



UNIVERSITÀ
DEGLI STUDI
FIRENZE

Dipartimento di Chimica
"Ugo Schiff"
Eccellenza 2023-2027



HR EXCELLENCE IN RESEARCH

**VERBALE DEL CONSIGLIO
DEL DIPARTIMENTO DI CHIMICA "UGO SCHIFF"
20/06/2025**

Il Consiglio del Dipartimento di Chimica "Ugo Schiff" – DICUS, convocato con nota prot. n. 131352 del 16/06/2025 e integrato con nota prot. 134315 del 18/06/2025, si è riunito il giorno 20/06/2025, in presenza presso l'Aula D4, Plesso didattico Enrica Calabresi (R1). Presiede la riunione il Direttore Prof. Stefano Menichetti.

Il Presidente, constatata la presenza del numero legale, alle ore 12:10 dichiara aperta e valida la seduta e nomina segretario verbalizzante il dott. Dario Abbate.

Ordine del giorno:

1. Comunicazioni
2. Approvazione verbali
3. Nuovo Regolamento di Dipartimento
4. Progetti di Ricerca, Accordi e Convenzioni
5. Ricerca commissionata e Laboratori congiunti
6. Assegni e borse
7. Internazionalizzazione
8. Programmazione didattica
9. Dottorato di ricerca
10. Incarichi di lavoro autonomo
11. Acquisti beni e servizi
12. Variazioni di bilancio
13. Adesione Centri di Ricerca Interdipartimentali
14. Varie ed eventuali
15. Programmazione triennale del personale docente e ricercatore 2025-2027
(punto riservato a personale docente e ricercatore)

Segreteria

Dipartimento di Chimica "Ugo Schiff" DICUS

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16. Proroga del contratto di ricercatore RTD/A, Gruppo Scientifico Disciplinare 03/CHEM-01, Settore Scientifico Disciplinare CHEM-01/A
(punto riservato a personale docente e ricercatore)
17. Contratti di ricerca (punto riservato a personale docente e ricercatore)
18. Procedura valutativa per un posto di professore associato ai sensi dell'art. 24 comma 5 della legge 240/2010, gruppo scientifico disciplinare 03/CHEM-05 (Chimica organica), settore scientifico disciplinare CHEM-05/A (Chimica organica): approvazione atti e proposta di chiamata
(punto riservato a Professori Ordinari e Associati)
19. Procedura valutativa per un posto di professore associato ai sensi dell'art. 24 comma 5 della legge 240/2010, gruppo scientifico disciplinare 03/CHEM-01 (Chimica analitica, ambientale e dei beni culturali), settore scientifico disciplinare CHEM-01/A (Chimica analitica): approvazione atti e proposta di chiamata
(punto riservato a Professori Ordinari e Associati)

Sono presenti:

	P	AGV	AG	A
Direttore				
1. MENICHETTI Stefano	X			
Professori Ordinari				
2. BERTI Debora	X			
3. BIANCHI Antonio				X
4. BILIA Anna Rita			X	
5. BOGANI Lapo	X			
6. BOTRE' Francesco	X			
7. CARDINI Gianni	X			



	P	AGV	AG	A
8. CICCHI Stefano		X		
9. DEI Luigi		X		
10. FRATINI Emiliano	X			
11. FURLANETTO Sandra	X			
12. GIAMBASTIANI Giuliano	X			
13. GOTI Andrea	X			
14. MANNINI Matteo		X		
15. MARRAZZA Giovanna		X		
16. NATIVI Cristina		X		
17. PAPINI Anna Maria		X		
18. PIERATTELLI Roberta	X			
19. SESSOLI Roberta	X			
20. SMULEVICH Giulietta	X			
21. TURANO Paola	X			
22. VALTANCOLI Barbara	X			
Professori associati				
23. ANDREINI Claudia	X			
24. BAZZICALUPI Carla	X			
25. BECUCCI Maurizio	X			
26. BELLO Claudia	X			
27. BENCINI Andrea	X			
28. BERGONZI Maria Camilla		X		
29. BINI Roberto	X			
30. BONINI Massimo	X			
31. CACCIARINI Martina		X		



	P	AGV	AG	A
32. CALDERONE Vito	X			
33. CANTINI Francesca		X		
34. CAPPERUCCI Antonella	X			
35. CARDONA Francesca		X		
36. CARRETTI Emiliano	X			
37. CHELAZZI David		X		
38. CHELLI Riccardo				X
39. CINCINELLI Alessandra	X			
40. CIOFI BAFFONI Simone	X			
41. CIRRI Marzia				X
42. CORDERO Franca Maria	X			
43. DEL BUBBA Massimo		X		
44. FEIS Alessandro	X			
45. FELLI Isabella Caterina	X			
46. FERRARONI Marta			X	
47. FRAGAI Marco		X		
48. FRANCESCONI Oscar	X			
49. FREDIANI Marco	X			
50. GIORGI Claudia	X			
51. GIORGI Rodorico			X	
52. INNOCENTI Massimo		X		
53. LAURATI Marco	X			
54. LELLI Moreno	X			
55. LO NOSTRO Pierandrea	X			
56. MAESTRELLI Francesca				X



	P	AGV	AG	A
57. MARRADI Marco		X		
58. MARTELLINI Tania	X			
59. MATASSINI Camilla		X		
60. MENNINI Natascia		X		
61. MESSORI Luigi	X			
62. MONTIS Costanza		X		
63. OCCHIATO Ernesto Giovanni	X			
64. ORLANDINI Serena	X			
65. PAGLIAI Marco	X			
66. PALCHETTI Ilaria			X	
67. PARIGI Giacomo	X			
68. PARMEGGIANI Camilla	X			
69. PERFETTI Mauro				X
70. PICCIOLI Mario	X			
71. POGGI Giovanna	X			
72. PROCACCI Piero	X			
73. RAVERA Enrico	X			
74. RICCHICI Barbara	X			
75. RIDI Francesca	X			
76. RISTORI Sandra	X			
77. ROSATO Antonio		X		
78. ROSI Luca	X			
79. SALVINI Antonella			X	
80. SCARANO Simona		X		
81. SEVERI Mirko	X			



	P	AGV	AG	A
82. SORACE Lorenzo	X			
83. TENORI Leonardo	X			
84. TOTTI Federico	X			
85. TRABOCCHI Andrea	X			
86. TRAVERSI Rita	X			
87. VIGLIANISI Caterina	X			
Ricercatori a tempo indeterminato				
88. CAMINATI Gabriella	X			
89. GELLINI Cristina	X			
90. PIETRAPERZIA Giangaetano				X
91. RICCI Marilena	X			
92. SCARPI Dina	X			
Ricercatori a tempo determinato				
93. BANDELLI Damiano	X			
94. BIAGIOTTI Giacomo	X			
95. BRIGANTI Matteo	X			
96. CEROFOLINI Linda	X			
97. CLEMENTE Francesca		X		
98. GELLI Rita	X			
99. GIURLANI Walter	X			
100. LENCI Elena	X			
101. LUCHINAT Enrico	X			
102. MACCHIAGODENA Marina		X		
103. MARTELLA Daniele	X			
104. MASSAI Lara	X			



	P	AGV	AG	A
105. MEONI Gaia	X			
106. PALLADINO Pasquale	X			
107. PASQUINI Benedetta		X		
108. SCHIAVINA Marco	X			
109. SEBASTIANI Federico	X			
110. TANINI Damiano	X			
111. TONELLI Monica		X		
112. VANTI Giulia			X	
113. VIALETTA Jacopo	X			
114. VIGNOLI Alessia	X			
RAD				
115. ABBATE Dario	X			
Rappr.ti del personale tecnico-amm.vo				
116. BECAGLI Silvia				X
117. BONANNI Marco				X
118. CASPANELLO Chiara	X			
119. GIANNONI Martina			X	
120. GIUBANI Cristina				X
121. SALVATORI Margherita	X			
122. TADINI BUONINSEGNI Francesco	X			
123. TILLI Silvia			X	
Rappr.ti degli assegnisti				
124.				
125.				
Rappr.ti dei dottorandi				



	P	AGV	AG	A
126. MONTANARI Francesco	X			
127. SESTAIONI Davide		X		
Rapp.ti degli studenti				
128.IMBESI Jacopo	X			
129.NESTI Tommaso				X
130.SPADONI Carlo				X

1. Comunicazioni

Il Presidente comunica che:

- Sono stati eletti i nuovi rappresentanti degli studenti per il biennio 2025 – 2027, la nomina è di ieri pomeriggio li convocheremo a partire dal prossimo consiglio (03/07/2025 e/o 23/07/2025)
 - SACCARDI LAPO Gruppo Collettivo di Polo/SdS
 - GIANNINI TOMMASO Gruppo Collettivo di Polo/SdS
 - FALCINI LORENZO Gruppo Collettivo di Polo/SdS
 - UVA ANDREA Gruppo Collettivo di Polo/SdS
 - IMBESI JACOPO Gruppo Lista CTF – Biennio 2025-2027
 - GUERCINI PIETRO
 - SCALZULLO LORENZO
 - ILISANU MARIA ROXANA
 - SOCCODATO TOMMASO
- Dal 21/07/2025 sarà dismesso il vecchio applicativo missioni
- Il 10 giugno è stata pubblicata la Nota della Rettrice 11/2025 avente ad oggetto la manifestazione di interesse per il reclutamento di professori tramite chiamata diretta



nell'anno 2025. Le delibere dovranno pervenire all'Unità di Processo "Amministrazione del Personale Docente e Ricercatore" entro il prossimo 30 giugno 2025

- Bando per la campagna invernale antartica. Le professionalità ricercate sono: "glaciologo/chimico dell'atmosfera", "fisico dell'atmosfera" e "astrofisico". Le attività si svolgeranno presso la base Concordia per un periodo di circa 13 mesi (novembre 2025 - novembre 2026). Per ulteriori informazioni potete visitare il sito: <https://www.pnra.ag.it/avviso-reclutamento-di-personale-la-xxii-campagna-invernale-antartica> Il Bando ha scadenza il prossimo 14 luglio 2025
- A seguito dell'incontro di Coordinamento dei Dipartimenti per lo Sviluppo Sostenibile (referenti Prorettore Marco Pierini, Marisa Santioli), sarebbe auspicabile nominare un delegato per la Sostenibilità in collaborazione con il Green. Chi fosse interessato si candidi scrivendo a me e a Elisa Zuri.
- Vi ricordo la compilazione del Syllabus entro il mese di luglio 2025.
- Dipartimento Eccellenza.
- Vista la programmazione annuale dell'Amministrazione, tenuto conto della festività cittadina del 24 giugno 2025, il prossimo lunedì 23 giugno 2025 le sedi UNIFI resteranno chiuse. Si chiede pertanto la disattivazione degli impianti di climatizzazione e ricambio aria centralizzati per i giorni 23 e 24 giugno.
- Il 30 maggio è stato siglato l'accordo quadro tra UNIFI e lo Stabilimento Chimico Farmaceutico Militare - Agenzia Industrie Difesa e la Fondazione Italiana ricerca sulle malattie dell'osso. La Prorettrice alla Ricerca è stata nominata membro del Comitato Operativo. La prof.ssa Anna Rita Bilia e la prof.ssa Barbara Richichi sono state nominate membri del Comitato Scientifico



- Fumo
- La sig.ra Francesca Tesi è stata assegnata alla nostra amministrazione.
Ci è stato notificato il trasferimento di Ilenia Rossi al costituendo Ufficio "Staff e supporto giuridico" presso l'UP "Management Grandi Opere", afferente all'Area Programmazione e sviluppo grandi opere.
- Si è concluso il concorso pubblico, per titoli ed esami, per n. 1 posto, Area dei Funzionari, settore scientifico-tecnologico, con contratto di lavoro subordinato a tempo indeterminato e pieno, per le esigenze del Dipartimento di Chimica "Ugo Schiff". È risultato vincitore il Gabellini Lapo che prenderà servizio dal 03 luglio.
- Il 9 luglio Roberta Sessoli riceverà il titolo di Dottore Honoris Causa dall'Università di Rennes.
- Roberta Pierattelli mi informa che Silvia Oliveti, studentessa della nostra Laurea Magistrale in Scienze Chimiche e attualmente dottoranda del International Doctorate in Structural Biology, ha vinto il premio "Angelini Pharma" per la miglior tesi di laurea, conferito dalla Divisione di Chimica dei Sistemi Biologici della SCI.
- Nella cerimonia riconoscimenti accademici 2025 del 11 giugno:
Edoardo Cipriani ha avuto il riconoscimento di migliore studente magistrale della Scuola SMFN e Matilde BECHERONI, dottoressa in Scienze chimiche, è stata premiata dall'Ateneo come migliore laureata magistrale STEM per la Scuola di SMFN.
- Procedura per la richiesta di una prima consegna o rinnovo badge per accesso al Dipartimento di Chimica. Informazioni e i moduli sono disponibili al seguente LINK:
<https://www.chim.unifi.it/vp-130-accesso-al-dipartimento-e-badge.html>



Le richieste possono essere:

- inviate alla nuova casella di posta dedicata: accessi.chimica@chim.unifi.it
 - consegnate in modalità cartacea (**dott. Leonardo Marchettoni** - stanza 380 in segreteria)
- PF60 a.a. 2024/2025 è stata prevista una voce dedicata nell'applicativo dei registri, in particolare sul
 - Registro delle attività didattiche
 - sotto la dicitura Altri incarichi didattici
 - insegnamento per Corsi di Formazione Insegnantida compilare obbligatoriamente.
 - Prossimi Consigli di Dipartimento:
 - 3 luglio *modalità telematica*
 - 23 luglio *in presenza*

2. Approvazione verbali

Il presidente pone in approvazione il verbale del Consiglio di Dipartimento del 20/05/2025 disponibile in cartella condivisa.

Il Consiglio approva all'unanimità

3. Nuovo Regolamento di Dipartimento

Il Direttore comunica che, a seguito dell'invio della modifica del Regolamento approvata nel Consiglio di Dipartimento del 15/04/2025 recante le modifiche riguardanti gli artt. 11 (Commissione di indirizzo e autovalutazione: composizione e modalità di designazione), 16 (Giunta di Dipartimento: composizione e modalità di designazione) e 17 (Giunta di



Dipartimento: funzionamento), la Commissione affari generali riunita il 03/06/2025 (prot. 120889 del 04/06/2025) ha rilasciato un parere in cui richiede ulteriori modifiche.

Su proposta del Direttore, la Commissione di indirizzo e autovalutazione del Dipartimento ha quindi elaborato una proposta di modifica, che da Art. 22 del Regolamento, deve essere ratificata all'unanimità dal Consiglio di Dipartimento per essere poi approvata dai preposti organi di Ateneo.

Il Direttore procede quindi ad illustrare le modifiche:

Regolamento di Dipartimento - in vigore

Art. 11

(Commissione di indirizzo e autovalutazione: composizione e modalità di designazione)

1. La Commissione di indirizzo e autovalutazione del Dipartimento, di cui all'art. 14 del Regolamento dei Dipartimenti è composta da tredici membri di cui:

- a) sei nominati dal Direttore fra i professori e i ricercatori membri del Consiglio di Dipartimento, uno per ognuno dei settori concorsuali 03/A1 - CHIMICA ANALITICA, 03/A2 - MODELLI E METODOLOGIE PER LE SCIENZE CHIMICHE, 03/B1 - FONDAMENTI DELLE SCIENZE CHIMICHE E SISTEMI INORGANICI, 03/C1 - CHIMICA ORGANICA, 03/C2 - CHIMICA INDUSTRIALE, 03/D2 - TECNOLOGIA, SOCIOECONOMIA E NORMATIVA DEI MEDICINALI, sentiti i professori e i ricercatori del relativo settore concorsuale; la nomina è comunque soggetta all'approvazione con maggioranza assoluta degli aventi diritto da parte del Consiglio di Dipartimento nella sua composizione ristretta ai soli professori e ricercatori;
- b) sette eletti dal Consiglio di Dipartimento nella sua composizione ristretta ai soli professori e ricercatori, con elettorato passivo costituito da tutti

Regolamento di Dipartimento – proposta di modifica

Art. 11

(Commissione di indirizzo e autovalutazione: composizione e modalità di designazione)

1. La Commissione di indirizzo e autovalutazione del Dipartimento, di cui all'art. 14 del Regolamento dei Dipartimenti è composta da tredici membri di cui:

- a) sei nominati dal Direttore fra i professori e i ricercatori membri del Consiglio di Dipartimento, uno per ognuno dei gruppi scientifico disciplinari (GSD) 03/CHEM-01 CHIMICA ANALITICA, AMBIENTALE E DEI BENI CULTURALI, 03/CHEM-02 CHIMICA FISICA, 03/CHEM-03 CHIMICA GENERALE E INORGANICA, 03/CHEM-04 CHIMICA INDUSTRIALE, 03/CHEM-05 CHIMICA ORGANICA, 03/CHEM-08 TECNOLOGIA, SOCIOECONOMIA E NORMATIVA DEI MEDICINALI E DEI PRODOTTI PER IL BENESSERE E PER LA SALUTE, sentiti i professori e i ricercatori del relativo gruppo scientifico-disciplinare; la nomina è comunque soggetta all'approvazione con maggioranza assoluta degli aventi diritto da parte del Consiglio di Dipartimento nella sua composizione ristretta ai soli professori e ricercatori;



i professori e ricercatori ad esclusione del Direttore e di quelli nominati secondo la lettera a. del presente comma, quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza.

2. Il Direttore partecipa alle riunioni della Commissione d'indirizzo e autovalutazione senza diritto di voto.

Art. 16

(Giunta di Dipartimento: composizione e modalità di designazione)

1. La Giunta del Dipartimento è composta da:
 - a) il Direttore, che la presiede;
 - b) tredici professori e ricercatori di cui:
 - b1) due rappresentanti dei professori di prima fascia eletti dai professori di prima fascia, secondo quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza,
 - b2) due rappresentanti dei professori di seconda fascia eletti dai professori di seconda fascia, secondo quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza,
 - b3) due rappresentanti dei ricercatori eletti dai ricercatori, secondo quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza,
 - b4) tre professori o ricercatori membri del Consiglio del Dipartimento che alla data delle elezioni siano affidatari a qualunque titolo di corsi d'insegnamento in Corsi di Studio coordinati dalla Scuola di Scienze della Salute Umana eletti dai professori e ricercatori del Dipartimento, secondo quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza,
 - b5) tre professori o ricercatori membri del Consiglio del Dipartimento che alla data

b) sette eletti dal Consiglio di Dipartimento nella sua composizione ristretta ai soli professori e ricercatori, con elettorato passivo costituito da tutti i professori e ricercatori ad esclusione del Direttore e di quelli nominati secondo la lettera a. del presente comma, quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza.

2. Il Direttore partecipa alle riunioni della Commissione d'indirizzo e autovalutazione senza diritto di voto.

Art. 16

(Giunta di Dipartimento: composizione e modalità di designazione)

1. La Giunta del Dipartimento è composta da:
 - a) il Direttore che la presiede;
 - b) quattordici professori e ricercatori di cui:
 - b1) sette eletti tra i professori o ricercatori membri del Consiglio del Dipartimento che alla data delle elezioni siano affidatari a qualunque titolo di corsi d'insegnamento in Corsi di Studio coordinati dalla Scuola di Scienze Matematiche Fisiche e Naturali, con votazione a doppia preferenza;
 - b2) tre eletti tra i professori o ricercatori membri del Consiglio del Dipartimento, che alla data delle elezioni siano affidatari a qualunque titolo di corsi d'insegnamento in Corsi di Studio coordinati dalla Scuola di Scienze della Salute Umana, con votazione a unica preferenza;
 - b3) tre eletti da e tra i professori o ricercatori membri del Consiglio del Dipartimento che alla data delle elezioni sia affidatario a qualunque titolo di corsi d'insegnamento in Corsi di Studio coordinati dalla Scuola di Agraria, con votazione a unica preferenza;
 - b4) un eletto tra i professori e ricercatori membri del Consiglio del Dipartimento, con votazione ad unica preferenza.
 - c) un rappresentante del personale tecnico-amministrativo eletto dal personale afferente al Dipartimento tra i propri



delle elezioni siano affidatari a qualunque titolo di corsi d'insegnamento in Corsi di Studio coordinati dalla Scuola di Scienze Matematiche Fisiche e Naturali eletti dai professori e ricercatori del Dipartimento, secondo quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza,

b6) un professore o ricercatore membro del Consiglio del Dipartimento che alla data delle elezioni sia affidatario a qualunque titolo di corsi d'insegnamento in Corsi di Studio coordinati dalla Scuola di Agraria eletto dai professori e ricercatori del Dipartimento, secondo quanto previsto dall'art. 47, commi 1, 2 e 3 dello Statuto, con votazione ad unica preferenza;

c) due rappresentanti del personale tecnico-amministrativo, dei lettori e collaboratori esperti linguistici, eletti dal personale afferente al Dipartimento tra i rappresentanti del Consiglio;

d) quattro rappresentanti degli studenti, uno dei dottorandi e uno degli assegnisti, eletti da e tra gli studenti, dottorandi e assegnisti membri del Consiglio di Dipartimento.

2. Partecipa altresì alle sedute il Responsabile amministrativo, senza diritto di voto.

3. Le elezioni sono indette dal Direttore del Dipartimento almeno quaranta giorni prima della scadenza. Lo stesso Direttore provvede alla costituzione del seggio o dei seggi elettorali.

4. Ai sensi dell'art. 47 dello Statuto, ogni elettore può votare per un terzo dei nominativi da eleggere con arrotondamento all'unità superiore per la rappresentanza di cui al comma 1, lett. b) e per un nominativo per le rappresentanze di cui al comma 1, lett. c) e d). Sono eletti i candidati che abbiano ottenuto il maggior numero di voti.

5. Tra i candidati che abbiano ottenuto un pari numero di consensi risulta eletto il più anziano di età.

rappresentanti in Consiglio, con votazione a unica preferenza;

d) un rappresentante tra studenti e dottorandi, eletto da e tra gli studenti e dottorandi e membri del Consiglio di Dipartimento, con votazione a unica preferenza;

2. Partecipa altresì alle sedute il Responsabile amministrativo, senza diritto di voto

3. Sono eletti i candidati che abbiano ottenuto il maggior numero di voti.

4. Tra i candidati che abbiano ottenuto un pari numero di consensi risulta eletto il più anziano di età

5. La votazione è valida se vi abbia preso parte almeno la metà più uno degli aventi diritto. Qualora la votazione risulti non valida, il Direttore del Dipartimento provvede ad una seconda indizione entro 10 giorni dalla data di svolgimento della votazione stessa.

6. Le elezioni sono indette dal Direttore del Dipartimento almeno quaranta giorni prima della scadenza. Lo stesso Direttore organizza le operazioni di voto anche tramite piattaforme digitali.

7. Al solo fine di rispettare i criteri di composizione dei Consigli delle Scuole cui il Dipartimento aderisce, il numero dei componenti della Giunta è incrementato, qualora quelli di cui al comma 1, lettere b1, b2 e b3 del presente articolo non risultino in numero sufficiente a soddisfare il requisito di cui all'art. 31, comma 2, lettera b, terzo periodo, dello Statuto. Tali componenti aggiuntivi sono eletti dal Consiglio di Dipartimento tra i professori e i ricercatori componenti del Consiglio nella misura necessaria a garantire la corretta composizione dei Consigli delle Scuole.



6. La votazione è valida se vi abbia preso parte almeno la metà più uno degli aventi diritto. Qualora la votazione risulti non valida, il Direttore del Dipartimento provvede ad una seconda indizione entro 10 giorni dalla data di svolgimento della votazione stessa.

Art. 17

(Giunta di Dipartimento: funzionamento)

1. Per il funzionamento della Giunta trovano applicazione l'art. 48 dello Statuto, l'art. 10, commi da 4 a 7, del Regolamento dei Dipartimenti, l'art. 8, commi da 1 a 5, 8, 9, 10, 12, 13 e 14 del presente regolamento.
2. L'ordine del giorno è predisposto dal Direttore del Dipartimento.
3. Una copia dei verbali approvati e firmati è archiviata presso la Segreteria del Dipartimento e resa disponibile sul sito web del Dipartimento con le modalità di accesso di cui all'art. 8 comma 13 del presente regolamento.

Art. 17

(Giunta di Dipartimento: funzionamento)

1. Per il funzionamento della Giunta trovano applicazione l'art. 48 dello Statuto, l'art. 19 del Regolamento dei Dipartimenti, e, oltre al presente articolo, l'art. 16 e 18 del presente regolamento.
2. L'ordine del giorno è predisposto dal Direttore del Dipartimento.
3. Una copia dei verbali approvati e firmati è archiviata presso la Segreteria del Dipartimento e resa disponibile sul sito web del Dipartimento. La pubblicizzazione dei verbali on-line è regolata da norme comuni deliberate dagli Organi di Governo dell'Ateneo.

Dopo breve discussione, il Consiglio unanime approva interamente le proposte di modifica e dà mandato al Direttore di trasmettere la presente delibera all'Unità di Processo Affari Istituzionali per gli atti conseguenti.

4. Progetti di Ricerca, Accordi e Convenzioni

4.1 Progetti di ricerca

4.1.a Manifestazioni di interesse per il Bando Grandi Attrezzature 2025 – Fondazione CR Firenze

Il Presidente sottopone all'attenzione del Consiglio le manifestazioni di interesse pervenute nell'ambito del Bando Grandi Attrezzature 2025 promosso dalla Fondazione CR Firenze, di cui vengono riportati i dettagli nelle tabelle seguenti:



Responsabile Scientifico	Lorenzo Sorace
Strumentazione	Acquisto di un magnetometro SQUID Ever Cool MPMS3 per la caratterizzazione e lo sviluppo di materiali magnetici per la transizione ecologica
Dipartimenti e altri enti a supporto	• Chimica "Ugo Schiff" (DICUS) – Roberta Sessoli; Matteo Mannini; Matteo Briganti; Mauro Perfetti; • Fisica e astronomia (FISICA) – Maria Fittipaldi; • Ingegneria Industriale (DIEF) – Giulia Serrano; Alberto Privitera; Andrea Caneschi
Ente Finanziatore	Fondazione CR Firenze
Finanziamento richiesto (€)	500.000
Scadenza	20/06/2025

Responsabile Scientifico	Rita Traversi / Mirko Severi
Strumentazione	IC-MS (Ion Chromatography - Mass Spectrometry)
Dipartimenti e altri enti a supporto	• Fisica e astronomia (FISICA) – Franco Lucarelli; Silvia Nava; • Scienze e Tecnologie Agrarie, Alimentari, Ambientali E Forestali (DAGRI) – Caterina Dinnella • CNR IFAC – Giovanni Macelloni
Ente Finanziatore	Fondazione CR Firenze
Finanziamento richiesto (€)	280.000
Scadenza	20/06/2025

Il Consiglio,

- Visti i dati e le informazioni riportati nelle tabelle;

Segreteria

Dipartimento di Chimica "Ugo Schiff" DICUS

Via della Lastruccia, 3-13 – 50019 Sesto Fiorentino (FI)

segreteria@chim.unifi.it chim@pec.unifi.it

centralino +39 055 4573007

P.IVA/Cod. Fis. 01279680480



- Riconosciuta la rilevanza scientifica e strategica delle strumentazioni proposte per le attività di ricerca dei Dipartimenti coinvolti;
- Considerata la fattibilità tecnica e amministrativa delle manifestazioni di interesse presentate, con adeguato supporto di personale e strutture,

Delibera la fattibilità delle manifestazioni di interesse presentate per il Bando Grandi Attrezzature 2025.

Dà quindi mandato al Direttore di procedere alla sottoscrizione di tutti gli atti necessari per la partecipazione al bando.

4.1.b Approvazione a ratifica proposta progettuale nell'ambito del programma Horizon Europe - EIC Pathfinder 2025

Il Presidente pone in approvazione, a ratifica, la proposta progettuale pervenuta nell'ambito del programma Horizon Europe - EIC Pathfinder 2025, di cui vengono riportati i dettagli nella tabella seguente:

Responsabile Scientifico	Claudia Giorgi
Titolo e acronimo	Self-Assembly Of Hybrid Peptide/Hormone/Aie-Gen Structures: A Radically New Approach To Generate Soft Nanovesicles For Cell Active Transport - AURIGA
Durata (mesi)	36
Ente Finanziatore	EUROPEAN COMMISSION - REA Research Executive Agency
Finanziamento richiesto (€)	355.000
Deadline	21/05/2025

Il Consiglio,



- Visti i dati e le informazioni riportati in tabella,
- Riconosciuto che sussistano i requisiti di fattibilità del progetto sia in termini di personale a supporto da dedicare alla ricerca che di budget finanziario utile a portarlo a compimento,

Delibera a ratifica la fattibilità del progetto.

Dà quindi mandato al Direttore del Dipartimento di sottoscrivere tutti gli atti funzionali alla partecipazione al progetto.

4.1.c Approvazione a ratifica proposta progettuale per il Bando di ateneo progetti competitivi per Ricercatori a Tempo Determinato (RTD) dell'Università di Firenze – Anno 2026/2027

Il Presidente pone in approvazione, a ratifica, la proposta progettuale pervenuta nell'ambito del Bando di ateneo progetti competitivi per Ricercatori a Tempo Determinato (RTD) dell'Università di Firenze – Anno 2026/2027, di cui vengono riportati i dettagli nella tabella seguente:

Responsabile Scientifico	Giulia Vanti (coordinatore Dr.ssa Laura Micheli, Dipartimento di Neuroscienze, Psicologia, Area del Farmaco e Salute del Bambino "NEUROFARBA")
Titolo e acronimo	Sviluppo di una nanoformulazione intranasale a base di b-cariofillene per il trattamento dell'idrocefalo e del dolore ad esso associato (CariDOL)
Durata (mesi)	24
Ente Finanziatore	Università degli Studi di Firenze
Finanziamento richiesto (€)	35.000 (Importo totale progetto 60.000)



Scadenza bando	16/06/2025

Il Consiglio,

- Visti i dati e le informazioni riportati in tabella,
- Visto il Decreto del Direttore di cui al prot. n. 129218/2025,
- Riconosciuto che sussistano i requisiti di fattibilità del progetto sia in termini di personale a supporto da dedicare alla ricerca che di budget finanziario utile a portarlo a compimento,

Delibera a ratifica la fattibilità del progetto.

Dà quindi mandato al Direttore del Dipartimento di sottoscrivere tutti gli atti funzionali alla partecipazione al progetto.

4.1.d Approvazione a ratifica proposta progettuale presentata nell'ambito del bando Ricerca – Fondazione CARIPT (Cassa di Risparmio Pistoia e Pescia)

Il Presidente pone in approvazione, a ratifica, la proposta progettuale pervenuta nell'ambito del bando Ricerca della fondazione CARIPT, di cui vengono riportati i dettagli nella tabella seguente:

Responsabile Scientifico	Francesca Cantini
Titolo e acronimo	Il ruolo dei metalli pesanti nella disfunzione delle proteine calcio-sensibili della retina
12	24
Ente Finanziatore	Fondazione CARIPT
Finanziamento richiesto (€)	30.000



Scadenza bando	16/06/2025

Il Consiglio,

- Visti i dati e le informazioni riportati in tabella,
- Riconosciuto che sussistano i requisiti di fattibilità del progetto sia in termini di personale a supporto da dedicare alla ricerca che di budget finanziario utile a portarlo a compimento,

Delibera a ratifica la fattibilità del progetto.

Dà quindi mandato al Direttore del Dipartimento di sottoscrivere tutti gli atti funzionali alla partecipazione al progetto.

4.1.e Approvazione proposte progettuali per il bando Fondazione Veronesi "Post-doctoral Fellowships" Experimental Research Grants 2026

Il Presidente pone in approvazione le proposte progettuali pervenute nell'ambito del "Post-doctoral Fellowships" Experimental Research Grants 2026 - Fondazione Umberto Veronesi, di cui vengono riportati i dettagli nelle tabelle seguenti:

Responsabile Scientifico	Gina Elena Giacomazzo (Claudia Giorgi)
Titolo e acronimo	Advancing Metal-Based Photodynamic Therapy for Vulvar Intraepithelial Neoplasia: A Translational Strategy Targeting HPV-Positive Lesions
Durata (mesi)	24
Ente Finanziatore	Fondazione Umberto Veronesi
Finanziamento richiesto (€)	66.000



Deadline	18/07/2025

Responsabile Scientifico	Lucrezia Cosottini (Paola Turano)
Titolo e acronimo	Ferritin-based Immune Response Enhancer - FIRE
Durata (mesi)	24
Ente Finanziatore	Fondazione Umberto Veronesi
Finanziamento richiesto (€)	66.000
Deadline	18/07/2025

Il Consiglio,

- Visti i dati e le informazioni riportati nelle tabelle,
- Preso atto delle lettere di supporto dei docenti responsabili scientifici, con le quali viene espressa la disponibilità a ospitare i ricercatori nei rispettivi laboratori in caso di vincita,
- Riconosciuto che sussistano i requisiti di fattibilità dei progetti sia in termini di personale a supporto da dedicare alla ricerca che di budget finanziario utile a portarli a compimento,

Delibera a ratifica la fattibilità del progetto.

Dà quindi mandato al Direttore del Dipartimento di sottoscrivere tutti gli atti funzionali alla partecipazione al progetto.

4.2 Accordo per l'erogazione di un contributo da parte di Fondazione Cassa di Risparmio di Firenze – Bando Talenti@Firenze 2024

Il Consiglio di Dipartimento è chiamato ad approvare la stipula di una convenzione finalizzata all'erogazione di un contributo per il progetto dal titolo "Quantum Carbon



Electronics at Ultra-low Temperatures (Elettronica Quantistica a base di Carbonio a Temperature Ultra-basse)", ID 58356 finanziato a valere sul bando Talenti@Firenze 2024 - programma RICERCA SCIENTIFICA E TECNOLOGICA della Fondazione Cassa di Risparmio di Firenze.

Il progetto vede coinvolti:

- il **Dipartimento di Chimica "Ugo Schiff" dell'Università di Firenze (DICUS)** –
Resp. delle attività: prof. Lapo Bogani;
- la **Fondazione Cassa di Risparmio di Firenze.**

Oggetto della convenzione è il trasferimento a Firenze dalla sede di Oxford della strumentazione ivi presente volta alla caratterizzazione nanoelettronica di nuovi materiali. Per la realizzazione del progetto, la Fondazione Cassa di Risparmio di Firenze si impegna a contribuire con la somma complessiva di € 342.000,00, a copertura delle spese sostenute.

L'accordo avrà validità di un anno dalla sottoscrizione della convenzione da parte di entrambe le parti, e comunque fino alla consegna del report finale da parte del beneficiario, con possibilità di proroga di ulteriori 12 mesi.

Il Consiglio

VISTO il testo dell'Accordo in parola, reso disponibile nella cartella condivisa con i componenti del Consiglio su file server del Dipartimento;

APPROVA all'unanimità

la stipula della convenzione tra il Dipartimento di Chimica "Ugo Schiff" (DICUS) e la Fondazione Cassa di Risparmio di Firenze, finalizzato alla erogazione di un contributo per per il progetto dal titolo "Quantum Carbon Electronics at Ultra-low Temperatures (Elettronica Quantistica a base di Carbonio a Temperature Ultra-basse)".

4.3. Accordi di riservatezza



Su istanza del prof. Simone Ciofi Baffoni, il Consiglio di Dipartimento è chiamato ad approvare la stipula di un *Confidentiality Agreement* con il **King's College London**, Strand – London WC2R 2LS – Regno Unito, necessario a future collaborazioni di ricerca, mirate allo sviluppo di nuove tecnologie per la protezione dalle infezioni virali.

L'Accordo avrà la durata di un anno dalla sottoscrizione, mentre gli obblighi di confidenzialità continueranno per un periodo di cinque anni dalla data dell'ultimo scambio di informazioni riservate.

Il Consiglio

VISTO il testo del *Confidentiality Agreement* con il King's College London, reso disponibile nella cartella condivisa su file server del Dipartimento, ne approva la stipula all'unanimità dei presenti.

4.4 Material Transfer Agreement

Su istanza della prof.ssa Cristina Nativi, il Consiglio di Dipartimento è chiamato ad approvare la stipula di un *Material Transfer Agreement*, con Bracco Imaging S.p.A., sita in Milano, Via E. Folli, 50, C.F./P. IVA 07785990156 e il Dipartimento di Scienze del Farmaco - Università del Piemonte Orientale sito in Novara, Largo Donegani, 2/3, C.F. 019943490027.

L'accordo avrà validità per un anno dalla sottoscrizione e si inserisce nell'ambito di una ricerca su sonde fluorescenti sensibili al pH e loro applicazioni biomediche.

il Consiglio

VISTO il *Material Transfer Agreement*, reso disponibile nella cartella condivisa su file server del Dipartimento;

CONSIDERATO che non sono pervenuti rilievi dal Servizio Prevenzione e Protezione dell'Ateneo, a cui è stato anticipato il testo dell'Accordo con mail del 06/06/2025;

all'unanimità ratifica la stipula del predetto Accordo.



5. Ricerca commissionata e Laboratori congiunti

5.1 Il Presidente presenta la richiesta della **prof.ssa Antonella Salvini** per l'approvazione di un contratto di ricerca commissionata (ex Art.3, c. 2, *lett. A1 del Regolamento sullo Svolgimento di attività di ricerca o didattica commissionate da soggetti pubblici e privati*) – con **Pratocorde Srl** c.f. e P.I. 00368830477, con sede in Montale (PT), Via Giordano Bruno, 79, dal titolo:

"Ottimizzazione della formulazione di un materiale adesivo per la saldatura di una cinghia elastica di trasmissione."

Il contratto sarà valido per sedici mesi, decorrenti dalla stipula.

Per lo svolgimento dell'attività è previsto un corrispettivo complessivo di € 4.000,00 (quattromila/00) + IVA, da erogare con la seguente modalità:

- € 1.000,00 + IVA, dopo tre mesi dalla stipula del contratto
- € 2.000,00 + IVA dopo nove mesi dalla stipula del contratto
- € 1.000,00 + IVA dopo nove mesi dalla stipula del contratto.

Il Consiglio

VISTO l'art. 44 del vigente Regolamento di amministrazione, finanza e contabilità dell'Università di Firenze secondo cui *"l'Università può effettuare a titolo oneroso, in collaborazione e per conto di organismi comunitari, enti pubblici o privati, attività di formazione, studi, ricerche, consulenze, analisi, controlli, tarature, prove ed esperienze, o altre attività nel rispetto delle proprie finalità istituzionali"*;



VISTO il vigente Regolamento sullo "Svolgimento di attività di ricerca o didattica commissionate da soggetti pubblici e privati" emanato con Decreto Rettorale n. 451, prot. n. 63016 del 16/04/2018, modificato con D.R. 60/2025 Prot. 12154 del 21.01.2025 e con D.R.118/2025 prot. 25169 del 05.02.2025;

VISTO il testo del contratto per ricerca commissionata con **Pratocorde Srl**, per un corrispettivo totale di € 4.000,00 (quattromila/00) + IVA, reso disponibile nella cartella condivisa con i componenti del Consiglio su file server del Dipartimento;

CONSIDERATO che non sono pervenuti rilievi dal Servizio Prevenzione e Protezione dell'Ateneo, a cui è stato anticipato il testo del contratto con mail del 17/06/2025;

VISTA la tabella di ripartizione di seguito riportata, presentata dal proponente senza ripartizione di quote tra il personale:

TABELLA RIPARTIZIONE CONTO TERZI - CONVENZIONI STIPULATE DAL 01/09/2018

(PER RICERCHE, COMMESSE DI DIDATTICA, CONSULENZE, PRESTAZIONI NON RICORRENTI, PRESTAZIONI A TARIFFA)

Contratto Pratocorde - Resp. Scientifico prof.ssa Salvini

Contratto Pratorcorde - Resp. Scientifico prof.ssa Salvini							% perc.	importo										
A	IMPORTO PER COMPENSI AL PERSONALE DIPENDENTE (variabile) importo per compensi al personale dipendente, al lordo degli oneri a carico dell'Amministrazione						0,00%	0,00										
	n. matricola	cognome	nome	n. ore (pers. Tec-amm)	importo orario (pers tec-amm)	importo			IDENTIFICATIVO Anagrafe delle Prestazioni									
B	IMPORTO PER ACQUISIZIONE DI BENI E SERVIZI E ALTRI COSTI CONNESSI ALLE ATTIVITA' (variabile) Importo per acquisti / noleggi / contratti a personale non dipendente e altri costi, al lordo degli oneri a carico dell'Amministrazione						88,50%	3.540,00										
C	IMPORTO PER USO SPAZI ATTREZZATURE E SERVIZI DELL'UNITA' AMMINISTRATIVA (variabile) Importo per uso di attrezzature e servizi forniti dall'Unità Amministrativa per lo svolgimento dell'attività						3,00%	120,00										
D	QUOTA DESTINATA AL FONDO PER LO SVILUPPO DELLA RICERCA DI ATENEO - SPESE GENERALI DI ATENEO - FONDO PER LA PREMIALITA' <table border="1"><thead><tr><th>Percentuale ripartita al personale</th><th>Ritenuta da applicare</th></tr></thead><tbody><tr><td>zero</td><td>6% su TOTALE</td></tr><tr><td>fino al 24,49%</td><td>15,4% su importo A + 6% su (TOTALE - importo A)</td></tr><tr><td>dai 24,50% al 56,49%</td><td>17,8% su importo A + 6% su (TOTALE - importo A)</td></tr><tr><td>dai 56,50%</td><td>20,8% su importo A + 6% su (TOTALE - importo A)</td></tr></tbody></table> Quota destinata al Fondo per lo Sviluppo della Ricerca di Ateneo ed alla copertura delle spese generali di Ateneo e al fondo per la premialità						Percentuale ripartita al personale	Ritenuta da applicare	zero	6% su TOTALE	fino al 24,49%	15,4% su importo A + 6% su (TOTALE - importo A)	dai 24,50% al 56,49%	17,8% su importo A + 6% su (TOTALE - importo A)	dai 56,50%	20,8% su importo A + 6% su (TOTALE - importo A)	6,00%	240,00
Percentuale ripartita al personale	Ritenuta da applicare																	
zero	6% su TOTALE																	
fino al 24,49%	15,4% su importo A + 6% su (TOTALE - importo A)																	
dai 24,50% al 56,49%	17,8% su importo A + 6% su (TOTALE - importo A)																	
dai 56,50%	20,8% su importo A + 6% su (TOTALE - importo A)																	
E	QUOTA DESTINATA AL FONDO COMUNE DI ATENEO (complessivamente stabilita nella misura del 2,5% del corrispettivo totale) Quota destinata al Fondo Comune di Ateneo						2,50%	100,00										
TOTALE (il totale della colonna percentuale deve essere sempre pari a 100%)							100,00%	4.000,00										

0,00%

differenza rispetto al 100%

differenza rispetto al 100% 0,00%

all'unanimità APPROVA

Segreteria

Dipartimento di Chimica "Ugo Schiff" DICUS

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1. la tabella di ripartizione del corrispettivo per commessa di ricerca per Pratorcorde Srl, proposta dalla prof.ssa Antonella Salvini, per l'importo di euro 4.000,00 (quattromila/00) oltre IVA;
2. la stipula del sopracitato contratto;
3. di conferire mandato all'Ufficio Commerciale d'Ateneo per l'emissione della fattura elettronica per la richiesta del pagamento, nei termini e nelle modalità previste dal contratto in parola.

5.2.a Proroga attività del Laboratorio congiunto "Valorizzazione di masse algali e sottoprodotti agro-industriali e riduzione di gas serra in atmosfera – VALORE" – Resp. Scientifico prof.ssa Antonella Salvini

Il Presidente informa i presenti che con lettera prot. 112862 del 22/05/2025, il Centro Servizi di Ateneo per la Valorizzazione della Ricerca e la gestione dell'Incubatore (CsaVRI) ha comunicato l'esito dell'incontro della Commissione Laboratori Congiunti e Conto Terzi, riunitasi in seduta telematica sincrona in data 12 maggio 2025. Nel riesaminare la situazione del Laboratorio Congiunto VALORE, prorogato fino al 30 giugno 2025 su precedente indicazione della medesima Commissione, si è preso atto che il processo di revisione del "Regolamento di Laboratori di ricerca Università-Soggetti esterni", già avviato in esecuzione della delibera del Senato Accademico e del Consiglio di amministrazione del maggio 2024, è tuttora in corso. Considerata la necessità di *"garantire continuità scientifica e operativa delle attività già avviate e l'omogeneità di trattamento tra i diversi Laboratori Congiunti dell'Ateneo"* la Commissione ha proposto un'ulteriore proroga della convenzione in essere fino al 31 marzo 2026, in attesa degli aggiornamenti regolamentari di cui sopra, *"sulla base delle condizioni già vigenti, fatte salve eventuali modifiche rese necessarie da circostanze specifiche"*.

Il Consiglio

CONSIDERATA l'imminente revisione del Regolamento su Laboratori di ricerca Università – Soggetti esterni";



PRESO ATTO della comunicazione resa dalla Commissione Laboratori Congiunti e Conto Terzi nella seduta del 12 maggio 2025;

VISTO il testo della convenzione per la proroga del Laboratorio in parola, reso disponibile nella cartella condivisa con i componenti del Consiglio su file server del Dipartimento

all'unanimità DELIBERA

- di prorogare le attività del Laboratorio congiunto "Valorizzazione di masse algali e sottoprodotti agro-industriali e riduzione di gas serra in atmosfera – VALORE" – Resp. Scientifico prof.ssa Antonella Salvini, fino al 31/03/2026;
- dà mandato al Direttore di sottoscrivere l'atto di proroga con i soggetti partecipanti (Dipartimento di Scienze e Tecnologie Agrarie, Alimentari, Ambientali e Forestali – DAGRI e Società Fotosintetica & Microbiologica S.r.l. - F&M).

5.2.b Rinnovo Laboratorio Congiunto di Ricerca denominato "*Analisi delle acque e dei processi di depurazione*" – Acronimo LABPUR

Il Presidente pone in approvazione, a ratifica, la convenzione Rep. 3221/2025, relativa al rinnovo del laboratorio congiunto denominato "***Analisi delle acque e dei processi di depurazione***" – **Acronimo LABPUR**, costituito dal Dipartimento di Chimica "Ugo Schiff e dalla Società **GIDA S.p.A.** C.F 03122430485/P. IVA 00289380974, con sede legale in Prato (PO) via Baciacavallo, 36.

Il laboratorio si propone di realizzare i seguenti obiettivi e finalità:

- a) progetti di ricerca e sviluppo di comune interesse.
- b) progetti di ricerca e sviluppo commissionati su interesse del soggetto esterno;



c) eventuali attività formative specialistiche (stage, post-laurea, e simili) e di orientamento collegate ai progetti di ricerca e sviluppo di cui ai punti precedenti

Nell'ambito della seguente tematica di ricerca:

- Sviluppo ed applicazione di metodi analitici di tipo chimico e biochimico per l'analisi di contaminanti chimici organici ed inorganici nelle acque e nei fanghi di depurazione degli impianti gestiti da GIDA S.p.A., ivi inclusi i sistemi pilota di fitodepurazione attualmente operativi presso gli impianti di Baciacavallo e di Calice, e i sistemi in scala pilota operativi presso il laboratorio "NatLab" del Dipartimento di Chimica.
- Studio dei processi di depurazione all'interno degli impianti gestiti da GIDA S.p.A., ivi inclusi i sistemi pilota di fitodepurazione attualmente operativi presso gli impianti di Baciacavallo e di Calice, e i sistemi in scala pilota operativi presso il laboratorio "NatLab" del Dipartimento di Chimica.
- Valorizzazione mediante riutilizzo delle matrici derivanti dai processi di depurazione.

Partecipano alle attività del laboratorio:

Per il Dipartimento di Chimica "Ugo Schiff":

Massimo Del Bubba

Demetrio Randazzo

Federico Sinigaglia

Davide Passaseo

Sara Morozzi

Michelangelo Fichera

Giulia Bonaccorso

Per la Società **GIDA S.p.A**

Donatella Fibbi



Roberto Camisa
Ester Coppini
Saer Doumett
Alexandra Antal
Gabriele Petracchi
Chiara Berardi
Edoardo Bramini
Lorenzo Mari
Laura Agostini

Il Responsabile Scientifico del laboratorio è il prof. Massimo Del Bubba.

Il Laboratorio svolge la propria attività presso il Dipartimento di Chimica, presso il Laboratori n. 263, n. 265, n. 267 interni all'edificio P1/301 del Dipartimento di Chimica e presso il laboratorio esterno "NatLab", sito tra gli edifici G1 (Dipartimento di Fisica e Astronomia) e H1 (INFN – Istituto Nazionale di Fisica Nucleare) del Campus di Sesto Fiorentino.

Il Laboratorio svolge la propria attività presso i locali del partner esterno, siti in:

1. Impianto di depurazione di Baciacavallo, situato in Via di Baciacavallo, 36 – 59100 Prato.
2. Impianto di depurazione di Calice, situato in Via Argine del Calice, snc – Prato.
3. Impianto di depurazione di Vaiano, situato in Via Giuseppe Di Vittorio, 76 – Vaiano (PO).
4. Impianto di depurazione di Vernio, situato in Via Montecuccoli, snc – Vernio (PO).
5. Impianto di depurazione di Cantagallo, Località Usella – Il Fabbro – Cantagallo (PO).

Il Dipartimento di Chimica "Ugo Schiff" continuerà a farsi carico della gestione amministrativa del Laboratorio.



Ai fini della normativa sulla sicurezza ed in particolare a quanto disposto dal Regolamento di Ateneo per la sicurezza e la salute dei Lavoratori, il Direttore pro-tempore del Dipartimento è individuato come Dirigente ai fini della sicurezza (art. 1, comma 1, lettera b) ed il Responsabile scientifico del Laboratorio come Responsabile delle Attività Didattiche e di Ricerca (art. 1, comma 1, lettera b).

Per tutte le attività svolte presso la Società GIDA S.p.A. ai fini della normativa sulla sicurezza, le figure di responsabilità sono individuate mediante l'organigramma aziendale della sicurezza allegato, da dove si evince il datore del lavoro e il dirigente ai fini della sicurezza e l'eventuale preposto.

Il Laboratorio avrà a disposizione le seguenti attrezzature:

del Dipartimento:

- UHPLC accoppiata con spettrometro di massa X500R.
- UHPLC accoppiata con spettrometro di massa 5500 QTrap.
- HPLC accoppiata con rivelatori UV e scattering di luce.
- GC-MS Shimadzu 2010 Plus.
- Digestore a microonde Milestone Ethos 1.
- Spettrofotometro Hach DR 4200.
- Apparato per sonicazione Sonix Vibracell.
- Ultracentrifuga MPW 351R.
- Apparato di agitazione per rotolamento Heidolph Reax 20

della Società **GIDA S.p.A.**:

- ICP Thermo ICAP.
- Digestore a microonde CEM Mars 6.
- Apparato per Jar Test VELP Scientifica.
- Respirometro TRIPLA

Il Consiglio di Dipartimento di Chimica



- VISTO il Regolamento su Laboratori di ricerca Università – Soggetti esterni adottato dall'Università degli Studi di Firenze in data 11 aprile 2018;
- PRESO ATTO della richiesta pervenuta da parte del prof Massimo Del Bubba, in merito al rinnovo del laboratorio congiunto denominato "**Analisi delle acque e dei processi di depurazione**" – **Acronimo LABPUR**
- CONSIDERATO il parere positivo espresso dalla Commissione Laboratori Congiunti e Conto Terzi pervenuto in data 09/06/2025;
- CONSIDERATO che non sono pervenuti rilievi dal Servizio Prevenzione e Protezione dell'Ateneo, a cui è stato anticipato il testo della convenzione con mail del 10/06/2025;
- VISTA la convenzione Rep. 3221/2025 per il rinnovo del laboratorio in parola;

delibera all'unanimità

di approvare la stipula della convenzione per il rinnovo, fino al 26/01/2028, del Laboratorio congiunto denominato "Analisi delle acque e dei processi di depurazione" – Acronimo LABPUR", tra il Dipartimento di Chimica e il Partner esterno GIDA S.p.A., Responsabile Scientifico prof. Massimo Del Bubba.

6. Assegni e borse

6.1.) Richieste di Rinnovo Assegni di ricerca

6.1.1) Il Presidente comunica che con richiesta prot. n. 119643 del 03/06/2025, il Prof. Luigi Messori richiede il seguente rinnovo di assegno di ricerca a ratifica:

Tipologia rinnovo	A Totale carico
Responsabile Scientifico	Prof. Luigi Messori



Nome assegnista	Dott. José Aleixo de Azevedo França
Decorrenza rinnovo	Dal 01/07/2025 al 30/06/2026
Titolo dell'assegno di ricerca	Sintesi, caratterizzazione ed interazione con target biologici di nuovi complessi metallici con attività farmacologiche
Costo annuale dell'assegno di ricerca	23.891,00 €
S.S.D.	CHEM-03/A
Fondi sui quali far gravare il costo dell'assegno	AIRC IG 2021-26169
Assegnatario dei fondi	Prof. Luigi Messori

Il Consiglio approva all'unanimità.

6.1.2) Il Presidente comunica che con richiesta prot. n. 131649 del 16/06/2025, la Prof.ssa Antonella Salvini richiede il seguente rinnovo di assegno di ricerca a ratifica:

Tipologia rinnovo	A Totale carico
Responsabile Scientifico	Prof.ssa Antonella Salvini
Nome assegnista	Dott.ssa Alice Cappitti
Decorrenza rinnovo	Dal 01/09/2025 al 31/08/2026
Titolo dell'assegno di ricerca	Materiali polimerici per strategie di eco-design
Costo annuale dell'assegno di ricerca	24.000,00 €
S.S.D.	CHEM-04/A
Fondi sui quali far gravare il costo dell'assegno	SMART-brain
Assegnatario dei fondi	Dr. Daniele Martella



Il Consiglio approva all'unanimità.

6.2. Borse di Ricerca

6.2.1. Attivazioni Borse di Ricerca

6.2.1.1. Il Presidente chiede al Consiglio di deliberare in merito alla richiesta pervenuta dalla **Prof.ssa Ilaria Palchetti con prot. 118368 del 30/05/2025** di attivazione della procedura per l'assegnazione di **una** borsa di ricerca con i requisiti di cui a seguito:

Titolo del programma di ricerca	Sviluppo di tecniche elettroanalitiche per analisi di contaminanti
Responsabile della ricerca e qualifica	Prof.ssa Ilaria Palchetti PA
Settore disciplinare	CHEM-01/A
Tipo di selezione	Per titoli e colloquio
Titoli di studio richiesti per ammissione	- Laurea vecchio ordinamento o specialistica o magistrale in Scienze Chimiche (LM-54) Farmacia e Farmacia Industriale (Classe LM-13), o Biotecnologie mediche veterinarie e farmaceutiche (Classe LM-09) - Curriculum scientifico professionale idoneo allo svolgimento della ricerca



Criteri di valutazione	- fino ad un massimo di 20 punti per il punteggio di laurea - fino ad un massimo di 20 punti per altri titoli - fino ad un massimo di 10 punti per la pregressa esperienza professionale - fino ad un massimo di 10 punti per attività di ricerca effettuata in relazione all'attività da svolgere - fino ad un massimo di 40 punti per il colloquio
Numero borse da attivare	1
Decorrenza attività di ricerca	01/09/2025
Durata	6 mesi
Costo totale della borsa	€ 6.000,00
Progetto e coan	Progetto BEM / MIPAF / CREA, COAN n. 76372 del 29/05/2025
Data, ora e luogo dell'eventuale colloquio	22/07/2025, ore 10:00, Stanza 268, Via della Lastruccia 3, Sesto F.no

6.2.1.2. Il Presidente chiede al Consiglio di deliberare in merito alla richiesta pervenuta dal **Prof. Luca Rosi con prot. 130304 del 12/06/2025** di attivazione della procedura per l'assegnazione di **una** borsa di ricerca con i requisiti di cui a seguito:



Titolo del programma di ricerca	"Reazioni di decolorazione di tessuti (textiles) mediante bio-solventi industriali e reazioni di valorizzazione di waste textiles attraverso processi termochimici"
Responsabile della ricerca e qualifica	Prof. Luca Rosi PA (co-responsabile della ricerca Prof. Massimo Del Bubba)
Settore disciplinare	CHEM-04/A e CHEM-01/A
Tipo di selezione	Per titoli e colloquio
Titoli di studio richiesti per ammissione	- Laurea triennale L27 Chimica - Curriculum scientifico professionale idoneo allo svolgimento della ricerca
Criteri di valutazione	- fino ad un massimo di 25 punti per il punteggio di laurea - fino a un massimo di 25 punti per altri titoli (documentata esperienza lavorativa o formativa, di tipo curriculare o extra-curriculare, coerente con le tematiche oggetto della ricerca) - fino ad un massimo di 50 punti per il colloquio
Numero borse da attivare	1
Decorrenza attività di ricerca	15/09/2025
Durata	6 mesi
Costo totale della borsa	€ 6.000,00
Progetto e coan	ROSI-KERING_2023_24 e ROSI-KERING_2024_25, COAN n. 81629 del 12/06/2025



Data, ora e luogo dell'eventuale colloquio	il giorno 28 luglio 2025 presso Dipartimento di Chimica "Ugo Schiff" DICUS, via della Lastruccia 3, Sesto Fiorentino (FI).

Il Presidente dopo aver illustrato l'oggetto al punto dell'ordine del giorno, vista la validità del programma proposto e la disponibilità dei fondi di bilancio, non essendovi richieste d'intervento, mette in approvazione la richiesta di attivazione della borsa di ricerca.

Il Consiglio approva all'unanimità la richiesta di attivazione della borsa di ricerca e dà mandato al Direttore del Dipartimento di procedere, alla scadenza del bando, alla nomina della Commissione Giudicatrice su proposta del Responsabile della ricerca.

Nel caso in cui risultasse vincitore della borsa di ricerca un ricercatore extra comunitario, il Consiglio di Dipartimento autorizza altresì il Direttore a stipulare una convenzione di accoglienza nei termini previsti dal comma 3 dell'art. 27 ter del D.Lgs. n. 286/98 – Testo unico sull'immigrazione, introdotto dal D.Lgs. n. 17/2008, che disciplina l'ingresso ed il soggiorno per ricerca scientifica di ricercatori extra UE per periodi superiori a tre mesi.

7. Internazionalizzazione

7.1 Visiting professor - Assegnazione dei contributi per l'anno 2025

Il Presidente informa il Consiglio che il Senato Accademico e il Consiglio di Amministrazione, rispettivamente nelle sedute del 20 e 26 maggio 2025, hanno deliberato l'assegnazione ai Dipartimenti dei contributi per la permanenza di visiting professor per l'anno 2025, sulla base di quanto previsto dal Bando annuale e tenuto conto del budget disponibile di € 100.000.



Come comunicato con nota prot. n. 116482 del 28/05/2025, l'assegnazione destinata al Dipartimento di Chimica (DICUS) è riportata nella tabella seguente:

Nominativo dello studioso	Istituzione di appartenenza	Docente promotore dell'invito	Periodo di permanenza	Assegnazione Ateneo	Cofinanziamento Dipartimento di Eccellenza
Haribabu Arthanari	Harvard Medical School (USA)	Enrico Luchinat	Dal 9/6/2025 Al 9/7/2025	3.000 €	500 €
Maria Celina Lamas	Universidad Nacional de Rosario (Argentina)	Francesca Maestrelli	Dal 30/09/2025 Al 31/10/2025	3.000 €	500 €

Il Consiglio,

- visto il "Regolamento in materia di visiting professor" emanato con D.R. n. 251 - prot. n. 51051 del 04/03/2025, con particolare riferimento all'art. 2 e all'art. 3, relativi al profilo e alla durata della permanenza necessari all'attribuzione del titolo;
- visto il Bando di Ateneo emanato con D.R. n. 316 – prot. n. 65915 del 19/03/2025 finalizzato a disciplinare le modalità di assegnazione ai Dipartimenti dei contributi per la permanenza di visiting professor per lo svolgimento di attività di didattica e di ricerca per il periodo compreso tra il 1° gennaio e il 31 dicembre 2025,

delibera all'unanimità di approvare la proposta di conferimento del titolo di "visiting professor" ai suddetti studiosi, secondo quanto riportato nella tabella sopra indicata, e conferisce mandato al Direttore per l'espletamento delle necessarie procedure.



7.2 Ingresso e soggiorno per ricerca di ricercatori extra UE per periodi superiori a tre mesi (ai sensi dell'art. 27 ter del D. Lgs. n. 286/98 – Testo unico sull'immigrazione)

Il Presidente informa che il Dipartimento è chiamato a deliberare in merito all'accoglienza di un ricercatore extra UE per un periodo complessivo superiore a tre mesi, a fini di ricerca scientifica.

Si tratta del Dott. Alper Gürarlan, di nazionalità turca, per lo svolgimento di un progetto di ricerca dal titolo "Regenerated Cotton for Electronic Textiles – RETEX", finanziato dall'Unione Europea nell'ambito di Horizon Europe, e più specificatamente dal programma Marie Skłodowska-Curie Action Staff Exchanges, che viene sottoposto al Consiglio.

A tal proposito ricorda che l'ingresso e il soggiorno per ricerca di ricercatori extra UE per periodi superiori a tre mesi è disciplinato in particolare dall'art. 27 ter del D. Lgs. n. 286/98 – Testo unico sull'immigrazione.

Tale norma prevede al comma 3 che *"Il ricercatore e l'istituto di ricerca di cui al comma 1 stipulano una convenzione di accoglienza con cui il ricercatore si impegna a realizzare l'attività di ricerca e l'istituto si impegna ad accogliere il ricercatore. L'attività di ricerca deve essere approvata dagli organi di amministrazione dell'istituto medesimo che valutano l'oggetto e la durata stimata della ricerca, i titoli in possesso del ricercatore rispetto all'oggetto della ricerca, certificati con una copia autenticata del titolo di studio, ed accertano la disponibilità delle risorse finanziarie per la sua realizzazione. La convenzione stabilisce il rapporto giuridico e le condizioni di lavoro del ricercatore, le risorse mensili messe a sua disposizione, sufficienti a non gravare sul sistema di assistenza sociale, le spese per il viaggio di ritorno, e contiene, altresì, le indicazioni sul titolo o sullo scopo dell'attività di ricerca e sulla durata stimata, l'impegno del ricercatore a completare l'attività di ricerca, le informazioni sulla mobilità del ricercatore in uno o in diversi secondi Stati membri, se già nota al momento della stipula della convenzione, l'indicazione della polizza assicurativa per malattia stipulata per il ricercatore ed i suoi familiari ovvero l'obbligo per l'istituto di provvedere alla loro iscrizione al Servizio sanitario nazionale. "*



La convenzione di accoglienza è condizione necessaria per l'avvio della procedura volta al rilascio del nulla-osta per l'ottenimento del visto e successivamente del permesso di soggiorno.

Fornisce inoltre le seguenti informazioni, affinché il Consiglio possa esprimersi in proposito:

Il ricercatore è stipendiato da:	☒ ente di appartenenza ☐ UNIFI su fondi del Dipartimento ☐ altro ente
Risorse complessive mensili a disposizione del ricercatore	€ 2.300
Tipologia di contratto del ricercatore (es: assegno di ricerca, cococo, ecc.) ¹	/
Durata del contratto (numero di mensilità) ¹	/

Il Consiglio di Dipartimento,

- richiamato l'art. 27 ter del D. Lgs. n. 286/98 – Testo unico sull'immigrazione;
- preso atto che, dalla disposizione di cui sopra, la permanenza in Italia per periodi superiori a tre mesi di ricercatori extra UE deve necessariamente essere regolata da apposita convenzione di accoglienza, previa selezione da parte dell'Ente ospitante;
- considerato che soltanto a seguito della sottoscrizione dell'atto sarà possibile, per il singolo ricercatore, acquisire il nulla osta per ingresso e soggiorno per motivi di ricerca e successivamente il relativo permesso indispensabile per regolarizzare la posizione contrattuale;
- vista la richiesta presentata dalla Prof.ssa Caterina Viglianisi e relativa all'accoglienza del Dott. Alper Gürarlan di nazionalità turca, per lo svolgimento di un progetto di ricerca dal titolo "Regenerated Cotton for Electronic Textiles – RETEX" (dal 01/10/2025 – al 30/09/2026);

¹ *Informazione non richiesta nel caso in cui il ricercatore sia stipendiato dall'ente di appartenenza o da altro ente*



- considerato che trattasi di un ricercatore extra UE che soggiognerà in Italia ed opererà presso il Dipartimento a fini di ricerca per un periodo superiore a tre mesi;
 - verificato che il ricercatore è in possesso del titolo di dottore di ricerca (PhD);
 - visto il progetto di ricerca presentato;
 - valutato l'oggetto della ricerca, nonché i titoli in possesso del ricercatore rispetto all'oggetto della stessa, certificati con una copia autenticata;
 - accertata la disponibilità delle risorse finanziarie per la sua realizzazione, previste dal comma 3 dell'art. 27 ter, con riferimento alla specifica documentazione presentata;
 - preso atto del contenuto della convenzione di accoglienza all'uopo predisposta in conformità al dettato normativo e allegata alla presente delibera (all. 1),
- a) esprime parere favorevole ad ospitare, presso il Dipartimento, il Dott. Alper Gürarlan per lo svolgimento delle attività connesse al progetto di ricerca di cui in premessa, individuato a seguito di apposita valutazione selettiva;
- b) dà mandato al Direttore di sottoscrivere la convenzione di accoglienza, debitamente compilata con le informazioni richieste e di acquisire n.2 marche da bollo da € 16,00 da apporre sulla documentazione relativa al nulla-osta;
- c) individua la Prof.ssa Caterina Viglianisi quale responsabile scientifico del progetto sopra menzionato nonché referente per le attività del Dott. Alper Gürarlan;
- d) dà mandato al settore Settore Internazionalizzazione - Ufficio Promozione e Sviluppo dell'Internazionalizzazione, cui verrà inoltrata apposita richiesta, di avviare le procedure per il rilascio del nulla osta per ricerca del dott. Alper Gürarlan, corredando fra l'altro l'istanza di copia autenticata del titolo di studio conseguito dallo stesso, di copia del passaporto (ed eventualmente della *Declaration of financial support*).

7.3 Ingresso e soggiorno per ricerca di ricercatori extra UE per periodi superiori a tre mesi (ai sensi dell'art. 27 ter del D. Lgs. n. 286/98 – Testo unico sull'immigrazione)



Il Presidente informa che il Dipartimento è chiamato a deliberare in merito all'accoglienza di un ricercatore extra UE per un periodo complessivo superiore a tre mesi, a fini di ricerca scientifica.

Si tratta della Dott.ssa Suchittra Konkankun, di nazionalità thailandese, per lo svolgimento di un progetto di ricerca dal titolo "strategies to enhance cell uptake of the polyamines by suitable functionalization with sugar motifs toward improving the capacity of nanovectors to encapsulate and eventually liberate genetic material for efficient in vitro transfection and therapy, foreseen in WP1 and WP2, and technical training, courses and seminars foreseen in WP5", nell'ambito del Progetto "SUPRO-GEN" – GA n. 101008072 Horizon 2020 Marie Skłodowska-Curie Actions - Research and Innovation Staff Exchange (RISE) - Call: H2020-MSCA-RISE-2020 (resp. scientifico Prof. Marco Marradi), che viene sottoposto al Consiglio.

A tal proposito ricorda che l'ingresso e il soggiorno per ricerca di ricercatori extra UE per periodi superiori a tre mesi è disciplinato in particolare dall'art. 27 ter del D. Lgs. n. 286/98 – Testo unico sull'immigrazione.

Tale norma prevede al comma 3 che *"Il ricercatore e l'istituto di ricerca di cui al comma 1 stipulano una convenzione di accoglienza con cui il ricercatore si impegna a realizzare l'attività di ricerca e l'istituto si impegna ad accogliere il ricercatore. L'attività di ricerca deve essere approvata dagli organi di amministrazione dell'istituto medesimo che valutano l'oggetto e la durata stimata della ricerca, i titoli in possesso del ricercatore rispetto all'oggetto della ricerca, certificati con una copia autenticata del titolo di studio, ed accertano la disponibilità delle risorse finanziarie per la sua realizzazione. La convenzione stabilisce il rapporto giuridico e le condizioni di lavoro del ricercatore, le risorse mensili messe a sua disposizione, sufficienti a non gravare sul sistema di assistenza sociale, le spese per il viaggio di ritorno, e contiene, altresì, le indicazioni sul titolo o sullo scopo dell'attività di ricerca e sulla durata stimata, l'impegno del ricercatore a completare l'attività di ricerca, le informazioni sulla mobilità del ricercatore in uno o in diversi secondi Stati membri, se già nota al momento della stipula della convenzione, l'indicazione della polizza assicurativa per malattia stipulata per il ricercatore ed i suoi familiari ovvero l'obbligo per l'istituto di provvedere alla loro iscrizione al Servizio sanitario nazionale. "*



La convenzione di accoglienza è condizione necessaria per l'avvio della procedura volta al rilascio del nulla-osta per l'ottenimento del visto e successivamente del permesso di soggiorno.

Fornisce inoltre le seguenti informazioni, affinché il Consiglio possa esprimersi in proposito:

Il ricercatore è stipendiato da:	☐ ente di appartenenza ☐ UNIFI su fondi del Dipartimento ☒ altro ente
Risorse complessive mensili a disposizione del ricercatore	€ 2.100
Tipologia di contratto del ricercatore (es: assegno di ricerca, cococo, ecc.) ²	/
Durata del contratto (numero di mensilità) ¹	/

Il Consiglio di Dipartimento,

- richiamato l'art. 27 ter del D. Lgs. n. 286/98 – Testo unico sull'immigrazione;
- preso atto che, dalla disposizione di cui sopra, la permanenza in Italia per periodi superiori a tre mesi di ricercatori extra UE deve necessariamente essere regolata da apposita convenzione di accoglienza, previa selezione da parte dell'Ente ospitante;
- considerato che soltanto a seguito della sottoscrizione dell'atto sarà possibile, per il singolo ricercatore, acquisire il nulla osta per ingresso e soggiorno per motivi di ricerca e successivamente il relativo permesso indispensabile per regolarizzare la posizione contrattuale;
- vista la richiesta presentata dal Prof. Marco Marradi e relativa all'accoglienza della Dott.ssa Suchittra Konkankun, di nazionalità thailandese, per lo svolgimento di un progetto di ricerca dal titolo "strategies to enhance cell uptake of the polyamines by suitable functionalization with sugar motifs toward improving the capacity of

² Informazione non richiesta nel caso in cui il ricercatore sia stipendiato dall'ente di appartenenza o da altro ente



nanovectors to encapsulate and eventually liberate genetic material for efficient in vitro transfection and therapy, foreseen in WP1 and WP2, and technical training, courses and seminars foreseen in WP5" nell'ambito del Progetto "SUPRO-GEN" – GA n. 101008072 Horizon 2020 Marie Skłodowska-Curie Actions - Research and Innovation Staff Exchange (RISE) - Call: H2020-MSCA-RISE-2020 (resp. scientifico Prof. Marco Marradi), dal 01/09/2025 al 31/01/2026;

- considerato che trattasi di un ricercatore extra UE che soggiornerà in Italia ed opererà presso il Dipartimento a fini di ricerca per un periodo superiore a tre mesi;
 - verificato che il ricercatore è in possesso del titolo di dottore di ricerca (PhD);
 - visto il progetto di ricerca presentato;
 - valutato l'oggetto della ricerca, nonché i titoli in possesso del ricercatore rispetto all'oggetto della stessa, certificati con una copia autenticata;
 - accertata la disponibilità delle risorse finanziarie per la sua realizzazione, previste dal comma 3 dell'art. 27 ter, con riferimento alla specifica documentazione presentata;
 - preso atto del contenuto della convenzione di accoglienza all'uopo predisposta in conformità al dettato normativo e allegata alla presente delibera (all. 1),
- a) esprime parere favorevole ad ospitare, presso il Dipartimento, la Dott.ssa Suchitra Konkankun per lo svolgimento delle attività connesse al progetto di ricerca di cui in premessa, individuato a seguito di apposita valutazione selettiva;
- b) dà mandato al Direttore di sottoscrivere la convenzione di accoglienza, debitamente compilata con le informazioni richieste e di acquisire n.2 marche da bollo da € 16,00 da apporre sulla documentazione relativa al nulla-osta;
- c) individua il Prof. Marco Marradi quale responsabile scientifico del progetto sopra menzionato nonché referente per le attività della Dott.ssa Suchitra Konkankun;
- d) dà mandato al settore Settore Internazionalizzazione - Ufficio Promozione e Sviluppo dell'Internazionalizzazione, cui verrà inoltrata apposita richiesta, di avviare le procedure per il rilascio del nulla osta per ricerca della Dott.ssa Suchitra Konkankun, corredando fra l'altro l'istanza di copia autenticata del titolo di studio conseguito dallo stesso, di copia del passaporto (ed eventualmente della *Declaration of financial*



support).

8. Programmazione didattica

Attività didattica integrativa ricercatori a.a. 2025/2026

Il Presidente pone in approvazione la tabella delle attività didattiche integrative dei ricercatori a.a. 2025/2025 svolte nei Corsi di Laurea in cui il Dipartimento è referente o promotore ([Allegato 8. att_did_integrativa_ric_2025-2026](#)) disponibile in cartella condivisa.

Il Consiglio approva all'unanimità

9. Dottorato di ricerca

A) Il Presidente informa che la procedura di accreditamento relativa al Dottorato di ricerca in Scienze Chimiche per il XLI ciclo si è regolarmente conclusa in data 12/06/2025 sulla banca dati del MUR.

La scheda di accreditamento è disponibile in cartella condivisa.

Il Consiglio ne prende atto

B) Il Presidente informa che la procedura di accreditamento relativa all'International Doctorate in Structural Biology per il XLI ciclo si è regolarmente conclusa in data 12/06/2025 sulla banca dati del MUR.

La scheda di accreditamento è disponibile in cartella condivisa.

Il Consiglio ne prende atto

C) Il Presidente nel ricordare che, ai sensi dell'art. 7 comma 4 del nuovo Regolamento per il Dottorato di ricerca, è richiesto il nulla-osta del Consiglio di Dipartimento alla



partecipazione dei docenti a dottorati di altri Atenei, pone in approvazione a ratifica il nulla-osta del Direttore del DICUS prot. n. 115802 del 27/05/2025 rilasciato in favore del Prof. David Chelazzi e del Prof. Emiliano Fratini, a seguito delle loro richieste di autorizzazione pervenute in data 20 maggio 2025, a poter partecipare per il XLI ciclo al seguente Dottorato di Interesse Nazionale:

"Catalisi e Energia" DOT23BYW42 (nel quale è confluito il precedente DIN in "Processi e Tecnologie Fotoindotti")

Ateneo Coordinatore: Università degli Studi di Perugia

Sede amm.va: Dipartimento di Chimica, Biologia e Biotecnologie

Il Direttore del DICUS ha rilasciato il nulla-osta tenuto conto che:

- ai sensi dell'art. 7 comma 3 del Regolamento, è possibile partecipare a un solo Collegio a livello nazionale, ma è consentito partecipare a un ulteriore Collegio ove questo si riferisca a un corso di Dottorato organizzato in forma associata, ivi compreso il Dottorato di Interesse Nazionale;
- la procedura di accreditamento per il XLI ciclo si sarebbe conclusa il 12 giugno 2025 e che quindi, non essendovi i tempi necessari per l'approvazione da parte del Consiglio di Dipartimento, sussistevano i motivi di necessità e urgenza.

Il Consiglio approva a ratifica all'unanimità

10. Incarichi di lavoro autonomo

Richiesta di attivazione di un incarico di lavoro autonomo abituale o non abituale per lo svolgimento dell'attività "Valorizzazione di scarti di biomassa lignocellulosica e di scarti da produzioni tessili e sintesi, purificazione e caratterizzazione di piccole molecole bioattive da scarti di biomassa lignocellulosica" nell'ambito del Progetto PNRR_PE 11_Made in Italy Circolare e Sostenibile - MICS - Spo2 - Responsabile Prof.ssa Camilla Matassini



Il Presidente informa che, dovendo sopperire ad esigenze particolari, temporanee e contingenti, la Prof.ssa Camilla Matassini, Responsabile scientifico del PNRR_PE 11_Made in Italy Circolare e Sostenibile - MICS - Spoke 2 con lettera assunta a protocollo n. 129711 dell'11/06/2025 ha richiesto l'indizione di una procedura di valutazione comparativa di titoli e colloquio per il conferimento di n. 1 incarico di lavoro autonomo esercitato nella forma della collaborazione coordinata, qualora la ricognizione interna all'Ateneo non individui la professionalità richiesta.

L'attività oggetto della prestazione consisterà nelle seguenti attività:

- Processi di valorizzazione di scarti di biomassa lignocellulosica e di scarti da produzioni tessili;
- Sintesi, purificazione e caratterizzazione di piccole molecole bioattive da scarti di biomassa lignocellulosica;

In particolare, l'incaricato dovrà occuparsi, nell'ambito del Progetto PNRR_PE 11_Made in Italy Circolare e Sostenibile - MICS - Spoke 2, dell'ottimizzazione della produzione di pannelli e film da scarti di biomassa lignocellulosica, per migliorarne l'equilibrio con l'umidità ambiente e la stabilità rispetto all'attacco di microorganismi e/o insetti. In collegamento a tale ambito l'incaricato/a dovrà portare a termine la purificazione e caratterizzazione di glicomimetici derivanti da biomassa progettati per essere testati come antibatterici. Infine, nell'ambito di una recente collaborazione con un'industria del territorio, dovrà condurre prove preliminari per l'uso di leganti alternativi di origine biologica da impiegare nella la produzione di materiali innovativi da scarti dell'industria tessile, in un'ottica di economia circolare.

Il contratto avrà la **durata di 4 mesi, con decorrenza dal 01/09/2025** e non è rinnovabile.

Il collaboratore da selezionare dovrà avere il seguente **profilo professionale**:

1. laurea magistrale in Scienze Chimiche



2. ottime conoscenze di tecniche di purificazione e caratterizzazione di piccole molecole organiche;
3. adeguati titoli professionali e scientifici comprovanti la capacità di pianificare, organizzare e svolgere attività di laboratorio, portando a compimento gli obiettivi della ricerca nei tempi richiesti
4. attitudine alle relazioni esterne

Per la valutazione la commissione avrà a disposizione 60 punti che verranno così ripartiti:

- fino a [15] punti per il punteggio di laurea;
- fino ad un massimo di [30] punti per altri titoli da valutare (possesso del titolo di Dottore di Ricerca, pubblicazioni, abstract a congressi)
- fino ad un massimo di 15 punti per la pregressa esperienza professionale maturata in relazione all'attività da svolgere e/o in settori analoghi;
- fino a [40] per il colloquio.

L'importo lordo del corrispettivo previsto, comprensivo di tutti gli oneri a carico del percipiente, è pari a € 9.450,00 (costo struttura € 12.500,00). Il suddetto compenso, come previsto dal bando, verrà corrisposto in 2 rate di pari importo di cui la prima a metà incarico e la seconda al termine dell'incarico, dietro presentazione di una relazione esplicativa delle attività in essere volta ad accertare l'effettivo raggiungimento degli obiettivi pattuiti. Sarà firmato un accordo di confidenzialità riguardo alle attività di ricerca svolte.

La spesa graverà sul budget del Dipartimento di Chimica "Ugo Schiff", progetto PNRR_PE 11_Made in Italy Circolare e Sostenibile - MICS - Spoke 2.

L'incaricato svolgerà l'attività con lavoro prevalentemente proprio, in piena autonomia, senza vincoli di subordinazione, convenendo, in linea di massima, con la Prof.ssa Camilla Matassini le relative modalità.

Il Presidente pone in approvazione.



Il Consiglio approva all'unanimità l'indizione della selezione, qualora la ricognizione interna non individui la professionalità necessaria, autorizza la relativa spesa e dà mandato al Direttore di nominare, alla scadenza del bando, la Commissione Giudicatrice su indicazione del richiedente.

11. Acquisti beni e servizi

a) Fornitura di componentistica per strumentazione prototipale altamente personalizzata su finanziamento ottenuto tramite bando PERFETTI_ERC_ELETTRA – Elettrically Controlled Magnetic Anisotropy

Il Presidente presenta la richiesta di acquisto n. 6359 presentata sull'applicativo DepotLab dal Prof. Mauro Perfetti (corredata da preventivo dettagliato), per la fornitura di componentistica per strumentazione prototipale altamente personalizzata in continuità con precedente ordine di cantilevers su finanziamento ottenuto tramite bando PERFETTI_ERC_ELETTRA – Elettrically Controlled Magnetic Anisotropy così dettagliata:

- Progettazione, costruzione e fornitura di N. 10 cantilevers di materiale altamente elastico (per esempio silicio o Rame-Berillio) ultra sottile (spessore compreso fra 50 e 100 micron). Lato 1 del cantilever: pista dorata circolare che sopporti una corrente di 200 mA e specchio riflettente (strato sottile completamente riflettente alla radiazione elettromagnetica in una finestra da 1Hz e 100 kHz) disposto sopra uno strato isolante. Lato 2 del cantilever: contattatura del cantilever per poter applicare un potenziale;
- Schede stampate per il montaggio del cantilever nel sistema di misura e saldatura del cantilever alla scheda stampata
- Consulenza su misura elettrica dei dispositivi tramite tecnica lock-in e supporto durante le misure elettriche preliminari



L'importo presunto della fornitura è di € 25.000,00 non imponibile IVA art. 72 DPR.633/72, come da preventivo dell'INSTM - Consorzio Interuniversitario Nazionale Per La Scienza E Tecnologia Dei Materiali, allegato alla richiesta di acquisto;

- Sussiste la necessità di procedere alla fornitura di componentistica per strumentazione prototipale altamente personalizzata per il progetto ERC StG ELECTRA che si concentra sulla misura di effetti magnetoelettrici su singoli cristalli di una serie di molecole contenenti ioni magnetici sottoposti a campi elettrici e magnetici. Per la misura di tali effetti il progetto propone l'assemblaggio di uno strumento innovativo ad alto livello di personalizzazione NON presente sul mercato;
- La scelta è ricaduta sui prodotti dell'INSTM - Consorzio Interuniversitario Nazionale Per La Scienza E Tecnologia Dei Materiali, in quanto offre una customizzazione pressoché totale dei cantilevers, come richiesto dalle condizioni dell'esperimento;
- Il presente acquisto è in continuità con quello effettuato nel 2022, dato che la componentistica necessita sostituzione;
- La copertura finanziaria è assicurata sul progetto ricerca del progetto PERFETTI_ERC_ELETTRA – Elettrically Controlled Magnetic Anisotropy;
- Le nuove risorse verranno installate nel laboratorio n. 88 al Dipartimento di Fisica dove non sussistono esigenze di adattamenti impiantistici.
- Non sussiste necessità di installazione da parte del fornitore; quindi, non dovrà essere redatto Duvri e non ricorrono oneri per la sicurezza;

Il Presidente

VISTO lo Statuto dell'Università degli Studi di Firenze;

VISTO il Regolamento di Amministrazione, Finanza e Contabilità dell'Università degli Studi di Firenze;

RICHIAMATO il D.lgs. 36/2023;

VISTO il Regolamento per l'attività contrattuale dell'Università degli Studi di Firenze, emanato con D.R. n. 98990 (1297) del 2014, nelle parti in cui rimane ancora in vigore compatibilmente con le norme contenute nel D.Lgs 36/2023;



CONSIDERATO che nella relazione tecnica allegata alla richiesta di acquisto sono espresse le caratteristiche della componentistica richiesta per le esigenze e lo svolgimento dei compiti istituzionali legati al progetto PERFETTI_ERC_ELETTRA – Electrically Controlled Magnetic Anisotropy di cui è Responsabile il Prof. Mauro Perfetti, pone in approvazione:

- 1) l'acquisto della fornitura di componentistica per strumentazione prototipale altamente personalizzata su finanziamento ottenuto tramite PERFETTI_ERC_ELETTRA – Electrically Controlled Magnetic Anisotropy con le caratteristiche tecnico scientifiche e le condizioni di fornitura contenute negli allegati alla richiesta;
- 2) la nomina della Dott. Dario Abbate, quale Responsabile Unico del Procedimento e Dec ex art. 15 Codice Appalti;
- 3) l'espletamento della procedura di acquisto dall'Hub Acquisti Dipartimentale;
- 4) la copertura finanziaria per un importo stimato di € 25.000,00, non imponibile IVA art. 72 DPR.633/72, è assicurata sul progetto ricerca del progetto PERFETTI_ERC_ELETTRA – Electrically Controlled Magnetic Anisotropy di cui è Responsabile il Prof. Mauro Perfetti

Il Consiglio approva all'unanimità

b) Affidamento diretto di un "Strumento Micro Reattore Agitato Parr Serie 4590, 100 ml testa removibile" su Fondo Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli

Il Presidente presenta la richiesta di acquisto della Dott.ssa Giannoni Martina su autorizzazione della Prof.ssa Valtancoli (corredata da relazione tecnica) per la fornitura di un PA 4593 - Reattore 100 ml testa removibile STANDARD per il Laboratorio Tematico "Green, Sustainable Chemistry & Scale UP LAB" del Dipartimento di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli.

L'importo presunto della fornitura è di € 29.000 oltre IVA di legge, come da preventivo allegato alla richiesta di acquisto;



- come desumibile dalla relazione tecnica, le esigenze di ricerca hanno condotto a identificare la strumentazione Parr come unica idonea al bisogno, ed è stato identificato il fornitore FKV in quanto la ditta è l'unico importatore Paar in Italia e pertanto quello in grado di offrire il bene al miglior prezzo.
- La copertura finanziaria è assicurata sul progetto ricerca del progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile la Prof.ssa Barbara Valtancoli.
- Il nuovo strumento cod. PA 4593 - Reattore 100 ml testa removibile STANDARD verrà posizionato presso il Laboratorio 20 del LAP, dopo l'installazione di un banco di lavoro con cappa dove sarà consentito l'accesso a tutti gli utilizzatori.
Nel caso in cui lo strumento venisse acquistato durante l'adeguamento del laboratorio 20 del LAP, si potrà ubicare temporaneamente presso il laboratorio 19 sempre del LAP ed il successivo spostamento non comporterebbe particolari problemi essendo lo strumento spostabile senza particolari accorgimenti.
L'adeguamento richiesto della struttura LAP per l'uso di gas infiammabili permetterà in futuro di ampliare l'uso del reattore ma anche nelle attuali condizioni di lavoro sarà possibile utilizzarlo in reazioni che vengono favorite in presenza di elevate pressioni di gas inerti e in processi di polimerizzazione sotto pressione.
L'attuale stato del Laboratorio LAP 20 consente il collaudo e l'impiego (pur restando in attesa degli adattamenti di cui sopra).
- Non ricorrono oneri per la sicurezza né esigenza DUVRI.
- L'installazione, il collaudo ed il training del personale saranno eseguiti da remoto con durata massima di un giorno (8h)

Il Presidente

VISTO lo Statuto dell'Università degli Studi di Firenze;

VISTO il Regolamento di Amministrazione, Finanza e Contabilità dell'Università degli Studi di Firenze;

RICHIAMATO il D.lgs. 36/2023;



VISTO il Regolamento per l'attività contrattuale dell'Università degli Studi di Firenze, emanato con D.R. n. 98990 (1297) del 2014, nelle parti in cui rimane ancora in vigore compatibilmente con le norme contenute nel D.Lgs 36/2023;

CONSIDERATO che nella richiesta di acquisto sono espresse le caratteristiche dello strumento richiesto per le esigenze e lo svolgimento dei compiti istituzionali legati al progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile la Prof.ssa Barbara Valtancoli pone in approvazione:

- 1) l'acquisto della fornitura di un Reattore 100 ml testa removibile STANDARD, cod. PA 4593 per il Laboratorio Tematico "Green, Sustainable Chemistry & Scale UP LAB" con le caratteristiche tecnico scientifiche le cui condizioni di fornitura sono contenute negli allegati alla richiesta;
- 2) la nomina del Dott. Abbate Dario, quale Responsabile Unico del Procedimento e della Prof.ssa Salvini Antonella quale DEC ex art. 15 Codice Appalti;
- 3) l'espletamento della procedura di acquisto ai sensi dell'art 50 D.lgs. 36/2023;
- 4) la copertura finanziaria per un importo stimato di € 29.000 oltre IVA di legge, è assicurata sul progetto ricerca del progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli"

Il Consiglio approva all'unanimità

c) Affidamento diretto per la fornitura di un "Apparecchio SEC (GPC) per misure in solventi polari modello Alliance 2695 QS" su Fondo Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli

Il Presidente presenta la richiesta di acquisto n. 6817 presentata sull'applicativo DepotLab dalla Dott.ssa Martina Giannoni (corredata da preventivo dettagliato), per la fornitura di un apparecchio SEC (GPC) modello Alliance 2695 QS per misure in solventi polari, a supporto e come trasversale ai laboratori tematici del progetto DICUS DIP. ECC. 2.0, su finanziamento ottenuto tramite il fondo Dipartimento di Eccellenza 2023-27 di cui è Responsabile la Prof.ssa Barbara Valtancoli.

Il sistema Alliance 2695 QS include:



- un sistema di degasaggio del tipo a membrana con microcamere indipendenti sottovuoto per quattro canali senza che sia richiesto l'uso di gas ausiliari quali elio;
- il sistema di degasaggio e tutte le parti del sistema ALLIANCE sono realizzati con materiali inerti specifici per poter lavorare con tutti i solventi che vengono utilizzati in cromatografia liquida ed in GPC/SEC sia in fase inversa che in fase diretta;
- tutti i materiali sia polimerici che in acciaio sono stati scelti per poter resistere alle aggressioni chimiche dei solventi. Il sistema viene fornito con un corredo completo di filtri e tubi e tutto ciò che serve per una corretta e completa installazione;
- un termostato colonne che lavora nel range di temperatura da Temp. ambiente fino +65°C, con incrementi di 1°C. Adatto per alloggiare colonne con lunghezza fino a 30 cm e diametro interno di 7,8 mm (GPC/SEC) oppure fino a 4 colonne con lunghezze più corte;
- il sistema viene configurato 2 detectors UV-Visibile Modello 2489 con range di lavoro fra 190-700nm ed Rifrattometro Differenziale Modello 2424;
- include anche una Workstation Empower QS (hardware e software) completa di opzione GPC per studi di caratterizzazione di polimeri solubili in solvente organico o biopolimeri solubili in soluzioni acquose.

L'importo presunto della fornitura è di € 39.900,00 oltre IVA di legge, come da preventivo allegato alla richiesta di acquisto, ed include imballo, trasporto, installazione, collaudo e training da parte degli operatori della Waters.

Come desumibile dalla relazione tecnica:

- sono stati richiesti i preventivi alle ditte Waters, Shimadzu e Agilent al fine di avere contezza delle miglior offerte per gli strumenti attualmente presenti sul mercato. Tutte e tre le aziende contattate sono produttrici della strumentazione richiesta;
- le esigenze di ricerca hanno condotto ad identificare l'apparecchio SEC (GPC) modello Alliance 2695 QS come più conveniente in relazione al rapporto qualità/prezzo, considerando che si tratta di uno strumento completo e di largo uso, ed è stato identificato il fornitore Waters s.r.l. in quanto unico importatore e distributore in Italia del sistema HPLC Waters Alliance 2695 QS prodotto da Waters Corporation (come da lettera tecnica e dichiarazione di esclusività)



- a supporto dell'identificazione del fornitore Waters va anche considerato che in Dipartimento sono presenti un detector Light Scattering (miniDawn), un Viscosimetro (ViscoTech) online e RI (t-Rex) ad alta risoluzione, tutti e tre della ditta Wyatt (recentemente acquisita da Waters) presso i laboratori del Prof. M. Frediani che in caso di necessità potrebbero essere utilizzati/integrati per utilizzo di entrambi gli strumenti Waters;
- per un uso più generale e diffuso tra i vari gruppi di ricerca, si suggerisce l'acquisto della strumentazione Waters modello Alliance QS più standard e generico nelle applicazioni, ma comunque completo e di facile utilizzo;

La copertura finanziaria è assicurata sul progetto ricerca del progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli;

Le nuove risorse verranno installate nel laboratorio n. 34 del Dipartimento di Chimica in Via della Lastruccia 13, dove sarà consentito l'accesso a tutti gli utilizzatori e per cui verrà chiesto che sia in parte assegnato al Direttore fino a che ospiterà tale strumento, e non sono necessari adattamenti impiantistici.

L'apparecchiatura è fornita di uno start-up kit per la buona installazione ed avviamento dello strumento che sarà a cura di tecnici specializzati della Waters. L'installazione necessita di un tempo inferiore a 5 uomini-giorno e pertanto non dovrà essere redatto Duvri né ricorrono oneri per la sicurezza;

Il Presidente

VISTO lo Statuto dell'Università degli Studi di Firenze;

VISTO il Regolamento di Amministrazione, Finanza e Contabilità dell'Università degli Studi di Firenze;

RICHIAMATO il D.lgs. 36/2023;

VISTO il Regolamento per l'attività contrattuale dell'Università degli Studi di Firenze, emanato con D.R. n. 98990 (1297) del 2014, nelle parti in cui rimane ancora in vigore compatibilmente con le norme contenute nel D.Lgs 36/2023;

CONSIDERATO che nella relazione tecnica allegata alla richiesta di acquisto sono espresse le caratteristiche dello strumento richiesto per le esigenze e lo svolgimento dei



compiti istituzionali legati al progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli, pone in approvazione:

- 1) l'acquisto della fornitura di un apparecchio SEC (GPC) modello Alliance 2695 QS per misure in solventi polari con le caratteristiche tecnico scientifiche e le condizioni di fornitura contenute negli allegati alla richiesta;
- 2) la nomina del Dott. Dario Abbate, quale Responsabile Unico del Procedimento e del Prof. Marco Frediani, quale Dec ex art. 15 Codice Appalti;
- 3) l'espletamento della procedura di acquisto dall'Hub Acquisti Dipartimentale;
- 4) la copertura finanziaria per un importo stimato di € 39.900 oltre IVA di legge, è assicurata sul progetto ricerca del progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli,

Il Consiglio approva all'unanimità

d) Affidamento diretto per la fornitura di un "Cromatografo ionico Thermo Scientific Dionex Inuvion Core." sul fondo 58503_DIDATTICA di cui è Responsabile Scientifico il Direttore del Dipartimento, Prof. Stefano Menichetti

Il Presidente presenta la richiesta di acquisto n. 6792 presentata sull'applicativo DepotLab dalla Dott.ssa Cristina Faggi (corredata da preventivo dettagliato), per la fornitura di un **Cromatografo ionico Thermo Scientific Dionex Inuvion Core** a supporto dei laboratori didattici, poichè possiede caratteristiche adeguate all'utilizzo come strumentazione didattica nell'ambito di diversi Corsi di Laurea Triennali e Magistrali, e graverà sul fondo **58503_DIDATTICA** (tramite variazione di bilancio n. 16918 del 05/06/2025 a ratifica con la seduta odierna del Consiglio di Dipartimento) di cui è Responsabile Scientifico il Direttore del Dipartimento, Prof. Stefano Menichetti.

Questa strumentazione, infatti, appartiene all'ultima generazione di Cromatografi Ionici che costituisce un'evoluzione della tecnica analitica, soprattutto in termini di soppressione del segnale, pur mantenendo una relativa semplicità di utilizzo. Pertanto, la disponibilità di questa strumentazione nei laboratori didattici può consentire agli studenti di acquisire le



competenze di base per lavorare in Cromatografia Ionica e di familiarizzare con un dispositivo moderno di cui sono dotati molti laboratori chimici in ambito lavorativo e di ricerca.

Il cromatografo ionico Thermo Scientific Dionex Inuvion Core è un sistema integrato ad alta pressione con soppressione chimica a rigenerazione continua.

Tutti i cromatografi ionici Inuvion possiedono le seguenti caratteristiche:

- Fluidica chimicamente inerte in PEEK esente da parti metalliche
- Sistema operante a pressioni elevate (0-35 MPa)
- Soppressione a rigenerazione chimica continua
- Pompa a doppio pistone reciprocante
- Valvola di iniezione a 6-porte e 2-posizioni
- Cella e detector conduttimetrico con controllo di temperatura e range di segnale fino a 18,000 $\mu\text{S}/\text{cm}$
- Valvola di intercettazione dell'eluente
- Sensore di perdite
- Facilmente configurabile con un certo numero di accessori opzionali atti a migliorarne le prestazioni e aumentarne la facilità di utilizzo.

Inoltre Il Retrolavaggio delle Guarnizioni Thermo Scientific Dionex Inuvion riduce i costi di manutenzione quando viene utilizzato eluente preparato manualmente, in quanto previene la formazione di precipitazioni di sali sui pistoni della pompa e sulle guarnizioni.

Il KIT, SEAL WASH, INUVION dunque Include:

- Pompa per lavaggio delle guarnizioni e coperchio
- Cavi di alimentazione per integrazione del sistema Inuvion
- Tutti i tubi e connessioni necessari

Il Kit di connessioni Dionex IC PEEK Viper™ per Inuvion semplifica le connessioni tra i consumabili che vengono sostituiti regolarmente senza l'utilizzo di strumenti e senza la necessità di particolari procedure. Include le seguenti parti:



- Connessione tra uscita precolonna ed entrata colonna da 250 mm (76 mm)
- Connessione tra uscita precolonna ed entrata colonna da 150 mm (140 mm)
- Connessione tra uscita colonna ed entrata soppressore (140 mm)
- Connessione tra uscita soppressore ed entrata cella conduttimetrica (203 mm)
- Connessione tra uscita soppressore ed entrata CRD (140 mm)
- Connessione tra uscita CRD ed entrata cella conduttimetrica (140 mm) 1.5

Oltre a ciò, la Pompa Rigenerante Integrata Thermo Scientific Dionex Inuvion.è una pompa peristaltica che consente la gestione integrata e semplificata via software della dispensazione della soluzione rigenerante esterna, nel caso di soppressione chimica continua, o acqua in caso di soppressione elettrolitica con acqua esterna. Possono essere installate alternativamente o una valvola ausiliaria a 6 porte o una valvola ausiliaria a 10 porte o la pompa del rigenerante integrata.

L'importo presunto della fornitura è di € **23.267,73** oltre IVA di legge, come da preventivo CPQ-00678935, con scadenza 27/06/2025, allegato alla richiesta di acquisto ed include strumentazione, kit retrolavaggio e connessioni, pompa rigenerante, accessori, software, garanzia 5 anni per soppressori chimici di anioni e cationi, garanzia 2 e 3 anni per parti di ricambio successive all'installazione, nonché trasporto, collaudo e training da parte degli operatori della Thermo Fisher spa.

Come desumibile dalla relazione tecnica:

- per ragioni di esclusività tecnico scientifica e specificità delle caratteristiche peculiari di tale strumentazione, non si è proceduto ad indagine di mercato, così come specificato nella dichiarazione di unicità (allegata);
- l'acquisto di tale strumentazione permetterà di aggiornare il software dello strumento esistente (un ex-Dionex, ora Thermo Fisher Scientific) che presenta malfunzionamenti. Ciò garantirà continuità operativa e compatibilità con i consumabili già presenti in laboratorio;



- il presente acquisto si distingue in particolare per un rapporto qualità-prezzo pienamente congruo, in quanto combina prestazioni elevate e caratteristiche tecniche avanzate a un costo complessivo vantaggioso (massimo sconto ottenuto dal fornitore, dovuto anche al preesistente strumento dello stesso o.e.) e giustificato in particolare dalle caratteristiche peculiari necessarie all'utilizzo;
- La copertura finanziaria è assicurata sul fondo **58503_DIDATTICA**, di cui è Responsabile Scientifico il Prof. Stefano Menichetti, Direttore del Dipartimento di Chimica "Ugo Schiff";

La nuova strumentazione verrà installata nel laboratorio n. 222 del Dipartimento di Chimica in Via della Lastruccia 3, dove sarà consentito l'accesso anche agli studenti per le esercitazioni didattiche dipartimentali nell'ambito dei diversi Corsi di Laurea Triennali e Magistrali;

Installazione, collaudo e familiarizzazione dello strumento verranno effettuati dal personale Thermo Fisher in meno di 4 giorni lavorativi e pertanto, in conformità a quanto previsto dall'Art. 26, comma 3-bis, del D.lgs. 81/2008 (dichiarazione ore uomo per intervento di installazione agli atti), non sono previsti oneri di sicurezza, né conseguente DUVRI, finalizzati all'eliminazione dei rischi di interferenza, a norma dell'Art 108, comma 9, D.lgs. 36/2023;

Il Presidente

VISTO lo Statuto dell'Università degli Studi di Firenze;

VISTO il Regolamento di Amministrazione, Finanza e Contabilità dell'Università degli Studi di Firenze;

RICHIAMATO il D.lgs. 36/2023;

VISTO il Regolamento per l'attività contrattuale dell'Università degli Studi di Firenze, emanato con D.R. n. 98990 (1297) del 2014, nelle parti in cui rimane ancora in vigore compatibilmente con le norme contenute nel D.Lgs 36/2023;

CONSIDERATO che nella relazione tecnica allegata alla richiesta di acquisto sono espresse le caratteristiche dello strumento richiesto per le esigenze e lo svolgimento dei compiti istituzionali legati al progetto **58503_DIDATTICA** di cui è Responsabile Scientifico il Direttore del Dipartimento, Prof. Stefano Menichetti.,



pone in approvazione

- 1) fornitura di un **Cromatografo ionico Thermo Scientific Dionex Inuvion Core** a supporto dei laboratori didattici con le caratteristiche tecnico scientifiche e le condizioni di fornitura contenute negli allegati alla richiesta;
- 2) la nomina del Dott. Dario Abbate, quale Responsabile Unico del Procedimento e della Dott.ssa Sara Giachetti, quale Dec ex art. 15 Codice Appalti;
- 3) l'espletamento della procedura di acquisto dall'Hub Acquisti Dipartimentale;
- 4) la copertura finanziaria per un importo stimato di € **23.267,73** oltre IVA di legge, è assicurata sul fondo **58503_DIDATTICA** di cui è Responsabile Scientifico il Direttore del Dipartimento, Prof. Stefano Menichetti.

Il Consiglio approva all'unanimità

- e) Fornitura di spettrometro NMR da banco per il Progetto "Benchtop NMR: translating metabolomics from high-tech laboratories to point-of-care diagnostics(BONSAI)" finanziato con i fondi di cui al progetto FIS di cui all'Avviso 2022 – 2023 schema Starting Grant (FIS 2) Resp. Scient, Dott.ssa Alessia Vignoli CUP B53C24009460001 Rup. Leonardo Gonnelli Dec Dott. Alessia Vignoli**

Il Presidente presenta la richiesta di acquisto della Dottoressa Alessia Vignoli (corredata da relazione tecnica) per la fornitura di uno spettrometro NMR da banco per il Progetto "Benchtop NMR: translating metabolomics from high-tech laboratories to point-of-care diagnostics (BONSAI)" finanziato con i fondi di cui al progetto FIS 2 di cui è responsabile. L'importo presunto della fornitura è di Euro € 160.700,00 oltre IVA di legge, come da preventivo allegato alla richiesta di acquisto;

- Il fornitore sarà identificato sulla base della maggior coerenza con le esigenze del progetto,
- La copertura finanziaria è assicurata sul progetto ricerca del progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli



Lo strumento verrà installato nella stanza 22 del Centro di Risonanze Magnetiche (CERM) previo accordo già avvenuto tra il Direttore del Dipartimento di Chimica Prof. Stefano Menichetti e la Presidente del CERM Prof.ssa Paola Turano per prossimità con il laboratorio di preparazione dei campioni biologici di origine umana, dal momento che lo spostamento di campioni biologici di origine umana va evitato per motivi di rischio biologico.

Per il giusto funzionamento dello strumento è necessaria obbligatoriamente una collocazione

che rispetti i seguenti parametri:

- Temperatura della stanza compresa tra 18 e 26°C;
- Termostatazione regolare della stanza con variazioni inferiori a 1°C per ora;
- Presa elettrica schuko collegata al gruppo di continuità UPS per garantire la continuità di funzionamento.

Gli stessi sono presenti presso la stanza 22 del CERM e pertanto non sono necessari adattamenti impiantistici. Resta inteso che lo strumento sarà inventariato dal Dipartimento e sarà di fruizione esclusiva per l'esecuzione del Progetto BONSAI. Si certifica che l'installazione del nuovo spettrometro NMR da banco richiederà meno di cinque giorni e pertanto non è necessaria la redazione del DUVRI e non sono previsti oneri per la sicurezza ai sensi del D. Lgs. 81/2008.

Il Presidente

VISTO lo Statuto dell'Università degli Studi di Firenze;

VISTO il Regolamento di Amministrazione, Finanza e Contabilità dell'Università degli Studi di Firenze;

RICHIAMATO il D.lgs. 36/2023;

VISTO il Regolamento per l'attività contrattuale dell'Università degli Studi di Firenze, emanato con D.R. n. 98990 (1297) del 2014, nelle parti in cui rimane ancora in vigore compatibilmente con le norme contenute nel D.Lgs 36/2023;

CONSIDERATO che nella richiesta di acquisto sono espresse le caratteristiche dello strumento richiesto per le esigenze e lo svolgimento dei compiti istituzionali legati al



progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli pone in approvazione:

- 1) l'acquisto della fornitura Fornitura di spettrometro NMR da banco per il Progetto "Benchtop NMR: translating metabolomics from high-tech laboratories to point-of-care diagnostics (BONSAI)" finanziato con i fondi di cui al progetto FIS di cui all'Avviso 2022 – 2023 schema Starting Grant (FIS 2) Resp. Scient, Dott.ssa Alessia Vignoli CUP B53C24009460001 Rup. Leonardo Gonnelli Dec Dott. Alessia Vignoli con le caratteristiche tecnico scientifiche e le condizioni di fornitura contenute negli allegati alla richiesta;
- 2) la nomina della Dott. Leonardo Gonnelli, quale Responsabile Unico del Procedimento e del prof. Marco Frediani quale Dec ex art. 15 Codice Appalti;
- 3) l'espletamento della procedura di acquisto ai sensi dell'art 76 D.lgs. 36/2023, previo invio alla Centrale Acquisti;
- 4) la copertura finanziaria per un importo stimato di Euro € 160.700,00 oltre IVA di legge, è assicurata sul progetto ricerca del progetto Dipartimenti di Eccellenza 2023-27 di cui è Responsabile Prof.ssa Barbara Valtancoli"

Il Consiglio approva all'unanimità

12. Variazioni di bilancio

12.1 Storno di Dotazione per pagamento quota 2025 Hydrogen Europe:

Il Presidente ricorda al dipartimento che con delibera del 25/01/2021 il Consiglio del Dipartimento DICUS aveva reso parere favorevole in merito alla proposta di partecipazione all'Associazione Hydrogen Europe, accolto il parere positivo di numerosi docenti. Il Dipartimento di Matematica e Informatica "Dino Ulisse" DIMAI, con delibera n 160/2024 del CdD del 14/11/24, ha formalmente espresso il ritiro del Dipartimento per mancato interesse a proseguire la partecipazione. In data 17/12/2024, il Consiglio di



Dipartimento di Chimica "Ugo Schiff", sentiti i docenti interessati Marco Pagliai, Massimo Innocenti, Antonio Bianchi, ha confermato l'interesse a proseguire nell'adesione all'Associazione Hydrogen Europe (analogamente al Dipartimento di Ingegneria Industriale DIEF), dando la loro disponibilità ad accollarsi una somma maggiore per il pagamento della quota 2025 che verrà imputata a carico dei suddetti docenti che hanno espresso la volontà di perseguire con l'associazione.

In data 08/04/2025 è pervenuta la fattura per il pagamento della quota relativa all'anno 2025 per l'importo di 3.500 euro, pagata nei termini dal dipartimento DIEF. Per il trasferimento della somma spettante al DICUS, si rende necessario uno storno di dotazione per l'importo di 1.750 euro dalla voce "Materiale di consumo per laboratorio" voce CO.04.01.02.01.05.01, alla voce CO.04.01.05.01.01.01.05 - Quote Associative del Dipartimento di Ingegneria Industriale DIEF, come da tabella riportata di seguito.

DA UA	Voce coan	IMPOR TO	A UA	Voce coan	IMPOR TO
UA.A.DIP. 58503 Chimica 'Ugo Schiff'	CO.04.01.02.01.05.01 Materiale di consumo per laboratorio	-1.750	UA.A.DIP. 58508 Ingegneria Industriale DIEF	CO.04.01.05.01.01.01.05 - Quote Associative	+1.750

Facendo seguito all'impegno dei docenti DICUS sopracitati, la cifra di 1.250 € verrà trattenuta dal fondo "INNOCENTI-3M" di cui responsabile il Prof. Innocenti Massimo, mentre l'importo di 500 € verrà corrisposto dalla dotazione del dipartimento.

Il Consiglio approva all'unanimità

12.2 Storno di Dotazione dall' Area Servizi alla Didattica a favore del Dipartimento DICUS:

Il Presidente rende noto a tutto il Consiglio, che con nota prot. n. 120994 del 04/06/2025, è stata richiesta dal Dipartimento di Chimica "Ugo Schiff" e autorizzata dal Direttore Generale in qualità di Dirigente della Didattica il 04/06/2025 con annotazione sul



medesimo protocollo, la variazione di bilancio stornando dalla dotazione dell' Area Servizi alla Didattica l'importo di 28.386,63 euro a favore del Dipartimento di Chimica per l'acquisto del Cromatografo ionico IC Inuvion Core, destinato al Laboratorio Didattico sulla voce di costo CO.01.01.02.03.01.01 - Attrezzature scientifiche del progetto 58503_DIDATTICA. Si riporta la variazione come in tabella di seguito.

DA UA	Voce coan	IMPORTO	A UA	Voce coan	IMPORTO
Amm. Centrale- Area Servizi alla Didattica	CO.04.01.02.01.12.05.2 9 Trasferimenti correnti al PIN	-28.386,63	UA.A.DI P. DICUS	58503_DIDATTICA CO.01.01.02.03.01.01 Attrezzature scientifiche	+28.386,63

Il Consiglio prende visione

13. Adesione Centri di Ricerca Interdipartimentali

13.1 Richiesta adesione del Dipartimento di Statistica, Informatica, Applicazioni "G. Parenti" (DIDA) al Centro Interdipartimentale per lo Studio delle Dinamiche Complesse (CSDC)

Il Presidente informa che il Dipartimento di Architettura (DIDA) ha ufficialmente richiesto l'adesione al Centro Interdipartimentale per lo Studio delle Dinamiche Complesse (CSDC).

Nello specifico, per il Dipartimento DIDA hanno manifestato interesse all'adesione i seguenti professori:

Carla Balocco, P.A. di Fisica Tecnica Ambientale (SSD 09/IIND-07/B) e Referente per il CSDC, dei colleghi del DiDA che si uniscono alla presente richiesta:



Luisa Rovero, P.A. di Scienza delle Costruzioni (SSD CEAR-06/A)

Giacomo Pierucci Assegnista di Ricerca di Fisica Tecnica Ambientale (SSD 09/IIND-07/B)

Giulia Misseri Ricercatore Legge 240/10 a tempo determinato di Scienza delle Costruzioni (SSD CEAR06/A).

I sopra elencati professori e ricercatori, sviluppano insieme studi e temi di ricerca interconnessi ed interagenti, affini alle tematiche della complessità su micro e macro-scala. I soggetti richiedenti del SSD 09/IIND-07/B affrontano la complessità, a piccola e grande scala, con approcci misuristici, sperimentali e di modellazione, connessi alle dinamiche dei flussi di entropia e neg-entropia di sistemi naturali viventi, sistemi edificio-impianto, sistemi umani come sistemi termodinamici interagenti con l'ambiente in relazione agli effetti del Global Warming, alla variabilità ed impulsività delle forzanti esterne, in prospettiva dell'adattamento climatico e conseguente riduzione degli impatti ambientali. Tutto questo è strettamente connesso ai temi di ricerca e studi affrontati dai soggetti richiedenti del SSD CEAR- 06/A. Infatti, questi ultimi, con approcci sperimentali e di modellazione, affrontano la complessità di sistemi matericompositi, di sistemi di interfacce coesive, dal componente specifico fino all'edificio in relazione alle sollecitazioni e variazioni connesse al cambiamento climatico.

Tutto ciò premesso,

il Dipartimento di Chimica "Ugo Schiff"

- VISTO lo Statuto dell'Università degli Studi di Firenze, ed in particolare l'art. 34, D.R. 1680/2018;
- VISTO il Regolamento di Amministrazione Finanza e Contabilità, D.R. 405/2014;



- VISTO il Regolamento di Ateneo per i Centri di Ricerca (D.R. 85/2014), in particolare l'art. 2 relativo alla costituzione di nuovi Centri e l'art. 5, co. 1, relativo alle nuove adesioni e recessi;
- VISTO il DR. 956/2024 Prot. n. 162529/2024 del 12/07/2024 con il quale la Rettore ha decretato la ricostituzione del Centro di Ricerca CSDC;
- Vista la richiesta di adesione del Dipartimento di Architettura (DIDA) dell'Università degli Studi di Firenze trasmessa con Prot. n. 25174/2025 del 05/02/2025;
- Considerato l'art. 9 – Nuove adesioni e recessi comma 1: *"La richiesta di adesione al Centro avanzata da un nuovo Dipartimento deve essere approvata dai Consigli dei Dipartimenti già aderenti su proposta del Comitato di gestione. Le relative delibere di approvazione, in conformità all'art. 5 del Regolamento di Ateneo per i Centri di ricerca, sono sottoposte al Senato accademico e al Consiglio di amministrazione, ai fini dell'adozione di una deliberazione di modifica della originaria costituzione del Centro. L'atto istitutivo del Centro viene modificato con decreto del rettore."*;

delibera

di approvare la richiesta di adesione al Centro Interdipartimentale per lo Studio delle Dinamiche Complesse (CSDC) da parte del Dipartimento di Architettura (DIDA) dell'Università degli Studi di Firenze.

13.2 Cessazione Centro di Ricerca, Trasferimento e Alta formazione "Turbomacchine e Sistemi Energetici – CERTUS".

Il Consiglio di Dipartimento è chiamato ad esprimersi in merito alla cessazione del Centro di Ricerca, Trasferimento e Alta formazione "Turbomacchine e Sistemi Energetici – CERTUS" - costituito nel 2004 tra i Dipartimenti di Ingegneria dell'Informazione (DINFO), Chimica "Ugo Schiff" (DICUS), Matematica e Informatica (DIMAI) e Fisica e Astronomia (FISICA) con l'obiettivo di promuovere, sostenere, coordinare e sviluppare attività di



ricerca interdisciplinare, nonché programmi di alta formazione nel settore tecnologico delle Turbomacchine e dei Sistemi Energetici.

Il Presidente informa che il suddetto Centro, rimasto inattivo negli ultimi anni, è scaduto nel marzo 2024 e che al Direttore dello stesso non sono pervenute manifestazioni di interesse per un eventuale rinnovo.

Tutto ciò premesso,

il Dipartimento di Chimica "Ugo Schiff"

VISTO lo Statuto dell'Università degli Studi di Firenze, ed in particolare l'art. 34, D.R. 1680/2018;

VISTO il Regolamento di Amministrazione Finanza e Contabilità, D.R. 405/2014;

VISTO il Regolamento di Ateneo per i Centri di Ricerca (D.R. 85/2014), in particolare l'art. 9 "Cessazione e Rinnovo";

VISTO il DR. 178/2004 - Prot. n. 14515/2004 con il quale il Rettore ha decretato l'attivazione del di Ricerca, Trasferimento e Alta formazione "Turbomacchine e Sistemi Energetici – *CERTUS*;

VISTO il DR. 262/2016 - Prot. n. 43100/2016 con il quale il Rettore ha emanato il nuovo Statuto del Centro in parola, e in particolare l'art. 6 "Cessazione e Rinnovo";

CONSIDERATE le interlocuzioni intercorse tra i Direttori dei Dipartimenti partecipanti al Centro;

delibera all'unanimità



di approvare la cessazione delle attività del Centro di Ricerca, Trasferimento e Alta formazione "Turbomacchine e Sistemi Energetici – CERTUS", confermando pertanto il mancato interesse al rinnovo dello stesso.

14. Varie ed eventuali

La dott.ssa Gabriella Caminati esce alle ore 12:47 al punto 14.

Il Prof. Piero Procacci esce alle ore 12:47 al punto 14.

Non vi sono varie ed eventuali.

Alle ore 12:48 il Presidente ringrazia le rappresentanze, la seduta procede in composizione ristretta al **personale docente e ricercatore**.

Contestualmente nomina come Segretario verbalizzante il Prof. Emiliano Fratini.

15. Programmazione triennale del personale docente e ricercatore 2025-2027 (punto riservato a personale docente e ricercatore)

Il Presidente comunica che, in ottemperanza a quanto richiesto dagli uffici competenti con riferimento alla Programmazione triennale del personale docente e ricercatore per gli anni 2025-2027, in data 30/05/2025 ha trasmesso una Nota del Direttore all'Ufficio Personale Docente e Ricercatore con nota prot. 118600 del 30/05/2025, che sottopone oggi all'approvazione a ratifica del Consiglio di Dipartimento.

Con la Nota si è provveduto ad inviare la tabella aggiornata della Programmazione del Personale Docente e Ricercatore 2025-2027, coerente con l'integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, deliberata dal Consiglio di Dipartimento del 06/09/2024, in cui il Dipartimento aveva già recepito i nuovi SSD.



Si sottolinea come, rispetto alla tabella dell'integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, nella tabella della Programmazione del personale docente e ricercatore 2025-2027 sono stati aggiunti i settori CHEM-01/A, CHEM-02/A tra gli SSD dei PA non in priorità per la procedura valutativa ex art. 24, comma 5, della legge 240/2010, come da segnalazione dell'ufficio personale docente e ricercatore.

Inoltre, si comunica che già nell'Integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, in conseguenza delle posizioni attivate, sono stati re-inseriti i seguenti SSD tra le posizioni non in priorità:

- nella sezione PO, i settori CHEM-03/A e CHEM-05/A;
- nella sezione RTT, i settori CHEM-01/B e CHEM-05/A (anziché i settori CHEM-02/A e CHEM-05/A indicati nella Nota del Direttore prot. 118600 del 30/05/2025).

Il Consiglio di Dipartimento,

- visto il "Regolamento di Ateneo dei Dipartimenti";
- visto il "Regolamento di Ateneo per la disciplina della chiamata dei professori ordinari e associati";
- visto il "Regolamento in materia di ricercatori a tempo determinato ai sensi dell'articolo 24 della legge 30 dicembre 2010, n. 240";
- visto il Decreto Ministeriale 2 maggio 2024, n. 639 "Determinazione dei gruppi scientifico-disciplinari e delle relative declaratorie, nonché la razionalizzazione e l'aggiornamento dei settori scientifico-disciplinari e la riconduzione di questi ultimi ai gruppi scientifico-disciplinari";
- preso atto della Circolare 8/2025;
- richiamato quanto deliberato dal Senato accademico e dal Consiglio di amministrazione nelle sedute, rispettivamente, del 18 e 28 marzo 2025;
- preso atto che la programmazione triennale del personale docente e ricercatore per gli anni 2025-2027 è intesa come aggiornamento annuale della programmazione 2024-2026 già approvata;



- verificato che i SSD residui della programmazione triennale 2024-2026 hanno tutti una corrispondenza univoca;
- considerata l'integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, deliberata dal Consiglio di Dipartimento del 06/09/2024;
- preso atto della proposta della Commissione di Indirizzo e Autovalutazione del 07/04/2025, elaborata in coerenza con il Piano di Sviluppo Dipartimentale approvato nella seduta del 16/05/2025;
- data comunicazione della Programmazione del Personale Docente e Ricercatore 2025/2027 nel Consiglio di Dipartimento del 15/04/2025;
- dato atto del Piano di Sviluppo Dipartimentale e, in particolare, dei contenuti previsti alla Sezione 2 "Programmazione del personale docente e ricercatore" in coerenza con i criteri di assicurazione della qualità del Modello AVA3;
- considerata la necessità di deliberare in merito alla programmazione triennale per gli anni 2025-2027 dei posti di professore ordinario, di professore associato e di ricercatore a tempo determinato;
- vista la Nota del Direttore prot. 118600 del 30/05/2025;

all'unanimità approva.

**16. Proroga del contratto di ricercatore RTD/A, Gruppo Scientifico
Disciplinare 03/CHEM-01, Settore Scientifico Disciplinare CHEM-01/A
(punto riservato a personale docente e ricercatore)**

Il Consiglio di Dipartimento, nella composizione ristretta riservata ai professori di ruolo e ai ricercatori a tempo indeterminato e determinato, e con la maggioranza assoluta degli aventi diritto, ai sensi dell'art.21 del "Regolamento in materia di ricercatori a tempo determinato ai sensi dell'articolo 24 della legge 30 dicembre 2010, n. 240" del 2019,

- Visto il Regolamento di Ateneo dei Dipartimenti;
- Visto il "Regolamento in materia di ricercatori a tempo determinato ai sensi dell'articolo 24 della legge 30 dicembre 2010, n. 240" emanato con D.R. n. 467 del 16 aprile 2019,



- che continua ad applicarsi per le procedure bandite prima dell'entrata in vigore del nuovo Regolamento in materia di Ricercatori a tempo determinato, ai sensi dell'articolo 24 della legge 30 dicembre 2010, n. 240" di cui al D.R. n. 1459 del 21 dicembre 2023);
- Visto in particolare l'art. 21 del suddetto Regolamento "Proroga del contratto";
 - Visto che il Dott. Walter Giurlani è titolare dal 01/02/2023 di un contratto triennale come ricercatore a tempo determinato di tipo A ai sensi dell'art.24, comma 3, lettera "a", legge n. 240/2010 presso il Dipartimento di Chimica "Ugo Schiff" dell'Università di Firenze per il settore scientifico-disciplinare CHEM-01/A, bandito nell'ambito del progetto PNRR PE11 - Made-in-Italy circolare e sostenibile – 3A - ITALY - B83C22004890007;
 - Vista la scadenza del contratto di cui sopra prevista per il 31/01/2026;
 - Valutato il permanere delle esigenze di didattica e di ricerca per cui la posizione di ricercatore conferita al Dott. Giurlani era stata attivata;
 - Visto il consenso prestato dal Dott. Walter Giurlani alla proroga del contratto, assunto a prot. n. 121971 del 05/06/2025;
 - Vista la nomina del relatore ad hoc Prof. Marco Pagliai, assunta a prot. n. 121319 del 05/06/2025;
 - Vista la relazione presentata dal Dott. Walter Giurlani, assunta a prot. n. 121978 del 05/06/2025;
 - Valutato positivamente il lavoro svolto nell'ambito della ricerca e delle attività di didattica e di supporto alla didattica da parte del relatore ad hoc nella relazione scientifica assunta a prot. 123049 del 06/06/2025;
 - Ricordato che per la procedura in oggetto, trattandosi di proroga di un contratto il cui bando è stato emanato prima del 28 febbraio 2023, ai sensi del Regolamento in materia di ricercatori a tempo determinato di cui al D.R. n. 467/2019 del 16 aprile 2019, rimane vigente l'art. 21 del citato regolamento;
 - Accertata la disponibilità di fondi diversi dal FFO e liberi da rendicontazione su cui imputare il rinnovo, che andrà a gravare sul budget del Dipartimento di Chimica "Ugo Schiff", progetti INNOCENTICREAZIONI2022_RINNOVO - INNOCENTIITALPREZIOSI2019 - INNOCENTILOTTI -



INNOCENTIMARZOCCO2020 -

INNOCNETI_VALMET_2024 -

INNOLUXOTTICA2022, di cui è responsabile il Prof. Massimo Innocenti, COAN n. 78537 del 05/06/2025 per l'importo di € 108.122,51;

- Preso atto che il Dipartimento si impegna a garantire la copertura finanziaria dell'incremento del costo contrattuale dovuto a DPCM di adeguamento del trattamento economico del personale non contrattualizzato;
- Vista l'approvazione della richiesta di proroga espressa dalla CIA del Dipartimento di Chimica "Ugo Schiff" nella seduta del 16/06/2025;
- Verificata la presenza della maggioranza assoluta dei membri del Consiglio;

DELIBERA

- a) di approvare la proroga biennale del contratto in scadenza il 31/01/2026 di cui è titolare il Dott. Walter Giurlani, ricercatore a tempo determinato di tipologia a) ex art.24 L.240/2010 in regime di impegno a tempo pieno - SSD CHEM-01/A – GSD 03/CHEM-01;
- b) di sottoporre la presente proposta alla commissione dell'Area Scientifica prevista dall'art. 2, comma 2, del Decreto Ministeriale 24 maggio 2011, n. 242 e nominata con D.R. 1489/2024, prot. 272938 dandone contestualmente comunicazione al Rettore;
- c) di dare mandato agli uffici per tutti gli adempimenti necessari e conseguenti.

17. Contratti di ricerca (*punto riservato a personale docente e ricercatore*)

Il Prof. Francesco Botrè esce alle ore 12:55 al punto 17

17.1. Richiesta attivazione contratto di ricerca per vincitore progetto MSCA Postdoctoral Fellowship – Dott. Carlo Andrea Mattei

Il Presidente informa il Consiglio che nell'ambito del Programma HORIZON EUROPE - Marie Skłodowska Curie Actions – Postdoctoral Fellowships il Dott. Carlo Andrea Mattei è



risultato vincitore per la tipologia Global Fellowship con il progetto dal titolo "METAL-metal bonding in molecular LanthanIde CompoUndS", acronimo METALLICUS, Grant Agreement n. 101210218 di cui è Responsabile scientifico per l'Università il Prof. Mauro Perfetti.

Nell'ambito del progetto suindicato il Ricercatore Marie Curie, Dott. Carlo Andrea Mattei, è stato selezionato a seguito di procedura comparativa di reclutamento conforme ai principi generali previsti dalla Raccomandazione della Commissione dell'11 Marzo 2005 nel rispetto della "European Charter for Researchers" nonché del Codice di Condotta previsto per il reclutamento dei Ricercatori. In particolare l'individuazione del Ricercatore è stata effettuata dalla REA a seguito della Proposal number 101210218 ed in base ai requisiti previsti dal programma "Marie Skłodowska Curie Actions" nell'ambito di HORIZON EUROPE.

Il Presidente comunica che il Dipartimento ha stipulato il Grant Agreement n 101210218 con la Research Executive Agency delegata dalla Commissione Europea per lo svolgimento del Progetto "METAL-metal bonding in molecular LanthanIde CompoUndS" – METALLICUS.

Per lo svolgimento dell'attività di ricerca, il Grant Agreement n. 101210218 prevede il reclutamento del Ricercatore Marie Curie Dott. Carlo Andrea Mattei da parte dell'Università degli Studi di Firenze per la durata di 36 mesi, tramite un *employment contract* (o contratto equivalente).

Il Presidente ricorda che il Regolamento di Ateneo per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240, emanato in data 1° aprile 2025 con D.R. n. 379, all'art. 17 *Vincitori di programmi di alta qualificazione* prevede la possibilità di stipulare contratti di lavoro subordinato a tempo determinato ai sensi dell'articolo 22 della Legge 240/2010 con i vincitori di programmi di ricerca di alta qualificazione, finanziati dall'Unione Europea, da enti pubblici o privati italiani e stranieri, che prevedano a seguito di valutazione l'identificazione del beneficiario e una contrattualizzazione presso l'Università ospitante. In questi casi la stipula del contratto, quindi, può essere effettuata senza espletare la selezione, recependo i risultati della selezione effettuata dall'ente erogatore del finanziamento.



Il Presidente comunica che a tal proposito è pervenuta richiesta da parte del prof. Mauro Perfetti, Responsabile scientifico del Progetto dal titolo "METAL-metal bonding in molecular LanthanIde CompoUndS" – METALLICUS con la quale richiede l'attivazione di un Contratto di ricerca per il dott. Carlo Andrea Mattei con decorrenza 1° settembre 2025.

Il Presidente precisa che l'art. 22 comma 2 della legge 240/2010 prevede che il contratto di ricerca abbia durata biennale prorogabile fino ad un ulteriore anno nel caso di progetti di ricerca di carattere nazionale, europeo ed internazionale, in ragione delle specifiche esigenze relative agli obiettivi e alla tipologia del progetto. Per questo motivo il contratto di ricerca con il Dott. Carlo Andrea Mattei sarà stipulato di durata biennale con impegno ad attivare la procedura di proroga di un ulteriore anno, di cui all'art. 16 del Regolamento, al fine di consentire lo svolgimento del progetto di ricerca per tutta la sua durata.

Il Presidente ricorda infine che il Regolamento al comma 4 del citato art. 17 prevede che i contratti di ricerca finanziati su fondi esterni possono prevedere un trattamento economico superiore, nel caso in cui l'importo sia stabilito dall'ente finanziatore.

Il Grant Agreement prevede, per il contratto da stipulare con il Dott. Carlo Andrea Mattei un importo lordo Ateneo annuo al netto dell'IRAP per i primi 24 mesi pari a euro 138.204,72 annui e per gli ultimi 12 mesi pari a euro 84.941,64. Tale importo sarà quello previsto nel periodo di proroga del contratto.

Il Consiglio del Dipartimento, nella composizione ristretta ai professori ordinari e associati, ricercatori a tempo indeterminato e determinato ai sensi dell'art. 8 comma 1 del "Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240" e con la maggioranza assoluta degli aventi diritto,

- visto il Regolamento di Ateneo dei Dipartimenti;
- visto il Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240 emanato con D.R. n. 379 del 1° aprile 2025;
- considerato che, nell'ambito del programma Marie Skłodowska Curie Actions – Postdoctoral Fellowships il dott. Carlo Andrea Mattei è risultato vincitore per la tipologia Global Fellowship con il progetto dal titolo "METAL-metal bonding in molecular LanthanIde CompoUndS" – Acronimo METALLICUS, di cui è Responsabile scientifico per l'Università il Prof. Mauro Perfetti;



- preso atto che per lo svolgimento dell'attività di ricerca, il Grant Agreement n. 101210218 prevede il reclutamento del Ricercatore Marie Curie Dott. Carlo Andrea Mattei da parte dell'Università degli Studi di Firenze per la durata di 36 mesi, pari alla durata del progetto di ricerca, tramite un *employment contract* (o contratto equivalente);
- tenuto conto che all'art. 17 "*Vincitori di programmi di alta qualificazione*" il Regolamento per la disciplina dei contratti di ricerca prevede la possibilità di stipulare contratti di lavoro subordinato a tempo determinato ai sensi dell'articolo 22 della Legge 240/2010 con i vincitori di programmi di ricerca di alta qualificazione, finanziati dall'Unione Europea, da enti pubblici o privati italiani e stranieri, che prevedano a seguito di valutazione l'identificazione del beneficiario e una contrattualizzazione presso l'Università ospitante;
- considerato che in questo caso la stipula del contratto può essere effettuata senza espletare la selezione, recependo i risultati della selezione effettuata dall'ente erogatore del finanziamento;
- vista la richiesta da parte del prof. Mauro Perfetti, Responsabile scientifico del Progetto dal titolo "METAL-metal bonding in molecular LanthanIde CompoUndS" – Acronimo METALLICUS con la quale richiede l'attivazione di un Contratto di ricerca per il dott. Carlo Andrea Mattei con decorrenza 1° settembre 2025;
- tenuto conto che l'art. 22 comma 2 della legge 240/2010 prevede che il contratto di ricerca abbia durata biennale prorogabile fino ad un ulteriore anno nel caso di progetti di ricerca di carattere nazionale, europeo ed internazionale, in ragione delle specifiche esigenze relative agli obiettivi e alla tipologia del progetto;
- precisato che il contratto di ricerca con il Dott. Carlo Andrea Mattei sarà pertanto stipulato di durata biennale con impegno ad attivare la procedura di proroga di un ulteriore anno al fine di consentire lo svolgimento del progetto di ricerca per tutta la sua durata;
- tenuto conto che il Regolamento per la disciplina dei contratti di ricerca al comma 4 del citato art. 17 prevede che i contratti di ricerca finanziati su fondi esterni possono prevedere un trattamento economico superiore, nel caso in cui l'importo sia stabilito



dall'ente finanziatore;

- preso atto che il Grant Agreement prevede, per il contratto da stipulare con il Dott. Carlo Andrea Mattei un importo lordo Ateneo annuo al netto dell'IRAP per i primi 24 mesi pari a euro 138.204,72 annui e per gli ultimi 12 mesi pari a euro 84.941,64. Tale importo sarà quello previsto nel periodo di proroga del contratto.
- precisato che tale importo graverà interamente sul progetto "METAL-metal bonding in molecular LanthanIde CompoUndS" – Acronimo METALLICUS, CUP B97G25000170006;
- valutato di inquadrare il Dott. Carlo Andrea Mattei nel GSD 03/CHEM-03, SSD CHEM-03-A;
- considerato che, a garanzia dell'impegno assunto, è stata emessa una COAN per l'importo di € 384.705,36;
- verificata la presenza della maggioranza assoluta dei membri del Consiglio,

DELIBERA

all'unanimità,

- a) di approvare la stipula di un contratto di ricerca ex art. 22 della L. 240/2010, di durata biennale, prorogabile per un ulteriore anno, al Dott. Carlo Andrea Mattei, vincitore del progetto dal titolo "METAL-metal bonding in molecular LanthanIde CompoUndS" – Acronimo METALLICUS, Grant Agreement n. 101210218, CUP B97G25000170006, nell'ambito del programma di ricerca Marie Skłodowska Curie Actions – Postdoctoral Fellowships - Global Fellowship, GSD 03/CHEM-03, SSD CHEM-03-A, Responsabile scientifico Prof. Mauro Perfetti, con decorrenza il 1° settembre 2025;
- b) di impegnarsi ad attivare la procedura di proroga del contratto, di cui all'art. 16 del Regolamento per la disciplina dei contratti di ricerca, di un ulteriore anno al fine di consentire lo svolgimento del progetto di ricerca per tutta la sua durata;
- c) di approvare e garantire la copertura finanziaria dell'intero costo contrattuale, incluso



il periodo relativo alla proroga (COAN n. 88926 del 03/07/2025).

17.2. Richiesta di attivazione della procedura di selezione per n. 1 contratto di ricerca ex art. 22 Legge 240/2010 - GSD 03/CHEM-03, SSD CHEM-03-A – Resp. Prof. Mauro Perfetti

Il Presidente informa il Consiglio che gli Organi di Ateneo nelle sedute del mese di marzo 2025 hanno approvato il Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240, successivamente emanato in data 1° aprile 2025 con D.R. n. 379.

In merito al trattamento economico, il Consiglio di Amministrazione nella seduta del 26 maggio 2025, in forza dell'articolo 4 comma 2 del regolamento di Ateneo, ai sensi dell'articolo 22 comma 6 della Legge 240/2010 e della sequenza contrattuale sottoscritta in data 18 marzo 2025, ha stabilito che lo stesso è pari al trattamento iniziale spettante al ricercatore confermato a tempo definito e al contempo ha individuato due posizioni economiche così definite:

- Posizione 1: pari al trattamento iniziale spettante al ricercatore confermato a tempo definito
- Posizione 2: pari al trattamento iniziale spettante al ricercatore confermato a tempo pieno.

Il Consiglio di amministrazione ha altresì stabilito che, l'attribuzione del trattamento economico corrispondente alla Posizione 2 può essere prevista dai Dipartimenti, in sede di richiesta di attivazione della procedura di selezione, con motivata delibera, qualora l'attività di ricerca sia riconducibile a progetti di elevata complessità sostenuti da finanziamenti esterni all'Ateneo, comporti un elevato grado di autonomia scientifica e gestionale da parte del/la contrattista, implichi la responsabilità di specifiche attività di ricerca interne al progetto e preveda la partecipazione attiva sia alla rendicontazione scientifica che a quella finanziaria del progetto.

Tali presupposti devono ricorrere contestualmente e, in mancanza di uno o più dei quali, è possibile l'attribuzione esclusivamente del trattamento di cui alla Posizione 1.



Il Consiglio del Dipartimento, nella composizione ristretta ai professori ordinari e associati, ricercatori a tempo indeterminato e determinato ai sensi dell'art. 8 comma 1 del "Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240" e con la maggioranza assoluta degli aventi diritto,

- visto il Regolamento di Ateneo dei Dipartimenti;
- visto il Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240 emanato con D.R. n. 379 del 1° aprile 2025;
- tenuto conto che il Consiglio di amministrazione nella seduta del 26 maggio 2025 ha stabilito che il trattamento economico del contratto di ricerca è pari a quello spettante al ricercatore confermato a tempo definito e al contempo ha individuato due posizioni economiche come di seguito specificato:
 - Posizione 1: pari al trattamento iniziale spettante al ricercatore confermato a tempo definito corrispondente ad € 39.594,71 annuo lordo amministrazione
 - Posizione 2: pari al trattamento iniziale spettante al ricercatore confermato a tempo pieno corrispondente ad € 54.577,15 annuo lordo amministrazione;
- considerato che il Dipartimento, in sede di richiesta di attivazione della procedura di selezione, può prevedere l'attribuzione del trattamento economico corrispondente alla Posizione 2 qualora l'attività di ricerca sia riconducibile a progetti di elevata complessità sostenuti da finanziamenti esterni all'Ateneo, comporti un elevato grado di autonomia scientifica e gestionale da parte del/la contrattista, implichi la responsabilità di specifiche attività di ricerca interne al progetto e preveda la partecipazione attiva sia alla rendicontazione scientifica che a quella finanziaria del progetto;
- vista la richiesta presentata dal **prof. Mauro Perfetti** di attivazione di n. 1 contratto di ricerca di durata biennale, per lo svolgimento del programma di ricerca dal titolo **"Sintesi e caratterizzazione di molecole magnetiche per lo studio di effetti spin elettrici"**, con inquadramento nella **Posizione 2**, in cui lo stesso prof. Mauro Perfetti dichiara che ricorrono le condizioni previste dal Consiglio di amministrazione nella seduta del 26 maggio 2025 in merito al trattamento economico, prot. 136099 del 19/06/2025;



- valutata la validità del programma proposto;
- verificata la copertura finanziaria (art. 6 del Regolamento): progetto di ricerca con enti pubblici o privati nei quali siano spese di personale da reclutare per lo svolgimento della ricerca tra le spese ammissibili e rendicontabili, i cui dettagli sono specificati nella scheda allegata che costituisce parte integrante della presente delibera;
- considerato che, a garanzia dell'impegno assunto, è stata emessa una COAN per l'importo di € 109.154,29;
- preso atto che la copertura finanziaria dell'eventuale rinnovo o proroga del contratto dovrà essere oggetto di nuova deliberazione del Dipartimento, ai sensi del Regolamento per la disciplina dei contratti di ricerca;
- verificata la presenza della maggioranza assoluta dei membri del Consiglio,

DELIBERA

all'unanimità,

- a) di approvare la proposta di attivazione della procedura di selezione per n. 1 contratto di ricerca ex art. 22 della L. 240/2010, di durata biennale, come segue:

Responsabile della ricerca: Prof. Mauro Perfetti

GSD: 03/CHEM-03

SSD: CHEM-03/A

Programma di ricerca: "Sintesi e caratterizzazione di molecole magnetiche per lo studio di effetti spin elettrici".

Il candidato dovrà effettuare la sintesi e la caratterizzazione chimica, magnetica e spettroscopica di composti di coordinazione per lo studio di effetti spin elettrici. La ricerca si concentrerà primariamente sulla sintesi di composti a base di ioni lantanoidi.

Sede di svolgimento delle attività: Dipartimento di Chimica "Ugo Schiff"



Numero massimo di pubblicazioni: 5

Criteri di valutazione e relativi punteggi massimi:

- a) qualità, originalità ed innovatività della proposta progettuale, con riferimento al programma di ricerca oggetto della selezione: 10;
- b) attinenza e rilevanza delle attività di ricerca precedentemente svolte, nonché delle eventuali esperienze lavorative, in relazione ai contenuti del programma di ricerca oggetto della selezione: 40;
- c) attinenza delle pubblicazioni allegate con il programma di ricerca oggetto della selezione: 10;
- d) colloquio volto ad accertare l'idoneità allo svolgimento dell'attività di ricerca oggetto del contratto e alla realizzazione della proposta progettuale presentata, nonché alla valutazione della conoscenza della lingua inglese e/o di altre lingue rilevanti per la ricerca: 40 punti

- b) di richiedere il trattamento economico corrispondente alla Posizione 2 (equiparata al trattamento iniziale del ricercatore confermato a tempo pieno) attestando che l'attività di ricerca è riconducibile a progetti di elevata complessità sostenuti da finanziamenti esterni all'Ateneo, comporta un elevato grado di autonomia scientifica e gestionale da parte del/la contrattista, implica la responsabilità di specifiche attività di ricerca interne al progetto e prevede la partecipazione attiva sia alla rendicontazione scientifica che a quella finanziaria del progetto;
- c) di approvare e garantire la copertura finanziaria dell'intero costo contrattuale come specificato nella scheda allegata che costituisce parte integrante della presente delibera (COAN n. 84337 del 19/06/2025).

17.3. Richiesta di attivazione della procedura di selezione per n. 1 contratto di ricerca ex art. 22 Legge 240/2010 - GSD 03/CHEM-03, SSD CHEM-03-A – Resp. Dr. Matteo Briganti



Il Presidente informa il Consiglio che gli Organi di Ateneo nelle sedute del mese di marzo 2025 hanno approvato il Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240, successivamente emanato in data 1° aprile 2025 con D.R. n. 379.

In merito al trattamento economico, il Consiglio di Amministrazione nella seduta del 26 maggio 2025, in forza dell'articolo 4 comma 2 del regolamento di Ateneo, ai sensi dell'articolo 22 comma 6 della Legge 240/2010 e della sequenza contrattuale sottoscritta in data 18 marzo 2025, ha stabilito che lo stesso è pari al trattamento iniziale spettante al ricercatore confermato a tempo definito e al contempo ha individuato due posizioni economiche così definite:

- Posizione 1: pari al trattamento iniziale spettante al ricercatore confermato a tempo definito
- Posizione 2: pari al trattamento iniziale spettante al ricercatore confermato a tempo pieno.

Il Consiglio di amministrazione ha altresì stabilito che, l'attribuzione del trattamento economico corrispondente alla Posizione 2 può essere prevista dai Dipartimenti, in sede di richiesta di attivazione della procedura di selezione, con motivata delibera, qualora l'attività di ricerca sia riconducibile a progetti di elevata complessità sostenuti da finanziamenti esterni all'Ateneo, comporti un elevato grado di autonomia scientifica e gestionale da parte del/la contrattista, implichi la responsabilità di specifiche attività di ricerca interne al progetto e preveda la partecipazione attiva sia alla rendicontazione scientifica che a quella finanziaria del progetto.

Tali presupposti devono ricorrere contestualmente e, in mancanza di uno o più dei quali, è possibile l'attribuzione esclusivamente del trattamento di cui alla Posizione 1.

Il Consiglio del Dipartimento, nella composizione ristretta ai professori ordinari e associati, ricercatori a tempo indeterminato e determinato ai sensi dell'art. 8 comma 1 del "Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240" e con la maggioranza assoluta degli aventi diritto,

- visto il Regolamento di Ateneo dei Dipartimenti;



- visto il Regolamento per la disciplina dei contratti di ricerca ai sensi dell'art. 22 della legge 30 dicembre, n. 240 emanato con D.R. n. 379 del 1° aprile 2025;
- tenuto conto che il Consiglio di amministrazione nella seduta del 26 maggio 2025 ha stabilito che il trattamento economico del contratto di ricerca è pari a quello spettante al ricercatore confermato a tempo definito e al contempo ha individuato due posizioni economiche come di seguito specificato:
 - Posizione 1: pari al trattamento iniziale spettante al ricercatore confermato a tempo definito corrispondente ad € 39.594,71 annuo lordo amministrazione
 - Posizione 2: pari al trattamento iniziale spettante al ricercatore confermato a tempo pieno corrispondente ad € 54.577,15 annuo lordo amministrazione;
- considerato che il Dipartimento, in sede di richiesta di attivazione della procedura di selezione, può prevedere l'attribuzione del trattamento economico corrispondente alla Posizione 2 qualora l'attività di ricerca sia riconducibile a progetti di elevata complessità sostenuti da finanziamenti esterni all'Ateneo, comporti un elevato grado di autonomia scientifica e gestionale da parte del/la contrattista, implichi la responsabilità di specifiche attività di ricerca interne al progetto e preveda la partecipazione attiva sia alla rendicontazione scientifica che a quella finanziaria del progetto;
- vista la richiesta presentata dal **Dr. Matteo Briganti** di attivazione di n. 1 contratto di ricerca di durata biennale, per lo svolgimento del programma di ricerca dal titolo **"Design High Throughput di Nanografeni open-shell attraverso metodi ab initio"**, con inquadramento nella **Posizione 1**, in cui lo stesso Dr. Matteo Briganti dichiara che ricorrono le condizioni previste dal Consiglio di amministrazione nella seduta del 26 maggio 2025 in merito al trattamento economico;
- valutata la validità del programma proposto;
- verificata la copertura finanziaria (art. 6 del Regolamento): progetto di ricerca con enti pubblici o privati nei quali siano spese di personale da reclutare per lo svolgimento della ricerca tra le spese ammissibili e rendicontabili, i cui dettagli sono specificati nella scheda allegata che costituisce parte integrante della presente delibera;



- considerato che, a garanzia dell'impegno assunto, è stata emessa una COAN per l'importo di € 79.189,41;
- preso atto che la copertura finanziaria dell'eventuale rinnovo o proroga del contratto dovrà essere oggetto di nuova deliberazione del Dipartimento, ai sensi del Regolamento per la disciplina dei contratti di ricerca;
- verificata la presenza della maggioranza assoluta dei membri del Consiglio,

DELIBERA

all'unanimità,

- a) di approvare la proposta di attivazione della procedura di selezione per n. 1 contratto di ricerca ex art. 22 della L. 240/2010, di durata biennale, come segue:

Responsabile della ricerca: Matteo Briganti

GSD: 03/CHEM-03

SSD: CHEM-03/A

Programma di ricerca: "Design High Throughput di Nanografeni open-shell attraverso metodi ab initio".

Il progetto di ricerca si propone di sviluppare sistemi basati su strutture molecolari di grafene che presentano elettroni spaiati (Nanographene Spins; NGS) con interazioni magnetiche regolabili tramite campi elettrici. Questi sistemi open-shell sono dei promettenti componenti per gate quantistici molecolari scalabili. La progettazione si baserà su metodi computazionali avanzati multiscala e protocolli high-throughput, supportati da machine learning.

Sede di svolgimento delle attività: Dipartimento di Chimica "Ugo Schiff", Università degli Studi di Firenze

Numero massimo di pubblicazioni: 6

Criteri di valutazione e relativi punteggi massimi (*):

- a) qualità, originalità ed innovatività della proposta progettuale, con riferimento al programma di ricerca oggetto della selezione: 10;



b) attinenza e rilevanza delle attività di ricerca precedentemente svolte, nonché delle eventuali esperienze lavorative, in relazione ai contenuti del programma di ricerca oggetto della selezione: 20;
c) attinenza delle pubblicazioni allegate con il programma di ricerca oggetto della selezione: 30;
d) colloquio volto ad accertare l'idoneità allo svolgimento dell'attività di ricerca oggetto del contratto e alla realizzazione della proposta progettuale presentata, nonché alla valutazione della conoscenza della lingua inglese e/o di altre lingue rilevanti per la ricerca: 40 punti

b) di approvare e garantire la copertura finanziaria dell'intero costo contrattuale come specificato nella scheda allegata che costituisce parte integrante della presente delibera (COAN n. 83739 del 18/06/2025).

Alle ore 12:57 il Presidente ringrazia i Ricercatori e la seduta procede in composizione ristretta a **Professori Ordinari e Associati**.

**18. Procedura valutativa per un posto di professore associato ai sensi dell'art. 24 comma 5 della legge 240/2010, gruppo scientifico disciplinare 03/CHEM-05 (Chimica organica), settore scientifico disciplinare CHEM-05/A (Chimica organica): approvazione atti e proposta di chiamata
(punto riservato a Professori Ordinari e Associati)**

Il Prof. Massimo Bonini esce alle ore 12:58 al punto 18.



Il Presidente informa che con decreto n. 680 del 12 giugno 2025, pubblicato sull'Albo Ufficiale con repertorio n. 130332, la Rettrice ha approvato gli atti della procedura valutativa in oggetto. Gli atti sono consultabili sul sito web di Ateneo all'indirizzo <https://www.unifi.it/it/ateneo/lavora-con-noi/reclutamento-bandi-di-concorso/bandi-professori-ordinari-e-associati-0> cliccando sulla relativa procedura.

Al riguardo vi ricordiamo che ai sensi dell'art.18 del Regolamento di Ateneo per la disciplina della chiamata dei professori associati e ordinari, il Consiglio di Dipartimento procede alla formulazione della proposta di chiamata entro 30 giorni dalla data di pubblicazione del decreto di approvazione degli atti sull'Albo Ufficiale di Ateneo.

La delibera è valida se adottata a maggioranza assoluta degli aventi diritto nella composizione ristretta ai professori ordinari e associati.

Il Dipartimento non può procedere alla chiamata dell'idoneo che abbia un grado di parentela o affinità entro il quarto grado compreso con un Professore appartenente al Dipartimento, ovvero con il Rettore, con il Direttore Generale o un componente del Consiglio di Amministrazione dell'Ateneo, sopravvenuti durante lo svolgimento della procedura.

Nel caso di specie, la Commissione, nominata con Decreto Rettorale n. 449 del 14 aprile 2025 e composta da:

- Prof. Andrea GOTI, Ordinario, Università degli Studi di Firenze (SSD CHEM-05/A);
- Prof. Maurizio TADDEI, Ordinario, Università degli Studi di Siena (SSD CHEM-05/A);
- Prof.ssa Francesca MARINI, Associato, Università degli Studi di Perugia (SSD CHEM-05/A).

ha valutato come idoneo il candidato dott. Damiano TANINI, titolare di un contratto di ricercatore a tempo determinato di tipologia b), decorrente dal 1° settembre 2022 al 31 agosto 2025.



Il Consiglio di Dipartimento, nella composizione ristretta ai Professori di Prima e Seconda Fascia, approva all'unanimità la proposta di chiamata del dott. Damiano TANINI a Professore Associato per il gruppo scientifico disciplinare 03/CHEM-05 (Chimica organica), settore scientifico disciplinare CHEM-05/A (Chimica organica).

**19. Procedura valutativa per un posto di professore associato ai sensi dell'art. 24 comma 5 della legge 240/2010, gruppo scientifico disciplinare 03/CHEM-01 (Chimica analitica, ambientale e dei beni culturali), settore scientifico disciplinare CHEM-01/A (Chimica analitica): approvazione atti e proposta di chiamata
(punto riservato a Professori Ordinari e Associati)**

Il Presidente informa che con decreto n. 683 del 12 giugno 2025, pubblicato sull'Albo Ufficiale con repertorio n. 130382, la Rettrice ha approvato gli atti della procedura valutativa in oggetto. Gli atti sono consultabili sul sito web di Ateneo all'indirizzo <https://www.unifi.it/it/ateneo/lavora-con-noi/reclutamento-bandi-di-concorso/bandi-professori-ordinari-e-associati-0> cliccando sulla relativa procedura.

Al riguardo vi ricordiamo che ai sensi dell'art.18 del Regolamento di Ateneo per la disciplina della chiamata dei professori associati e ordinari, il Consiglio di Dipartimento procede alla formulazione della proposta di chiamata entro 30 giorni dalla data di pubblicazione del decreto di approvazione degli atti sull'Albo Ufficiale di Ateneo.

La delibera è valida se adottata a maggioranza assoluta degli aventi diritto nella composizione ristretta ai professori ordinari e associati.

Il Dipartimento non può procedere alla chiamata dell'idoneo che abbia un grado di parentela o affinità entro il quarto grado compreso con un Professore appartenente al Dipartimento, ovvero con il Rettore, con il Direttore Generale o un componente del Consiglio di Amministrazione dell'Ateneo, sopravvenuti durante lo svolgimento della procedura.



Nel caso di specie, la Commissione, nominata con Decreto Rettorale n. 493 del 23 aprile 2025 e composta da:

- Prof.ssa Giovanna MARRAZZA, Ordinario, Università degli Studi di Firenze (SSD CHEM-01/A);
- Prof.ssa Angela AMORESANO, Ordinario, Università degli Studi di Napoli "Federico II" (SSD CHEM-01/A);
- Prof. Giuseppe SPOTO, Ordinario, Università degli Studi di Catania (SSD CHEM-01/A).

ha valutato come idoneo il candidato dott. Pasquale PALLADINO, titolare di un contratto di ricercatore a tempo determinato di tipologia b), decorrente dal 1° ottobre 2022 al 30 settembre 2025.

Il Consiglio di Dipartimento, nella composizione ristretta ai Professori di Prima e Seconda Fascia, approva all'unanimità la proposta di chiamata del dott. Pasquale PALLADINO a Professore Associato per il gruppo scientifico disciplinare 03/CHEM-01 (Chimica analitica, ambientale e dei beni culturali), settore scientifico disciplinare CHEM-01/A (Chimica analitica).

Alle ore 13:00, essendo esaurita la trattazione degli argomenti all'ordine del giorno, il Presidente dichiara chiusa la seduta. Della medesima viene redatto il presente verbale, approvato seduta stante limitatamente alle delibere assunte, che viene confermato e sottoscritto come segue

IL SEGRETARIO

Dott. Dario Abbate

Firmato digitalmente da: Dario Abbate
Data: 30/07/2025 14:58:42

IL PRESIDENTE

Prof. Stefano Menichetti



Stefano Menichetti
31.07.2025
09:39:50
GMT+02:00

Segreteria

Dipartimento di Chimica "Ugo Schiff" DICUS

Via della Lastruccia, 3-13 – 50019 Sesto Fiorentino (FI)
segreteria@chim.unifi.it chim@pec.unifi.it
centralino +39 055 4573007
P.IVA/Cod. Fis. 01279680480



UNIVERSITÀ
DEGLI STUDI
FIRENZE

Dipartimento di Chimica
"Ugo Schiff"

Eccellenza 2023-2027

IL SEGRETARIO PER I PUNTI 15,16,17,18 e 19

Prof. Emiliano Fratini



Firmato
digitalmente da:
EMILIANO
FRATINI
Data: 29/07/2025
17:52:11 CEST

Segreteria

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P.IVA/Cod. Fis. 01279680480



**CONVENZIONE PER L'EROGAZIONE DI UN CONTRIBUTO PER IL FINANZIAMENTO DEL
PROGETTO QUANTUM CARBON ELECTRONICS AT ULTRA-LOW TEMPERATURES
(ELETTRONICA QUANTISTICA A BASE DI CARBONIO A TEMPERATURE ULTRA-BASSE)**

TRA

il **Dipartimento di Chimica "Ugo Schiff"** dell'Università degli Studi di Firenze, di seguito denominato "**Dipartimento**", C.F. e P. IVA 01279680480 con sede in via della Lastruccia 3-13, Sesto Fiorentino, 50019 FI, legalmente rappresentato dal Prof. Stefano Menichetti, nato a Cerreto Guidi (FI) il 14/03/1960, in qualità di Direttore del Dipartimento

E

Fondazione Cassa di Risparmio di Firenze, di seguito denominata "**FCRF**", C.F. 00524310489 con sede legale in Via Maurizio Bufalini, 6 Firenze, legalmente rappresentata dal Dott. Gabriele Gori, nato a Firenze 02/06/1962, in qualità di Direttore Generale di FCRF,
di seguito definite singolarmente "**Parte**" e congiuntamente "**Parti**"

PREMESSO

- che il Dipartimento ha presentato una richiesta di contributo nell'ambito del **Bando Talenti@Firenze** - programma RICERCA SCIENTIFICA E TECNOLOGICA;
- che il Dipartimento sviluppa ricerche nell'ambito dell'**elettronica quantistica a base di carbonio a temperature ultra-basse**;
- che in data 12 febbraio 2025 il Consiglio di Amministrazione di FCRF ha deliberato una cifra pari a € 342.000,00 (trecentoquarantaduemila) per il progetto "**Quantum Carbon Electronics at Ultra-low Temperatures (Elettronica Quantistica a base di Carbonio a Temperature Ultra-basse)**" come contributo finalizzato al trasferimento a Firenze dalla sede di Oxford della strumentazione presente nella sede di Oxford volta alla caratterizzazione nanoelettronica di nuovi materiali;

- che la strumentazione così trasferita verrà utilizzata per esplorare gli stati quantistici di sistemi di carbonio creati per via molecolare, invece, che con metodi "top-down". Tale approccio permette un controllo estremamente preciso della morfologia dei sistemi e di inserire, a piacimento, stati magnetici o stati elettronici esotici, con proprietà quantistiche interessanti.
- che il Dipartimento ha approvato la stipula del presente atto nella seduta del Consiglio di Dipartimento del 20/06/2025.

TUTTO CIO' PREMESSO SI CONVIENE E SI STIPULA QUANTO SEGUE

Art. 1 – Oggetto della Convenzione

Oggetto del presente atto, di seguito **"Convenzione"** è il trasferimento della strumentazione indicata nel modulo di richiesta del contributo n.58356, che avverrà grazie all'erogazione di un contributo da parte di FCRF.

Art. 2 – Responsabili Scientifici della Convenzione

Per la realizzazione delle attività finanziate è indicato quale responsabile il Prof. Lapo Bogani, professore ordinario del Dipartimento

Art. 3 – Modalità di erogazione del contributo

FCRF, come da delibera del Consiglio di Amministrazione richiamata in Premessa, corrisponderà un contributo finanziario fino all'importo massimo di € 342.000,00 (Euro trecentoquarantaduemila/00), da utilizzare entro la data di scadenza della Convenzione. L'ordine di acquisto e trasferimento delle strumentazioni dovrà essere emesso dal Dipartimento entro 60 (sessanta) giorni dalla data di firma della Convenzione. La documentazione relativa alla procedura di trasferimento, acquisto e di collaudo della strumentazione dovrà essere inoltrata a FCRF tramite posta elettronica al seguente indirizzo di posta elettronica silvia.zonnedda@fondazionecrfirenze.it; entro e non oltre la data di scadenza della Convenzione, come stabilita all'articolo 4.

In caso di gravi e documentati impedimenti all'acquisto, il Dipartimento può chiedere una proroga di ulteriori 30 (trenta) giorni.

Il Dipartimento avrà, quindi, 90 (novanta) giorni di tempo per l'installazione, il collaudo e la messa in funzione dell'apparecchiatura acquistata, a partire dalla data di consegna di quest'ultima. Il collaudo sarà inteso a verificare, per tutti i materiali, la conformità al tipo o ai modelli descritti in contratto o nei suoi allegati e la funzionalità richiesta. L'accettazione dei prodotti non solleva il fornitore dalla responsabilità per vizi apparenti od occulti degli stessi non rilevati all'atto della consegna.

Il contributo verrà erogato dalla FCRF al Dipartimento in un'unica soluzione a fronte dell'evidenza della regolare fatturazione di acquisto dei beni, di cui al modulo di richiesta del contributo n.58356, nonché della presentazione della documentazione attestante il collaudo rilasciata dal competente ufficio di UNIFI.

Ai sensi del DL n. 76 del 16/7/2020, FCRF provvederà al pagamento del contributo utilizzando pagoPA, attraverso la piattaforma IRIS – Regione Toscana (<https://iris.rete.toscana.it/public/>) dedicata ai pagamenti spontanei all'Università di Firenze, al seguente indirizzo bancario:

Conto di Contabilità speciale presso Banca d'Italia - Tesoreria Provinciale dello Stato di Firenze, intestato a Università degli Studi di Firenze, n. TU-311-0036739 – IBAN IT37E0100004306TU0000011462

Art. 4 - Durata della Convenzione

La Convenzione decorre dalla data di stipula del presente atto e avrà durata di 1 (un) anno, termine entro cui il Dipartimento consegnerà il report finale indicante le attività finanziate e svolte con il contributo di FCRF con giustificativi inerenti all'utilizzo del contributo, come indicato all'art.3 e al manuale per le erogazioni del contributo FCRF.

In caso di gravi e documentati ritardi e/o impedimenti alla realizzazione delle attività di cui innanzi, il Dipartimento può chiedere una proroga della durata della Convenzione di ulteriori 12 mesi al massimo.

La rendicontazione è prevista in formato digitale da effettuare sul sistema informatico e con invio alla pec della FCRF: contributi.fondazionecrfirenze@pec.ntc.it.

Art. 5 - Responsabilità

Le Parti si impegnano reciprocamente a tenersi indenni da qualsiasi impegno o responsabilità a qualsiasi titolo che possa derivare nei confronti di terzi con riferimento alle attività poste in essere in forza della Convenzione.

Art. 6 – Recesso e risoluzione

Le Parti possono recedere dalla Convenzione nel caso intervengano fatti o provvedimenti che modifichino la situazione esistente all'atto di sottoscrizione della Convenzione e ne rendano, impossibile o inopportuna, la sua conduzione a termine, con un preavviso di 15 (quindici) giorni da comunicarsi da una parte all'altra con raccomandata a.r. o comunicazione inviata per posta elettronica certificata.

La Convenzione potrà essere anticipatamente risolta da una delle due Parti, con effetto dalla data di ricevimento della raccomandata a.r. o della comunicazione inviata per posta elettronica certificata inviata dalla Parte che vuol risolvere la Convenzione all'altra Parte, in presenza di un essenziale inadempimento dell'altra Parte rispetto ad uno degli obblighi previsti, a meno che tale inadempimento non risulti sanato nel termine di 5 (cinque) giorni lavorativi dal ricevimento di richiesta scritta ad adempiere, da effettuarsi sempre mediante lettera raccomandata a.r. o comunicazione inviata per posta elettronica certificata.

La risoluzione della Convenzione non esime la Parte inadempiente dall'obbligo del risarcimento del danno dovuto alla Parte adempiente.

Art. 7 - Codice Comportamento

Le Parti dichiarano di conoscere ed impegnarsi a rispettare il Codice di comportamento dei dipendenti pubblici, emanato con il DPR 16 aprile 2013 n. 62.

La violazione degli obblighi derivanti dal Codice comporta la risoluzione della Convenzione ai sensi dell'art.1456 del Codice Civile.

Il Dipartimento prende atto dell'adozione da parte di FCRF del Modello di Organizzazione, Gestione e Controllo di cui al D.Lgs n.231/2001 e del Codice Etico pubblicati (il primo per

estratto) sul sito internet www.fondazioneecrfirenze.it, nonché di quanto previsto in ciascuno di predetti documenti.

Art. 8 - Registrazione

La Convenzione redatta in duplice originale è soggetta a registrazione in caso d'uso ai sensi degli artt. 5, 6 e 39 del D.P.R. n. 131 del 26/04/1986; le spese di bollo sono a carico delle Parti in pari misura ai sensi dell'art. 16 del D.P.R. n. 642/72. Le spese per l'eventuale registrazione sono a carico della parte richiedente.

Art. 9 - Trattamento dei Dati Personali

I dati forniti dalle Parti saranno trattati per le finalità della Convenzione, nel rispetto dei principi di liceità, correttezza, trasparenza, adeguatezza, pertinenza e necessità di cui all'art. 5, paragrafo 1 del Regolamento Generale sulla Protezione dei Dati (GDPR). Il conferimento di tali dati tra le Parti è obbligatorio, al fine di adempiere a tutti gli obblighi che discendono dalla Convenzione e comunque connessi all'esecuzione del rapporto instaurato tra le Parti sulla base della Convenzione.

I medesimi dati potranno essere comunicati unicamente all'interno delle strutture di entrambi le Parti per la gestione del rapporto instaurato dalla Convenzione.

I dati forniti dalle Parti saranno raccolti e trattati, con modalità manuale, cartacea e informatizzata, mediante il loro inserimento in archivi cartacei e/o informatici.

L'informativa completa dell'Università di Firenze sulla protezione dei dati personali degli operatori economici relativi alla Convenzione è disponibile al seguente link: <https://www.unifi.it/it/ateneo/qualita-e-trasparenza/protezione-dati>

Con la sottoscrizione della Convenzione le Parti esprimono il proprio consenso al trattamento ed alla comunicazione dei propri dati personali secondo le modalità e per le finalità sopra descritte.

Titolari del trattamento sono l'Università degli Studi di Firenze e FCRF. Responsabili per la protezione dei dati sono il Dott. Massimo Benedetti per l'Università, e il Direttore della Fondazione CR Firenze, Gabriele Gori.

Art. 10 - Attività di comunicazione del progetto e utilizzo dei segni distintivi

Le Parti si impegnano, a gestire l'immagine in modo coordinato relativamente a tutte alle attività oggetto della Convenzione e a confrontarsi e concordare preventivamente qualsivoglia azione divulgativa, di comunicazione e promozione legata al progetto (realizzazione di materiali a stampa, di presentazioni formali al pubblico, conferenze stampa, ecc.).

Il Dipartimento si impegna, altresì, a sottoporre all'esame e all'approvazione preventiva di FCRF tutte le modalità di uso del nome, del logo e del marchio di FCRF su tutti i documenti, materiali o dati o quant'altro su cui comparirà in occasione dell'esecuzione della Convenzione (testi divulgativi on line e off line, comunicati stampa, materiali promozionali, post social, video, ecc.).

La facoltà di utilizzo del logo "Fondazione CR Firenze" è consentita nei termini e alle condizioni che saranno indicate da FCRF ed è, comunque, limitata alle sole attività oggetto di cui alla Convenzione.

Art. 11 - Controversie e Foro

Per tutto quanto non espressamente stabilito, restano ferme le disposizioni previste dal Codice Civile. Il Foro è quello di Firenze in via esclusiva.

Firenze, _____

Per il Dipartimento

Il Direttore

Prof. Stefano Menichetti

Per FCRF

Il Direttore Generale

Dott. Gabriele Gori

Visto del Responsabile Scientifico

Prof. Lapo Bogani

Allegato 8. att_did_integrativa_ric_2025-2026

Docente	SSD	Qualifica	Assistenza_lab	Esercitazioni_i n_aula	Rel/Corr_LM	Rel/Corr_LT	Tutor Tirocini	Delegato	Commiss_Istituz	Comm_es ame1	Comm_e same2	Comm_es ame3	Comm_e same4	Comm_e same5	Comm_e same6	Comm_ esame7	Altro
Caminati Gabriella	CHEM-02/A	RTI			Scienze Chimiche, CTF	Chimica			Commissione di Garanzia Codice Etico								
Gellini Cristina	CHEM-02/A	RTI				Biotechnologie Chimica	Biotechnologie Chimica		Collegio di Disciplina di Ateneo	E349<59#0# HOHPHQWL#GL# WHUPRGLQDPL FD#ELRFPKLPLFD# H#SURSULHWD# PROHFPRODUL							
Pietraperzia Giangaetano	CHEM-02/A	RTI			Scienze Chimiche	Chimica		Formazione sicurezza studenti di Chimica									
Ricci Marilena	CHEM-02/A	RTI			Scienza e materiali per la conservazione e il restauro	Diagnostica e materiali per la conservazione e il restauro	Scienza e materiali per la conservazione e il restauro Diagnostica e materiali per la conservazione e il restauro	orientamento in ingresso e uscita per Diagnostica e materiali per la conservazione e il restauro e Scienza e materiali per la conservazione e il restauro									
Scarpi Dina	CHEM-05/A	RTI	Lab. di Chimica Organica I		Scienze Chimiche	Chimica				B012713 Stereochimica	B016772 Chimica Organica (L-Z)						
Bandelli Damiano	CHEM-02/A	RTD	Methods and materials for CH conservation (B029586); Laboratorio di Chimica del restauro (B018867)							Methods and materials for CH conservation (B029586)	Laboratorio di Chimica del restauro (B018867)						
Biagiotti Giacomo	CHEM-05/A	RTT															
Briganti Matteo	CHEM-03/A	RTD	LABORATORIO DI CHIMICA GENERALE E INORGANICA (B032557) (B258)	CALCOLO ALTE PRESTAZIONI APPLICATO ALLA CHIMICA INORGANICA (B032469) (B257)				Delegato all' orientamento per la laurea triennale in Scienza dei Materiali; Delegato all' orientamento per la laurea magistrale in Data Science, Calcolo Scientifico & Intelligenza Artificiale	Membro della Commissione Paritetica della Scuola di Scienze	CHIMICA GENERALE E INORGANICA E LABORATORIO DI CHIMICA GENERALE E INORGANICA (B032486) (B258)	CALCOLO ALTE PRESTAZIONI APPLICATO ALLA CHIMICA (B032468) (B257)	FONDAMENTI DI CHIMICA PER IL DATA/COMPUTAT IONAL SCIENTIST (B032472) (B257)	CHIMICA (B006506) (B030)	CHIMICA GENERALE ED INORGANICA- STECHEIOMETRI A (B016340) (B193)			
Cerofolini Linda	CHEM-03/A	RTD			Scienze Chimiche		Scienze Chimiche			CHIMICA GENERALE E INORGANICA CON LABORATORIO (B000019) - SCIENZE AGRARIE	CHIMICA GENERALE ED INORGANICA (0015009) - VITICOLTURA ED ENOLOGIA	METABOLOMICA E PROTEOMICA STRUTTURALE NEL DRUG DISCOVERY - [B020968]	DOTTORATO IN "STRUCTURAL BIOLOGY" - ESAME PASSAGGIO D' ANNO				Co-supervisor studenti di dottorato in "Structural Biology"

Docente	SSD	Qualifica	Assistenza_lab	Esercitazioni_in_aula	Rel/Corr_LM	Rel/Corr_LT	Tutor Tirocini	Delegato	Commiss_Istituz	Comm_esame1	Comm_esame2	Comm_esame3	Comm_esame4	Comm_esame5	Comm_esame6	Comm_esame7	Altro
Clemente Francesca	CHEM-05/A	RTD			Scienze Chimiche	Chimica	Scienze Chimiche e Chimica			CHIMICA ORGANICA [B000396] VITICOLTURA ED ENOLOGIA (L)	CHIMICA ORGANICA [B029068] Scienze Naturali (L) (Prof. Cacciarini)	CHIMICA ORGANICA I E LABORATORIO DI CHIMICA ORGANICA I [B006871] CHIMICA (L) (Prof. Goti)					Co-tutore studenti dottorato in Scienze Chimiche. Referente Scientifico Reattore a Microonde (Microwave Biotage Initiator Plus)
Gelli Rita	CHEM-02/A	RTD			Scienze Chimiche	Chimica, Design Tessile e Moda	Scienze Chimiche e Chimica	Delegata all'orientamento per la laurea triennale in Chimica e per la laurea magistrale in Scienze Chimiche		LABORATORIO DI NANOMATERIALI (B016298)	CHIMICA FISICA DELLE SUPERFICI (B012847)	CONTROLLO QUALITÀ E PERFORMANCE TEST (B031695)					Referente scientifico Universal Testing Machine (Instron)
Giurlani Walter	CHEM-01/A	RTD	CHIMICA ANALITICA II E LABORATORIO DI CHIMICA ANALITICA II (B006880)		Scienze Chimiche	Chimica	Scienze Chimiche e Chimica			CHIMICA ANALITICA II E LABORATORIO DI CHIMICA ANALITICA II (B006880)	SUPERFICI E RIVESTIMENTI DI METALLI E LEGHE: PREPARAZIONE, ANALISI, CARATTERIZZAZIONE ED APPLICAZIONI (B032497)						
Lenci Elena	CHEM-05/A	RTD	DRUG DISCOVERY (B015930)		Bioteecnologie Molecolari, Scienze Chimiche	Chimica, Scienze Biologiche		Delegata all'orientamento per la laurea magistrale in Bioteecnologie Molecolari		CHIMICA ORGANICA E ELEMENTI DI CHIMICA AMBIENTALE (B033848)	CHIMICA ORGANICA (Cognomi A-L) (B006416)	METODOLOGIE DI SINTESI DI MOLECOLE BIOATTIVE (B015924)	DRUG DISCOVERY (B015930)				Referente scientifico Electrasyn 2.0 (IKA)
Luchinat Enrico	CHEM-03/A	RTD			Scienze Chimiche, Bioteecnologie Molecolari	Chimica				LABORATORIO DI CHIMICA INORGANICA I (B006897)	SUPERSTRUCTURES AND MULTICOMPONENTS ARCHITECTURES IN LIFE AND MATERIAL SCIENCES (B029588)						
Macchiagodena Marina	CHEM-02/A	RTD			Scienze Chimiche	Chimica				B012815 - CHIMICA FISICA SUPERIORE	B012829 - MODELLISTICA CHIMICA E DINAMICA MOLECOLARE	B029589 - COMPUTATIONAL MODELLING OF COMPLEX SYSTEMS	B006866 - CHIMICA FISICA I E LABORATORIO DI CHIMICA FISICA I				
Martella Daniele	CHEM-04/A	RTD			Advanced Molecular Science e Scienze Chimiche	Chimica			commissione strumenti dipartimentali	Sostenibilità dei processi industriali [B032983]							

Docente	SSD	Qualifica	Assistenza_lab	Esercitazioni_in_aula	Rel/Corr_LM	Rel/Corr_LT	Tutor Tirocini	Delegato	Commiss_Istituz	Comm_esame1	Comm_esame2	Comm_esame3	Comm_esame4	Comm_esame5	Comm_esame6	Comm_esame7	Altro
Massai Lara	CHEM-03/A	RTD				Biotechnologie indirizzo medico-farmaceutico				Laboratorio di chimica per la biologia [B016095]	Chimica generale ed inorganica [B029067] Prof. Perfetti						Referente scientifico Settopolarimetro Jasco J-1500
Palladino Pasquale	CHEM-01/A	RTD	CHIMICA ANALITICA APPLICATA CON LABORATORIO (B031957)		Scienze Chimiche	Chimica	Scienze Chimiche e Chimica	Membro del Comitato per la Didattica del Corso di Studi in Scienza dei Materiali del DICUS UNIFI Rappresentante del DICUS UNIFI nel panel esperti 'Dual Use', per gli adempimenti necessari del Dipartimento rispetto alla normativa europea e quindi nazionale riguardante l'eventuale duplice uso civile e militare di beni e conoscenze. Rappresentante del DICUS UNIFI nel Comitato di Gestione del Centro		LABORATORIO DI CHIMICA ANALITICA I (Q-Z) (B006860)	CHIMICA ANALITICA E LABORATORIO DI CHIMICA ANALITICA (B032485)						Referente scientifico: QCM-D QSense (Biolin); SPR Biacore X-100 (Cytiva)
Pasquini Benedetta	CHEM-01/A	RTD	SENSORI E BIOSENSORI (B012935), Prof. Giovanna Marrazza; CHIMICA ANALITICA APPLICATA CON LABORATORIO (B031957), Prof. Giovanna Marrazza		Scienze Chimiche Farmacia	Chimica	Scienze Chimiche e Chimica			CHIMICA ANALITICA II E LABORATORIO DI CHIMICA ANALITICA II [B006880]	CHIMICA ANALITICA (B033157)	CHEMIOMETRIA E QUALITA' DEL DATO (B031205)	CHIMICA ANALITICA (B016329)				Responsabile PCTO DICUS
Schiavina Marco	CHEM-03/A	RTD			Scienze Chimiche	Chimica				CHIMICA GENERALE E INORGANICA CON LABORATORIO (B000019)	NMR IN BIOLOGIA STRUTTURALE (B016303)	LABORATORIO DI RISONANZE MAGNETICHE (B029104)					Tutoraggio a studenti in tesi e tirocinio (laurea triennale e magistrale in scienze chimiche)
Sebastiani Federico	CHEM-02/A	RTD	CHIMICA FISICA (B016519); CHIMICA FISICA I E LABORATORIO DI CHIMICA FISICA I (B006869)		Chimica e Tecnologia Farmaceutiche					CHIMICA DEI MATERIALI PER L'OTTICA (B006669)	METODI SPERIMENTALI DI INDAGINE STRUTTURALE E DINAMICA (B01301)	ELEMENTI DI TERMODINAMICA BIOCHIMICA E PROPRIETA' MOLECOLARI (B016926)	CHIMICA FISICA (B016519)	SPETTROSCOPIA MOLECOLARE (B012699)	CHIMICA FISICA I E LABORATORIO DI CHIMICA FISICA I (B006869)		
Tanini Damiano	CHEM-05/A	RTD			Chimica e Tecnologia Farmaceutiche; Scienze e Tecnologie Alimentari	Chimica; Diagnostica e Materiali per la Conservazione e il Restauro	Chimica; Diagnostica e Materiali per la Conservazione e il Restauro			CHIMICA ORGANICA (B00096)	CHIMICA ORGANICA (B002378)	CHIMICA DEGLI AROMI (B014731)	CHIMICA DEGLI ADDITIVI ALIMENTARI (B014371)	CHIMICA ORGANICA NEI PRODOTTI ALIMENTARI (B016608)	METODI FISICI IN CHIMICA ORGANICA (B016522 e B007441)		

Docente	SSD	Qualifica	Assistenza_lab	Esercitazioni_in_aula	Rel/Corr_LM	Rel/Corr_LT	Tutor Tirocini	Delegato	Commiss_Istituz	Comm_esame1	Comm_esame2	Comm_esame3	Comm_esame4	Comm_esame5	Comm_esame6	Comm_esame7	Altro
Tonelli Monica	CHEM-02/A	RTD		Materiali nanostrutturati (B015349); Nanomateriali funzionali (B020971)	Scienze Chimiche	Chimica	Scienze Chimiche e Chimica			Nanomateriali funzionali (B020971)	Materiali nanostrutturati (B015349)						
Vanti Giulia	CHEM-08/A	RTT			Farmacia (LM13)		Biotechnologie mediche e farmaceutiche (LM9)			Normativa dei medicinali e farmaceutica [B033324]							
Vialetto Jacopo	CHEM-02/A	RTD	B029590 (B234) - EXPERIMENTAL METHODS FOR THE STUDY OF NANOSTRUCTURED MATERIALS		Scienze Chimiche	Chimica	Scienze Chimiche e Chimica			B006894 - LABORATORIO DI CHIMICA FISICA II	[B012687] - CHIMICA FISICA DEI SISTEMI DISPERSI E DELLE INTERFASI						
Vignoli Alessia	CHEM-03/A	RTD	METABOLOMICA E PROTEOMICA STRUTTURALE NEL DRUG DISCOVERY (B020968 (B088))	Fondamenti di Chimica Generale [B031653]	Biotechnologie Mediche e Farmaceutiche					Fondamenti di Chimica Generale [B031653]	CHIMICA GENERALE E INORGANICA CON LABORATORIO [B000019]	CHIMICA GENERALE E INORGANICA [0015009]	CHIMICA GENERALE E INORGANICA [B031126]	LABORATORIO DI CHIMICA GENERALE [B031136]	CHIMICA GENERALE E INORGANICA CON LABORATORIO [B028177]	ABILITA' INFORMATICA E IN CHIMICA [B006846]	



UNIVERSITÀ
DEGLI STUDI
FIRENZE
DICUS
DIPARTIMENTO DI CHIMICA
"UGO SCHIFF"
ECCELLENZA 2023-27

*Alla Magnifica Rettrice
Prof.ssa Alessandra Petrucci*

*Al Dirigente dell'Area Persone e Organizzazione
Dott. Luca Bardi*

*All'Unità di Processo "Amministrazione del Personale
Docente e Ricercatore"
Dott.ssa Eva Furini*

Oggetto: Nota del Direttore - Programmazione triennale del personale docente e ricercatore per gli anni 2025-2027: posti di professore ordinario, di professore associato e di ricercatore a tempo determinato

In ottemperanza a quanto richiesto dagli uffici competenti e con riferimento alla Programmazione triennale del personale docente e ricercatore per gli anni 2025-2027,

Il sottoscritto, Prof. Stefano Menichetti, in qualità di Direttore del Dipartimento di Chimica "Ugo Schiff",

- visto il "Regolamento di Ateneo dei Dipartimenti";
- visto il "Regolamento di Ateneo per la disciplina della chiamata dei professori ordinari e associati";
- visto il "Regolamento in materia di ricercatori a tempo determinato ai sensi dell'articolo 24 della legge 30 dicembre 2010, n. 240";
- visto il Decreto Ministeriale 2 maggio 2024, n. 639 "Determinazione dei gruppi scientifico-disciplinari e delle relative declaratorie, nonché la razionalizzazione e



l'aggiornamento dei settori scientifico-disciplinari e la riconduzione di questi ultimi ai gruppi scientifico-disciplinari”;

- preso atto della Circolare 8/2025;
- richiamato quanto deliberato dal Senato accademico e dal Consiglio di amministrazione nelle sedute, rispettivamente, del 18 e 28 marzo 2025;
- preso atto che la programmazione triennale del personale docente e ricercatore per gli anni 2025-2027 è intesa come aggiornamento annuale della programmazione 2024-2026 già approvata;
- verificato che i SSD residui della programmazione triennale 2024-2026 hanno tutti una corrispondenza univoca;
- considerata l'integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, deliberata dal Consiglio di Dipartimento del 06/09/2024;
- preso atto della proposta della Commissione di Indirizzo e Autovalutazione del 07/04/2025, elaborata in coerenza con il Piano di Sviluppo Dipartimentale approvato nella seduta del 16/05/2025;
- data comunicazione della Programmazione del Personale Docente e Ricercatore 2025/2027 nel Consiglio di Dipartimento del 15/04/2025;
- dato atto del Piano di Sviluppo Dipartimentale e, in particolare, dei contenuti previsti alla Sezione 2 “Programmazione del personale docente e ricercatore” in coerenza con i criteri di assicurazione della qualità del Modello AVA3;
- considerata la necessità di deliberare in merito alla programmazione triennale per gli anni 2025-2027 dei posti di professore ordinario, di professore associato e di ricercatore a tempo determinato;

invia la tabella aggiornata della Programmazione del Personale Docente e Ricercatore 2025-2027, coerente con l'integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, deliberata dal Consiglio di Dipartimento del 06/09/2024, in cui il Dipartimento aveva già recepito i nuovi SSD. Si sottolinea come, rispetto alla tabella dell'integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, nella tabella della Programmazione del personale docente e ricercatore 2025-2027 sono stati aggiunti i settori CHEM-01/A, CHEM-02/A tra gli SSD dei PA non in priorità per la



procedura valutativa ex art. 24, comma 5, della legge 240/2010, come da segnalazione dell'ufficio personale docente e ricercatore.

Inoltre, comunica che già nell'Integrazione della Programmazione del Personale Docente e Ricercatore 2024/2026, in conseguenza delle posizioni attivate, sono stati re-inseriti i seguenti SSD tra le posizioni non in priorità:

- nella sezione PO, i settori CHEM-03/A e CHEM-05/A;
- nella sezione RTT/RTDb, i settori CHEM-02/A E CHEM-05/A.

Tale nota sarà ratificata nel prossimo Consiglio di Dipartimento che avrà luogo il prossimo 20 giugno 2025.

Cordiali saluti

Il Direttore
Prof. Stefano Menichetti

2 – PROGRAMMAZIONE TRIENNALE DEL PERSONALE DOCENTE E RICERCATORE

Obiettivo della sezione: In questa sezione il Dipartimento presenta i criteri di allocazione interna delle risorse per la programmazione triennale del personale docente e ricercatore, motivandoli in coerenza con la propria pianificazione strategica, con le indicazioni dell'Ateneo e con i risultati conseguiti nell'ambito della didattica, della ricerca e della terza missione.

Ambiti di valutazione AVA 3 – AQ dei Dipartimenti

E.DIP.3.2 Il Dipartimento definisce con chiarezza i criteri e le modalità di distribuzione interna delle risorse di personale docente, coerentemente con la propria pianificazione strategica, con le indicazioni dell'Ateneo e con i risultati conseguiti.

E.DIP.3.3 Il Dipartimento definisce i criteri di distribuzione di eventuali ulteriori incentivi e premialità per il personale docente oltre a quelli definiti a livello di Ateneo, sulla base di criteri e indicatori chiari e condivisi, coerenti con le proprie politiche e obiettivi e con la regolamentazione di Ateneo (tenendo conto anche degli esiti dei processi di monitoraggio e valutazione del MUR, dell'ANVUR e dell'Ateneo stesso).

E.DIP.4.1 Il Dipartimento dispone di risorse di personale docente e ricercatore adeguate all'attuazione della propria pianificazione strategica e delle attività istituzionali e gestionali.

Elementi di riferimento per la programmazione triennale del personale docente e ricercatore:

DAF > “Informazioni di supporto alla programmazione triennale”.

2.1 Criteri di ripartizione interna dei Punti Organico

Note per la compilazione: indicare i fattori che il Dipartimento considera prioritari o rilevanti nell'allocazione dei punti organico assegnati. Se il Dipartimento non adotta criteri diversi da quelli già stabiliti a livello di Ateneo, richiamarli brevemente. Se il Dipartimento ha adottato criteri e modalità specifiche per la distribuzione interna dei punti organico assegnati (es. per fabbisogni specifici, tra gruppi di ricerca, SSD...), riportarli sinteticamente, facendo riferimento al documento in cui sono stati approvati.

Il Dipartimento non ha criteri e modalità propri di distribuzione dei punti organico e utilizza quelli individuati prioritari a livello di Ateneo avendo come obiettivo lo sviluppo armonico del personale del Dipartimento declinato nei suoi Settori Scientifico Disciplinari di cui è referente avendo come obiettivo primario quello di mantenere sempre positive la derivate della produzione scientifica, attività didattica e di terza missione. Quindi le richieste di attivazione delle nuove procedure selettive sono state trovano coerenza negli obiettivi del Piano di Sviluppo Dipartimentale e risultano correlate alla "Qualità della Ricerca e dei prodotti della ricerca, alla capacità di attrarre talenti in un ambito diverso e inclusivo, all'ottimizzazione dell'offerta didattica nei 38 Corsi distudio e 7 Scuole nelle quali il DICUS è impegnato, e nelle azioni di terza missione. Infine, ogni volta che se ne è presentata l'occasione il DICUS ha deliberato di impegnare le seppur ristrette risorse in Punto Organico per l'assunzione diretta di vincitori di bandi competitivi come i Rita Levi Montalcini o FIS.

2.2 Programmazione

Note per la compilazione: riportare le richieste della programmazione triennale con le motivazioni approfondite per le proposte di reclutamento, in collegamento con i fabbisogni del Dipartimento, con i criteri sopra esposti e con le linee strategiche dipartimentali.

Nel corso del 2024 sono state attivate le seguenti procedure di reclutamento selettive impiegando PuOr attribuiti dall'Ateneo su FFO nell'ambito del Programmazione Triennale del personale docente e ricercatore 2024 - 2026 ordinaria o su Piano Straordinario:

1 PA CHIM02 - procedura valutativa ex art. 24, comma 5, della legge 240/2010 (procedura conclusa con presa di servizio)

1 PA CHIM06 - procedura valutativa ex art. 24, comma 5, della legge 240/2010 (procedura conclusa con presa di servizio)

1 CHIM/02 RTT ai sensi dell'art. 24, comma 3, della L. 240/2010 (procedura conclusa con presa di servizio nel 2025)

1 CHIM/03 RTDb ai sensi dell'art. 24, comma 3, della L. 240/2010

1 CHIM/04 RTDb ai sensi dell'art. 24, comma 3, della L. 240/2010 (procedura conclusa con presa di servizio nel 2025)

1 RTT CHIM/01 ai sensi dell'art. 24 co.1 bis della Legge 240/2010 (procedura attivata grazie al recupero di PuOr da trasferimento PO sullo stesso settore e conclusa con presa di servizio nel 2025)

1 PO CHEM-05/A ai sensi dell'art. 18 c.1 della Legge 240/2010

1 PO CHEM-03/A ai sensi dell' art. 18 c.1 della Legge 240/2010

1 RTT CHEM-02/A RTT ai sensi dell'art. 24 co.1 bis della Legge 240/2010

1 RTT CHEM-05/A ai sensi dell'art. 24, comma 3, della L. 240/2010

In conseguenza delle posizioni attivate, il CdD, su proposta della CIA, ha deciso di mettere in pari priorità gli SSD per le attivazioni della Programmazione del personale successiva (CHEM-01/A, CHEM-01/B, CHEM-02/A, CHEM-03/A, CHEM-05/A , CHEM-08/A per le posizioni di PO; CHEM-01/A, CHEM-01/B, CHEM-02/A, CHEM-03/A, CHEM-04/A, CHEM-05/A, CHEM-08/A per le posizioni di RTT/RTDb)

Su fondi del Dipartimento di Eccellenza 2023-2027 si è conclusa una procedura di reclutamento per 1 posizione di PO CHIM/01 ai sensi dell'art. 18 comma 4 ed il vincitore prenderà servizio nel 2025.

Nell'ambito della programmazione ordinaria 2021-2023 è stata attivata una procedura di reclutamento per 1 posizione di PO CHIM/02 ai sensi dell'art.18, comma 1, L. 240/2010, da cui è risultato un vincitore, la cui presa di servizio è al momento sospesa.

Nel 2024 sono state deliberate le chiamate dirette di 1 RTD/a CHEM-02/A nell'ambito del Programma Giovani Ricercatori "Rita Levi Montalcini" Bando 2021 ai sensi dell'art.24 della Legge 240/2010 e di 1 RTT CHEM-03/A ai sensi dell'art.24 c.3 della Legge 240/2020 quale vincitore del programma FIS – Fondo Italiano per la Scienza (Bando FIS 2).

Allegato 15.3 TABELLA DEF REV

Tabella 2 - Integrazione Programmazione triennale 2025-27																			
	PO						PA						RTT/RTDb)						
	Ordine di priorità	SSD	Tipo di procedura *	indicatori utilizzati	motivazione	Da attivare nel 2025	Ordine di priorità	SSD	Tipo di procedura *	indicatori utilizzati	motivazione	Da attivare nel 2025	Ordine di priorità	SSD	Indicazione RTD B)/RTT**	indicatori utilizzati	motivazione	Da attivare nel 2025	
Dipartimento di Chimica	1--6	CHEM-01/A CHEM-01/B CHEM-02/A CHEM-03/A CHEM-05/A CHEM-08/A		qualità dei prodotti di ricerca	Ricerca	NO	1	CHEM-01/B	Qualità dei prodotti di ricerca (R1+R2 0,98).	Ricerca	NO	1--7	CHEM-01/A CHEM-01/B CHEM-02/A CHEM-03/A CHEM-04/A CHEM-05/A CHEM-08/A			CHEM-01/A Qualità dei prodotti di ricerca (R1+R2 1,08). Soglie ASN superate 100%; Progetti procapite finanziati 0.74, importo medio di 90504 €. CHEM-01/B Qualità dei prodotti di ricerca (R1+R2 0,98) CHEM-02/A Qualità dei prodotti di ricerca (R1+R2 1.0). Soglie ASN superate 100%; Settore con alta età media CHEM-03/A Qualità dei prodotti di ricerca (R1+R2 1,13). Progetti procapite finanziati 0.36, importo medio di 116.618 €. CHEM-04/A Qualità dei prodotti di ricerca (R1+R2 0,97). Progetti procapite finanziati 0.25, importo medio di 37.500 €. CHEM-05/A Qualità dei prodotti di ricerca (R1 + R2 0.98). Progetti procapite finanziati 0.65, importo medio di 64344€. CHEM-08/A Qualità dei prodotti di ricerca (R1+R2 0,98). Progetti procapite finanziati 0.20, importo medio di 59250€.	RICERCA	NO	
							2	CHEM-05/A	procedura valutativa ex art. 24, comma 5, della legge 240/2010	Qualità dei prodotti di ricerca (R1+R2 0,98). Progetti procapite finanziati 0.65, importo medio di 64344€.	Ricerca	SI							
							3	CHEM-01/A	procedura valutativa ex art. 24, comma 5, della legge 240/2010	Qualità dei prodotti di ricerca (R1+R2 1,08). Progetti procapite finanziati 0.74, importo medio di 90,474€.	Ricerca	SI							
							4--9	CHEM-03/A CHEM-05/A CHEM-02/A CHEM-03/A CHEM-01/A CHEM-02/A	procedura valutativa ex art. 24, comma 5, della legge 240/2010	Qualità dei prodotti di ricerca	Ricerca	NO							
La struttura della tabella non deve essere modificata																			
* L'indicazione del tipo di procedura è richiesta anche per i SSD approvati nella precedente programmazione																			
** In caso di RTT indicare anche gli eventuali vincoli ai sensi dell'art. 24 comma 1bis L. 240/2010, o ai sensi dell'art. 14 comma 6-septiesdecies del D.L.36/2022																			

Verbale della Commissione di indirizzo e autovalutazione (CIA) del Dipartimento di Chimica del 07/04/2025

La commissione si riunisce il giorno 07/04/2025 alle ore 16:00 presso la biblioteca del Dipartimento con l'Ordine del Giorno sotto riportato:

- 1. Comunicazioni**
- 2. Approvazione verbale**
- 3. Revisione Regolamento DICUS**
- 4. Fondi Internazionalizzazione 2025, II call**
- 5. Situazione Punti Organico**
- 6. Varie e eventuali**

La riunione si apre alle ore 16:07

Sono indicati con P i presenti, con G gli assenti giustificati e con A gli assenti

Membri effettivi:

Bilia Anna Rita	P
Cicchi Stefano	P
Fratini Emiliano	P
Furlanetto Sandra	P
Giorgi Claudia	G
Nativi Cristina	P
Pagliai Marco	P
Parmeggiani Camilla	P
Pierattelli Roberta	P
Ridi Francesca	P
Severi Mirko	P
Sorace Lorenzo	P
Trabocchi Andrea	P

Partecipanti senza diritto di voto:

Menichetti Stefano	P	(Direttore Dip.)
Abbate Dario	A	(RAD)

Presiede la seduta il Prof. Emiliano Fratini.

Il Prof. Mirko Severi assume le funzioni di segretario verbalizzante.

1. Comunicazioni

Il Direttore comunica che il giorno successivo si terrà il Collegio dei Direttori e che non ci sono comunicazioni di rilievo.

2. Approvazione verbale

Il Presidente pone in approvazione il verbale del 12/03/2025.

La CIA approva all'unanimità.

Il Presidente comunica che il verbale della seduta del 25/02/2025 verrà portato in approvazione nella prossima seduta.

3. Revisione Regolamento DICUS

Il Presidente comunica che in cartella condivisa è disponibile il materiale relativo alle variazioni effettuate sul regolamento del DICUS.

In particolare, sono stati modificati gli artt. 11, 16 e 17 del regolamento.

L'art. 11, riguardante la composizione e la modalità di designazione/elezione della CIA, viene aggiornato al comma 1 sostituendo i vecchi SSD con i nuovi GSD.

L'art. 16, che decreta la composizione e la modalità di designazione della Giunta di dipartimento, viene aggiornato al comma 1 con le nuove regole per la costituzione della Giunta e in altri commi (si veda il materiale in cartella condivisa).

L'art. 17 riguarda il funzionamento della Giunta di Dipartimento e viene modificato ai commi 1 e 3. Il Presidente pone in approvazione il nuovo regolamento del DICUS.

La CIA approva all'unanimità.

4. Fondi Internazionalizzazione 2025, II call

Il Presidente ricorda alla CIA che per quanto riguarda la seconda Call 2025 per i fondi destinati all'internazionalizzazione, a partire dal 01/02/2025 possono essere presentate richieste "a sportello" sulla base del Budget non speso e privilegiando l'ordine temporale dell'arrivo delle richieste. Il budget complessivo per il 2025 ammontava a 19000 €, di cui 4110 € sono stati assegnati nella prima Call e 7730 € sono già stati assegnati per richieste a sportello. Il residuo ammonta quindi a 7160 €.

Il Presidente comunica che sono pervenute altre tre richieste: 1 di tipo b1), 1 di tipo b3) e 1 di tipo c) (originariamente presentata come b1) come riportato nell'Allegato 1. Le tre richieste possono essere soddisfatte lasciando ancora un ulteriore residuo per l'Internazionalizzazione pari a 2725 €.

Il Presidente pone in approvazione.

La CIA approva all'unanimità.

5. Situazione Punti Organico

Il Presidente comunica che nelle riunioni del 18 marzo 2025 (Senato) e del 28 marzo 2025 (CdA) sono stati assegnati i PuOr ai vari Dipartimenti. Il 4 Aprile è stato comunicato il saldo su cui il DICUS può contare per la programmazione di quest'anno. La programmazione dovrà essere predisposta non più tardi del CdD di Maggio. Per questo anno, il tetto del debito contraibile per fare nuove posizioni sarà al massimo 0.05 PuOr. I costi per le varie posizioni sono quelli ministeriali: 1 PuOr per PO, 0.7 PuOr per PA, 0.5 PuOr per RTT + 0.2 PuOr (che l'Ateneo ammette come credito e che richiederà al momento del passaggio a PA e comunque non prima di un anno di attività dell'RTT). L'Ateneo inoltre richiede obbligatoriamente che gli RTD-A maturino un'anzianità di almeno 3 anni prima del passaggio a PA.

Per l'attivazione di nuovi RTT si terrà conto delle sofferenze didattiche calcolate sul SSD. Dovremo verificare che la sofferenza in un determinato SSD non sia riassorbibile da personale di altro SSD dello stesso GSD. È evidente che per una determinata posizione potremmo addurre altre motivazioni (ricerca o pensionamento), ma dovremmo prendere in considerazione l'ipotesi sopra, se culturalmente sensata. Tutte le nostre scelte andranno motivate accuratamente nella relazione annuale.

Come riportato dalla tabella in Allegato 2, la disponibilità effettiva per la programmazione del personale (colonna H) si ottiene dall'assegnazione 2025 (+0.828) aumentata dell'avanzo da piano straordinario (+0.111) ridotta per il debito su FFO 2024 (-0.434 derivati dalle posizioni: terza quota PO SSD CHIM04 e RTT SSD CHIM01) e del debito per i passaggi da RTDb a PA (-0.175). Gli 0.331 PuOr a disposizione non consentono di bandire alcuna posizione; quindi, la CIA propone di rimandare la programmazione al 2026.

La CIA approva all'unanimità.

6. Varie ed eventuali

Nessuna

La seduta si conclude alle ore 17:00.

Presidente: Prof. Emiliano Fratini

Segretario: Prof. Mirko Severi

Allegato 1

Laurati Marco	Castañeda-Priego, Ramón	Universidad de Guanajuato, Mexico	Opzione b1) - Mobilità di docenti nell'ambito di accordi di collaborazione scientifica e culturale	no	In Entrata	10	01/10/25	11/10/25	2,000 €	2,000 €						Accordo attivo, ok
Marrazza Giovanna	Vitale Iaria	Institute of Materials Science, Faculty of Engineering Christian-Albrechts-Universität zu Kiel	Opzione b3) - Mobilità da parte di dottorandi del terzo anno del corso che abbiano già consumato la loro quota o che il restante non copra interamente l'attività di ricerca proposta all'estero (università, centri di ricerca, largo scale)	si	In Uscita		Febbraio	luglio	3,000 €	560 €	140 €			Prin17		Dottorando su progetto PNRR "La Prof.ssa Marrazza ha chiesto nel 2023 e nel 2024 di accedere ai fondi dipartimentali ma ha poi in entrambi gli anni ritirato al sua richiesta in prossimità della fine dell'anno rendendo inutilizzabili i soldi impegnati e non spesi. Adesso la dottoranda e' in mobilità in Germania.
Giacomo Biagiotti	Giacomo Biagiotti	Asociación Centro de Investigación Cooperativa en Biotecnologías - CIC bioGUNE, Parque Científico y Tecnológico de Bizkaia, Edificio 801A, 48160 Derio (Bizkaia)	Opzione c) Mobilità di docenti per stipula di nuovi accordi di collaborazione scientifica e culturale	no	In Uscita	1 mese	30/06/2025 - 06/10/2025	11/07/2025 - 27/10/2025	2,500 €	1,875 €	625 €	25%		ricaten Richichi		Periodo di Training su CryoEM equivalente al nostro strumento. Esiste un accordo di ricerca fra i gruppi. Nel corso delle 2 visite il docente avvierà le pratiche per stipulare un accordo fra DICUS e CIC bioGUNE.

Allegato 2

	A	B	C	D	E	F	G	H	
DIPARTIMENTO	Saldo PuOr Piano Straordinario B DM 795/2023	Saldo PuOr a seguito azione strategica approvata agli Organi Giugno 2024 da addebitare/restituire al Dipartimenti	Situazione debito/credito su FFO 2024	Costi per attivazione procedure valutative ex art. 24 comma 6 approvate CdA 26 giugno 2024 e CdA 28 febbraio 2025	Assegnazione da modello 2025	Misure compensative Dipartimenti di Eccellenza 2023-2027	Quota PuOr a carico del Dipartimento per attivazione procedure 24 comma 5 nel 2025 pari al 25% - CdA 21 dicembre 2023	disponibilità effettiva 2025 H = A+B+C+D+E+F+G	Debito maturato su RTD b) Bando Montalcini, RTT Bando FISA e FIS2
CHIMICA 'UGO SCHIFF'	0,111		-0,434		0,829		-0,175	0,331	0,300



UNIVERSITÀ
DEGLI STUDI
FIRENZE

Dipartimento di Chimica
"Ugo Schiff"

Eccellenza 2023-2027



HR EXCELLENCE IN RESEARCH

[Allegato 16.1 Atto_nomina_relatore_ad_hoc_signed PROT](#)

ATTO DI NOMINA DI RELATORE AD HOC

Il Direttore del Dipartimento di Chimica "Ugo Schiff"
dell'Università degli Studi di Firenze

VISTO l'art. 24 della Legge 30 dicembre 2010, n. 240, recante disposizioni in materia di personale docente e ricercatore delle Università;

VISTO il "Regolamento in materia di ricercatori a tempo determinato ai sensi dell'articolo 24 della legge 30 dicembre 2010, n. 240" dell'Università degli Studi di Firenze, emanato con D.R. n. 467/2019 e successive modificazioni;

VISTO il contratto di lavoro a tempo determinato di tipo a) stipulato con il Dott. Walter Giurlani, afferente al Dipartimento di Chimica "Ugo Schiff", con decorrenza dal 01/02/2023 al 31/01/2026;

CONSIDERATA la necessità di acquisire una relazione sull'attività scientifica, didattica e gestionale svolta dal suddetto ricercatore, ai fini dell'eventuale proroga del contratto secondo quanto previsto dal vigente Regolamento;

RITENUTO opportuno procedere alla nomina di un relatore ad hoc per la redazione della suddetta relazione;

DECRETA

Art. 1 – Il Prof. Marco Pagliai, afferente al Dipartimento di Chimica "Ugo Schiff", è nominato relatore ad hoc per la redazione di una relazione sull'attività svolta dal Dott. Walter Giurlani durante il periodo di contratto a tempo determinato di tipo a).

Art. 2 – La relazione dovrà essere redatta in conformità a quanto previsto dal Regolamento in materia di ricercatori a tempo determinato ai sensi dell'art. 24 della Legge 240/2010 e trasmessa al Direttore del Dipartimento entro il 13 giugno 2025, al fine di consentire l'avvio della procedura di valutazione per l'eventuale proroga del contratto.

Il presente atto è trasmesso agli interessati e inserito agli atti del Dipartimento.

Il Direttore del Dipartimento
Prof. Stefano Menichetti

Allegato 16.2 Consenso ricercatore_firmato PROT

Consenso Rinnovo

RTD/a

All'attenzione del Prof. Stefano Menichetti

Direttore del Dipartimento di Chimica "Ugo Schiff"

Io sottoscritto Walter Giurlani, in servizio dal 01/02/2023 come ricercatore a tempo determinato ai sensi dell'art. 24, comma 3, lettera a), legge n. 240/2010 presso il Dipartimento di Chimica "Ugo Schiff" dell'Università di Firenze per il settore scientifico disciplinare CHEM-01/A e con contratto in scadenza il 31/01/2026 esprimo il mio consenso alla richiesta di proroga dei due anni del contratto, dal 01/02/2026 al 31/01/2028.

Sesto Fiorentino, 05/06/2025

Firma

Allegato 16.3 Relazione triennale RTDa_firmato PROT

Relazione sull'attività scientifica svolta dal 01/02/2023 al 05/06/2025

Walter Giurlani

05 giugno 2025

Presentazioni a seminari e convegni

- Seminario "Metodi innovativi per la realizzazione e l'analisi di rivestimenti" all'interno del workshop "Il trattamento delle superfici per gioielleria, oreficeria e accessori moda tra tradizione e innovazione" presso OROAREZZO 11/05/2025.
- PRiME 2024 ECS, Honolulu 6-11/10/24, Invited Talk "Nano-Sized Metal Deposition on Doped Silicon: Electrodeposition and Characterization".
- XXVIII Congresso Nazionale della Società Chimica Italiana (SCI2024) Milano 26-30/08/24, Talk "Determination of additives in copper plating baths by dynamic Electrochemical Impedance Spectroscopy (EIS)".
- Seminario "Tecnologie di finitura alternative o complementari: le caratteristiche dei processi PVD" all'interno del workshop "La filiera dell'accessorio metallico: innovazioni e prospettive" presso POLIMODA 23/05/2024.
- Conventional And High-Energy Spectroscopies For Inorganic, Organic And Biomolecular Surfaces And Interfaces - CHESS 2024, Brescia 21-25/02/2024, Invited Lecture "Data analysis supporting the Xray Probing of industrial coupons".
- 06/02/2024 Seminario "More sustainable electroplating formulations and innovative methods for the thickness determination of metal coatings" presso "Faculty of Non-Ferrous Metals, AGH University" a Cracovia
- 15th International Workshop On Electrodeposited Nanostructure (EDNANO-15), Metz 15-18/11/2023, Talk "The potential of pulsed current deposition: enhancing electroplating techniques for industrial applications".
- XXX Congresso della Divisione di Chimica Analitica, Vasto (CH) 17-21/09/23, Talk "Assessing intermetallic diffusion in electroplated gold Coatings: a combined EDS and XRF spectroscopic approach".
- Incontro di Spettroscopia Analitica (ISA 2023), Milano 14-16/06/23, Talk "Application of computational methods to analytical spectroscopy techniques for the characterization of films and metal alloys".
- 243rd ECS Meeting, Boston 28/05-2/06/23, Invited Talk "Electrodeposition of Manganese Arsenides (MnxAs) as Promising Candidates in Spintronics".

Periodi di visita in istituzioni internazionali

- Visiting Researcher per 3 mesi (02/12/2024 - 28/02/2025) presso all'Università AGH di Cracovia (Polonia) all'interno del programma "Short-Term Stays for Foreign Researchers" (Azione D11) per effettuare una ricerca in collaborazione sul tema "POB 7: Design, production, and testing of modern materials and technologies of the future" (proposal n. 11736).

Organizzazione di eventi

- Chief Organizer del congresso “International Workshop on Electrodeposited Nanostructures” (EDNANO-16), Firenze 10-12/04/2025

Partecipazione in progetti

- Made-in-Italy circolare e sostenibile -3A-ITALY su cui sono stato reclutato come RTD-a con impegno 100%.

Attività didattica

- A.a. 2024-25: 4 CFU (32 ore) per l’insegnamento “B032497 Superfici e rivestimenti di metalli e leghe: preparazione, analisi, caratterizzazione ed applicazioni” SSD CHIM/01, L.T. (DM 270/04) “B258 - Scienza dei materiali” dell’Università degli Studi di Firenze.
- A.a. 2023-24: 2 CFU (16 ore) per l’insegnamento “B031661 - Chimica organica e elementi di chimica analitica ambientale” SSD CHIM/06, L.T. (DM 270/04) “B246 - Design tessile e moda” dell’Università degli Studi di Firenze
- A.a. 2022-23: 2 CFU (16 ore) per l’insegnamento “B031661 - Chimica organica e elementi di chimica analitica ambientale” SSD CHIM/06, L.T. (DM 270/04) “B246 - Design tessile e moda” dell’Università degli Studi di Firenze

Pubblicazioni

- Giurlani, W.; Fidi, A.; Anselmi, E.; Pizzetti, F.; Bonechi, M.; Carretti, E.; Lo Nostro, P.*; Innocenti, M.* Specific ion effects on copper electroplating. *Colloids Surfaces B Biointerfaces* 2023, 225, 113287, doi:10.1016/j.colsurfb.2023.113287.
- Giurlani, W.*; Biffoli, F.; Fei, L.; Pizzetti, F.; Bonechi, M.; Fontanesi, C.; Innocenti, M.* Analytic procedure for the evaluation of copper intermetallic diffusion in electroplated gold coatings with energy dispersive X-ray microanalysis. *Anal. Chim. Acta* 2023, 1269, 341428, doi:10.1016/j.aca.2023.341428.
- Vorobyova, M.; Biffoli, F.; Giurlani, W.*; Martinuzzi, S.M.; Linser, M.; Caneschi, A.*; Innocenti, M. PVD for Decorative Applications: A Review. *Materials (Basel)*. 2023, 16, 4919, doi:10.3390/ma16144919.
- Kawondera, R.; Bonechi, M.; Maccioni, I.; Giurlani, W.; Salzillo, T.; Venuti, E.; Mishra, D.; Fontanesi, C.; Innocenti, M.*; Mehla, G.; Mtangi, W*. Chiral “doped” MOFs: an electrochemical and theoretical integrated study. *Front. Chem.* 2023, 11, 1–11, doi:10.3389/fchem.2023.1215619.
- Stefani, A.; Innocenti, M.; Giurlani, W.; Calisi, N.; Pedio, M.; Felici, R.; Favaretto, L.; Melucci, M.; Zanardi, C.; Jones, A.C.; Mishra, S.; Zema, N.; Fontanesi, C.* Spin-dependent charge transmission through chiral 2T3N self-assembled monolayer on Au. *J. Chem. Phys.* 2023, 159, doi:10.1063/5.0151350.
- Campeggio, J.; Giurlani, W.; Pagliai, M.; Innocenti, M.; Fontanesi, C.; Chelli, R.* Insights into the Rate-Determining Step of the Ethanol Electro-oxidation Reaction on the Pd(111) Surface through Ab Initio Molecular Dynamics Simulations. *J. Phys. Chem. C* 2023, 127, 21075–21084, doi:10.1021/acs.jpcc.3c04587.
- Bonechi, M.; Marchetti, A.; Giurlani, W.; Vanossi, D.; Pasquali, L.; Campidelli, S.; Fontanesi, C.*; Innocenti, M.* Electrochemical growth of PAH-dendrimers supramolecular films. An integrated

experimental-theoretical approach. *Electrochim. Acta* 2024, 474, 143435, doi:10.1016/j.electacta.2023.143435.

- Monini, V.; Bonechi, M.*; Bazzicalupi, C.*; Bianchi, A.; Gentilesca, P.; Giurlani, W.; Innocenti, M.; Meoli, A.; Romano, G.M.; Savastano, M.* Oxygen reduction reaction (ORR) in alkaline solution catalysed by an atomically precise catalyst based on a Pd(ii) complex supported on multi-walled carbon nanotubes (MWCNTs). *Electrochemical and structural considerations. Dalt. Trans.* 2024, doi:10.1039/D3DT03947A.
- Verrucchi, M.; Comparini, A.; Bonechi, M.; del Pace, I.; Zangari, G.; Giurlani, W.*; Innocenti, M.* Electrochemical spectroscopic analysis of additives in copper plating baths by DRT and multivariate approach. *J. Electroanal. Chem.* 2024, 954, 118045, doi:10.1016/j.jelechem.2024.118045.
- Mariani, E.*; Giurlani, W.; Verrucchi, M.; Dell'Aquila, V.; Lo Nostro, P.; Innocenti*, M. Pulse Electroplating of Gold-Nickel Alloys: Morphological and Aesthetic Improvement Compared to DC. *J. Electrochem. Soc.* 2024, 171, 012504, doi:10.1149/1945-7111/ad1d97.
- Bakari, Z.; Fichera, M.; El Ghadraoui, A.; Renai, L.; Giurlani, W.; Santianni, D.; Fibbi, D.; Bruzzoniti, M.C.; Del Bubba, M. Biochar from co-pyrolysis of biological sludge and woody waste followed by chemical and thermal activation: end-of-waste procedure for sludge management and biochar sorption efficiency for anionic and cationic dyes. *Environ. Sci. Pollut. Res.* 2024, 31, 35249–35265, doi:10.1007/s11356-024-33577-3.
- Biffoli, F.; Giurlani, W.*; Vorobyova, M.; Maccioni, I.; Giovani, C.; Salvi, M.; Cianfanelli, E.; Pagliai, M.; Innocenti, M.* Tailoring barrier layers design for haute couture through X-ray microanalysis: Insights and guidelines. *Heliyon* 2024, 10, e32147, doi:10.1016/j.heliyon.2024.e32147.
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- Felici, R.*; Baroni, T.; Carlà, F.; Cioffi, N.; Di Benedetto, F.; Fontanesi, C.; Giaccherini, A.; Giurlani, W.; Gonidec, M.; Lavacchi, A.; Berretti, E.; Marcantelli, P.; Montegrossi, G.; Bonechi, M.; Picca, R. A.; Poggini, L.; Russo, F.; Sportelli, M. C.; Torsi, L.; Innocenti, M.* On the Electrochemical Growth of a Crystalline p–n Junction From Aqueous Solutions. *Chem. – A Eur. J.* 2024, 202401403, 1–6, doi:10.1002/chem.202401403.
- Giurlani, W.; Pappaianni, G.; Biffoli, F.; Mariani, E.; Bonechi, M.; Giliberti, L.; Tufarelli, M.; Franzo, P.; Cianfanelli, E.; Innocenti, M.* What Is the Current State of Sustainability in the Decorative Electroplating Industry? A Close Look at New Practices and Advances. *Sustainability* 2024, 16, 5821, doi:10.3390/su16135821.
- Sestaioni, D.; Giurlani, W.; Ciacci, G.; Camagni, V.; Palladino, P.; Barucci, A.; Scarano*, S. Sustainable and effective reconditioning of SPR gold chips functionalized with molecularly imprinted polynorepinephrine. *Anal. Chim. Acta* 2024, 1321, 343037, doi:10.1016/j.aca.2024.343037.
- Aquilia, S.; Rosi, L.; Pinna, M.; Bianchi, S.; Giurlani, W.; Bonechi, M.; Ciardelli, F.*; Papini, A.M.*; Bello, C. Study of the Preparation and Properties of Chemically Modified Materials Based on Rapeseed Meal. *Biomolecules* 2024, 14, 982, doi:10.3390/biom14080982.
- R. Emanuele, A. Comparini, M. Verrucchi, I. Del Pace, A. Meoli, M. Vorobyova, W. Giurlani*, M. Innocenti*, Nickel release from 316L stainless steel following a Ni-free electroplating cycle, *Heliyon*. 10 (2024) e37125, doi:10.1016/j.heliyon.2024.e37125.
- F. Biffoli, I. Cartechini, M. Riccardi, W. Giurlani, M. Bonechi, C. Bazzicalupi, C. Fontanesi, M. Pagliai, M. Innocenti*, Clarifying the mechanism of actions of suppressor, brightener and sodium chloride in acid copper electrodeposition: A multidisciplinary approach for a many variable problem, *J. Electroanal. Chem.* 972 (2024) 118617, doi:10.1016/j.jelechem.2024.118617.

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- Pappaianni, G.; Montanari, F.; Bonechi, M.; Zangari, G.; Giurlani, W.*; Innocenti, M.* Electrodeposition of Nanostructured Metals on n-Silicon and Insights into Rhodium Deposition. *Nanomaterials* 2024, 14, 2042, doi:10.3390/nano14242042.
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- Verrucchi, M.; Pelagatti, A.; Biffoli, F.; Mariani, E.; Del Pace, I.; Giurlani, W.*; Bazzicalupi, C.; Innocenti, M.* Impact of electrodeposition parameters on hydrogen absorption and α - β phases formation in palladium electroplating. *J. Electroanal. Chem.* 2025, 987, 119108, doi:10.1016/j.jelechem.2025.119108.
- Biffoli, F.*; Corsi, P.; Riccardi, M.; Bazzicalupi, C.; Bonechi, M.; Fontanesi, C.; Giurlani, W.; Pagliai, M.*; Innocenti, M. Experimental and theoretical investigation of L-cysteine influence over the electrodeposition mechanism for a novel sustainable acid copper electroplating formulation. *Electrochim. Acta* 2025, 527, 146243, doi:10.1016/j.electacta.2025.146243.

Attività di ricerca

- Guest Editor dello Special Issue "Advances in Thin-Film Deposition via Plasma-Assisted and Pulsed Laser Techniques" del giornale *Materials* ISSN 1996-1944
- Review Editor della divisione Analytical Chemistry del giornale *Frontiers in Chemistry* ISSN 2296-2646
- Co-supervisore Claudia Giovani Dottorato in Scienze Chimiche XL ciclo dell'Università degli Studi di Firenze "Sustainable metal deposition for the production and optimization of innovative smart devices" CHEM-01/A
- Co-supervisore Giulio Pappaianni Dottorato in Scienze Chimiche XXXVIII ciclo dell'Università degli Studi di Firenze "Electrodeposition and modification of surfaces of technological interest with low environmental impact" CHIM/01
- Relatore e co-relatore di 15 studenti per la laurea in Chimica L-27 e laurea magistrale in Scienze Chimiche LM-54.
- PRiME 2024 (ECS) Travel Grant
- Premio del Gruppo di Spettroscopia Analitica "Ambrogio Mazzucotelli"
- 243rd ECS Meeting Travel Grant

Data

...05/06/2025....

Firma

.....

UNIVERSITÀ
DEGLI STUDI
FIRENZEDipartimento di Chimica
"Ugo Schiff"
Eccellenza 2023-2027

HR EXCELLENCE IN RESEARCH

Allegato 16.4 Relazione_Pagliai_fto PROT

Al Prof. Stefano Menichetti
Direttore del Dipartimento di Chimica "Ugo Schiff"**RELAZIONE PER IL RINNOVO DI UN CONTRATTO RTD-a**

Io sottoscritto Prof. Marco Pagliai, afferente al Dipartimento di Chimica "Ugo Schiff" dell'Università di Firenze, nominato relatore ad hoc per la proroga del contratto di RTD-a del SSD CHEM-01/A del Dott. Walter Giurlani, invio la relazione sull'attività scientifica e didattica effettuata dal Dott. Giurlani nel periodo di attività presso il nostro dipartimento.

Il dott. Walter Giurlani ha preso servizio il 1° febbraio 2023.

Nel periodo di servizio, fino ad ora, ha avuto una produzione scientifica molto intensa, che consta di 24 pubblicazioni. Le pubblicazioni (tutte già apparse) hanno mediamente una collocazione editoriale molto buona, talvolta ottima, e rivelano una produzione scientifica di elevata qualità e intensità, caratterizzata da originalità e rigore metodologico. Testimoniano inoltre la grande capacità di collaborazione del Dott. Giurlani, sia a livello locale che a livello nazionale e internazionale, rivelando un ottimo inserimento nella vita scientifica del nostro Dipartimento e un buon network di collaborazioni nazionali e straniere.

Il Dott. Giurlani ha inoltre tenuto numerosi seminari a conferenze nazionali e internazionali, ha effettuato una visita di 3 mesi (dal 02/12/2024 al 28/02/2025) presso l'Università AGH di Cracovia ed ha partecipato all'organizzazione del congresso internazionale EDNANO-16 (International Workshop on Electrodeposited Nanostructures, Firenze 10-12 aprile 2025). Il Dott. Giurlani sta partecipando al progetto PE11 - Made-in-Italy circolare e sostenibile - 3A-ITALY, sul quale è stato reclutato come RTD-a.

All'intensa ed eccellente attività scientifica, il Dott. Giurlani ha accompagnato un'attività didattica altrettanto intensa e di qualità, svolgendo con successo i corsi assegnatigli dal Dipartimento presso il corso di laurea in Scienza dei Materiali ([B032497] Superfici e rivestimenti di metalli e leghe: preparazione, analisi, caratterizzazione ed applicazioni) della Scuola di Scienze Matematiche, Fisiche e Naturali e presso il corso di laurea in Design Tessile e Moda ([B031661] Chimica organica e elementi di chimica analitica ambientale) della Scuola di Architettura.

Infine, il Dott. Giurlani ha dato anche un ottimo contributo all'attività del gruppo del Laboratorio di Elettrochimica Applicata (LEA).

Per tutte queste ragioni, ritengo il Dott. Walter Giurlani un ottimo membro del Dipartimento, che ha dato e potrà continuare a dare un eccellente contributo sotto tutti gli aspetti, e sostengo pertanto convintamente la richiesta di proroga del suo contratto da RTD-a.

Sesto Fiorentino, il 06/06/2025

Relatore ad Hoc
Prof. Marco Pagliai

SCRITTURA COAN

Esercizio						UA budget				
2025						UA.A - UNIVERSITA' DEGLI STUDI DI FIRENZE				
Tipo scrittura	Numero scrittura	Data Scrittura	Id Dg	Soggetto		Totale costi	Totale ricavi	Differenza	Quota aperta	
Anticipata	78537	05/06/2025		153619---SOGGETTI DIVERSI		108.122,52	0,00	-108.122,52	108.122,52	
Tipo Dg			Num DG		Data DG	UO Numerante	UO origine	Numero reg DG		Data Reg DG
Descrizione										
Proroga del Contratto di RTD/a del Dott. Walter Giurlani dal 01/02/2026 al 31/01/2028.										
Numero dettaglio	UA	Voce COAN	Tipo dim ana	Dim Ana	Progetto	Unità Lavoro	Ammontare	Quota aperta	Data Inizio	Data Fine
1	UA.A.DIP.58503 - Chimica 'Ugo Schiff' - DICUS	CO.04.01.05.01.02 .12 - Costi per ricercatori a tempo determinato	D - Dimensioni analitiche	D.TRASFINT - Trasferimenti interni	Innoluxottica2022---"Studio ed analisi del rilascio nickel dell'acciaio AISI 316L a seguito di trattamenti galvanici"		18.390,00	18.390,00	05/06/2025	05/06/2025
2	UA.A.DIP.58503 - Chimica 'Ugo Schiff' - DICUS	CO.04.01.05.01.02 .12 - Costi per ricercatori a tempo determinato	D - Dimensioni analitiche	D.TRASFINT - Trasferimenti interni	INNOCENTI_VALME T_2024--- Elettrodeposizione e analisi di leghe metalliche Parte III		16.888,00	16.888,00	05/06/2025	05/06/2025
3	UA.A.DIP.58503 - Chimica 'Ugo Schiff' - DICUS	CO.04.01.05.01.02 .12 - Costi per ricercatori a tempo determinato	D - Dimensioni analitiche	D.TRASFINT - Trasferimenti interni	INNOCENTI-MARZOCCO2020--- Test e valutazioni Analitiche di sensori per l'analisi di acque ad uso alimentare		17.332,26	17.332,26	05/06/2025	05/06/2025
4	UA.A.DIP.58503 - Chimica 'Ugo Schiff' - DICUS	CO.04.01.05.01.02 .12 - Costi per ricercatori a tempo determinato	D - Dimensioni analitiche	D.TRASFINT - Trasferimenti interni	INNOCENTILOTTI--- contratto di ricerca conto terzi lotti srl		15.287,67	15.287,67	05/06/2025	05/06/2025

Numero dettaglio	UA	Voce COAN	Tipo dim ana	Dim Ana	Progetto	Unità Lavoro	Ammontare	Quota aperta	Data Inizio	Data Fine
5	UA.A.DIP.58503 - Chimica 'Ugo Schiff' - DICUS	CO.04.01.05.01.02 .12 - Costi per ricercatori a tempo determinato	D - Dimensioni analitiche	D.TRASFINT - Trasferimenti interni	Innocentitalprezio si2019---Studio delle problematiche legate al processo di fusione, affinazione, trattamento di metalli preziosi e loro caratterizzazione Chimica e Fisica		24.451,78	24.451,78	05/06/2025	05/06/2025
6	UA.A.DIP.58503 - Chimica 'Ugo Schiff' - DICUS	CO.04.01.05.01.02 .12 - Costi per ricercatori a tempo determinato	D - Dimensioni analitiche	D.TRASFINT - Trasferimenti interni	INNOCENTICREAZI ONI2022 RINNOV O---"Analisi di superfici e controlli di qualità in galvanica "		15.772,81	15.772,81	05/06/2025	05/06/2025



EUROPEAN RESEARCH EXECUTIVE AGENCY (REA)

REA.A – Marie Skłodowska-Curie Actions & Support to Experts
A.2 – MSCA Postdoctoral Fellowships

GRANT AGREEMENT

Project 101210218 — METALLICUS

PREAMBLE

This **Agreement** ('the Agreement') is **between** the following parties:

on the one part,

the **European Research Executive Agency (REA)** ('EU executive agency' or 'granting authority'),
under the powers delegated by the European Commission ('European Commission'),

and

on the other part,

1. 'the coordinator':

UNIVERSITA DEGLI STUDI DI FIRENZE (UNIFI), PIC 999895789, established in Piazza San Marco 4, Florence 50121, Italy,

Unless otherwise specified, references to 'beneficiary' or 'beneficiaries' include the coordinator and affiliated entities (if any).

If only one beneficiary signs the grant agreement ('mono-beneficiary grant'), all provisions referring to the 'coordinator' or the 'beneficiaries' will be considered — mutatis mutandis — as referring to the beneficiary.

The parties referred to above have agreed to enter into the Agreement.

By signing the Agreement and the accession forms, the beneficiaries accept the grant and agree to implement the action under their own responsibility and in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

The Agreement is composed of:

Preamble

Terms and Conditions (including Data Sheet)

Annex 1	Description of the action ¹
Annex 2	Estimated budget for the action
Annex 2a	Additional information on unit costs and contributions (if applicable)
Annex 3	Accession forms (if applicable) ²
Annex 3a	Declaration on joint and several liability of affiliated entities (if applicable) ³
Annex 4	Model for the financial statements
Annex 5	Specific rules (if applicable)

¹ Template published on [Portal Reference Documents](#).

² Template published on [Portal Reference Documents](#).

³ Template published on [Portal Reference Documents](#).

TERMS AND CONDITIONS

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DATA SHEET

1. General data

Project summary:

Project summary
Molecules with bonds between elements that should not normally share an electron pair provide important new knowledge of electronic structure. Studies of the various orbital overlaps between two d-block metals have made fundamental contributions to our understanding of bonding. Bonds involving an f-block metal ion, with even more orbitals, offer even greater potential contributions to new knowledge. Molecular complexes with d-4f metal bonds are extremely rare and those with 4f-4f metal bonding even more so. Rational design and precise synthesis of compounds exhibiting technologically desirable properties (i.e. magnetic, optical or catalytic properties) is challenging because we still lack the deep understanding of the structure-property relation and thus the synthetic capability to prepare them. The objective of METALLICUS is to open new vistas in our understanding of lanthanide-metal bonds using improved synthetic control and rational design of compounds containing 4f metal-metal bonds with outstanding magnetic properties. The project will bring together an international team of scientists to 1) design and synthesise new compounds containing d-4f and 4f-4f metal-metal bonds with a well-defined molecular architecture, and 2) investigate their unique chemical and physical nature using a multi-technique approach involving magnetism, spectroscopy and electrochemistry with the support of computational methods. METALLICUS is an ambitious research project that represents a concrete opportunity to advance knowledge of lanthanide bonding and develop new compounds with unprecedented magnetic properties. Chemistry and physics will collaborate to exceed the current limits of single molecule magnets (SMMs) and spintronic materials. The knowledge generated by METALLICUS will open new horizons in classical and quantum information technology, with further impact in critical areas such as rare earth separations and recovery.

Keywords:

- Atomic, molecular physics
- Coordination chemistry
- Molecular chemistry
- Organometallic chemistry
- Spectroscopic and spectrometric techniques
- Lanthanides, molecular magnetism, metal-metal bonding

Project number: 101210218

Project name: METAL-metal bonding in molecular LanthanIde CompoUndS

Project acronym: METALLICUS

Call: HORIZON-MSCA-2024-PF-01

Topic: HORIZON-MSCA-2024-PF-01-01

Type of action: HORIZON TMA MSCA Postdoctoral Fellowships - Global Fellowships

Granting authority: European Research Executive Agency

Grant managed through EU Funding & Tenders Portal: Yes (eGrants)

Project starting date: fixed date: 1 September 2025

Project end date: 31 August 2028

Project duration: 36 months

Consortium agreement: No

2. Participants

List of participants:

N°	Role	Short name	Legal name	Ctry	PIC	Total eligible contrib.	Max grant amount
1	COO	UNIFI	UNIVERSITA DEGLI STUDI DI FIRENZE	IT	999895789	420 751.08	420 751.08

N°	Role	Short name	Legal name	Ctry	PIC	Total eligible contrib.	Max grant amount
2	AP	UCLA	THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	US	999467340	0.00	0.00
Total						420 751.08	420 751.08

Coordinator:

- UNIVERSITA DEGLI STUDI DI FIRENZE (UNIFI)

3. Grant**Maximum grant amount, total estimated eligible costs and contributions and funding rate:**

Total eligible contributions (unit, flat-rate and lump sum contributions and financing not linked to costs)	Maximum grant amount (Annex 2)	Maximum grant amount (award decision)
420 751.08	420 751.08	420 751.08

Grant form: Unit**Grant mode:** Action grant**Budget categories/activity types:**

- A. Contributions for recruited researchers
 - A.1 Living allowance
 - A.2 Mobility allowance
 - A.3 Family allowance
 - A.4 Long-term leave allowance
 - A.5 Special needs allowance
- B. Institutional contributions
 - B.1 Research, training and networking contribution
 - B.2 Management and indirect contribution

Cost eligibility options:

- In-kind contributions eligible costs

Budget flexibility: Yes (flexibility with conditions)**4. Reporting, payments and recoveries****4.1 Continuous reporting** (art 21)**Deliverables:** see Funding & Tenders Portal Continuous Reporting tool**4.2 Periodic reporting and payments**

Reporting and payment schedule (art 21, 22):

Reporting					Payments	
Reporting periods			Type	Deadline	Type	Deadline (time to pay)
RP No	Month from	Month to				
					Initial prefinancing	30 days from entry into force/10 days before starting date – whichever is the latest
					Interim payment	90 days from receiving periodic report
					Final payment	90 days from receiving periodic report

Prefinancing payments and guarantees:

Prefinancing payment	
Type	Amount
Prefinancing 1 (initial)	294 525.76

Reporting and payment modalities (art 21, 22):

Mutual Insurance Mechanism (MIM): Yes

MIM contribution: 5% of the maximum grant amount (21 037.55), retained from the initial prefinancing

Restrictions on distribution of initial prefinancing: The prefinancing may be distributed only if the minimum number of beneficiaries set out in the call conditions (if any) have acceded to the Agreement and only to beneficiaries that have acceded.

Interim payment ceiling (if any): 90% of the maximum grant amount

No-profit rule: n/a

Late payment interest: ECB + 3.5%

Bank account for payments:

IT54X0623002813000047128792 CRPPIT2PXXX

Conversion into euros: n/a

Reporting language: Language of the Agreement

4.3 Certificates (art 24): n/a**4.4 Recoveries (art 22)****First-line liability for recoveries:**

Beneficiary termination: Beneficiary concerned

Final payment: Each beneficiary for their own debt



After final payment: Beneficiary concerned

Joint and several liability for enforced recoveries (in case of non-payment):

Individual financial responsibility: Each beneficiary is liable only for its own debts (and those of its affiliated entities, if any)

Joint and several liability of affiliated entities — n/a

5. Consequences of non-compliance, applicable law & dispute settlement forum

Suspension and termination:

Additional suspension grounds (art 31)

Additional termination grounds (art 32)

Applicable law (art 43):

Standard applicable law regime: EU law + law of Belgium

Dispute settlement forum (art 43):

Standard dispute settlement forum:

EU beneficiaries: EU General Court + EU Court of Justice (on appeal)

Non-EU beneficiaries: Courts of Brussels, Belgium (unless an international agreement provides for the enforceability of EU court judgements)

6. Other

Specific rules (Annex 5): Yes

Standard time-limits after project end:

Confidentiality (for X years after final payment): 5

Record-keeping (for X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

Reviews (up to X years after final payment): 2

Audits (up to X years after final payment): 2

Extension of findings from other grants to this grant (no later than X years after final payment): 2

Impact evaluation (up to X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

CHAPTER 1 GENERAL

ARTICLE 1 — SUBJECT OF THE AGREEMENT

This Agreement sets out the rights and obligations and terms and conditions applicable to the grant awarded for the implementation of the action set out in Chapter 2.

ARTICLE 2 — DEFINITIONS

For the purpose of this Agreement, the following definitions apply:

Actions — The project which is being funded in the context of this Agreement.

Grant — The grant awarded in the context of this Agreement.

EU grants — Grants awarded by EU institutions, bodies, offices or agencies (including EU executive agencies, EU regulatory agencies, EDA, joint undertakings, etc.).

Participants — Entities participating in the action as beneficiaries, affiliated entities, associated partners, third parties giving in-kind contributions, subcontractors or recipients of financial support to third parties.

Beneficiaries (BEN) — The signatories of this Agreement (either directly or through an accession form).

Affiliated entities (AE) — Entities affiliated to a beneficiary within the meaning of Article 187 of EU Financial Regulation 2018/1046⁴ which participate in the action with similar rights and obligations as the beneficiaries (obligation to implement action tasks and right to charge costs and claim contributions).

Associated partners (AP) — Entities which participate in the action, but without the right to charge costs or claim contributions.

Purchases — Contracts for goods, works or services needed to carry out the action (e.g. equipment, consumables and supplies) but which are not part of the action tasks (see Annex 1).

Subcontracting — Contracts for goods, works or services that are part of the action tasks (see Annex 1).

In-kind contributions — In-kind contributions within the meaning of Article 2(36) of EU Financial

⁴ For the definition, see Article 187 Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012 ('EU Financial Regulation') (OJ L 193, 30.7.2018, p. 1): "**affiliated entities** [are]:

- (a) entities that form a sole beneficiary [(i.e. where an entity is formed of several entities that satisfy the criteria for being awarded a grant, including where the entity is specifically established for the purpose of implementing an action to be financed by a grant)];
- (b) entities that satisfy the eligibility criteria and that do not fall within one of the situations referred to in Article 136(1) and 141(1) and that have a link with the beneficiary, in particular a legal or capital link, which is neither limited to the action nor established for the sole purpose of its implementation".

Regulation 2018/1046, i.e. non-financial resources made available free of charge by third parties to a beneficiary.

Fraud — Fraud within the meaning of Article 3 of EU Directive 2017/1371⁵ and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995⁶, as well as any other wrongful or criminal deception intended to result in financial or personal gain.

Irregularities — Any type of breach (regulatory or contractual) which could impact the EU financial interests, including irregularities within the meaning of Article 1(2) of EU Regulation 2988/95⁷.

Grave professional misconduct — Any type of unacceptable or improper behaviour in exercising one's profession, especially by employees, including grave professional misconduct within the meaning of Article 136(1)(c) of EU Financial Regulation 2018/1046.

Applicable EU, international and national law — Any legal acts or other (binding or non-binding) rules and guidance in the area concerned.

Portal — EU Funding & Tenders Portal; electronic portal and exchange system managed by the European Commission and used by itself and other EU institutions, bodies, offices or agencies for the management of their funding programmes (grants, procurements, prizes, etc.).

CHAPTER 2 ACTION

ARTICLE 3 — ACTION

The grant is awarded for the action **101210218 — METALLICUS** ('action'), as described in Annex 1.

ARTICLE 4 — DURATION AND STARTING DATE

The duration and the starting date of the action are set out in the Data Sheet (see Point 1).

CHAPTER 3 GRANT

ARTICLE 5 — GRANT

5.1 Form of grant

The grant is an action grant⁸ which takes the form of a unit grant.

⁵ Directive (EU) 2017/1371 of the European Parliament and of the Council of 5 July 2017 on the fight against fraud to the Union's financial interests by means of criminal law (OJ L 198, 28.7.2017, p. 29).

⁶ OJ C 316, 27.11.1995, p. 48.

⁷ Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

⁸ For the definition, see Article 180(2)(a) EU Financial Regulation 2018/1046: '**action grant**' means an EU grant to finance "an action intended to help achieve a Union policy objective".

5.2 Maximum grant amount

The maximum grant amount is set out in the Data Sheet (see Point 3) and in the estimated budget (Annex 2).

5.3 Funding rate

Not applicable

5.4 Estimated budget, budget categories and forms of funding

The estimated budget for the action is set out in Annex 2.

It contains the estimated eligible contributions for the action (unit contributions), broken down by participant and budget category.

Annex 2 also shows the types of contributions (forms of funding)⁹ to be used for each budget category.

The details on the calculation of the unit contributions will be explained in Annex 2a.

5.5 Budget flexibility

The budget breakdown may be adjusted — without an amendment (see Article 39) — by transfers of units between participants, as long as this does not imply any substantive or important change to the description of the action in Annex 1. Transfers between budget categories are not allowed.

ARTICLE 6 — ELIGIBLE AND INELIGIBLE CONTRIBUTIONS

6.1 General eligibility conditions

The **general eligibility conditions** for the unit contributions are the following:

(a) the units must:

- be actually used or produced by the beneficiary in the period set out in Article 4 (with the exception of units relating to the submission of the final periodic report, which may be used or produced afterwards; see Article 21)
- be necessary for the implementation of the action and

(b) the number of units must be identifiable and verifiable, in particular supported by records and documentation (see Article 20).

6.2 Specific eligibility conditions for each budget category

For each budget category, the **specific eligibility conditions** are as follows:

A. Contributions for recruited researchers

Contributions for recruited researchers (A.1 Living allowance, A.2 Mobility allowance, A.3 Family

⁹ See Article 125 EU Financial Regulation 2018/1046.

allowance, A.4 Long-term leave allowance and A.5 Special needs allowance) are eligible, if they fulfil the general eligibility conditions and are calculated as unit contributions in accordance with the method set out in Annex 2a, and if:

for A.1 Living allowance and A.2 Mobility allowance:

- (a) the number of units declared:
 - (i) corresponds to the number of months spent by the recruited researchers on the research training activities and
 - (ii) does not exceed the maximum number of months (per researcher) set out in the call conditions
- (b) the recruited researchers comply with the following conditions:
 - (i) be — at the date of the call deadline — a post-doctoral researcher (i.e. in possession of a doctoral degree¹⁰)
 - (ii) be recruited by the beneficiaries under an employment contract (or other direct contract with equivalent benefits, including social security coverage) or — if not otherwise possible under national law — under a fixed amount fellowship agreement with minimum social security coverage, including during periods of secondment
 - (iii) be employed full-time, unless the granting authority has approved a part-time employment for professional, personal or family reasons, and
 - (iv) be working exclusively for the action, unless part-time for professional reasons has been approved
- (c) the contributions have been fully incurred for the benefit of the recruited researchers

This condition is met if:

{ **total remuneration costs** (salaries, social security contributions, taxes and other costs included in the remuneration under the employment contract or other direct contract) or **total fixed-amount fellowship costs** for the researcher during the action

plus

total mobility costs (household, relocation and travel expenses and, if they must be paid under national law, taxes, duties and social security contributions) for the researcher during the action}

divided by

the number of actual units}.

is equal to or higher than the following amount:

{amount per unit contribution set out in Annex 2 as living allowance

plus

amount per unit contribution set out in Annex 2 as mobility allowance}.

¹⁰ As defined in the call conditions.

for A.3 Family allowance:

- (a) the recruited researchers have a family.

‘Family’ means persons linked to the researcher by marriage (or a relationship with equivalent status to a marriage recognised by the legislation of the country where this relationship was formalised) or dependent children who are actually being maintained by the researcher.

- (b) the number of units declared:

- (i) corresponds to the number of months spent by the recruited researchers with a family on the research training activities and
- (ii) does not exceed the maximum number of months (per researcher) set out in the call conditions.

- (c) the contributions have been fully incurred for the benefit of the recruited researchers

This condition is met if they have been fully used for the recruited researchers for whom they are claimed.

for A.4 Long-term leave¹¹ allowance:

- (a) the general and specific eligibility conditions for the living and mobility allowances were fulfilled before the long-term leave and
- (b) the number of units declared corresponds to the number of months paid by the beneficiary.

for A.5 Special needs allowance:

- (a) they are used for recruited researchers with disabilities whose long-term physical, mental, intellectual or sensory impairments are certified by a competent national authority and of such nature that their participation in the action would not be possible without the special needs items or services
- (b) the special needs items or services are not already covered from another source (such as social security or health insurance)
- (c) the number of units declared corresponds to the number of special needs units that were needed for implementing the action.

B. Institutional contributions

Institutional contributions (B.1 Research, training and networking contribution and B.2 Management and indirect contribution) are eligible, if they are calculated as unit contributions in accordance with the method set out in Annex 2a, and if the living and mobility allowances are eligible.

6.3 Ineligible contributions

‘Ineligible contributions’ are:

¹¹ Long-term leave includes maternity, paternity, parental, sick or special leave of more than 30 days.

- (a) units that do not comply with the conditions set out above (see Article 6.1 and 6.2)
- (b) units implemented during grant agreement suspension (see Article 31) and
- (c) units for activities already funded under other EU grants (or grants awarded by an EU Member State, non-EU country or other body implementing the EU budget), except for the following case:
 - (i) Synergy actions: not applicable
- (d) other:
 - (i) country restrictions for eligible costs: not applicable.

6.4 Consequences of non-compliance

If a beneficiary declares unit contributions that are ineligible, they will be rejected (see Article 27).

This may also lead to other measures described in Chapter 5.

CHAPTER 4 GRANT IMPLEMENTATION

SECTION 1 CONSORTIUM: BENEFICIARIES, AFFILIATED ENTITIES AND OTHER PARTICIPANTS

ARTICLE 7 — BENEFICIARIES

The beneficiaries, as signatories of the Agreement, are fully responsible towards the granting authority for implementing it and for complying with all its obligations.

They must implement the Agreement to their best abilities, in good faith and in accordance with all the obligations and terms and conditions it sets out.

They must have the appropriate resources to implement the action and implement the action under their own responsibility and in accordance with Article 11. If they rely on affiliated entities or other participants (see Articles 8 and 9), they retain sole responsibility towards the granting authority and the other beneficiaries.

They are jointly responsible for the *technical* implementation of the action. If one of the beneficiaries fails to implement their part of the action, the other beneficiaries must ensure that this part is implemented by someone else (without being entitled to an increase of the maximum grant amount and subject to an amendment; see Article 39). The *financial* responsibility of each beneficiary in case of recoveries is governed by Article 22.

The beneficiaries (and their action) must remain eligible under the EU programme funding the grant for the entire duration of the action. Unit contributions will be eligible only as long as the beneficiary and the action are eligible.

The **internal roles and responsibilities** of the beneficiaries are divided as follows:

(a) Each beneficiary must:

- (i) keep information stored in the Portal Participant Register up to date (see Article 19)
- (ii) inform the granting authority (and the other beneficiaries) immediately of any events or circumstances likely to affect significantly or delay the implementation of the action (see Article 19)
- (iii) submit to the coordinator in good time:
 - the prefinancing guarantees (if required; see Article 23)
 - the financial statements and certificates on the financial statements (CFS) (if required; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
 - the contribution to the deliverables and technical reports (see Article 21)
 - any other documents or information required by the granting authority under the Agreement
- (iv) submit via the Portal data and information related to the participation of their affiliated entities.

(b) The coordinator must:

- (i) monitor that the action is implemented properly (see Article 11)
- (ii) act as the intermediary for all communications between the consortium and the granting authority, unless the Agreement or granting authority specifies otherwise, and in particular:
 - submit the prefinancing guarantees to the granting authority (if any)
 - request and review any documents or information required and verify their quality and completeness before passing them on to the granting authority
 - submit the deliverables and reports to the granting authority
 - inform the granting authority about the payments made to the other beneficiaries (report on the distribution of payments; if required, see Articles 22 and 32)
- (iii) distribute the payments received from the granting authority to the other beneficiaries without unjustified delay (see Article 22).

The coordinator may not delegate or subcontract the above-mentioned tasks to any other beneficiary or third party (including affiliated entities).

However, coordinators which are public bodies may delegate the tasks set out in Point (b)(ii) last indent and (iii) above to entities with ‘authorisation to administer’ which they have created or which are controlled by or affiliated to them. In this case, the coordinator retains sole responsibility for the payments and for compliance with the obligations under the Agreement.

Moreover, coordinators which are ‘sole beneficiaries’¹² (or similar, such as European research infrastructure consortia (ERICs)) may delegate the tasks set out in Point (b)(i) to (iii) above to one of their members. The coordinator retains sole responsibility for compliance with the obligations under the Agreement.

The beneficiaries must have **internal arrangements** regarding their operation and co-ordination, to ensure that the action is implemented properly.

If required by the granting authority (see Data Sheet, Point 1), these arrangements must be set out in a written **consortium agreement** between the beneficiaries, covering for instance:

- the internal organisation of the consortium
- the management of access to the Portal
- different distribution keys for the payments and financial responsibilities in case of recoveries (if any)
- additional rules on rights and obligations related to background and results (see Article 16)
- settlement of internal disputes
- liability, indemnification and confidentiality arrangements between the beneficiaries.

The internal arrangements must not contain any provision contrary to this Agreement.

ARTICLE 8 — AFFILIATED ENTITIES

Not applicable

ARTICLE 9 — OTHER PARTICIPANTS INVOLVED IN THE ACTION

9.1 Associated partners

The following entities which cooperate with a beneficiary will participate in the action as ‘associated partners’:

- **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA (UCLA)**, PIC 999467340

Associated partners must implement the action tasks attributed to them in Annex 1 in accordance with Article 11. They may not charge contributions to the action (no unit contributions) and the costs for their tasks are not eligible.

The tasks must be set out in Annex 1.

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interests), 13 (confidentiality and security), 14 (ethics), 17.2

¹² For the definition, see Article 187(2) EU Financial Regulation 2018/1046: “Where several entities satisfy the criteria for being awarded a grant and together form one entity, that entity may be treated as the **sole beneficiary**, including where it is specifically established for the purpose of implementing the action financed by the grant.”

(visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the associated partners.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the associated partners.

9.2 Third parties giving in-kind contributions to the action

Other third parties may give in-kind contributions to the action (i.e. personnel, equipment, other goods, works and services, etc. which are free-of-charge) if necessary for the implementation.

Third parties giving in-kind contributions do not implement any action tasks. They may not charge contributions to the action (no unit contributions) and their costs are considered entirely covered by the unit contributions paid to the beneficiaries.

The third parties and their in-kind contributions should be set out in Annex 1.

9.3 Subcontractors

Subcontractors may participate in the action, if necessary for the implementation.

Subcontractors must implement their action tasks in accordance with Article 11. The beneficiaries' costs for subcontracting are considered entirely covered by the unit contributions (irrespective of the actual subcontracting costs incurred, if any).

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the subcontractors.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the subcontractors.

9.4 Recipients of financial support to third parties

If the action includes providing financial support to third parties (e.g. grants, prizes or similar forms of support), the beneficiaries must ensure that their contractual obligations under Articles 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the third parties receiving the support (recipients).

The beneficiaries must also ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the recipients.

ARTICLE 10 — PARTICIPANTS WITH SPECIAL STATUS

10.1 Non-EU participants

Participants which are established in a non-EU country (if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles,

environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)

- for the submission of certificates under Article 24: to use qualified external auditors which are independent and comply with comparable standards as those set out in EU Directive 2006/43/EC¹³
- for the controls under Article 25: to allow for checks, reviews, audits and investigations (including on-the-spot checks, visits and inspections) by the bodies mentioned in that Article (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.).

Special rules on dispute settlement apply (see Data Sheet, Point 5).

10.2 Participants which are international organisations

Participants which are international organisations (IOs; if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use either independent public officers or external auditors which comply with comparable standards as those set out in EU Directive 2006/43/EC
- for the controls under Article 25: to allow for the checks, reviews, audits and investigations by the bodies mentioned in that Article, taking into account the specific agreements concluded by them and the EU (if any).

For such participants, nothing in the Agreement will be interpreted as a waiver of their privileges or immunities, as accorded by their constituent documents or international law.

Special rules on applicable law and dispute settlement apply (see Article 43 and Data Sheet, Point 5).

10.3 Pillar-assessed participants

Pillar-assessed participants (if any) may rely on their own systems, rules and procedures, in so far as they have been positively assessed and do not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries.

‘Pillar-assessment’ means a review by the European Commission on the systems, rules and procedures which participants use for managing EU grants (in particular internal control system, accounting system, external audits, financing of third parties, rules on recovery and exclusion, information on recipients and protection of personal data; see Article 154 EU Financial Regulation 2018/1046).

Participants with a positive pillar assessment may rely on their own systems, rules and procedures, in particular for:

¹³ Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts or similar national regulations (OJ L 157, 9.6.2006, p. 87).



- record-keeping (Article 20): may be done in accordance with internal standards, rules and procedures
- currency conversion for financial statements (Article 21): may be done in accordance with usual accounting practices
- guarantees (Article 23): for public law bodies, prefinancing guarantees are not needed
- certificates (Article 24):
 - certificates on the financial statements (CFS): may be provided by their regular internal or external auditors and in accordance with their internal financial regulations and procedures
 - certificates on usual accounting practices (CoMUC): are not needed if those practices are covered by an ex-ante assessment

and use the following specific rules, for:

- recoveries (Article 22): in case of financial support to third parties, there will be no recovery if the participant has done everything possible to retrieve the undue amounts from the third party receiving the support (including legal proceedings) and non-recovery is not due to an error or negligence on its part
- checks, reviews, audits and investigations by the EU (Article 25): will be conducted taking into account the rules and procedures specifically agreed between them and the framework agreement (if any)
- impact evaluation (Article 26): will be conducted in accordance with the participant's internal rules and procedures and the framework agreement (if any)
- grant agreement suspension (Article 31): certain costs incurred during grant suspension are eligible (notably, minimum costs necessary for a possible resumption of the action and costs relating to contracts which were entered into before the pre-information letter was received and which could not reasonably be suspended, reallocated or terminated on legal grounds)
- grant agreement termination (Article 32): the final grant amount and final payment will be calculated taking into account also costs relating to contracts due for execution only after termination takes effect, if the contract was entered into before the pre-information letter was received and could not reasonably be terminated on legal grounds
- liability for damages (Article 33.2): the granting authority must be compensated for damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement only if the damage is due to an infringement of the participant's internal rules and procedures or due to a violation of third parties' rights by the participant or one of its employees or individual for whom the employees are responsible.

Participants whose pillar assessment covers procurement and granting procedures may also do purchases, subcontracting and financial support to third parties (Article 6.2) in accordance with their internal rules and procedures for purchases, subcontracting and financial support.

Participants whose pillar assessment covers data protection rules may rely on their internal standards, rules and procedures for data protection (Article 15).

The participants may however not rely on provisions which would breach the principle of equal treatment of applicants or beneficiaries or call into question the decision awarding the grant, such as in particular:

- eligibility (Article 6)
- consortium roles and set-up (Articles 7-9)
- security and ethics (Articles 13, 14)
- IPR (including background and results, access rights and rights of use), communication, dissemination and visibility (Articles 16 and 17)
- information obligation (Article 19)
- payment, reporting and amendments (Articles 21, 22 and 39)
- rejections, reductions, suspensions and terminations (Articles 27, 28, 29-32)

If the pillar assessment was subject to remedial measures, reliance on the internal systems, rules and procedures is subject to compliance with those remedial measures.

Participants whose assessment has not yet been updated to cover (the new rules on) data protection may rely on their internal systems, rules and procedures, provided that they ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subject
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the personal data.

Participants must inform the coordinator without delay of any changes to the systems, rules and procedures that were part of the pillar assessment. The coordinator must immediately inform the granting authority.

Pillar-assessed participants that have also concluded a framework agreement with the EU, may moreover — under the same conditions as those above (i.e. not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries) — rely on the provisions set out in that framework agreement.

SECTION 2 RULES FOR CARRYING OUT THE ACTION

ARTICLE 11 — PROPER IMPLEMENTATION OF THE ACTION

11.1 Obligation to properly implement the action

The beneficiaries must implement the action as described in Annex 1 and in compliance with the provisions of the Agreement, the call conditions and all legal obligations under applicable EU, international and national law.

11.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 12 — CONFLICT OF INTERESTS

12.1 Conflict of interests

The beneficiaries must take all measures to prevent any situation where the impartial and objective implementation of the Agreement could be compromised for reasons involving family, emotional life, political or national affinity, economic interest or any other direct or indirect interest ('conflict of interests').

They must formally notify the granting authority without delay of any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.

The granting authority may verify that the measures taken are appropriate and may require additional measures to be taken by a specified deadline.

12.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the beneficiary may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 13 — CONFIDENTIALITY AND SECURITY

13.1 Sensitive information

The parties must keep confidential any data, documents or other material (in any form) that is identified as sensitive in writing ('sensitive information') — during the implementation of the action and for at least until the time-limit set out in the Data Sheet (see Point 6).

If a beneficiary requests, the granting authority may agree to keep such information confidential for a longer period.

Unless otherwise agreed between the parties, they may use sensitive information only to implement the Agreement.

The beneficiaries may disclose sensitive information to their personnel or other participants involved in the action only if they:

- (a) need to know it in order to implement the Agreement and
- (b) are bound by an obligation of confidentiality.

The granting authority may disclose sensitive information to its staff and to other EU institutions and bodies.

It may moreover disclose sensitive information to third parties, if:

- (a) this is necessary to implement the Agreement or safeguard the EU financial interests and
- (b) the recipients of the information are bound by an obligation of confidentiality.

The confidentiality obligations no longer apply if:

- (a) the disclosing party agrees to release the other party
- (b) the information becomes publicly available, without breaching any confidentiality obligation
- (c) the disclosure of the sensitive information is required by EU, international or national law.

Specific confidentiality rules (if any) are set out in Annex 5.

13.2 Classified information

The parties must handle classified information in accordance with the applicable EU, international or national law on classified information (in particular, Decision 2015/444¹⁴ and its implementing rules).

Deliverables which contain classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving classified information may be subcontracted only after explicit approval (in writing) from the granting authority.

Classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

Specific security rules (if any) are set out in Annex 5.

13.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

¹⁴ Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 14 — ETHICS AND VALUES

14.1 Ethics

The action must be carried out in line with the highest ethical standards and the applicable EU, international and national law on ethical principles.

Specific ethics rules (if any) are set out in Annex 5.

14.2 Values

The beneficiaries must commit to and ensure the respect of basic EU values (such as respect for human dignity, freedom, democracy, equality, the rule of law and human rights, including the rights of minorities).

Specific rules on values (if any) are set out in Annex 5.

14.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 15 — DATA PROTECTION

15.1 Data processing by the granting authority

Any personal data under the Agreement will be processed under the responsibility of the data controller of the granting authority in accordance with and for the purposes set out in the Portal Privacy Statement.

For grants where the granting authority is the European Commission, an EU regulatory or executive agency, joint undertaking or other EU body, the processing will be subject to Regulation 2018/1725¹⁵.

15.2 Data processing by the beneficiaries

The beneficiaries must process personal data under the Agreement in compliance with the applicable EU, international and national law on data protection (in particular, Regulation 2016/679¹⁶).

They must ensure that personal data is:

¹⁵ Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39).

¹⁶ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC ('GDPR') (OJ L 119, 4.5.2016, p. 1).

- processed lawfully, fairly and in a transparent manner in relation to the data subjects
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the data.

The beneficiaries may grant their personnel access to personal data only if it is strictly necessary for implementing, managing and monitoring the Agreement. The beneficiaries must ensure that the personnel is under a confidentiality obligation.

The beneficiaries must inform the persons whose data are transferred to the granting authority and provide them with the Portal Privacy Statement.

15.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 16 — INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE

16.1 Background and access rights to background

The beneficiaries must give each other and the other participants access to the background identified as needed for implementing the action, subject to any specific rules in Annex 5.

‘Background’ means any data, know-how or information — whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights — that is:

- (a) held by the beneficiaries before they acceded to the Agreement and
- (b) needed to implement the action or exploit the results.

If background is subject to rights of a third party, the beneficiary concerned must ensure that it is able to comply with its obligations under the Agreement.

16.2 Ownership of results

The granting authority does not obtain ownership of the results produced under the action.

‘Results’ means any tangible or intangible effect of the action, such as data, know-how or information,

whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights.

16.3 Rights of use of the granting authority on materials, documents and information received for policy, information, communication, dissemination and publicity purposes

The granting authority has the right to use non-sensitive information relating to the action and materials and documents received from the beneficiaries (notably summaries for publication, deliverables, as well as any other material, such as pictures or audio-visual material, in paper or electronic form) for policy, information, communication, dissemination and publicity purposes — during the action or afterwards.

The right to use the beneficiaries' materials, documents and information is granted in the form of a royalty-free, non-exclusive and irrevocable licence, which includes the following rights:

- (a) **use for its own purposes** (in particular, making them available to persons working for the granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services)
- (b) **distribution to the public** (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes)
- (c) **editing or redrafting** (including shortening, summarising, inserting other elements (e.g. meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation)
- (d) **translation**
- (e) **storage** in paper, electronic or other form
- (f) **archiving**, in line with applicable document-management rules
- (g) the right to authorise **third parties** to act on its behalf or sub-license to third parties the modes of use set out in Points (b), (c), (d) and (f), if needed for the information, communication and publicity activity of the granting authority
- (h) **processing**, analysing, aggregating the materials, documents and information received and **producing derivative works**.

The rights of use are granted for the whole duration of the industrial or intellectual property rights concerned.

If materials or documents are subject to moral rights or third party rights (including intellectual property rights or rights of natural persons on their image and voice), the beneficiaries must ensure that they comply with their obligations under this Agreement (in particular, by obtaining the necessary licences and authorisations from the rights holders concerned).

Where applicable, the granting authority will insert the following information:

“© – [year] – [name of the copyright owner]. All rights reserved. Licensed to the [name of granting authority] under conditions.”

16.4 Specific rules on IPR, results and background

Specific rules regarding intellectual property rights, results and background (if any) are set out in Annex 5.

16.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

ARTICLE 17 — COMMUNICATION, DISSEMINATION AND VISIBILITY

17.1 Communication — Dissemination — Promoting the action

Unless otherwise agreed with the granting authority, the beneficiaries must promote the action and its results by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1 and in a strategic, coherent and effective manner.

Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority.

17.2 Visibility — European flag and funding statement

Unless otherwise agreed with the granting authority, communication activities of the beneficiaries related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge EU support and display the European flag (emblem) and funding statement (translated into local languages, where appropriate):



Funded by the
European Union



Co-funded by the
European Union



Funded by the
European Union



Co-funded by the
European Union

The emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text.

Apart from the emblem, no other visual identity or logo may be used to highlight the EU support.

When displayed in association with other logos (e.g. of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos.

For the purposes of their obligations under this Article, the beneficiaries may use the emblem without first obtaining approval from the granting authority. This does not, however, give them the right to exclusive use. Moreover, they may not appropriate the emblem or any similar trademark or logo, either by registration or by any other means.

17.3 Quality of information — Disclaimer

Any communication or dissemination activity related to the action must use factually accurate information.

Moreover, it must indicate the following disclaimer (translated into local languages where appropriate):

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them.”

17.4 Specific communication, dissemination and visibility rules

Specific communication, dissemination and visibility rules (if any) are set out in Annex 5.

17.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 18 — SPECIFIC RULES FOR CARRYING OUT THE ACTION

18.1 Specific rules for carrying out the action

Specific rules for implementing the action (if any) are set out in Annex 5.

18.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

SECTION 3 GRANT ADMINISTRATION

ARTICLE 19 — GENERAL INFORMATION OBLIGATIONS

19.1 Information requests

The beneficiaries must provide — during the action or afterwards and in accordance with Article 7 — any information requested in order to verify eligibility of the unit contributions declared, proper implementation of the action and compliance with the other obligations under the Agreement.

The information provided must be accurate, precise and complete and in the format requested, including electronic format.

19.2 Participant Register data updates

The beneficiaries must keep — at all times, during the action or afterwards — their information stored in the Portal Participant Register up to date, in particular, their name, address, legal representatives, legal form and organisation type.

19.3 Information about events and circumstances which impact the action

The beneficiaries must immediately inform the granting authority (and the other beneficiaries) of any of the following:

- (a) **events** which are likely to affect or delay the implementation of the action or affect the EU's financial interests, in particular:
 - (i) changes in their legal, financial, technical, organisational or ownership situation (including changes linked to one of the exclusion grounds listed in the declaration of honour signed before grant signature)
 - (ii) linked action information: not applicable
- (b) **circumstances** affecting:
 - (i) the decision to award the grant or
 - (ii) compliance with requirements under the Agreement.

19.4 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 20 — RECORD-KEEPING

20.1 Keeping records and supporting documents

The beneficiaries must — at least until the time-limit set out in the Data Sheet (see Point 6) — keep records and other supporting documents to prove the proper implementation of the action in line with the accepted standards in the respective field (if any).

In addition, the beneficiaries must — for the same period — keep adequate records and supporting documents to prove the number of units declared; beneficiaries do not need to keep specific records on the actual costs incurred.

The records and supporting documents must be made available upon request (see Article 19) or in the context of checks, reviews, audits or investigations (see Article 25).

If there are on-going checks, reviews, audits, investigations, litigation or other pursuits of claims under the Agreement (including the extension of findings; see Article 25), the beneficiaries must keep these records and other supporting documentation until the end of these procedures.

The beneficiaries must keep the original documents. Digital and digitalised documents are considered originals if they are authorised by the applicable national law. The granting authority may accept non-original documents if they offer a comparable level of assurance.

20.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, unit contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 21 — REPORTING

21.1 Continuous reporting

The beneficiaries must continuously report on the progress of the action (e.g. **deliverables, milestones, outputs/outcomes, critical risks, indicators**, etc; if any), in the Portal Continuous Reporting tool and in accordance with the timing and conditions it sets out (as agreed with the granting authority).

Standardised deliverables (e.g. progress reports not linked to payments, reports on cumulative expenditure, special reports, etc; if any) must be submitted using the templates published on the Portal.

21.2 Periodic reporting: Technical reports and financial statements

In addition, the beneficiaries must provide reports to request payments, in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2):

- for additional prefinancings (if any): an **additional prefinancing report**
- for interim payments (if any) and the final payment: a **periodic report**.

The prefinancing and periodic reports include a technical and financial part.

The technical part includes an overview of the action implementation. It must be prepared using the template available in the Portal Periodic Reporting tool.

The financial part of the additional prefinancing report includes a statement on the use of the previous prefinancing payment.

The financial part of the periodic report includes:

- the financial statements (individual and consolidated; for all beneficiaries/affiliated entities)
- the explanation on the use of resources (or detailed cost reporting table, if required)
- the certificates on the financial statements (CFS): not applicable.

The **financial statements** must detail the contributions for the units implemented in the reporting period.

Unit contributions which are not declared in a financial statement will not be taken into account by the granting authority.

By signing the financial statements (directly in the Portal Periodic Reporting tool), the beneficiaries confirm that:

- the information provided is complete, reliable and true
- the unit contributions declared are eligible (see Article 6)
- the contributions can be substantiated by adequate records and supporting documents (see Article 20) that will be produced upon request (see Article 19) or in the context of checks, reviews, audits and investigations (see Article 25)

Beneficiaries will have to submit also the financial statements of their affiliated entities (if any). In case of recoveries (see Article 22), beneficiaries will be held responsible also for the financial statements of their affiliated entities.

21.3 Currency for financial statements and conversion into euros

The financial statements must be drafted in euro.

21.4 Reporting language

The reporting must be in the language of the Agreement, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

21.5 Consequences of non-compliance

If a report submitted does not comply with this Article, the granting authority may suspend the payment deadline (see Article 29) and apply other measures described in Chapter 5.

If the coordinator breaches its reporting obligations, the granting authority may terminate the grant or the coordinator's participation (see Article 32) or apply other measures described in Chapter 5.

ARTICLE 22 — PAYMENTS AND RECOVERIES — CALCULATION OF AMOUNTS DUE

22.1 Payments and payment arrangements

Payments will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

They will be made in euro to the bank account indicated by the coordinator (see Data Sheet, Point 4.2) and must be distributed without unjustified delay (restrictions may apply to distribution of the initial prefinancing payment; see Data Sheet, Point 4.2).

Payments to this bank account will discharge the granting authority from its payment obligation.

The cost of payment transfers will be borne as follows:

- the granting authority bears the cost of transfers charged by its bank
- the beneficiary bears the cost of transfers charged by its bank
- the party causing a repetition of a transfer bears all costs of the repeated transfer.

Payments by the granting authority will be considered to have been carried out on the date when they are debited to its account.

22.2 Recoveries

Recoveries will be made, if — at beneficiary termination, final payment or afterwards — it turns out that the granting authority has paid too much and needs to recover the amounts undue.

Each beneficiary's financial responsibility in case of recovery is in principle limited to their own debt and undue amounts of their affiliated entities.

In case of enforced recoveries (see Article 22.4), affiliated entities will be held liable for repaying debts of their beneficiaries, if required by the granting authority (see Data Sheet, Point 4.4).

22.3 Amounts due

22.3.1 Prefinancing payments

The aim of the prefinancing is to provide the beneficiaries with a float.

It remains the property of the EU until the final payment.

For **initial prefinancings** (if any), the amount due, schedule and modalities are set out in the Data Sheet (see Point 4.2).

For **additional prefinancings** (if any), the amount due, schedule and modalities are also set out in the Data Sheet (see Point 4.2). However, if the statement on the use of the previous prefinancing payment shows that less than 70% was used, the amount set out in the Data Sheet will be reduced by the difference between the 70% threshold and the amount used.

The contribution to the Mutual Insurance Mechanism will be retained from the prefinancing payments

(at the rate and in accordance with the modalities set out in the Data Sheet, see Point 4.2) and transferred to the Mechanism.

Prefinancing payments (or parts of them) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.2 Amount due at beneficiary termination — Recovery

At beneficiary termination there will be no payment, but the grant must be provisionally closed for the beneficiary which leaves the consortium (and the affiliated entities which had to end their participation together with the beneficiary, if any).

Payments (if any) will be made with the next interim or final payment.

The **amount due** will be calculated in the following step:

Step 1 — Calculation of the total accepted EU contribution

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the 'accepted EU contribution' for the beneficiary for all reporting periods, by calculating the unit contributions for the accepted units.

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the 'total accepted EU contribution' for the beneficiary.

The **balance** is then calculated by deducting the payments received (if any; see report on the distribution of payments in Article 32), from the total accepted EU contribution:

$$\begin{aligned} & \{ \text{total accepted EU contribution for the beneficiary} \\ & \text{minus} \\ & \{ \text{prefinancing and interim payments received (if any)} \} \}. \end{aligned}$$

If the balance is **positive**, the amount will be included in the next interim or final payment to the consortium.

If the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount due, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered and ask this amount to be paid to the coordinator (**confirmation letter**).

If payment is not made to the coordinator by the date specified in the confirmation letter, the granting authority may call on the Mutual Insurance Mechanism to intervene, if continuation of the action is guaranteed and the conditions set out in the rules governing the Mechanism are met.

In this case, it will send a **beneficiary recovery letter**, together with a **debit note** with the terms and date for payment.

The debit note for the beneficiary will include the amount calculated for the affiliated entities which also had to end their participation (if any).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

The amounts will later on also be taken into account for the next interim or final payment.

22.3.3 Interim payments

Interim payments reimburse the eligible contributions claimed for the units implemented during the reporting periods (if any).

Interim payments (if any) will be made in accordance with the schedule and modalities set out the Data Sheet (see Point 4.2).

Payment is subject to the approval of the periodic report. Its approval does not imply recognition of compliance, authenticity, completeness or correctness of its content.

The **interim payment** will be calculated by the granting authority in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the interim payment ceiling

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the ‘accepted EU contribution’ for the action for the reporting period, by calculating the unit contributions for the accepted units.

After that, the granting authority will take into account grant reductions from beneficiary termination (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the interim payment ceiling

The resulting amount is then capped to ensure that the total amount of prefinancing and interim payments (if any) does not exceed the interim payment ceiling set out in the Data Sheet (see Point 4.2).

Interim payments (or parts of them) may be offset (without the beneficiaries’ consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency,



offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.4 Final payment — Final grant amount — Revenues and Profit — Recovery

The final payment (payment of the balance) reimburses the eligible contributions claimed for the remaining units implemented (if any).

The final payment will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

Payment is subject to the approval of the final periodic report. Its approval does not imply recognition of compliance, authenticity, completeness or correctness of its content.

The **final grant amount for the action** will be calculated in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the maximum grant amount

Step 3 — Reduction due to the no-profit rule

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the ‘accepted EU contribution’ for the action for all reporting periods, by calculating the unit contributions for the accepted units.

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the maximum grant amount

If the resulting amount is higher than the maximum grant amount set out in Article 5.2, it will be limited to the latter.

Step 3 — Reduction due to the no-profit rule

Not applicable

The **balance** (final payment) is then calculated by deducting the total amount of prefinancing and interim payments already made (if any), from the final grant amount:

$$\begin{aligned} &\{\text{final grant amount} \\ &\text{minus} \\ &\{\text{prefinancing and interim payments made (if any)}\}\}. \end{aligned}$$

If the balance is **positive**, it will be **paid** to the coordinator.

The amount retained for the Mutual Insurance Mechanism (see above) will be released and **paid** to the coordinator (in accordance with the rules governing the Mechanism).

The final payment (or part of it) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

If — despite the release of the Mutual Insurance Mechanism contribution — the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to recover, the final grant amount, the amount to be recovered and the reasons why
- requesting a report on the distribution of payments to the beneficiaries within 30 days of receiving notification and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received) and the coordinator has submitted the report on the distribution of payments, it will calculate the **share of the debt per beneficiary**, by:

- (a) identifying the beneficiaries for which the amount calculated as follows is negative:

$$\left\{ \left\{ \begin{array}{l} \text{total accepted EU contribution for the beneficiary} \\ \text{divided by} \\ \text{total accepted EU contribution for the action} \end{array} \right\} \times \left\{ \begin{array}{l} \text{final grant amount for the action} \\ \text{minus} \\ \text{prefinancing and interim payments received by the beneficiary (if any)} \end{array} \right\} \right\}$$

and

- (b) dividing the debt:

$$\left\{ \begin{array}{l} \text{amount calculated according to point (a) for the beneficiary concerned} \\ \text{divided by} \\ \text{the sum of the amounts calculated according to point (a) for all the beneficiaries identified according to point (a)} \end{array} \right\}$$

multiplied by

the amount to be recovered}.

and confirm the amount to be recovered from each beneficiary concerned (**confirmation letter**), together with **debit notes** with the terms and date for payment.

The debit notes for beneficiaries will include the amounts calculated for their affiliated entities (if any).

If the coordinator has not submitted the report on the distribution of payments, the granting authority will **recover** the full amount from the coordinator (**confirmation letter** and **debit note** with the terms and date for payment).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.3.5 Audit implementation after final payment — Revised final grant amount — Recovery

If — after the final payment (in particular, after checks, reviews, audits or investigations; see Article 25) — the granting authority rejects unit contributions (see Article 27) or reduces the grant (see Article 28), it will calculate the **revised final grant amount** for the beneficiary concerned.

The **beneficiary revised final grant amount** will be calculated in the following step:

Step 1 — Calculation of the revised total accepted EU contribution

Step 1 — Calculation of the revised total accepted EU contribution

The granting authority will first calculate the ‘revised accepted EU contribution’ for the beneficiary, by calculating the ‘revised accepted contributions’.

After that, it will take into account grant reductions (if any). The resulting ‘revised total accepted EU contribution’ is the beneficiary revised final grant amount.

If the revised final grant amount is lower than the beneficiary’s final grant amount (i.e. its share in the final grant amount for the action), it will be **recovered** in accordance with the following procedure:

The **beneficiary final grant amount** (i.e. share in the final grant amount for the action) is calculated as follows:

$$\left\{ \begin{array}{l} \{ \text{total accepted EU contribution for the beneficiary} \\ \text{divided by} \\ \text{total accepted EU contribution for the action} \} \\ \text{multiplied by} \\ \text{final grant amount for the action} \} \end{array} \right\}.$$

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered (**confirmation letter**), together with a **debit note** with the terms and the date for payment.

Recoveries against affiliated entities (if any) will be handled through their beneficiaries.

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.4 Enforced recovery

If payment is not made by the date specified in the debit note, the amount due will be recovered:

- (a) by offsetting the amount — without the coordinator or beneficiary's consent — against any amounts owed to the coordinator or beneficiary by the granting authority.

In exceptional circumstances, to safeguard the EU financial interests, the amount may be offset before the payment date specified in the debit note.

For grants where the granting authority is the European Commission or an EU executive agency, debts may also be offset against amounts owed by other Commission services or executive agencies.

- (b) financial guarantee(s): not applicable
- (c) joint and several liability of beneficiaries: not applicable
- (d) by holding affiliated entities jointly and severally liable (if any, see Data Sheet, Point 4.4)
- (e) by taking legal action (see Article 43) or, provided that the granting authority is the European Commission or an EU executive agency, by adopting an enforceable decision under Article 299 of the Treaty on the Functioning of the EU (TFEU) and Article 100(2) of EU Financial Regulation 2018/1046.

If the Mutual Insurance Mechanism was called on by the granting authority to intervene, recovery will be continued in the name of the Mutual Insurance Mechanism. If two debit notes were sent, the second one (in the name of the Mutual Insurance Mechanism) will be considered to replace the first one (in the name of the granting authority). Where the MIM intervened, offsetting, enforceable decisions or any other of the above-mentioned forms of enforced recovery may be used *mutatis mutandis*.

The amount to be recovered will be increased by **late-payment interest** at the rate set out in Article 22.5, from the day following the payment date in the debit note, up to and including the date the full payment is received.

Partial payments will be first credited against expenses, charges and late-payment interest and then against the principal.

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2015/2366¹⁷ applies.

¹⁷ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment

For grants where the granting authority is an EU executive agency, enforced recovery by offsetting or enforceable decision will be done by the services of the European Commission (see also Article 43).

22.5 Consequences of non-compliance

22.5.1 If the granting authority does not pay within the payment deadlines (see above), the beneficiaries are entitled to **late-payment interest** at the rate applied by the European Central Bank (ECB) for its main refinancing operations in euros ('reference rate'), plus the rate specified in the Data Sheet (Point 4.2). The reference rate is the rate in force on the first day of the month in which the payment deadline expires, as published in the C series of the *Official Journal of the European Union*.

If the late-payment interest is lower than or equal to EUR 200, it will be paid to the coordinator only on request submitted within two months of receiving the late payment.

Late-payment interest is not due if all beneficiaries are EU Member States (including regional and local government authorities or other public bodies acting on behalf of a Member State for the purpose of this Agreement).

If payments or the payment deadline are suspended (see Articles 29 and 30), payment will not be considered as late.

Late-payment interest covers the period running from the day following the due date for payment (see above), up to and including the date of payment.

Late-payment interest is not considered for the purposes of calculating the final grant amount.

22.5.2 If the coordinator breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the coordinator may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 23 — GUARANTEES

Not applicable

ARTICLE 24 — CERTIFICATES

Not applicable

ARTICLE 25 — CHECKS, REVIEWS, AUDITS AND INVESTIGATIONS — EXTENSION OF FINDINGS

25.1 Granting authority checks, reviews and audits

25.1.1 Internal checks

The granting authority may — during the action or afterwards — check the proper implementation

services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (OJ L 337, 23.12.2015, p. 35).

of the action and compliance with the obligations under the Agreement, including assessing unit contributions, deliverables and reports.

25.1.2 Project reviews

The granting authority may carry out reviews on the proper implementation of the action and compliance with the obligations under the Agreement (general project reviews or specific issues reviews).

Such project reviews may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiary concerned and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent, outside experts. If it uses outside experts, the coordinator or beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The coordinator or beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information and data in addition to deliverables and reports already submitted (including information on the use of resources). The granting authority may request beneficiaries to provide such information to it directly. Sensitive information and documents will be treated in accordance with Article 13.

The coordinator or beneficiary concerned may be requested to participate in meetings, including with the outside experts.

For **on-the-spot visits**, the beneficiary concerned must allow access to sites and premises (including to the outside experts) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the review findings, a **project review report** will be drawn up.

The granting authority will formally notify the project review report to the coordinator or beneficiary concerned, which has 30 days from receiving notification to make observations.

Project reviews (including project review reports) will be in the language of the Agreement, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

25.1.3 Audits

The granting authority may carry out audits on the proper implementation of the action and compliance with the obligations under the Agreement.

Such audits may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the beneficiary concerned and will be considered to start on the date of the notification.

The granting authority may use its own audit service, delegate audits to a centralised service or use external audit firms. If it uses an external firm, the beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information (including complete accounts, individual salary statements or other personal data) to verify compliance with the Agreement. Sensitive information and documents will be treated in accordance with Article 13.

For **on-the-spot** visits, the beneficiary concerned must allow access to sites and premises (including for the external audit firm) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the audit findings, a **draft audit report** will be drawn up.

The auditors will formally notify the draft audit report to the beneficiary concerned, which has 30 days from receiving notification to make observations (contradictory audit procedure).

The **final audit report** will take into account observations by the beneficiary concerned and will be formally notified to them.

Audits (including audit reports) will be in the language of the Agreement, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

25.2 European Commission checks, reviews and audits in grants of other granting authorities

Where the granting authority is not the European Commission, the latter has the same rights of checks, reviews and audits as the granting authority.

25.3 Access to records for assessing simplified forms of funding

The beneficiaries must give the European Commission access to their statutory records for the periodic assessment of simplified forms of funding which are used in EU programmes.

25.4 OLAF, EPPO and ECA audits and investigations

The following bodies may also carry out checks, reviews, audits and investigations — during the action or afterwards:

- the European Anti-Fraud Office (OLAF) under Regulations No 883/2013¹⁸ and No 2185/96¹⁹
- the European Public Prosecutor's Office (EPPO) under Regulation 2017/1939
- the European Court of Auditors (ECA) under Article 287 of the Treaty on the Functioning of the EU (TFEU) and Article 257 of EU Financial Regulation 2018/1046.

¹⁸ Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council of 11 September 2013 concerning investigations conducted by the European Anti-Fraud Office (OLAF) and repealing Regulation (EC) No 1073/1999 of the European Parliament and of the Council and Council Regulation (Euratom) No 1074/1999 (OJ L 248, 18/09/2013, p. 1).

¹⁹ Council Regulation (Euratom, EC) No 2185/96 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15/11/1996, p. 2).

If requested by these bodies, the beneficiary concerned must provide full, accurate and complete information in the format requested (including complete accounts, individual salary statements or other personal data, including in electronic format) and allow access to sites and premises for on-the-spot visits or inspections — as provided for under these Regulations.

To this end, the beneficiary concerned must keep all relevant information relating to the action, at least until the time-limit set out in the Data Sheet (Point 6) and, in any case, until any ongoing checks, reviews, audits, investigations, litigation or other pursuits of claims have been concluded.

25.5 Consequences of checks, reviews, audits and investigations — Extension of results of reviews, audits or investigations

25.5.1 Consequences of checks, reviews, audits and investigations in this grant

Findings in checks, reviews, audits or investigations carried out in the context of this grant may lead to rejections (see Article 27), grant reduction (see Article 28) or other measures described in Chapter 5.

Rejections or grant reductions after the final payment will lead to a revised final grant amount (see Article 22).

Findings in checks, reviews, audits or investigations during the action implementation may lead to a request for amendment (see Article 39), to change the description of the action set out in Annex 1.

Checks, reviews, audits or investigations that find systemic or recurrent errors, irregularities, fraud or breach of obligations in any EU grant may also lead to consequences in other EU grants awarded under similar conditions ('extension to other grants').

Moreover, findings arising from an OLAF or EPPO investigation may lead to criminal prosecution under national law.

25.5.2 Extension from other grants

Results of checks, reviews, audits or investigations in other grants may be extended to this grant, if:

- (a) the beneficiary concerned is found, in other EU grants awarded under similar conditions, to have committed systemic or recurrent errors, irregularities, fraud or breach of obligations that have a material impact on this grant and
- (b) those findings are formally notified to the beneficiary concerned — together with the list of grants affected by the findings — within the time-limit for audits set out in the Data Sheet (see Point 6).

The granting authority will formally notify the beneficiary concerned of the intention to extend the findings and the list of grants affected.

If the extension concerns **rejections of unit contributions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings
- (b) the request to submit revised financial statements for all grants affected
- (c) the correction rate for extrapolation, established on the basis of the systemic or recurrent errors, to calculate the amounts to be rejected, if the beneficiary concerned:

- (i) considers that the submission of revised financial statements is not possible or practicable or
- (ii) does not submit revised financial statements.

If the extension concerns **grant reductions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings and
- (b) the **correction rate for extrapolation**, established on the basis of the systemic or recurrent errors and the principle of proportionality.

The beneficiary concerned has **60 days** from receiving notification to submit observations, revised financial statements or to propose a duly substantiated **alternative correction method/rate**.

On the basis of this, the granting authority will analyse the impact and decide on the implementation (i.e. start rejection or grant reduction procedures, either on the basis of the revised financial statements or the announced/alternative method/rate or a mix of those; see Articles 27 and 28).

25.6 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, unit contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 26 — IMPACT EVALUATIONS

26.1 Impact evaluation

The granting authority may carry out impact evaluations of the action, measured against the objectives and indicators of the EU programme funding the grant.

Such evaluations may be started during implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiaries and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent outside experts.

The coordinator or beneficiaries must provide any information relevant to evaluate the impact of the action, including information in electronic format.

26.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the granting authority may apply the measures described in Chapter 5.

CHAPTER 5 CONSEQUENCES OF NON-COMPLIANCE

SECTION 1 REJECTIONS AND GRANT REDUCTION

ARTICLE 27 — REJECTION OF CONTRIBUTIONS

27.1 Conditions

The granting authority will — at beneficiary termination, interim payment, final payment or afterwards — reject any unit contributions which are ineligible (see Article 6), in particular following checks, reviews, audits or investigations (see Article 25).

The rejection may also be based on the extension of findings from other grants to this grant (see Article 25).

Ineligible unit contributions will be rejected.

27.2 Procedure

If the rejection does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the rejection, the amounts and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the rejection (payment review procedure).

If the rejection leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

27.3 Effects

If the granting authority rejects unit contributions, it will deduct them from the contributions declared and then calculate the amount due (and, if needed, make a recovery; see Article 22).

ARTICLE 28 — GRANT REDUCTION

28.1 Conditions

The granting authority may — at beneficiary termination, final payment or afterwards — reduce the grant for a beneficiary, if:

- (a) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (see Article 25).

The amount of the reduction will be calculated for each beneficiary concerned and proportionate to the seriousness and the duration of the errors, irregularities or fraud or breach of obligations, by applying an individual reduction rate to their accepted EU contribution.

28.2 Procedure

If the grant reduction does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the reduction, the amount to be reduced and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the reduction (payment review procedure).

If the grant reduction leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

28.3 Effects

If the granting authority reduces the grant, it will deduct the reduction and then calculate the amount due (and, if needed, make a recovery; see Article 22).

SECTION 2 SUSPENSION AND TERMINATION

ARTICLE 29 — PAYMENT DEADLINE SUSPENSION

29.1 Conditions

The granting authority may — at any moment — suspend the payment deadline if a payment cannot be processed because:

- (a) the required report (see Article 21) has not been submitted or is not complete or additional information is needed
- (b) there are doubts about the amount to be paid (e.g. ongoing audit extension procedure, queries about eligibility, need for a grant reduction, etc.) and additional checks, reviews, audits or investigations are necessary, or
- (c) there are other issues affecting the EU financial interests.

29.2 Procedure

The granting authority will formally notify the coordinator of the suspension and the reasons why.

The suspension will **take effect** the day the notification is sent.

If the conditions for suspending the payment deadline are no longer met, the suspension will be **lifted** — and the remaining time to pay (see Data Sheet, Point 4.2) will resume.

If the suspension exceeds two months, the coordinator may request the granting authority to confirm if the suspension will continue.

If the payment deadline has been suspended due to the non-compliance of the report and the revised

report is not submitted (or was submitted but is also rejected), the granting authority may also terminate the grant or the participation of the coordinator (see Article 32).

ARTICLE 30 — PAYMENT SUSPENSION

30.1 Conditions

The granting authority may — at any moment — suspend payments, in whole or in part for one or more beneficiaries, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant.

If payments are suspended for one or more beneficiaries, the granting authority will make partial payment(s) for the part(s) not suspended. If suspension concerns the final payment, the payment (or recovery) of the remaining amount after suspension is lifted will be considered to be the payment that closes the action.

30.2 Procedure

Before suspending payments, the granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to suspend payments and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

At the end of the suspension procedure, the granting authority will also inform the coordinator.

The suspension will **take effect** the day after the confirmation notification is sent.

If the conditions for resuming payments are met, the suspension will be **lifted**. The granting authority will formally notify the beneficiary concerned (and the coordinator) and set the suspension end date.

During the suspension, no prefinancing will be paid to the beneficiaries concerned. For interim

payments, the periodic reports for all reporting periods except the last one (see Article 21) must not contain any financial statements from the beneficiary concerned (or its affiliated entities). The coordinator must include them in the next periodic report after the suspension is lifted or — if suspension is not lifted before the end of the action — in the last periodic report.

ARTICLE 31 — GRANT AGREEMENT SUSPENSION

31.1 Consortium-requested GA suspension

31.1.1 Conditions and procedure

The beneficiaries may request the suspension of the grant or any part of it, if exceptional circumstances — in particular *force majeure* (see Article 35) — make implementation impossible or excessively difficult.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the suspension takes effect; this date may be before the date of the submission of the amendment request and
- the expected date of resumption.

The suspension will **take effect** on the day specified in the amendment.

Once circumstances allow for implementation to resume, the coordinator must immediately request another **amendment** of the Agreement to set the suspension end date, the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the amendment. This date may be before the date of the submission of the amendment request.

During the suspension, no prefinancing will be paid. Moreover, no units may be implemented. Ongoing units must be interrupted and no new units may be started. Unit contributions for activities implemented during grant suspension are not eligible (see Article 6.3).

31.2 EU-initiated GA suspension

31.2.1 Conditions

The granting authority may suspend the grant or any part of it, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions,

submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or

- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant
- (c) other:
 - (i) linked action issues: not applicable
 - (ii) the action has lost its scientific or technological relevance

31.2.2 Procedure

Before suspending the grant, the granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to suspend the grant and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

The suspension will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification).

Once the conditions for resuming implementation of the action are met, the granting authority will formally notify the coordinator a **lifting of suspension letter**, in which it will set the suspension end date and invite the coordinator to request an amendment of the Agreement to set the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the lifting of suspension letter. This date may be before the date on which the letter is sent.

During the suspension, no prefinancing will be paid. Moreover, no units may be implemented. Ongoing units must be interrupted and no new units may be started. Unit contributions for activities implemented during suspension are not eligible (see Article 6.3).

The beneficiaries may not claim damages due to suspension by the granting authority (see Article 33).

Grant suspension does not affect the granting authority's right to terminate the grant or a beneficiary (see Article 32) or reduce the grant (see Article 28).

ARTICLE 32 — GRANT AGREEMENT OR BENEFICIARY TERMINATION

32.1 Consortium-requested GA termination

32.1.1 Conditions and procedure

The beneficiaries may request the termination of the grant.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the consortium ends work on the action ('end of work date') and
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

The termination will **take effect** on the termination date specified in the amendment.

If no reasons are given or if the granting authority considers the reasons do not justify termination, it may consider the grant terminated improperly.

32.1.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the unit contributions for activities implemented before the end of work date (see Article 22).

If the granting authority does not receive the report within the deadline, only unit contributions which are included in an approved periodic report will be taken into account (no contributions if no periodic report was ever approved).

Improper termination may lead to a grant reduction (see Article 28).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.2 Consortium-requested beneficiary termination

32.2.1 Conditions and procedure

The coordinator may request the termination of the participation of one or more beneficiaries, on request of the beneficiary concerned or on behalf of the other beneficiaries.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the opinion of the beneficiary concerned (or proof that this opinion has been requested in writing)
- the date the beneficiary ends work on the action ('end of work date')

- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

If the termination concerns the coordinator and is done without its agreement, the amendment request must be submitted by another beneficiary (acting on behalf of the consortium).

The termination will **take effect** on the termination date specified in the amendment.

If no information is given or if the granting authority considers that the reasons do not justify termination, it may consider the beneficiary to have been terminated improperly.

32.2.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement and the explanation on the use of resources
- (iii) a second **request for amendment** (see Article 39) with other amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report submitted and taking into account the unit contributions for activities implemented before the end of work date (see Article 22).

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only unit contributions which are included in an approved periodic report will be taken into account (no contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the second request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the second request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

Improper termination may lead to a reduction of the grant (see Article 31) or grant termination (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.3 EU-initiated GA or beneficiary termination

32.3.1 Conditions

The granting authority may terminate the grant or the participation of one or more beneficiaries, if:

- (a) one or more beneficiaries do not accede to the Agreement (see Article 40)
- (b) a change to the action or the legal, financial, technical, organisational or ownership situation of a beneficiary is likely to substantially affect the implementation of the action or calls into question the decision to award the grant (including changes linked to one of the exclusion grounds listed in the declaration of honour)
- (c) following termination of one or more beneficiaries, the necessary changes to the Agreement (and their impact on the action) would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (d) implementation of the action has become impossible or the changes necessary for its continuation would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (e) a beneficiary (or person with unlimited liability for its debts) is subject to bankruptcy proceedings or similar (including insolvency, winding-up, administration by a liquidator or court, arrangement with creditors, suspension of business activities, etc.)
- (f) a beneficiary (or person with unlimited liability for its debts) is in breach of social security or tax obligations
- (g) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has been found guilty of grave professional misconduct
- (h) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed fraud, corruption, or is involved in a criminal organisation, money laundering, terrorism-related crimes (including terrorism financing), child labour or human trafficking
- (i) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) was created under a different jurisdiction with the intent to circumvent fiscal, social or other legal obligations in the country of origin (or created another entity with this purpose)
- (j) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
 - (i) substantial errors, irregularities or fraud or

- (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.)
- (k) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (extension of findings from other grants to this grant; see Article 25)
- (l) despite a specific request by the granting authority, a beneficiary does not request — through the coordinator — an amendment to the Agreement to end the participation of one of its affiliated entities or associated partners that is in one of the situations under points (d), (f), (e), (g), (h), (i) or (j) and to reallocate its tasks, or
- (m) other:
 - (i) linked action issues: not applicable
 - (ii) the action has lost its scientific or technological relevance

32.3.2 Procedure

Before terminating the grant or participation of one or more beneficiaries, the granting authority will send a **pre-information letter** to the coordinator or beneficiary concerned:

- formally notifying the intention to terminate and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the termination and the date it will take effect (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

For beneficiary terminations, the granting authority will — at the end of the procedure — also inform the coordinator.

The termination will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification; ‘termination date’).

32.3.3 Effects

(a) for GA termination:

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the last open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted (see Article 22). Only units implemented until termination will be accepted.

If the grant is terminated for breach of the obligation to submit reports, the coordinator may not submit any report after termination.

If the granting authority does not receive the report within the deadline, only unit contributions which are included in an approved periodic report will be taken into account (no contributions if no periodic report was ever approved).

Termination does not affect the granting authority's right to reduce the grant (see Article 28) or to impose administrative sanctions (see Article 34).

The beneficiaries may not claim damages due to termination by the granting authority (see Article 33).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

(b) for **beneficiary termination**:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement, and the explanation on the use of resources
- (iii) a **request for amendment** (see Article 39) with any amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report submitted (see Article 22). Only units implemented until termination will be accepted.

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only unit contributions included in an approved periodic report will be taken into account (no contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

SECTION 3 OTHER CONSEQUENCES: DAMAGES AND ADMINISTRATIVE SANCTIONS

ARTICLE 33 — DAMAGES

33.1 Liability of the granting authority

The granting authority cannot be held liable for any damage caused to the beneficiaries or to third parties as a consequence of the implementation of the Agreement, including for gross negligence.

The granting authority cannot be held liable for any damage caused by any of the beneficiaries or other participants involved in the action, as a consequence of the implementation of the Agreement.

33.2 Liability of the beneficiaries

The beneficiaries must compensate the granting authority for any damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement, provided that it was caused by gross negligence or wilful act.

The liability does not extend to indirect or consequential losses or similar damage (such as loss of profit, loss of revenue or loss of contracts), provided such damage was not caused by wilful act or by a breach of confidentiality.

ARTICLE 34 — ADMINISTRATIVE SANCTIONS AND OTHER MEASURES

Nothing in this Agreement may be construed as preventing the adoption of administrative sanctions (i.e. exclusion from EU award procedures and/or financial penalties) or other public law measures, in addition or as an alternative to the contractual measures provided under this Agreement (see, for instance, Articles 135 to 145 EU Financial Regulation 2018/1046 and Articles 4 and 7 of Regulation 2988/95²⁰).

SECTION 4 FORCE MAJEURE

ARTICLE 35 — FORCE MAJEURE

²⁰ Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

A party prevented by force majeure from fulfilling its obligations under the Agreement cannot be considered in breach of them.

‘Force majeure’ means any situation or event that:

- prevents either party from fulfilling their obligations under the Agreement,
- was unforeseeable, exceptional situation and beyond the parties’ control,
- was not due to error or negligence on their part (or on the part of other participants involved in the action), and
- proves to be inevitable in spite of exercising all due diligence.

Any situation constituting force majeure must be formally notified to the other party without delay, stating the nature, likely duration and foreseeable effects.

The parties must immediately take all the necessary steps to limit any damage due to force majeure and do their best to resume implementation of the action as soon as possible.

CHAPTER 6 FINAL PROVISIONS

ARTICLE 36 — COMMUNICATION BETWEEN THE PARTIES

36.1 Forms and means of communication — Electronic management

EU grants are managed fully electronically through the EU Funding & Tenders Portal (‘Portal’).

All communications must be made electronically through the Portal, in accordance with the Portal Terms and Conditions and using the forms and templates provided there (except if explicitly instructed otherwise by the granting authority).

Communications must be made in writing and clearly identify the grant agreement (project number and acronym).

Communications must be made by persons authorised according to the Portal Terms and Conditions. For naming the authorised persons, each beneficiary must have designated — before the signature of this Agreement — a ‘legal entity appointed representative (LEAR)’. The role and tasks of the LEAR are stipulated in their appointment letter (see Portal Terms and Conditions).

If the electronic exchange system is temporarily unavailable, instructions will be given on the Portal.

36.2 Date of communication

The sending date for communications made through the Portal will be the date and time of sending, as indicated by the time logs.

The receiving date for communications made through the Portal will be the date and time the communication is accessed, as indicated by the time logs. Formal notifications that have not been accessed within 10 days after sending, will be considered to have been accessed (see Portal Terms and Conditions).

If a communication is exceptionally made on paper (by e-mail or postal service), general principles apply (i.e. date of sending/receipt). Formal notifications by registered post with proof of delivery will be considered to have been received either on the delivery date registered by the postal service or the deadline for collection at the post office.

If the electronic exchange system is temporarily unavailable, the sending party cannot be considered in breach of its obligation to send a communication within a specified deadline.

36.3 Addresses for communication

The Portal can be accessed via the Europa website.

The address for paper communications to the granting authority (if exceptionally allowed) is the official mailing address indicated on its website.

For beneficiaries, it is the legal address specified in the Portal Participant Register.

ARTICLE 37 — INTERPRETATION OF THE AGREEMENT

The provisions in the Data Sheet take precedence over the rest of the Terms and Conditions of the Agreement.

Annex 5 takes precedence over the Terms and Conditions; the Terms and Conditions take precedence over the Annexes other than Annex 5.

Annex 2 takes precedence over Annex 1.

ARTICLE 38 — CALCULATION OF PERIODS AND DEADLINES

In accordance with Regulation No 1182/71²¹, periods expressed in days, months or years are calculated from the moment the triggering event occurs.

The day during which that event occurs is not considered as falling within the period.

‘Days’ means calendar days, not working days.

ARTICLE 39 — AMENDMENTS

39.1 Conditions

The Agreement may be amended, unless the amendment entails changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

Amendments may be requested by any of the parties.

39.2 Procedure

²¹ Regulation (EEC, Euratom) No 1182/71 of the Council of 3 June 1971 determining the rules applicable to periods, dates and time-limits (OJ L 124, 8/6/1971, p. 1).

The party requesting an amendment must submit a request for amendment signed directly in the Portal Amendment tool.

The coordinator submits and receives requests for amendment on behalf of the beneficiaries (see Annex 3). If a change of coordinator is requested without its agreement, the submission must be done by another beneficiary (acting on behalf of the other beneficiaries).

The request for amendment must include:

- the reasons why
- the appropriate supporting documents and
- for a change of coordinator without its agreement: the opinion of the coordinator (or proof that this opinion has been requested in writing).

The granting authority may request additional information.

If the party receiving the request agrees, it must sign the amendment in the tool within 45 days of receiving notification (or any additional information the granting authority has requested). If it does not agree, it must formally notify its disagreement within the same deadline. The deadline may be extended, if necessary for the assessment of the request. If no notification is received within the deadline, the request is considered to have been rejected.

An amendment **enters into force** on the day of the signature of the receiving party.

An amendment **takes effect** on the date of entry into force or other date specified in the amendment.

ARTICLE 40 — ACCESSION AND ADDITION OF NEW BENEFICIARIES

40.1 Accession of the beneficiaries mentioned in the Preamble

The beneficiaries which are not coordinator must accede to the grant by signing the accession form (see Annex 3) directly in the Portal Grant Preparation tool, within 30 days after the entry into force of the Agreement (see Article 44).

They will assume the rights and obligations under the Agreement with effect from the date of its entry into force (see Article 44).

If a beneficiary does not accede to the grant within the above deadline, the coordinator must — within 30 days — request an amendment (see Article 39) to terminate the beneficiary and make any changes necessary to ensure proper implementation of the action. This does not affect the granting authority's right to terminate the grant (see Article 32).

40.2 Addition of new beneficiaries

In justified cases, the beneficiaries may request the addition of a new beneficiary.

For this purpose, the coordinator must submit a request for amendment in accordance with Article 39. It must include an accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool.

New beneficiaries will assume the rights and obligations under the Agreement with effect from the date of their accession specified in the accession form (see Annex 3).

Additions are also possible in mono-beneficiary grants.

ARTICLE 41 — TRANSFER OF THE AGREEMENT

In justified cases, the beneficiary of a mono-beneficiary grant may request the transfer of the grant to a new beneficiary, provided that this would not call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiary must submit a request for **amendment** (see Article 39), with

- the reasons why
- the accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool and
- additional supporting documents (if required by the granting authority).

The new beneficiary will assume the rights and obligations under the Agreement with effect from the date of accession specified in the accession form (see Annex 3).

ARTICLE 42 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE GRANTING AUTHORITY

The beneficiaries may not assign any of their claims for payment against the granting authority to any third party, except if expressly approved in writing by the granting authority on the basis of a reasoned, written request by the coordinator (on behalf of the beneficiary concerned).

If the granting authority has not accepted the assignment or if the terms of it are not observed, the assignment will have no effect on it.

In no circumstances will an assignment release the beneficiaries from their obligations towards the granting authority.

ARTICLE 43 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES

43.1 Applicable law

The Agreement is governed by the applicable EU law, supplemented if necessary by the law of Belgium.

Special rules may apply for beneficiaries which are international organisations (if any; see Data Sheet, Point 5).

43.2 Dispute settlement

If a dispute concerns the interpretation, application or validity of the Agreement, the parties must bring action before the EU General Court — or, on appeal, the EU Court of Justice — under Article 272 of the Treaty on the Functioning of the EU (TFEU).

For non-EU beneficiaries (if any), such disputes must be brought before the courts of Brussels, Belgium — unless an international agreement provides for the enforceability of EU court judgements.

For beneficiaries with arbitration as special dispute settlement forum (if any; see Data Sheet, Point 5), the dispute will — in the absence of an amicable settlement — be settled in accordance with the Rules for Arbitration published on the Portal.

If a dispute concerns administrative sanctions, offsetting or an enforceable decision under Article 299 TFEU (see Articles 22 and 34), the beneficiaries must bring action before the General Court — or, on appeal, the Court of Justice — under Article 263 TFEU.

For grants where the granting authority is an EU executive agency (see Preamble), actions against offsetting and enforceable decisions must be brought against the European Commission (not against the granting authority; see also Article 22).

ARTICLE 44 — ENTRY INTO FORCE

The Agreement will enter into force on the day of signature by the granting authority or the coordinator, depending on which is later.

SIGNATURES

For the coordinator

For the granting authority



ANNEX 1



Horizon Europe (HORIZON)

Description of the action (DoA)

Part A

Part B

DESCRIPTION OF THE ACTION (PART A)

COVER PAGE

Part A of the Description of the Action (DoA) must be completed directly on the Portal Grant Preparation screens.

PROJECT	
Grant Preparation (General Information screen) — Enter the info.	
Project number:	101210218
Project name:	METAL-metal bonding in molecular LanthanIde CompoUndS
Project acronym:	METALLICUS
Call:	HORIZON-MSCA-2024-PF-01
Topic:	HORIZON-MSCA-2024-PF-01-01
Type of action:	HORIZON-TMA-MSCA-PF-GF
Service:	REA/A/02
Project starting date:	fixed date: 1 September 2025
Project duration:	36 months

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List of work packages 4

Staff effort 6

List of deliverables 7

List of milestones (outputs/outcomes) 9

List of critical risks 9

MSCA SE partner exchanges and overall funded exchanges 10

PROJECT SUMMARY

Project summary

Grant Preparation (General Information screen) — Provide an overall description of your project (including context and overall objectives, planned activities and main achievements, and expected results and impacts (on target groups, change procedures, capacities, innovation etc)). This summary should give readers a clear idea of what your project is about.

Use the project summary from your proposal.

Molecules with bonds between elements that should not normally share an electron pair provide important new knowledge of electronic structure. Studies of the various orbital overlaps between two d-block metals have made fundamental contributions to our understanding of bonding. Bonds involving an f-block metal ion, with even more orbitals, offer even greater potential contributions to new knowledge. Molecular complexes with d-4f metal bonds are extremely rare and those with 4f-4f metal bonding even more so. Rational design and precise synthesis of compounds exhibiting technologically desirable properties (i.e. magnetic, optical or catalytic properties) is challenging because we still lack the deep understanding of the structure-property relation and thus the synthetic capability to prepare them. The objective of METALLICUS is to open new vistas in our understanding of lanthanide-metal bonds using improved synthetic control and rational design of compounds containing 4f metal-metal bonds with outstanding magnetic properties. The project will bring together an international team of scientists to 1) design and synthesise new compounds containing d-4f and 4f-4f metal-metal bonds with a well-defined molecular architecture, and 2) investigate their unique chemical and physical nature using a multi-technique approach involving magnetism, spectroscopy and electrochemistry with the support of computational methods. METALLICUS is an ambitious research project that represents a concrete opportunity to advance knowledge of lanthanide bonding and develop new compounds with unprecedented magnetic properties. Chemistry and physics will collaborate to exceed the current limits of single molecule magnets (SMMs) and spintronic materials. The knowledge generated by METALLICUS will open new horizons in classical and quantum information technology, with further impact in critical areas such as rare earth separations and recovery.

LIST OF PARTICIPANTS

PARTICIPANTS

Grant Preparation (Beneficiaries screen) — Enter the info.

Number	Role	Short name	Legal name	Country	PIC
1	COO	UNIFI	UNIVERSITA DEGLI STUDI DI FIRENZE	IT	999895789
2	AP	UCLA	THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	US	999467340

LIST OF WORK PACKAGES

Work packages						
Grant Preparation (Work Packages screen) — Enter the info.						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverables
WP1	Research Data Management	1 - UNIFI	1.00	1	36	D1.1 – Data Management Plan D1.2 – Career Development Plan D1.3 – Communication, Dissemination & Exploitation Plan

Work package WP1 – Research Data Management

Work Package Number	WP1	Lead Beneficiary	1 - UNIFI
Work Package Name	Research Data Management		
Start Month	1	End Month	36

Objectives
Research Data Management

Description
Research Data Management

STAFF EFFORT

Staff effort per participant <i>Grant Preparation (Work packages - Effort screen) — Enter the info.</i>		
Participant	WP1	Total Person-Months
1 - UNIFI	1.00	1.00
Total Person-Months	1.00	1.00

LIST OF DELIVERABLES

Deliverables Grant Preparation (Deliverables screen) — Enter the info. The labels used mean: Public — fully open (🚩 automatically posted online) Sensitive — limited under the conditions of the Grant Agreement EU classified —RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision 2015/444						
Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D1.1	Data Management Plan	WP1	1 - UNIFI	DMP — Data Management Plan	PU - Public	6
D1.2	Career Development Plan	WP1	1 - UNIFI	R — Document, report	SEN - Sensitive	6
D1.3	Communication, Dissemination & Exploitation Plan	WP1	1 - UNIFI	R — Document, report	PU - Public	35

Deliverable D1.1 – Data Management Plan

Deliverable Number	D1.1	Lead Beneficiary	1 - UNIFI
Deliverable Name	Data Management Plan		
Type	DMP — Data Management Plan	Dissemination Level	PU - Public
Due Date (month)	6	Work Package No	WP1

Description			
The Data Management Plan describes the data management life cycle for all data sets that will be collected, processed or generated by the action. It is a document describing what data will be collected, processed or generated and following what methodology and standards, whether and how this data will be shared and/or made open, and how it will be curated and preserved.			

Deliverable D1.2 – Career Development Plan

Deliverable Number	D1.2	Lead Beneficiary	1 - UNIFI
Deliverable Name	Career Development Plan		
Type	R — Document, report	Dissemination Level	SEN - Sensitive
Due Date (month)	6	Work Package No	WP1

Description			
A Career Development Plan will be established jointly by the supervisor(s) and the researcher. In addition to research objectives, this plan will comprise the researcher's training and career needs, including training on transferable skills, teaching, planning for publications and participation in conferences and events aiming at opening science and research to citizens. The Plan can be updated when needed.			

Deliverable D1.3 – Communication, Dissemination & Exploitation Plan

Deliverable Number	D1.3	Lead Beneficiary	1 - UNIFI
Deliverable Name	Communication, Dissemination & Exploitation Plan		
Type	R — Document, report	Dissemination Level	PU - Public
Due Date (month)	35	Work Package No	WP1

Description			
The plan describes the planned measures to maximize the impact of the project, including the dissemination and exploitation measures that are planned, and the target group(s) addressed. Regarding communication measures and public engagement strategy, the aim is to inform and reach out to society and show the activities performed, and the use and the benefits the project will have for citizens.			

LIST OF MILESTONES

(None)

LIST OF CRITICAL RISKS

(None)

MSCA SE PARTNER EXCHANGES AND OVERALL FUNDED EXCHANGES

Partner exchanges							
Summary of secondment months per sending partner (beneficiaries and associated partners)							
Partner No	Partner Name	Country	Country Group	Academic Sector	Number of Secondment Months Period 1	Number of Secondment Months Period 2	Total Number of Secondment Months
Total					0	0	0

Overall funded exchanges					
Summary of secondment months funded by the EU per beneficiary (as sending partner + seconded to partner)					
Partner No	Partner Name	Country	Number of Secondment Months Period 1	Number of Secondment Months Period 2	Total Number of Secondment Months
Total			0	0	0

PART B TEMPLATE

----- Start of page count (max 10 pages) -----

[This document is tagged. Do not delete the tags; they are needed for processing.] #@APP-FORM-HEMSCAPF@#

Part B-1

1. Excellence #@REL-EVA-RE@#

1.1 *Quality and pertinence of the project's research and innovation objectives (and the extent to which they are ambitious, and go beyond the state of the art)*

1.1.1 State of the art (SoA) and extent to which the proposed work is achievable and ambitious.

In the last decades, **the 4f-block has gained increased attention thanks to the extraordinary properties of these metals** which have found several technological applications associated with informatics, telecommunications, renewable energies, illumination and displays, transport industry, sensors, and healthcare. Lanthanides have demonstrated potential as permanent magnets, single molecule magnets, molecular and ionic qubits, magnetic refrigerants, paramagnetic contrast agents, optical materials and catalysts. Notably, **the rarer species containing metal-metal bonds have led to revolutionary discoveries**. For instance, direct metal-metal bonding in Sm-Co and Nd-Fe-B type magnets permits the interaction between 4f electrons and 3d band of transition metals resulting in outstanding high temperature permanent magnetic behaviour.¹ Further, the recent isolation of dinuclear mixed valence compounds displaying supported half-order lanthanide-lanthanide bonding resulted in the largest coercive magnetic field ever detected for any molecular compound.^{2,3} Participation of the 5d lanthanide orbitals has been determined as crucial to the formation of lanthanide-metal bonding. These discoveries have inspired the recent interest in lanthanide-based compounds displaying metal-metal bonds and behaving as molecular magnets.²⁻⁸ However, **metal-metal interactions in the chemistry and physics of the f-elements are still largely uncharted**. **This scientific project will pioneer molecular design and synthesis of new classes of high-performance lanthanide-based molecular magnets where metal-metal bonding will be the key to unprecedented magnetic properties and novel technological applications**. Through a synergistic combination of chemistry and physics, METALLICUS will generate new knowledge that will lead to a new class of magnetic materials opening new vistas in classical and quantum information technology. METALLICUS will profit from the unique perturbation that metal-metal bonds, compared to metal-ligand bonds, can generate in metal ion electronic structures. This will be achieved by combining the best features of 4f- and d-metals, where the 4f ions provide the large magnetic anisotropy and higher energy, accessible d-orbitals, while d-metals provide the diffuse d orbitals. In fact, the radial extension of the s, p and d orbitals contrasts with the inner nature of the f orbitals, justifying the scarcity of lanthanide compounds displaying metal-metal bonds.⁹ However, our understanding of chemical bonding involving f elements is expanding. The scientific community has gradually begun to include a certain degree of covalence in the description of bonds formed by lanthanides ions, which have been traditionally considered purely ionic.¹⁰⁻¹² **Both Prof. P. L. Arnold and Prof. M. Perfetti have added substantial contributions to the SoA**. Prof. Arnold crystallised the first unsupported molecular 4f-3d metal-metal bond, and showed bonding trends in group 10 metal-uranium bonded complexes through careful synthetic methodologies.^{13,14} Prof. Perfetti unravelled the magnetic anisotropy of d-4f-d heterometallic species and found reversible switch of the magnetic anisotropy upon applying external stimuli such as temperature and magnetic field.¹⁵ Afterwards, Prof. Perfetti also demonstrated the less donating character of 4d-compared to 5d-block metal ions (i.e. Pd²⁺ vs Pt²⁺) in the bond with lanthanide centres.¹⁶ For my part, **I have conducted studies on monometallic f-complexes and multi-metallic f and d-f compounds bridged by homo- and hetero-topic ligands**, with a particular focus on magnetic properties in multifunctional systems.¹⁷⁻²² **A better understanding of lanthanide chemical bonding is essential for future chemo-physical developments, and compounds with metal-metal bonds offer a unique angle for this.**

1.1.2 R&I objectives: The project has four main experimental objectives (**fig.1**) with graded difficulty to guarantee both short-term high-level scientific results and long-term genuine innovation. Objectives 1-3 will be realised in Work Packages (WPs) 1a-c during the synthetic studies at the University of California, Berkeley (UCB). WP2 will

take place at the University of Florence (UNIFI) and will concern physical characterisations and rationalisation of magnetic properties in objective4.

○ **Obj1 [WP1.a] Provide the first extensive series of molecular compounds containing d-4f metal-metal bonds** that will supersede the known limited and specialist examples. New molecules will be targeted to obtain a **detailed comparison via precise modifications** of selected parameters such as the metal oxidation state, identity, ligand substituents and coordination geometry on the modulation of metal orbitals overlap and magnetic properties. Given the modest number of 4f-molecular species displaying metal-metal bonds (with the majority presenting Ln oxidation state equal to III), and the scarcity of systematic studies, **obj1 will introduce a crucial understanding of lanthanide metal-**

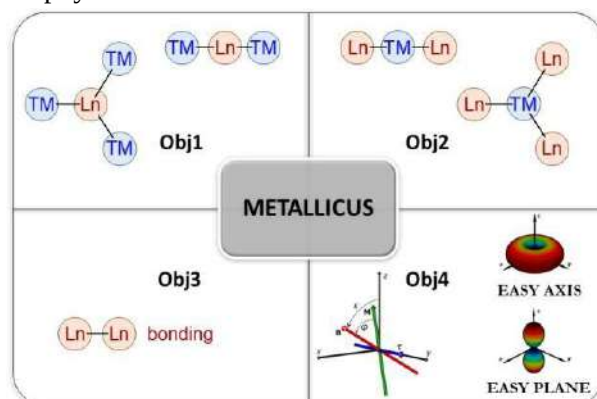


Figure 1. Scientific objectives. Ln = lanthanide. TM = d-block transition metal. Organic ligands are omitted for clarity.

metal chemistry. The magnetic characterisations and properties rationalisation constitute part of Obj4.

○ **Obj2 [WP1.b]** The paradigm set by Perfetti^{15,16} and other groups^{6,23–25} (d-metals “connected” by f-centres) will be reversed. Synthetic routes will be developed to **the first molecular compounds with a d-block ion bridging two 4f metals to mediate f-f magnetic coupling by a completely new mechanism** in molecular chemistry and magnetism. Currently, the use of radical ligands with diffuse p orbitals able to interact with the inner 4f orbitals of the Ln ions they bridge is the most explored strategy to generate strong magnetic coupling. I hypothesise that replacing the radical ligand with a d-block metal ion can maintain the magnetic communication and, at the same time, provide several advantages such as 1) tunability of the d orbitals energy to better match the 5d lanthanide orbitals, 2) possibility of targeting both dia- and para-magnetic d-block centres, and 3) use of d-metal based building blocks to achieve precise molecular architectures. This pioneering advance beyond the current SoA^{26,27} will focus on species with a potential impact on molecular magnetism.

○ **Obj3 [WP1.c]** The synthetic methodologies employed in Obj1 and Obj2 will be used to prepare molecular species containing f-f metal bonds to extend and normalise lanthanide-lanthanide bonding beyond the rare current, specialised examples.^{2,3} I predict an **enormous increase of the f-f exchange coupling by species with full metal-metal bonding surpassing the already impressive magnetic properties of the few reported examples.**

○ **Obj4 [WP2]** Specialist characterisation of the synthesised molecules by torque magnetometry²⁸ in addition to dc and ac magnetometry, EPR and computational methods. Torque magnetometry is one of the most powerful techniques to precisely unravel magnetic anisotropy,²⁹ a fundamental property in the development of magnetic materials. Torque magnetometry benefits from high sensitivity (μg crystals can be easily measured) and the capability to disentangle noncollinear contributions (all seven space groups are accessible), thus enabling modelling to fully describe the effect of the chemical environment and bonding on magnetic properties. As such, **torque magnetometry represents the perfect tool to pinpoint, and then rationalise, the impact of lanthanide-metal bonding in magnetic molecules. This will allow to delineate clear guidelines in the molecular design of magnetic technologies.**

The achievement of these four objectives will generate invaluable knowledge opening new horizons in the understanding and full synthetic control over lanthanide-metal bonds. Finally, METALLICUS will significantly contribute to outline new directions in the rational design of the next-generation magnetic materials.

1.2 Soundness of the proposed methodology (including interdisciplinary approaches, consideration of the gender dimension and other diversity aspects if relevant for the research project, and the quality of open science practices).

1.2.1 Overall research methodology and interdisciplinarity of the project. The project has **two synergic experimental WPs**, one rooted in chemistry, the other in physics (fig. 2).

- **WP1 (UCB, USA):** Organometallic synthesis, coordination chemistry, and initial characterisation (XRD, NMR, electrochemistry, UV-Vis spectroscopy) of new 4f-block compounds with targeted molecular architectures and metal-metal bonds;
- **WP2 (UNIFI, IT):** Magnetic investigation of the obtained molecules by means of advanced magnetometry, continuous wave and/or pulsed EPR spectroscopy, and theoretical methods to rationalise the impact of lanthanide-metal bonding in current and future technological applications.

WP1 is further divided into: **WP1.a - Molecular compounds containing d-f metal bonding according to obj1** - To guarantee a set of molecules for **WP2**, METALLICUS will start by making derivatives of the known Ln-TM compounds with precise modifications. The Eu(II) analogue of the Yb(II) $[\text{Yb}\{\text{Re}(\text{Cp})_2\}_2(\text{THF})_2]$ ²³ will be prepared ($E^\circ(\text{Eu}^{3+}/\text{Eu}^{2+}) = -0.35 \text{ V}$ vs $E^\circ(\text{Yb}^{3+}/\text{Yb}^{2+}) = -1.15 \text{ V}$).³⁰ Further, the two THF molecules on the Ln(II) centre will be replaced with tunable donors L, ranging from strongly electron donating NHCs to poorly electron donating NCMe. This simple series guarantees clear data on the electron-richness effect of the lanthanide ion on metal-metal bonding and thus the magnetic properties. Next, removal of the

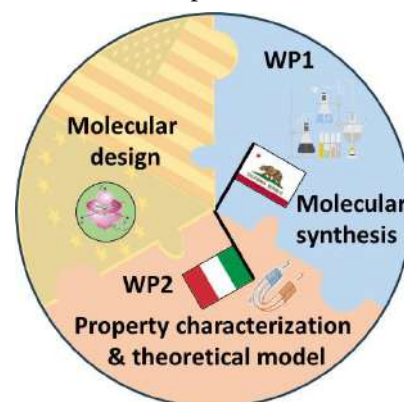


Figure 2. Representation of WPs 1&2.

two L donors, by increasing the bulk of the $\text{Re}(\text{Cp})_2$ group via Cp functionalization, will be used to bend the Ln(II) centre from tetrahedral towards linearity. The bonding and magnetic behaviour in the linear Re-Eu-Re will be compared later with the more advanced linear Ln-TM-Ln (see WP.1b). The knowledge gained on the Ln electron richness and coordination geometry effect will define clear guidelines to maximise orbitals' overlap and magnetic properties in the next WPs.

WP1.b - Complexes where f-block metals are connected to each other by metal-metal bonds with a central d-block ion according to obj2 - Reacting a d-block salt with an anionic lanthanide precursor can generate d-4f

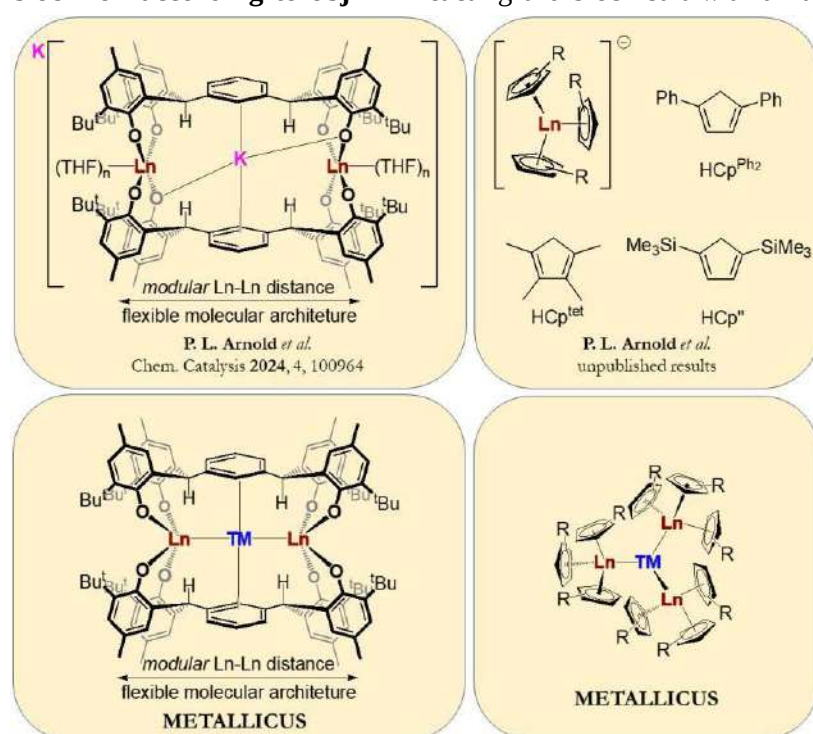


Figure 3. Representation of (top) ate species from the Arnold group, and (bottom) target complexes in WP1.b according to obj2.

metal bonding so long as the salt elimination is effective.³¹ We will ensure this by favouring borohydrides, triflates and alkyl salt elimination over halides to generate metal-metal bonding according to Obj2. The tendency of lanthanide compounds to form ate complexes offers several potential candidates useful for WP1.b.^{21,32–35} Compounds recently prepared by Arnold's group are extremely suitable given their stability, molecular architecture, as well as steric and electronic tunability (fig. 3).³⁶ In doing so, the use of heavy d-block metals,^{15,16} lanthanide(II)³⁷ and certain photoexcited Ln(III) (notably Ce, Eu, Sm)¹² will promote the overlap between the Ln 5d- and TM d-orbitals, stabilising molecules with d-4f metal bonds (fig. 3). This will directly promote the magnetic communication between the metals centres. **WP1.c - Molecular compounds containing f-f metal bonds according to obj3** - Existent synthetic methodologies, particularly those developed by Arnold's

group, will be applied and extended to prepare new magnetic compounds containing 4f-4f metal bonding (fig. 4). The synthetic work will begin by applying targeted modifications to literature-known Arnold group molecules (e.g. reaction of a lanthanide halide with an anionic f-block complex), then progressively move towards more unexplored reaction routes (e.g. sonication of μ -arene complexes where the arene is formally a dianionic ligand but

can be released as a neutral molecule) intending not just to prepare new molecules, but also to pave the way towards new synthetic protocols.

WP2 - Characterisation of the magnetic anisotropy by means of spectroscopy and magnetometry according to obj4 – Characterisation of the magnetic anisotropy will be essential to fully understand the structure-property relation with respect to magnetic properties. Among the physical techniques, torque magnetometry will allow to determine the exact anisotropy axes orientations.²⁸ This will provide an immediate way to assess the efficacy of the metal-metal bond in promoting exceptional magnetic properties and produce valuable feedback to address future syntheses (fig. 5). The final rationalisation of the molecular structure effect over magnetic properties will be achieved with the support of computational

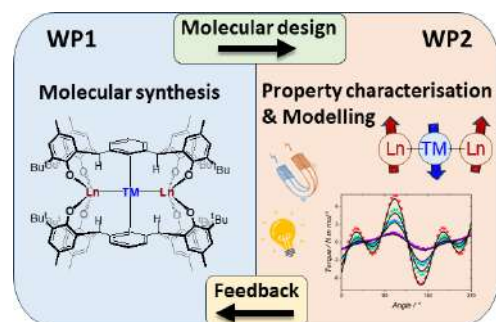


Figure 5. Representation of the synergic collaboration between WP1 and WP2.

chemistry that will be performed in collaboration with the Perfetti group and the Laboratory of Molecular Magnetism (LaMM) at UNIFI.

To further augment the impact of METALLICUS, a critical review on lanthanide-based molecular compounds containing metal-metal bonding will be submitted before the end of WP1. Such a review will consider all potential scopes of the discussed class of molecules including but not limited to, molecular magnetism, luminescence and catalysis. **1.2.2 Gender dimension and other diversity aspects.** Arnold has an international reputation for her work in diversity and inclusion of under-esteemed groups, and I will learn from her.

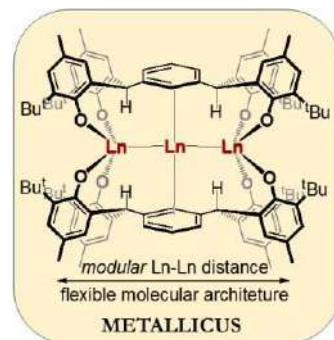


Figure 4. Target complex in obj.3.

I will also further my knowledge in these topics by attending workshops/lectures at UCB. Public engagement events and workshops held in the communication and dissemination stage (sec. 2.2.1) of the project will explicitly include collaborations and active support of these key groups, and I will lever Arnold and UCB's support in organising these. In publication submissions, **I will actively request for the peer-review process to be conducted to include persons from minority and diverse backgrounds.** Furthermore, the technological progress that will eventually arise from METALLICUS know-how will offer new tools in information technology to specifically improve service access and economic opportunities for disadvantaged groups, key targets set in the United Nations Sustainable Development Goals (SDGs 5b, 8.2, 9.1). **1.2.3 Open science (OS) practices.** I strongly welcome the concept of OS as central to scientific research. OS practices will be implemented along with FAIR data principles.³⁸ Following the criterion of “as open as possible and as closed as necessary”, thus without compromising confidentiality, the data generated by this project will be made available to the wider public. Among the OS approaches that will be used are a) publication of preprints in Open-Access (OA) archives (e.g. ChemRxiv); b) dissemination of the results in diamond and gold OA publications, paying hybrid fees where necessary (e.g. Nature, Nat. Commun., J. Am. Chem. Soc., Chem. Sci.); c) use of open-source software (e.g. Libre Office, VESTA, Olex2) for paper/report writing and data analysis; d) establishing a collaboration with the FAIRmat consortium, developer of the data infrastructure project NOMAD (NOvel Materials Discovery),³⁹ and extending their data model in the molecular chemistry field - preliminary meetings have already been held. **1.2.4 Research data management.** The data generated by this project will implement a Data Management Plan (DMP) based on FAIR principles. Details of the DMP will be developed before the beginning of the project in joint meetings with my supervisors. Raw and processed data will be collected, together with manually recorded metadata, in a structured manner with the help of Electronic Lab Notebooks (ELNs), as well as reports and presentations. In the post-research stage, data preservation will be made available in the appropriate repositories. The agreed collaboration with the FAIRmat project will grant the application of established practices and community standards to structure data and lab workflows to optimize searchability and reusability of the research results by external scientists.

1.3 Quality of the supervision, training and of the two-way transfer of knowledge between the researcher and the host



1.3.1 Qualifications and experience of the supervisors. METALLICUS is an ambitious and interdisciplinary project that arises from my joint work with Prof. Arnold and Prof. Perfetti, world-class leading scientists in the fields of d- and f-blocks molecular chemistry (further information in part B2-sec.5.2). METALLICUS has been conceived to progress in both domains of synthetic chemistry and property characterisation, with a particular focus on magnetic properties. The project team has attested experience in a range of techniques that include synthesis, crystallography, electrochemistry, magnetometry, NMR, luminescence and other spectroscopic techniques. **Both supervisors carry international experience with complementary scientific profiles directly related to the topic of the project.**^{13-16,21,36,40}

Prof. Arnold ($\approx$ 200 publications, h-index: 61) **has extensive knowledge in synthetic chemistry.** She is a former ERC Advanced Grant recipient (**f-ex**) and now holds the position of director of the chemical sciences division at Lawrence Berkeley National Laboratory (LBNL) and professor of chemistry at UC Berkeley (UCB). UCB's chemistry department ranks first in the USA for graduate education (US News and World Report 2024) and the university is ranked 5th overall (Academic Ranking of World Universities 2024 and Shanghai Rankings 2024). Her research focuses on the synthesis of f-complexes with unusual structure and bonding. Arnold's group employs advanced air-sensitive techniques and molecular characterisations to challenge preconceived ideas in bonding. She is a pioneer in 4f–3d metal–metal bonding.¹³ Prof. Arnold has been active in delivering lectures around the world, advising the government and industry, and highlighting the importance of diversity in the STEM workforce.⁴¹ **Prof. Perfetti** ($\approx$ 50 publications, 1 book chapter, 1 book, h-index: 24) **is oriented towards property characterisation with a strong emphasis on the study of magnetism and magnetic anisotropy,** crucial in magnetism-based applications. He carries out teaching and research activities at the University of Florence (UNIFI) where he is a permanent member of the LaMM group, a world leading laboratory in molecular magnetism. His research made original and fundamental contributions, and he is especially recognised for rationalisation of magnetic anisotropy using torque magnetometry. Prof. Perfetti combines this technique with more conventional magnetometry methods and a breadth of spectroscopic techniques to experimentally determine crystal field parameters, electronic structures and energy spectra of lanthanides complexes. His research also focusses on paving the understanding of spin-electric effects in molecules (ERC, **ELECTRA**) and advancing quantum materials information technology (Projects MUR PRIN, **CROQUET**). Both supervisors carry experience supervising PhD students and post-doctoral researchers who now hold significant professional positions in both academia and industry. METALLICUS can count on the international network of both Prof. Arnold and Prof. Perfetti to boost and advance the research work. As such, the work team will have all the necessary skills to guarantee the project's success. **1.3.2 Three-way transfer of knowledge between the researcher, host organisation, and associated partner for outgoing phase.** METALLICUS represents a concrete opportunity to promote a fruitful exchange of knowledge at an international level. During the project, I will be fully part of the research groups of both Prof. Arnold and Prof. Perfetti and will be involved in their scientific networks. **The two supervisors master distinctive and complementary knowledge and techniques** - put concisely, one makes molecules while the other studies and rationalises their physical properties - **which will be paramount to develop the interdisciplinary aspects of the project and further hone my scientific profile.** Proficiency and expertise in multiple scientific techniques and methodologies, as well as in group and laboratory management, and other soft/transferable skills will be transferred from the host institution to myself through direct trainings (see sect. 3.1), individual and group meetings, and involvement in the laboratory and faculty activities (**table 1**). **In Arnold's group I will particularly gain skills in chemical design, synthesis and characterisation of compounds exhibiting metal-metal bonds.** The Arnold group will benefit from my multidisciplinary background acquired during my research activity in different groups (**table 2**) (sec. 1.4 and part B-2/sec. 4). METALLICUS will also serve as a concrete bridge between the Arnold and Perfetti groups, expanding to the rest of the LaMM research group at UNIFI - such a collaboration is expected to be mutually beneficial and to continue in the long term. To favour such a collaboration, Prof. Perfetti will be added to the UCB seminar speaker list. Further, I will personally organise joint virtual meetings between the two groups to facilitate a broader exchange of knowledge and acquire new skills that can be transferred to the organisation of conferences or similar events. We will also plan to participate in one common conference each year to strengthen collaboration between the groups. **The return phase at UNIFI will be central in extending my knowledge in magnetism, particularly in torque magnetometry, an advanced technique that I do not yet master.** All new skills acquired during my period spent in Arnold's group will be exceedingly beneficial for the Perfetti and LaMM groups - the improvement of my synthetic expertise will

advance my research and will be a valuable tool to be added into the skillset of my home institution, UNIFI. A Career Development Plan (CDP), which will include planning for publications, conferences and specific trainings, will be made at the beginning of the project and periodically discussed. The CDP will focus on both scientific and soft/transferable skills, while also considering the impact on the academic and socio-economic context. METALLICUS will be a springboard to my fully independent scientific career.

Skill	Training method
Advanced chemical design & synthesis of compounds exhibiting metal-metal bonds	Training through research in the Arnold group
Advanced characterisation of metal-metal bonds (e.g. electrochemistry, paramagnetic NMR)	Training through research in the Arnold group
Torque Magnetometry	Training through research in the Perfetti group
Magnetism & modelling of coupled systems	Training through research in the Perfetti group
Project coordination, management & leadership	Mentorship by the supervisors. Courses and workshops at UCB and UNIFI. DMP and CDP
Entrepreneurial vision & intellectual property management (e.g. spin off, patents)	Mentorship by the supervisors. Courses and workshops at UCB and UNIFI UCB and UNIFI
Research integrity & open science	Mentorship by the supervisors. Courses and workshops at UCB and UNIFI
Gender dimension & diversity inclusion	Mentorship by Arnold. Courses and workshops at UCB and UNIFI.
Teaching, mentoring & leadership	Mentoring of undergraduate and graduate students at UCB and UNIFI, workshops and student seminars
Scientific dissemination & communication	Written - reports, publications, social media, proposals Oral - group meetings, departmental seminars, scientific conferences and public engagement

Table 1. Knowledge transfer and training from Berkeley and Florence institutions to researcher.

Skill	Beneficiary - training method
Design & synthesis of d- and f-block complexes	Perfetti group - Knowledge acquired in the past two years will be transferred by training through research in the group, mentoring of undergraduate and graduate students, dissemination and exploitation activities
Design & characterisation of magnetism compounds	Arnold group - Knowledge will be transferred through research in the group, mentoring of undergraduate and graduate students and dissemination activities
New ideas & approaches	Arnold and Perfetti groups - new connections between the groups. Individual and group meetings.

Table 2. Knowledge transfer and training from researcher to Berkeley and Florence institutions.

1.4 Quality and appropriateness of the researcher's professional experience, competences and skills

Throughout my professional career I have had the privilege of experiencing an exciting scientific environment working in various fields of chemistry. My research studies began at the University of Pisa (Italy) with the synthesis of N,N-dialkylcarbamato metal complexes to develop luminescent materials or walk alternative paths in the preparation of metal oxides. Subsequently, I focussed on the elaboration of homo- and hetero-metallic coordination polymers with d- and f-metals with optical and magnetic properties. Both projects allowed me to gain experience using Schlenk techniques and manipulating substances under a controlled atmosphere. Here, I was introduced to molecular magnetism, which fascinated me since the beginning. After an Erasmus post-master research experience at the University of Limerick (Ireland), I began my PhD studies at the University of Rennes (France) in an ERC project (MULTIPROSM). The research focussed on the chemistry and physics of rare earth- based compounds exhibiting multiple properties. There, I worked on the synthesis of organic ligands and metal coordination complexes, but also used the instrumentation needed to investigate magnetic and optical properties of the prepared molecules and analysed the collected data. The aim of my PhD thesis was to pioneer the modulation of Circularly Polarised Luminescence (CPL) through Single Molecule Magnet (SMM) properties. During my PhD, I

spent a research period at the University of Manchester (UoM) (UK) financed by two individual grants (Bourse ED3M and Molspin COST Action). I returned to UoM as a postdoctoral researcher working on an ERC funded project (F-ELEMENT ARCHITECT). This was an opportunity to further develop my synthetic skills targeting highly reactive and unstable f-organometallic species. I am now a postdoc at UNIFI working on the synthesis and property characterisation of compounds with a specific molecular architecture to investigate the interaction between magnetic spins and electrical fields in an ERC project (ELECTRA). Along the past years I have bolstered my experience working independently and in a team, mentoring and supervising students and managing national and international collaborations. I have presented my work in several key conferences and developed scientific and grant writing skills. I am highly motivated to continue my research career by developing my own scientific projects. **The interdisciplinary nature of METALLICUS requires a profile with skills involving synthesis and magnetism.** This project will allow me to consolidate my scientific independence and further develop the soft/transferable necessary skills to conduct high-quality science. METALLICUS will also further extend my scientific network to an international level. The experience acquired and the results produced within this project will make me ready to hold a position as an independent researcher and compete for other prestigious and ambitious grants.

2. Impact #@IMP-ACT-IA@#

2.1 *Credibility of the measures to enhance the career perspectives and employability of the researcher and contribution to his/her skills development*

This fellowship will be decisive in advancing my employability within academia, but also outside of it if my career will lead me there. In the short/medium-term, I aim for a tenure-track position in a European university. **The collaboration with Prof. Arnold's group will affirm my profile in synthetic chemistry, and expand my international reputation and network, while the return phase in the Perfetti (and LaMM) group will consolidate my position in molecular magnetism.** METALLICUS will strengthen and develop the following scientific and soft/transferrable skills that will be invaluable for my future career in research and innovation: a) research and project management for myself and others; b) international networking; c) molecular design and synthesis of d- and f-complexes; d) characterisation of magnetic systems; e) interdisciplinary vision; f) mentoring and retention of people from underesteemed minorities; g) dissemination in all forms; h) leadership and supervision skills. Proficiency in these competencies, obtained through research activities, trainings and integration, leading workshops, mentoring (as mentor/mentee), participation in key international conferences (see sec. 2.2), and publication in high impact journals, will benefit my future institution and contribute to further high quality research production and innovation. My involvement in future projects and grants will benefit from a prestigious grant such as the MSCA and ongoing collaborations with Prof. Arnold and Prof. Perfetti.

2.2 *Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan, including communication activities* #@COM-DIS-VIS-CDV@#

The project results will be shared during conferences, seminars and scientific events, with both virtual and in-person options, while also making use of media channels such as X (Twitter) and ResearchGate (see also sec. 3.1.1). **My period at UCB will favour the dissemination and communication of my results towards an international and diversified community.** The dissemination and communication plan will be revised and updated during the project action to maximise reach and impact. The following conferences are identified based on available dates and specific research area: a) Molecular Magnetism in North America (MAGNA) b) International Conference on Coordination Chemistry (ICCC, Denmark, 28/06-03/07/2026); (c) International Conference on Molecular Magnetism (ICMM, 2027); (d) International Conference on f Elements (ICFE, 2027). Results will be published in suitable journals and databases as described in sec. 1.2.3. Such a sharing strategy is also expected to facilitate collaborations. Public engagement activities will be undertaken through well-established wide public events (e.g. European Researchers' Night, Science at Cal) where I will discuss about "rare earths elements and magnetic properties" highlighting the fundamental support of the MSCA and Europe in research, as well as the importance of a zero-waste and recycling attitude. Given the industry's high interest in rare earths and magnetic materials, for instance in the production of new high density hard drives, the potential publications of patents will be considered with supervisors and patenting offices in both UCB and UNIFI.

2.3 The magnitude and importance of the project's contribution to the expected scientific, societal and economic impacts

Lanthanide-based technology has found multiple uses and applications as mentioned in sec. 1.1. Among these, areas involving magnetism are closely linked to METALLICUS. For instance, the use or development of any technology based on permanent magnets, SMMs or in general magnetic material partners with METALLICUS. Providing a more specific example, the exponential growth of data generated by our society requires low- environmental-impact and performing **information technology** which can find in the intrinsic molecular nature of SMMs a possible high-density storage alternative. **Developing SMMs through METALLICUS will address needs such as chemical tunability and miniaturization of magnetic devices.** This project will bring fundamental innovation in the areas of d- and f-chemistry, which will have an influence in a variety of fields such as quantum technology and catalysis. As such, this project greatly impacts science, society and economy. #COM-DIS-VIS-CDV\$# #IMP-ACT-IA\$#

3. Quality and Efficiency of the Implementation #QUA-LIT-QL@# #WRK-PLA-WP@#

#CON-SOR-CS@# #PRJ-MGT-PM@#

3.1 Quality and effectiveness of the work plan, assessment of risks and appropriateness of the effort assigned to work packages

3.1.1 Overall structure of the work plan. The five interconnected WPs covering all aspects necessary for the project's success and my professional development are summarised in **table 3** and **fig. 6**.

WP1 - Design and synthesis of f-block compounds containing metal-metal bonding
Period - Location - Supervisor(s): years 1&2 - UCB - Prof. Arnold Objectives: 1) provide the first extensive series of molecular compounds containing d-4f metal bonds; 2) first molecular compounds with a d-block ion bridging two 4f metals to mediate 4f-4f magnetic coupling; 3) extend and normalise 4f-4f bonding beyond the rare current, specialised examples. Tasks: synthesis and initial characterisation of complexes containing i) d-4f bonding according to obj1, M1; ii) d-4f bonding according to obj2, M2; iii) 4f-4f bonding according to obj3, M3. Description: new f-complexes with metal-metal bonds will be designed and synthesised according to sections 1.1.2 and 2.1.1. At the end of WP1, the most suitable molecules for WP2 will be selected.
WP2 - Magnetic, spectroscopic and theoretical studies
Period - Location - Supervisor(s): years 2&3 - UNIFI - Prof. Perfetti Objectives: study of the metal-metal bond effect on magnetic properties. Tasks: i) magnetic studies (AC, DC and torque magnetometry), M4; ii) spectroscopic studies; iii) <i>ab initio</i> calculations; iv) modelling, M5. Description: this WP will be mostly conducted during my return phase at UNIFI, where I will particularly focus on magnetic characterisations and the study of magnetic anisotropy. <i>Ab initio</i> calculations will be performed in collaboration with the Perfetti and LaMM group and will begin in Year 2. Some of the basic spectroscopic and magnetic characterisations will be performed prior to my return to UNIFI by taking advantage of new and established collaborations.
WP3 - Project coordination & management
Period - Location - Supervisor(s): years 1&2&3 – UCB & UNIFI - Profs. Arnold & Perfetti Objectives: coordination, management and monitoring of METALLICUS. Tasks: mobility declaration D1 will be completed in the first 20 days, while the DMP (D2) and CDP (D3), will be completed within six months of project start. One report will be completed at the end of each year (D4 and D5), to provide progress, culminating in a final report, D8. A detailed dissemination and exploitation plan, D6, and project evaluation questionnaires (D7), will be finalised towards end of project. Weekly and monthly meetings with my supervisors and communication with the UCB and UNIFI research grant offices will occur Description: see sections 1.2.4, 1.3.2 and 2.2.2.
WP4 - Training
Period - Location - Supervisor(s): years 1&2&3 - UCB & UNIFI - Profs. Arnold & Perfetti Objectives: new skills acquisition. Further development & consolidation of already acquired skills.

Tasks: weekly/monthly 1:1 and group meetings; practical lab trainings at the start of my periods in the labs. I'll also attend a *Project Management workshop* and an *IP Management* course at UNIFI in Years 2 and 3, as well as workshops on diversity and inclusion at UCB's Diversity, Equity, Inclusion and Belonging (DEIB) office.

Description: see section 1.3.2.

WP5 - Dissemination & communication											
Period - Location - Supervisor(s): years 1&2&3 - international - Profs. Arnold & Perfetti											
Objectives: promoting METALLICUS results by dissemination and exploitation activities, communicating importance of science and networking.											
Tasks: I plan to lead a talk at UCB's <i>Science at Cal</i> (O1), a forum aimed at lectures for the wider public. Similarly in Italy I'll take part in European Researchers Night (O4). I will also participate in internal department seminars at UCB (O2) and UNIFI(O3). Other planned exploitation activities include use of Horizon Results Booster and synergy with other EC platforms (O5). Lastly, I'll attend at least three key conferences (C) and produce publications (P) in OA and high impact journals.											
Description: see sections 1.1.2, 2.2 and 2.3											

Table 3. Work plan.

WPs	Tasks	Year 1												Year 2												Year 3																													
		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12																		
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WP2	i																									M4																													
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	iii																																																						
	iv																									M5																													
WP3	D	D1,2,& 3												D4												D5												D6,7,&8																	
WP4	Trainings workshops																																																						
WP5	O													O1												O2												O3						O4						O5					
	C, P	C												C												P												C						P											
Key: M = Milestone D = Deliverable C = Conference P = Publication O = Outreach, dissemination, exploitation and communication																																																							

Figure 6. Gantt chart

There will be continual dialogue with my supervisors, including frequent individual meetings (not less than once a month), and project reports. The complete project will be conducted respecting FAIR and OA principles. METALLICUS will produce high-quality research with a strong scientific and social impact. My project will support concepts of equality and environmental respect undertaking serious and concrete actions. **My strong multidisciplinary and international background with a focus in both synthesis and magnetism represents a strength for the success of METALLICUS.** This associated to the collaboration with Prof. Arnold (synthesis) and Prof. Perfetti (magnetism) guarantees a solid and complete work team.

3.1.2 Risk assessment. The ambition of the project implies a certain degree of risk (R). Table 4 summarises the following risks discussed. **R1. Difficulty in synthesising the target complexes.** WP1 has been structured according to an increasing degree of synthetic difficulty to guarantee (low risk) at least a part of the new targeted molecules - this is in itself a contingency plan. Monthly meetings with my supervisors will be used to discuss progress and challenges, and will allow to define alternative synthetic protocols. **R1 can be divided into: R1.1. Some of the d-f molecules for obj1 cannot be synthesised.** Syntheses of derivatives of the known Ln-TM compounds with precise modifications are planned to ensure series of new molecules for the systematic study of physical properties during WP2. **R1.2. Suggested salt/metathesis elimination routes do not yield the expected products.** Although the validity of the strategy is supported by literature,³¹ undesirable reactions may occur.^{42,43} Furthermore, the synthetic procedure discussed to reach Obj2 may lead to halide bridging or formation of new ate

R	Issue	R Level	R impact	Affected WP
1.1	Synthesis	Low	Medium	WP1.1
1.2	Synthesis	Medium	Medium	WP1.2
1.3	Synthesis	High	Low	WP1.3
2	Data analysis	Low	Medium	WP2
3	Instruments	Low	High	WP1&2
4	Resources	Low	High	All WPs
5	Administration	Low	High	All WPs
6	Dissemination & Communication	Low	Medium	WP5

Table 4. Summary of the risks.



complexes. Apart from the anionic precursors available in Arnold's laboratory, other suitable reagents are identified in the literature.^{32–35} Among these, the [Ln(DOTA)][−] series that Prof. Perfetti and myself recently published can also be considered.²¹ These complexes display an unsaturated lanthanide coordination sphere with a ninth apical site available to form metal-metal bonds. Rigidity and steric bulkiness of the d-block precursor must also be considered. Alkane and dihydrogen elimination, and donor-acceptor strategies represent other practicable synthetic routes. **R1.3 f-f metal bonding cannot be stabilised.** WP1.3 moves into an ambitious and unexplored territory. However, employing Ln(II) ions will grant for a higher involvement of the more diffused 5d lanthanide orbitals promoting the formation of metal-metal bonding. **R2. Difficulty in providing physical models to rationalise the magnetic behaviour.** Given the complexity of the target compounds, modelling of the magnetic behaviour and non-collinear contributions to the magnetic anisotropy could be not trivial. Supervisory meetings and discussions will be fundamental. Complementary insights from in-field far-IR (CNRS Grenoble) and neutron scattering (ILL Grenoble) spectroscopic analyses will be considered. **R3. Instrumentation malfunction.** Instrumentation malfunction is unlikely to affect the project in the medium/long term thanks to the large instrumental availability at both institutions and their ongoing strict instrument maintenance plans. **R4. Insufficient resources.** Lack of resources for chemicals and instrumentation is a low probable risk as laboratories in both institutions are already fully equipped for necessary experiments. The application for further funding will be considered in individual meetings with supervisors. **R5. Administrative risks.** Support from both UCB and UNIFI institutions, which have international experience and dedicated grant offices, will ensure prevention and resolution of administrative and bureaucratic issues. **R6. Obstacles to dissemination & communication.** The possibility of targeted audience not being reached will be mitigated by employing varied dissemination, exploitation, and communication methods in various forms (written, oral in person and online, visual) (see Table 3, WP5). Dedicated offices at institutions will be contacted for further resources, as needed.

3.2 Quality and capacity of the host institutions and participating organisations, including hosting arrangements

During the duration of the project I will benefit from a) laboratory and office space; b) access to all Arnold and Perfetti groups and departmental instrumentation and resources (e.g. chemicals, IT, data sources, software, working and recreative spaces, etc.) after induction and training activities; c) HR and administrative support (e.g. hosting agreement, work contract, familiarisation with internal procedures, visa process, etc.). Additional information on the institutions' quality and capacity are given in Part B-2/Sec. 5. There will be possibility to further collaborate within the groups (e.g. valorisation of the prepared compounds in reactivity studies and catalysis in Arnold's group) and the whole departments/institutions (e.g. collaboration with theoretical groups at UNIFI). My return phase will be facilitated by a reintegration plan.

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##\$CON-SOR-CS\$##\$PRJ-MGT-PM\$##\$QUA-LIT-QL\$##\$WRK-PLA-WP\$##

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4. CV of the researcher

○ PERSONAL INFORMATION

Name: Carlo Andrea

Nationality: Italian

Last name: Mattei

ORCID: <https://orcid.org/0000-0001-5550-9195>

Date of birth: 22/08/1989

○ EDUCATION

20/07/2021 PhD in Chemistry, Université de Rennes 1, France

13/07/2017 Master of Science in Inorganic Chemistry, University of Pisa, Italy

10/07/2014 Bachelor of Science in Chemistry, University of Pisa, Italy

- PhD thesis

Supervisors: Dr Fabrice Pointillart and
Dr Claudia Lalli

Title: Elaboration of coordination complexes combining properties of molecular magnets and chirality.

- Post-Master Internship

Supervisor: Prof. Kevin M. Ryan

Research of interest: Three month post-master Erasmus programme in Limerick (IE) to study the preparation of colloidal nanocrystals.

- Master Thesis

Supervisor: Prof. Luca Labella

Title: Synthesis of mono-dimensional coordination polymers with two different metals regularly alternated and directed by a simple divergent ligand: N-oxyde-4,4'-bipyridine.

- Bachelor Thesis

Supervisor: Prof. Luca Labella

Title: Anchorage of terbium N,N-dialkylcarbamato complexes onto inorganic matrices and preparation of a ceria doped with terbium.

○ ACADEMIC WORK EXPERIENCE

Università degli Studi di Firenze (IT)

01/09/2022-present

Postdoctoral researcher in Prof. Mauro Perfetti's group. The research work mainly focuses on the synthesis and characterisation of lanthanide-based compounds.

University of Manchester (UK)

01/12/2021-31/08/2022

Postdoctoral researcher in Prof. David P. Mills' group. The research work concerned the synthesis and characterisation of organometallic compounds.

○ **LANGUAGES**

Italian (native), English (fluent), French (intermediate).

○ **MENTORING AND SUPERVISION OF GRADUATE STUDENTS**

2019 – Mentor of one bachelor student (Manon Even), Université de Rennes 1, France

I mentored (in French) Manon Even during her thesis project which I developed together with Dr F. Pointillart. I mentored Manon during each step of her thesis: laboratory work, thesis writing, and preparation of oral thesis defence.

2020 – Mentor of one master student (Bassima Hoteit), Université de Rennes 1, France

I mentored (in English) Bassima Hoteit during her thesis project which I developed together with Dr F. Pointillart. I mentored Bassima during each step of her thesis: laboratory work, thesis writing, and preparation of oral thesis defence.

2024 – Co-supervisor of one bachelor student (Tommaso Benvenuti), University of Florence, Italy

I co-supervised (in Italian) Tommaso Benvenuti during his thesis project which I developed together with Prof. M. Perfetti. I co-supervised Tommaso during each step of his thesis: laboratory work, thesis writing, and preparation of oral thesis defence.

○ **INSTITUTIONAL RESPONSIBILITIES**

2024 – present Appointed “*cultore della materia*” (expert in the field) at UNIFI.

2024 – present Member of the judging committee for bachelor's and master's degree exams at UNIFI.

○ **INDIVIDUAL GRANTS**

Erasmus Programme	2017
Bourse Ecole Doctorale Matière, Molécules et Matériaux	2020
Molspin COST Action	2020

○ **COLLABORATIONS**

Before and during PhD: Prof. Lidia Armelao (Consiglio Nazionale delle Ricerche, University of Padua, IT), Prof. Francesco Pineider (University of Pisa, IT), Prof. Giordano Poneti (Istituto de Química – Universidade Federal do Rio de Janeiro, BR), Dr. Boris Le Guennic (University of Rennes 1, FR), Dr. Olivier Maury (Ecole Normale Supérieure of Lyon, FR), Prof. Stéphan Guy (Université ClaudeBernard Lyon 1, FR), Dr. Pierre-Antoine Bouit (University of Rennes 1, FR).

Post PhD: Dr. Matteo Briganti (University of Florence, IT), Prof. Jesper Bendix (University of Copenhagen, DK), Prof. Muralee Murugesu (University of Ottawa, CA).

○ **REVIEWER ACTIVITY**

2023 – present Reviewer for ACS (Inorganic Chemistry)

○ **CONGRESS (presenting author only)**

A total of 5 oral and 5 poster contributions

- Congrès SCF18, Montpellier, FRANCE
02-04/07/2018, Oral contribution
- Journées Scientifiques du GdR MCM2, Dourdan, FRANCE
27-29/11/2018, Oral contribution
- 17th International Conference on Chiroptical Spectroscopy (CD2019), Pisa, ITALY
23-27/06/2019, Poster contribution
- 7th European Conference on Molecular Magnetism (ECMM), Florence, ITALY
15-18/09/2019, Oral and poster contribution
- 11th International Conference on f Elements (ICFE-11), Strasbourg, FRANCE
22-26/08/2023, Poster contribution
- Contemporary Coordination Chemistry Copenhagen (C4), Copenhagen, DENMARK
17-19/06/2024, Oral and poster contribution
- 7th Inorganic Graduate Student Seminar (IGSS), Copenhagen, DENMARK
18/06/2024, Oral contribution
- 45th International Conference on Coordination Chemistry (C4), Fort Collins, CO, USA
17/06-03/07/2024, Poster contribution (awarded "Outstanding Poster").

PUBLICATIONS

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2. Lidia Armelao, Daniela Belli Dell'Amico, Gregorio Bottaro, Luca Bellucci, Luca Labella, Fabio Marchetti, Carlo Andrea Mattei, Federica Mian, Francesco Pineider, Giordano Poneti and Simona Samaritani, 1D hetero-bimetallic regularly alternated 4f–3d coordination polymers based on N-oxide-4,4'-bipyridine (bipyMO) as a linker: photoluminescence and magnetic properties, Dalton Trans. 47 (2018). 8337 <https://doi.org/10.1039/C8DT00880A>.

3. Lidia Armelao, Daniela Belli Dell'Amico, Luca Bellucci, Gregorio Bottaro, Samuele Ciattini, Luca Labella, Giacomo Manfroni, Fabio Marchetti, Carlo Andrea Mattei and Simona Samaritani, Homodinuclear Lanthanide Complexes with the Divergent Heterotopic 4,4'-Bipyridine N -Oxide (bipyMO) Ligand, Eur. J. Inorg. Chem. 40 (2018) 4421 <https://doi.org/10.1002/ejic.201800747>.

4. Siham Tiaouinine, Jessica Flores Gonzalez, Vincent Montigaud, Carlo Andrea Mattei, Vincent Dorcet, Lakhmici Kaboub, Vladimir Cherkasov, Olivier Cador, Boris Le Guennic, Lahcène Ouahab, Viacheslav Kuropatov and Fabrice Pointillart, Redox Modulation of Field-Induced Tetrathiafulvalene-Based Single-Molecule Magnets of Dysprosium, Magnetochemistry. 6 (2020), 34 <https://doi.org/10.3390/magnetochemistry6030034>.

5. Carlo Andrea Mattei, Vincent Montigaud, Frédéric Gendron, Sandrine Denis-Quanquin, Vincent Dorcet, Nicolas Giraud, François Riobé, Gilles Argouarch, Olivier Maury, Boris Le Guennic, Olivier Cador, Claudia Lalli, Fabrice Pointillart, Solid-State versus Solution Investigation of a Luminescent Chiral BINOL-Derived Bisphosphate Single-Molecule Magnet, Inorg. Chem. Front. 8 (2021) 947 <https://doi.org/10.1039/D0QI01192D>.

6. Carlo Andrea Mattei, Vincent Montigaud, Vincent Dorcet, François Riobé, Gilles Argouarch, Olivier Maury, Boris Le Guennic, Olivier Cador, Claudia Lalli, Fabrice Pointillart, Luminescent Dysprosium Single-Molecule Magnets Made from Designed Chiral BINOL-Derived Bisphosphate Ligands, Inorg. Chem. Front. 8 (2021) 963 <https://doi.org/10.1039/D0QI01193B>.

7. Bertrand Lefevre, Carlo Andrea Mattei, Jessica Flores Gonzalez, Frédéric Gendron, Vincent Dorcet, François Riobé, Claudia Lalli, Boris Le Guennic, Olivier Cador, Olivier Maury, Stéphan Guy, Amina Bensalah-Ledoux, Bruno Baguenard, and Fabrice Pointillart, « Solid-State Near-Infrared Circularly Polarized Luminescence from Chiral Yb III -Single-Molecule Magnet » Chem. Eur. J. 27 (2021) 7362 <https://doi.org/10.1002/chem.202100903>.

8. Bertrand Lefevre, Jessica Flores Gonzalez, Carlo Andrea Mattei, Dorcet Vincent, Olivier Cador, Fabrice Pointillart, « Chiral or Luminescent Lanthanide Single-Molecule Magnets Involving Bridging Redox Active Triad Ligand » Inorganics 9 (2021) 50 <https://doi.org/10.3390/inorganics9070050>.

9. Carlo Andrea Mattei, Kais Dhbaibi, Bertrand Lefevre, Vincent Dorcet, Gilles Argouarch, Olivier Cador, Boris Le Guennic, Olivier Maury, Claudia Lalli, Stéphan Guy, Amina Bensalah-Ledoux, François Riobé, Bruno Baguenard, Fabrice Pointillart, « Circularly polarized luminescence of Eu(III) complexes with chiral 1,1'-bi-2-naphtol-derived bisphosphate ligands » Chirality (2021) <https://doi.org/10.1002/chir.23392>.

10. Carlo Andrea Mattei, Bertrand Lefevre, Dorcet Vincent, Gilles Argouarch, Olivier Cador, Claudia Lalli, Fabrice Pointillart, « Counter Intuitive Single-Molecule Magnet Behavior in Two Polymorphs of One-Dimensional Compounds Involving Chiral BINOL-Derived Bisphosphate Ligands » *Magnetochemistry* 7 (2021) 150 <https://doi.org/10.3390/magnetochemistry7110150>.

11. Carlo Andrea Mattei, Thomas Delouche, Bertrand Lefevre, Marie Dallon-Cordier, Claudia Lalli, Olivier Cador, Laura Abad Galán, François Riobé, Olivier Maury, Pierre-Antoine Bouit, Fabrice Pointillart, « Luminescent and Sublimable Lanthanide-Based Chiral Field-Induced Single- Molecule Magnets » *Chemistry Squared* 6 (2022) 1 <https://doi.org/10.28954/2022.csq.06.001>.

12. Carlo Andrea Mattei, Vincent Montigaud, Bertrand Lefevre, Vincent Dorcet, Gilles Argouarch, Olivier Cador, Boris Le Guennic, Olivier Maury, Claudia Lalli, Yannick Guyot, Stéphan Guy, Cyprien Gindre, Amina Bensalah-Ledoux, François Riobé, Bruno Baguenard, Fabrice Pointillart, « Circularly polarized luminescence in one-dimensional assembly of Binaphthyl-based Yb(III) single- molecule magnets » *J. Mater. Chem. C* 11 (2023) 7299 <https://doi.org/10.1039/D3TC00858D>.

13. Anna Schannong Manvell, Rouven Pflieger, Niels Andreas Bonde, Matteo Briganti, Carlo Andrea Mattei, Theis Brock Nannestad, Høgni Weihe, Annie K. Powell, Jacques Ollivier, Jesper Bendix, Mauro Perfetti, « LnDOTA puppeteering: removing the water molecule and imposing tetragonal symmetry » *Chem. Sci.* 15 (2024) 113 <https://doi.org/10.1039/D3SC03928E>.

14. Benjamin L. L. Réant, Fraser J. Mackintosh, Gemma K. Gransbury, Carlo Andrea Mattei, Barak Alnami, Benjamin Atkinson, David Bonham, Jack Baldwin, Ashley J. Wooles, Iñigo J. Vitorica-Yrezabal, Daniel Lee, Nicholas F. Chilton, Stephen T. Liddle, and David P. Mills, « Tris-Silanide f-Block Complexes: Insights into Paramagnetic Influence on NMR Chemical Shifts » *JACS Au* 4 (2024) 2695 <https://doi.org/10.1021/jacsau.4c00466>.

5. Capacity of the Participating Organisation(s)

5.1 Template table: Overview of Participating Organisations

Organisation role	PIC	Legal Entity Short Name	Academic organisation (Y/N)	Country	Name of Supervisor
Beneficiary	999895789	UNIFI	Y	Italy	Mauro Perfetti
Associated partner for outgoing phase (mandatory for GF)	999467340	UC	Y	United States	Polly Louise Arnold

5.2 Template table: Capacity of the Participating Organisations

Beneficiary	
University of Florence, UNIFI, Italy	
General description: Established in 1321, UNIFI is one of the largest institutions in Italy. UNIFI has 21 different departments, offering about 40 research, knowledge-transfer, and advanced training centres. Committing to the European Charter and Code for Researchers, UNIFI is one of the 16 Italian universities holding the HRS4R, Human Resources Strategy For Researchers Award. The University of Florence has been ranked among top Italian Universities for the distribution of national research funds, and it is one of the most active Italian universities in terms of European projects and related grants. The University also participates in several joint initiatives and research programmes sponsored by international agencies, associations, foundations and other donors.	
Role and profile of supervisor	Role: Prof. Mauro Perfetti will co-supervise the whole project. His contribution will be pivotal to advance physical characterisation and modelling. He will play a key role in extending my knowledge in magnetism and particularly in torque magnetometry. Profile of the supervisor: $\approx$ 50 publications, 1 book chapter, 1 book, h-index: 24. Associated Professor at UNIFI, leader of the Perfetti group and permanent member of the LaMM group at the department of chemistry “Ugo Schiff” in Florence. Previous academic experience: PhD at UNIFI, postdoctoral researcher at the University of Stuttgart (Germany) and University of Copenhagen, (Denmark); assistant professor at the University of Copenhagen, (Denmark). Prof. Perfetti is a world-leading scientist in the characterisation and modelling of magnetic molecules. His research made original and fundamental contributions in the field of molecular magnetism, and he is especially recognised for rationalisation of magnetic anisotropy using torque magnetometry. Prof. Perfetti characterised the

	magnetic anisotropy of several families of lanthanide complexes, and discovered new phenomena such as the $4f^{n+7}$ effect (<i>J. Am. Chem. Soc.</i> 2021, 143 (21), 8108–8115) or the "switch" between axial and planar magnetic anisotropy which was found in d-4f-d heterometallic species with metal-metal bonds (<i>Adv. Funct. Mater.</i> 2018, 28 (32), 1801846). He also demonstrated the less donating character of 4d-compared to 5d-block metal ions (i.e. Pd^{2+} vs Pt^{2+}) in metal-metal bonding with lanthanide centres (<i>Inorg. Chem.</i> 2020, 59 (1), 235–243). He is recipient of an ERC starting grant (ELECTRA, No. 101039890) and a national MUR PRIN project (CROQUET, No. 2022L57S28). He was awarded with prestigious recognitions such as the R. Ciprian Award (2021) and O. Kahn International Award (2022).
Key research facilities, Infrastructure and Equipment	All Perfetti group, LaMM group, and UNIFI departmental facilities will be available. DC, AC and torque magnetometries, magnetic resonance, transport measurement and magnetic force microscopy facilities, all connected to a helium liquefier for low temperature/high magnetic field operation. A UHV platform equipped with in situ variable temperature scanning probe microscopies (STM and AFM) and photoelectron spectroscopies (XPS, UPS, LEISS), is also available. UV/VIS/NIR, FTIR spectrophotometer and fluorimeter equipped with UV/VIS and IR detectors. The UNIFI Grant Office, with extensive experience in managing EU projects (100 Horizon Europe projects among which 35 are MSCA actions), will support the fellowship's effective management. UNIFI's Welcome Service will support relocation and Human Resources hosting agreements. The Department of Chemistry will provide structured training including various scientific, management, and mentorship activities, pivotal for the project progress and my career growth.
Previous and current involvement in EU-funded research and training programmes/actions/projects	In Horizon 2020 the EU funded 164 projects (of which 35 MSCA actions) for a total of about 60 million Euros, in Horizon Europe, as of today. A total of 100 (of which 25 MSCA actions) projects of about 40 million Euros. Among others, UNIFI is involved in the project ERC starting grant (ELECTRA, No. 101039890) led by Prof. M. Perfetti. For a full list of past and ongoing research projects

	please visit the following websites: Funding & tenders (europa.eu) National, regional, international projects Search University of Florence UniFI

Associated partner for outgoing phase	
Regents of the University of California, UC, United States	
General description: <i>Berkeley's chemistry department ranks first in the US for graduate education (US News and World Report 2024) and the university is ranked 5th (Academic Ranking of World Universities 2024 and Shanghai Rankings 2024).</i>	
Role and profile of supervisor	Role: Prof. Polly Louise Arnold will co-supervise the whole project. Her extensive knowledge in synthetic chemistry will be central for the project success and my scientific growth. Profile of the supervisor: $\approx$ 200 publications, h-index: 61. Director of the chemical sciences division at Lawrence Berkeley National Laboratory (LBNL), full professor of chemistry at UC Berkeley (UCB) and leader of the Arnold group. Previous academic experience: PhD at the University of Sussex (UK), Fulbright Postdoctoral Fellow at the Massachusetts Institute of Technology (US), Lecturer then Reader in Chemistry at the University of Nottingham (UK), Reader then Professor then Crum Brown Chair of Chemistry at the University of Edinburgh (UK). Prof. Arnold is a recognised international expert in the research field of the synthesis of f-block complexes with unusual electronic structures and bonding. Prof. Arnold crystallised the first unsupported molecular 4f–3d metal–metal bond (<i>Chem. Commun.</i> 2009, No. 7, 818–820), and showed bonding trends in group 10 metal-uranium bonded complexes through careful synthetic methodologies (<i>J. Am. Chem. Soc.</i> 2016, 138 (10), 3333–3345). Prof. Arnold is one of the most well-known and distinguished experts in the design and synthesis of highly reactive f-block complexes that can activate inert small molecules such as dinitrogen which is another way to gain fundamental information on the f-block (<i>Nat. Chem.</i> 2020, 12 (7), 654–659). Prof. Arnold has been active in delivering lectures around the world, advising the government and industry, and talking to various media to highlight the importance of diversity in the science, technology, engineering, and mathematics (STEM) workforce. For this and her scientific achievements she was awarded with the Rosalind Franklin Award (2012) and appointed Officer of the

	Order of the British Empire (OBE) in the 2017 Birthday Honours. Her awards also include the Royal Society of Chemistry's Corday-Morgan Prize (2012), Fellow of the Royal Society of Edinburgh (FRSE) (2012), the Engineering and Physical Sciences Suffrage Science award (2015), the Royal Society of Chemistry (RSC) Sir Geoffrey Wilkinson award (2018) and Fellow of the Royal Society (FRS) (2018). She is a former ERC Advanced Grant recipient (f-ex, No. 740311).
Key research facilities, Infrastructure and Equipment	All Arnold group, and UCB & LBNL departmental facilities will be available. Laboratory – Over 12,000 sq. ft. of modern laboratory space. All equipment needed to conduct advanced organometallic/coordination synthesis including multiple fume hoods, Schlenk lines, gloveboxes, solvent purification systems (some directly linked into glove boxes), ovens and furnaces, electrochemical instrumentation, glassware and general synthetic labware. Gloveboxes contain analytical capabilities (e.g. FTIR spectrometers). X- ray and electron diffractometers - XRD instrumentation including Bruker APEX II QUAZAR, MicroSTAR-H APEX II, SMART APEX, and Rigaku XtaLAB Synergy-S single crystal X-ray diffractometers, PANalytical X'pert Pro X-ray powder diffractometer. An electron diffractometer for 3D structural analysis determination. NMR spectrometers - NMR facilities offering spectrometers for multi-dimensional and multi- nuclear (¹H, ¹³C, ¹⁹F, ³¹P, ²⁹Si, ⁸⁹Y, etc.) studies including an NMR Bruker Advance 400 and 500 MHz. X-ray spectroscopy at the Advanced Light Source (ALS) synchrotron facility. The UC Berkeley Grant Office carries extensive experience in facilitate and support pioneering research, teaching, and public service in order to affect change worldwide. The UC Berkeley Grant Office accomplish that mission by providing its expertise in research administration and compliance to the campus community. The Department of Chemistry will offer a variety of training courses on topics such as science, equality and ethics, management, and mentoring.
Previous and current involvement in EU-funded research and training programmes/actions/projects	UCB has successfully participated in numerous MSCA actions as an associated partner. Among others, UCB was involved in the project ERC

Advanced Grant (f-ex , No. 740311) led by Prof. P. L. Arnold.

6. Additional ethics information

Insert here text for your proposal

(NB: Only if you have additional information that could not be included in the ethics self-assessment)

7. Additional information on security screening

Insert here text for your proposal

(NB: Only if you answered yes to one of the questions in the security issues table, with the exception of “Does this activity involved HE associated and/or third countries?”)

8. Environmental considerations in light of the MSCA Green Charter

With an overall ranking of No. 2 in the 2024 QS World University Rankings: Sustainability, as well as a Platinum rating in the Sustainability, Tracking, Assessment & Rating System, UCB is an exemplary institution that implements sustainability efforts through specific goals in a wide-range of aspects of university life including procurement, built environment, transportation, energy use, and food. Together with support from UNIFI’s newly formed Green Office, these environments facilitate a sustainable implementation of METALLICUS. Sustainable procurement of materials and supplies will occur in collaboration with UCB’s Office of Sustainability Procurement Team with a focus on reducing, reusing, and recycling products. Procurement will be prioritised to those products with a sustainability mark and use of suppliers that follow ethical supply chain practices. Similarly, the EU Buying Green! Handbook will be used to guide procurement at UNIFI. Low-emission forms of transport will be put into action by taking advantage of UNIFI and UCB’s programs for cycling, public transit, shared mobility, carpooling and trip planning. Where air travel and lodging are necessary, steps will be taken to mitigate and reduce carbon footprint through dedicated footprint calculators, use of carbon offset options, and eco-friendly accommodations. When attending these events, I will maximise the value of travel and combine these trips with opportunities to further research links. Communication with partner institutions will be primarily through email, videoconferencing, phone calls, etc. When planning and organising events, the ‘EU’s 7 steps for greener events’ guide will steer decision making, such as choice of venue, dissemination plans, and minimising the amount of single-use products. Lastly, in an effort to further implement energy savings practices I will take part of the International Laboratory Freezer Challenge, a project from My Green Lab, at UCB to learn more about energy efficiency with cold storage, a skill I can then relay to UNIFI.

9. Required for Global Fellowships only: Letter(s) of commitment from associated partners (hosting the of outgoing phase)

University of California
Berkeley

Polly L. Arnold OBE FRS MAE FRSE FRSC DPhil
Professor of Chemistry
<https://chemistry.berkeley.edu/faculty/chem/polly-arnold>



Department of Chemistry
537 Latimer Hall MC91460
Berkeley, CA 94720-1460
Phone: 510 486-6382
Email: pla@berkeley.edu

September 3, 2024

Solicitation no.: HORIZON-MSCA-2025-IF-01-01

Title: Metal-metal bonding in molecular Lanthanide Compounds

To Whom It May Concern:

The University of California, Berkeley hereby agrees to participate in the proposed Marie Skłodowska-Curie Global Fellowship (IF) Call HORIZON-MSCA-2025-IF-01-01, which will be submitted by Carlo Andrea Mattei through the European Commission.

Under the Global Fellowship project of Carlo Andrea Mattei, the Fellow, the home institution will be the University of Florence, and the University of California, Berkeley Department of Chemistry will host the Fellow for 24 months. Carlo Andrea Mattei will pursue research in METALLICUS under the direction of Prof. Polly Arnold, with a focus on the synthesis, for electronic structure analysis, of lanthanide complexes with metal-metal bonds.

By joining Prof. Polly Arnold's research group, Carlo Andrea Mattei will be immersed in a rigorous research culture and gain expertise in the synthesis of f-block complexes with unusual electronic structures and bonding. My group has been developing a range of synthetic techniques in order to make the progress needed in this field. Carlo's demonstrated capability for working across subject groups and anticipated development as a Marie Skłodowska-Curie Actions fellow will enable us to link our synthetic skills with the unique characterization capabilities in his return phase that will ensure the success of the project.

The UC Berkeley Department of Chemistry expects to be awarded Euros, in accordance with EU policy, for the following: Euro 1000/mo. for the postdoctoral fellow's research-related expenses, plus Euro 650/mo. for indirect costs. Throughout the duration of the outgoing phase, any policy or administrative matters will be dealt with in accordance with the University of California at Berkeley's policies and procedures.

Sincerely,



Polly L. Arnold
Professor of Chemistry

Confirmed:



Cora Basada
Contract and Grant Officer
Sponsored Projects Office

University of California
Berkeley



Polly L Arnold OBE FRS MAE FRSE FRSC DPhil
Professor of Chemistry, Department of Chemistry
Berkeley, CA 94720-1460, USA

+1 510 612 6883; pla@berkeley.edu

August 26, 2024

Support letter For METALLICUS MSCA Marie Skłodowska-Curie Actions Global Postdoctoral fellowship applicant
Carlo Andrea MATTEI

Dear Committee members,

I am writing to give my strongest support for Carlo Andrea MATTEI in his application to spend the international portion of the Marie Skłodowska-Curie Actions Global fellowship with my research lab at the University of California, Berkeley, USA. I will commit to set up all the necessary provisions needed for Carlo's successful fellowship stay in our labs if the fellowship is awarded.

Carlo will carry out research as a fellow primarily in our labs on the UC Berkeley campus and also in the E. O. Lawrence Berkeley National Laboratory where we have further equipment, including the single crystal X-ray diffractometer and NMR spectrometer that were part of my startup package at Berkeley. I came from Scotland to Berkeley four years ago and have known of the fellowship since I first hosted a Marie Curie fellow at the start of my career in the UK; they are now a highly successful scientist. I see the same level of deep thinking, and passion for academic discussion in Carlo, as I did with my first fellow. Carlo's two years in the UC Berkeley department and LBL community will both push his intellectual boundaries, provide him with new skills and compounds to test in his return phase, and generate an international network that will benefit him in his future academic career in Europe.

I write in my capacity as a well-known full professor and a recognised international expert in the research field of the synthesis of f-block complexes with unusual electronic structures and bonding. I am also the Director of the Chemical Sciences Division at Lawrence Berkeley National Laboratory, with strategic oversight of a portfolio of around 40M USD per annum, and around eight principal investigators and their groups. I have never collaborated, nor worked with Carlo as a colleague, but have attended the same high-level conferences, so already know him professionally. Therefore, I am ideally suited to offer my opinion on the high quality of his research proposals and potential to be a future internationally renowned scientist.

Fit of the proposal with Carlo's development, and our current and future goals:

The proposal that Carlo has crafted is a cleverly straightforward and new direction for synthetic inorganic chemistry, building on recent results and our capabilities, and using his skills to the full, to develop molecules from f-block cations with unprecedented electronic structures and properties that have been well hypothesized, but we cannot yet predict with certainty, due to the lack of research into this part of the periodic table. The proposed project is fundamental, and designed to establish this needed understanding of



Lawrence Berkeley National Laboratory

One Cyclotron Road / MS: 50B-4230 / Berkeley, CA 94720

how the electronic structures will govern properties of these magnetic, anisotropic metal cations. The field has seen some exciting successes recently, but we are still at the beginning. My group has been developing a range of synthetic techniques in order to make the progress needed in this field. Carlo's demonstrated capability for working across subject groups, and anticipated development as a Marie Skłodowska-Curie Actions fellow, will enable us to link our synthetic skills with the unique characterisation capabilities in his return phase that will ensure the success of the project.

Carlo has displayed a maturity that I appreciate throughout all our discussions, and I have thoroughly enjoyed talking recently about hypotheses, synthetic ideas, his complementary skill sets and his ambitions for the future.

The project we are embarking on together will become a collaboration between chemists and physicists and possibly also computer scientists. The wider impacts of the measurements we will try to make, will be *inter alia* contributions to quantum information storage, isotope stewardship, rare earth separations and recovery. This will translate to Carlo bringing real value to the fellowship.

Promised office and lab space in my group:

Carlo will have a fumehood and ventilated benchspace in our lab on campus, 15 minutes walk from our labs in Lawrence Berkeley National Lab. There he will make ligands and the new metal complexes, helped with the range of precursors, reagents, and solvents that we have in stock for other ongoing f-block projects. He will have a desk there, adjacent to the graduate student mentees (usually 2) that I assign our postdocs. These spaces are adjacent to my campus office to enable relaxed conversations about chemistry on the whiteboards, and a gathering place before group/subgroup meetings. He will have the same set-up on the LBNL site, if he wishes to have access to other families of reagents. There the double glove box, hood, NMR spectrometer, and X-ray diffractometer were part of my start-up, but we share instrumentation which develops the 'team science' approach, and creates a real network for our early career researchers. It also facilitates our access to instruments run by others such as the local EPR, and the more unusual techniques such as X-ray spectroscopy at the ALS synchrotron and microED (micro electron diffraction for 3D structural analysis) in the National Center for Electron Microscopy at the Molecular Foundry.

Mentoring plan:

My group normally has a postdoc:PhD:undergraduate student ratio of 1:2:1 in a group size of 10-16. I design this allocation to encourage postdocs to practice supervision skills, but my 2-weekly 1:1s also ensures oversight, and sound feedback loops. Weekly group meetings and quarterly group trips/events are designed with inclusivity first, to generate real psychological safety for all.

Personal development opportunities:

My postdocs and fellows regularly discuss their pathways to academia, what unique skills they can present to a department as an assistant professor, and how they would be able to fit in as a colleague and collaborator. I have placed sixteen people in academia and independent research fellowships across the globe in my 24-year research career. I understand that Carlo recognized my pedigree in mentoring early career researchers and my work to help my group members develop their creative synthetic skills and ideas to the level at which they can become independent academics.

Communication skills training:

Carlo will receive from the UC Berkeley training office, and from my group and me, support in developing his written and oral research presentations to colleagues; collaborators; the public. Carlo's publication track record is already exceptionally strong, demonstrating his drive, time organization, and writing skills. I also organise practice talk sessions before conference season, and more open questioning sessions, in a completely informal atmosphere as group members approach the qualifying exam or an academic job interview. My group shared online docs for planning and (open) data collection in the run-up to drafting a manuscript, prior to running through paper drafts as small collaborative groups, bringing in best practice from the postdoctoral fellows already here.

Idea generation and proposal writing:

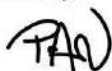
Brainstorming and hypothesis development is a key component of our weekly group meetings, where we constantly ask each other the why/what if questions, and look for tangents or opportunities where an existing or new collaboration could teach us more about a reaction. When it's clear that we should write a new proposal, and I have identified the different interests and behavioural styles of my individual group members, I will assign them different components of proposal writing, before bringing small groups together, often sitting at the same computer, to identify if our ideas are good, and who would like to take on a different role in the project. Six-monthly check-ins off campus in a neutral environment with each postdoctoral fellow provides an important, safe space to discuss their own ideas and career plans, and identify if I have contacts, international, industrial, in the equity and diversity arena, spectroscopic, or computational who can help them with their plans.

Service; student supervision; inclusion and ethics:

Carlo has already demonstrated himself to be a collaborative team member in the lab, and a person to whom students come to for chemistry discussions. Alongside the other four postdoctoral fellows in my group, he will be assigned a portion of student supervision (normally two direct PhD mentees) and will be encouraged to contribute to the School's Graduate Life committee as a mentor. The principles of equity, diversity, inclusion, and accountability are a golden thread that run through everything we do in my research group, and we have a dedicated segment in literature group meetings where we discuss new research and findings in the field of ethics/inclusion, as well as safety. The group have told me how much they appreciate this segment. We also discuss ethics at the start of each manuscript we draft, noting that authorship disputes are the most common ethics problem in lab-based sciences. We maintain a friendly and supportive regular additional discussion forum for deeper dives into topical or difficulty issues, and the postdocs are encouraged to take leadership in different areas on a rotational basis. We pride ourselves on the international background of our research group and have always used this to demonstrate the value and capacity of international networks to further enhance our science.

In summary, I am really excited by the proposal that Carlo has designed, and given our previous studies, am keen to see it work in his hands, and for him to bring exciting new compounds back to the EU. Our complementary expertise will afford the highest chance of success in the science goals. The energized atmosphere in our new labs of exploratory research supported by both local and international collaboration, intertwined with the connections and thought leadership that benefits from being part of the Marie Skłodowska-Curie Actions network of fellows, will provide an exceptional environment in which Carlo can grow as an intellectual. Carlo will make an excellent ambassador for the Fellowship while in the program, and later when he establishes his own academic career.

Sincerely,



Polly L. Arnold

Professor of Chemistry, University of California, Berkeley
Director, Chemical Sciences Division, Lawrence Berkeley National Laboratory

ANNEX 2

ESTIMATED BUDGET FOR THE ACTION

	Estimated EU contribution								
	Estimated eligible unit contributions (per budget category)							Maximum grant amount ¹	
	A. Contributions for recruited researchers					B. Institutional contributions			Total
	A.1 Living allowance	A.2 Mobility allowance	A.3 Family allowance	A.4 Long-term leave allowance	A.5 Special needs allowance	B.1 Research, training and networking contribution	B.2 Management and indirect contribution		
Forms of funding	Unit contribution ²	Unit contribution ²	Unit contribution ²	Unit contribution ²	Unit contribution ²	Unit contribution ²	Unit contribution ²	h = a + b + c + d + e + f + g	i
	a	b	c	d	e	f	g		
1 - UNIFI	312 031.08	25 560.00	23 760.00	0.00	0.00	36 000.00	23 400.00	420 751.08	420 751.08
2 - UCLA									
Σ consortium	312 031.08	25 560.00	23 760.00	0.00	0.00	36 000.00	23 400.00	420 751.08	420 751.08

¹ The 'maximum grant amount' is the maximum grant amount fixed in the grant agreement (on the basis of the sum of the beneficiaries' estimated units).

² See Annex 2a 'Additional information on the estimated budget' for the details (units, amount per unit).

ANNEX 2a

ADDITIONAL INFORMATION ON UNIT COSTS AND CONTRIBUTIONS

HE MSCA Doctoral Networks/Post-doctoral Fellowships and HE ERA fellowships

See [*Additional information on unit costs and contributions \(Annex 2a and 2b\)*](#)

HE MSCA Staff Exchanges

See [*Additional information on unit costs and contributions \(Annex 2a and 2b\)*](#)

HE MSCA COFUND

See [*Additional information on unit costs and contributions \(Annex 2a and 2b\)*](#)

ANNEX 4 HORIZON EUROPE MSCA UNIT MGA — MULTI + MONO

FINANCIAL STATEMENT FOR [PARTICIPANT NAME] FOR REPORTING PERIOD [NUMBER]

	EU contribution								Requested EU contribution
	Eligible unit contributions (per budget category)								
	[OPTION for all MSCA ToA except COFUND: A. . Contributions for [recruited researchers] [seconded staff members]][OPTION for COFUND: A. COFUND contributions]					[OPTION for all MSCA ToA except COFUND: B. Institutional contributions]		Total	
	[OPTION for DN and PF : A.1 Living allowance] [OPTION for SE: A.1 Top - up allowance] [OPTION for COFUND: A.1 COFUND allowance]	[OPTION for DN and PF: A.2 Mobility allowance]	[OPTION for DN and PF: A.3 Family allowance]	[OPTION for all MSCA ToA except SE: A.4 Long-term leave allowance]	A.5 Special needs allowance	[B.1 Research, training and networking contribution]	[B.2 Management and indirect contribution]		
Forms of funding	Unit contribution ¹	[Unit contribution ¹]	[Unit contribution ¹]	[Unit contribution ¹]	Unit contribution ¹	[Unit contribution ¹]	[Unit contribution ¹]	h = a [+ b]/[+ c] [+ d] + e [+ f] [+ g]	i
	a	[b]	[c]	[d]	e	[f]	[g]		
XX – [short name beneficiary/affiliated entity]									

The beneficiary/affiliated entity hereby confirms that:

The information provided is complete, reliable and true.

The unit contributions declared are eligible (see Article 6).

The contributions can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 19, 20 and 25).

¹ See Annex 2a 'Additional information on the estimated budget' for the details (units, amount per unit).

ANNEX 5

SPECIFIC RULES

CONFIDENTIALITY AND SECURITY (— ARTICLE 13)

Sensitive information with security recommendation

Sensitive information with a security recommendation must comply with the additional requirements imposed by the granting authority.

Before starting the action tasks concerned, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task. The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary.

For requirements restricting disclosure or dissemination, the information must be handled in accordance with the recommendation and may be disclosed or disseminated only after written approval from the granting authority.

EU classified information

If EU classified information is used or generated by the action, it must be treated in accordance with the security classification guide (SCG) and security aspect letter (SAL) set out in Annex 1 and Decision 2015/444¹ and its implementing rules — until it is declassified.

Deliverables which contain EU classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving EU classified information may be subcontracted only with prior explicit written approval from the granting authority and only to entities established in an EU Member State or in a non-EU country with a security of information agreement with the EU (or an administrative arrangement with the Commission).

EU classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

ETHICS (— ARTICLE 14)

Ethics and research integrity

The beneficiaries must carry out the action in compliance with:

- ethical principles (including the highest standards of research integrity)

¹ Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

and

- applicable EU, international and national law, including the EU Charter of Fundamental Rights and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols.

No funding can be granted, within or outside the EU, for activities that are prohibited in all Member States. No funding can be granted in a Member State for an activity which is forbidden in that Member State.

The beneficiaries must pay particular attention to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of persons, the right to non-discrimination, the need to ensure protection of the environment and high levels of human health protection.

The beneficiaries must ensure that the activities under the action have an exclusive focus on civil applications.

The beneficiaries must ensure that the activities under the action do not:

- aim at human cloning for reproductive purposes
- intend to modify the genetic heritage of human beings which could make such modifications heritable (with the exception of research relating to cancer treatment of the gonads, which may be financed)
- intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer, or
- lead to the destruction of human embryos (for example, for obtaining stem cells).

Activities involving research on human embryos or human embryonic stem cells may be carried out only if:

- they are set out in Annex 1 or
- the coordinator has obtained explicit approval (in writing) from the granting authority.

In addition, the beneficiaries must respect the fundamental principle of research integrity — as set out in the European Code of Conduct for Research Integrity².

This implies compliance with the following principles:

- reliability in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources
- honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair and unbiased way

² European Code of Conduct for Research Integrity of ALLEA (All European Academies).

- respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment
- accountability for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts

and means that beneficiaries must ensure that persons carrying out research tasks follow the good research practices including ensuring, where possible, openness, reproducibility and traceability and refrain from the research integrity violations described in the Code.

Activities raising ethical issues must comply with the additional requirements formulated by the ethics panels (including after checks, reviews or audits; see Article 25).

Before starting an action task raising ethical issues, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task, notably from any (national or local) ethics committee or other bodies such as data protection authorities.

The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary, which shows that the documents cover the action tasks in question and includes the conclusions of the committee or authority concerned (if any).

VALUES (— ARTICLE 14)

Gender mainstreaming

The beneficiaries must take all measures to promote equal opportunities between men and women in the implementation of the action and, where applicable, in line with the gender equality plan. They must aim, to the extent possible, for a gender balance at all levels of personnel assigned to the action, including at supervisory and managerial level.

INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE (— ARTICLE 16)

Definitions

Access rights — Rights to use results or background.

Dissemination — The public disclosure of the results by appropriate means, other than resulting from protecting or exploiting the results, including by scientific publications in any medium.

Exploit(ation) — The use of results in further research and innovation activities other than those covered by the action concerned, including among other things, commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities.

Fair and reasonable conditions — Appropriate conditions, including possible financial terms or royalty-free conditions, taking into account the specific circumstances of the request for access, for example the actual or potential value of the results or background to which access is requested and/or the scope, duration or other characteristics of the exploitation envisaged.

FAIR principles — ‘findability’, ‘accessibility’, ‘interoperability’ and ‘reusability’.

Open access — Online access to research outputs provided free of charge to the end-user.

Open science — An approach to the scientific process based on open cooperative work, tools and diffusing knowledge.

Research data management — The process within the research lifecycle that includes the organisation, storage, preservation, security, quality assurance, allocation of persistent identifiers (PIDs) and rules and procedures for sharing of data including licensing.

Research outputs — Results to which access can be given in the form of scientific publications, data or other engineered results and processes such as software, algorithms, protocols, models, workflows and electronic notebooks.

Scope of the obligations

For this section, references to ‘beneficiary’ or ‘beneficiaries’ do not include affiliated entities (if any).

Agreement on background — Background free from restrictions

The beneficiaries must identify in a written agreement the background as needed for implementing the action or for exploiting its results.

Where the call conditions restrict control due to strategic interests reasons, background that is subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries or target countries set out in the call conditions and that impact the exploitation of the results (i.e. would make the exploitation of the results subject to control or restrictions) must not be used and must be explicitly excluded in the agreement on background — unless otherwise agreed with the granting authority.

Results free from restrictions

Where the call conditions restrict control due to strategic interests reasons, the beneficiaries must ensure that the results of the action are not subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries or target countries set out in the call conditions — unless otherwise agreed with the granting authority.

Ownership of results

Results are owned by the beneficiaries that generate them.

However, two or more beneficiaries own results jointly if:

- they have jointly generated them and
- it is not possible to:
 - establish the respective contribution of each beneficiary, or
 - separate them for the purpose of applying for, obtaining or maintaining their protection.

The joint owners must agree — in writing — on the allocation and terms of exercise of their joint ownership ('joint ownership agreement'), to ensure compliance with their obligations under this Agreement.

Unless otherwise agreed in the joint ownership agreement or consortium agreement, each joint owner may grant non-exclusive licences to third parties to exploit the jointly-owned results (without any right to sub-license), if the other joint owners are given:

- at least 45 days advance notice and
- fair and reasonable compensation.

The joint owners may agree — in writing — to apply another regime than joint ownership.

If third parties (including employees and other personnel) may claim rights to the results, the beneficiary concerned must ensure that those rights can be exercised in a manner compatible with its obligations under the Agreement.

The beneficiaries must indicate the owner(s) of the results (results ownership list) in the final periodic report.

Protection of results

Beneficiaries which have received funding under the grant must adequately protect their results — for an appropriate period and with appropriate territorial coverage — if protection is possible and justified, taking into account all relevant considerations, including the prospects for commercial exploitation, the legitimate interests of the other beneficiaries and any other legitimate interests.

Exploitation of results

Beneficiaries which have received funding under the grant must — up to four years after the end of the action (see Data Sheet, Point 1) — use their best efforts to exploit their results directly or to have them exploited indirectly by another entity, in particular through transfer or licensing.

If, despite a beneficiary's best efforts, the results are not exploited within one year after the end of the action, the beneficiaries must (unless otherwise agreed in writing with the granting authority) use the Horizon Results Platform to find interested parties to exploit the results.

If results are incorporated in a standard, the beneficiaries must (unless otherwise agreed with the granting authority or unless it is impossible) ask the standardisation body to include the funding statement (see Article 17) in (information related to) the standard.

Additional exploitation obligations

Where the call conditions impose additional exploitation obligations (including obligations linked to the restriction of participation or control due to strategic assets, interests, autonomy or security reasons), the beneficiaries must comply with them — up to four years after the end of the action (see Data Sheet, Point 1).

Where the call conditions impose additional exploitation obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) grant for a limited period of time specified in the request, non-exclusive licences — under fair and reasonable

conditions — to their results to legal entities that need the results to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

Additional information obligation relating to standards

Where the call conditions impose additional information obligations relating to possible standardisation, the beneficiaries must — up to four years after the end of the action (see Data Sheet, Point 1) — inform the granting authority, if the results could reasonably be expected to contribute to European or international standards.

Transfer and licensing of results

Transfer of ownership

The beneficiaries may transfer ownership of their results, provided this does not affect compliance with their obligations under the Agreement.

The beneficiaries must ensure that their obligations under the Agreement regarding their results are passed on to the new owner and that this new owner has the obligation to pass them on in any subsequent transfer.

Moreover, they must inform the other beneficiaries with access rights of the transfer at least 45 days in advance (or less if agreed in writing), unless agreed otherwise in writing for specifically identified third parties including affiliated entities or unless impossible under the applicable law. This notification must include sufficient information on the new owner to enable the beneficiaries concerned to assess the effects on their access rights. The beneficiaries may object within 30 days of receiving notification (or less if agreed in writing), if they can show that the transfer would adversely affect their access rights. In this case, the transfer may not take place until agreement has been reached between the beneficiaries concerned.

Granting licences

The beneficiaries may grant licences to their results (or otherwise give the right to exploit them), including on an exclusive basis, provided this does not affect compliance with their obligations.

Exclusive licences for results may be granted only if all the other beneficiaries concerned have waived their access rights.

Granting authority right to object to transfers or licensing — Horizon Europe actions

Where the call conditions in Horizon Europe actions provide for the right to object to transfers or licensing, the granting authority may — up to four years after the end of the action (see Data Sheet, Point 1) — object to a transfer of ownership or the exclusive licensing of results, if:

- the beneficiaries which generated the results have received funding under the grant
- it is to a legal entity established in a non-EU country not associated with Horizon Europe, and

- the granting authority considers that the transfer or licence is not in line with EU interests.

Beneficiaries that intend to transfer ownership or grant an exclusive licence must formally notify the granting authority before the intended transfer or licensing takes place and:

- identify the specific results concerned
- describe in detail the new owner or licensee and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or licence on EU interests, in particular regarding competitiveness as well as consistency with ethical principles and security considerations.

The granting authority may request additional information.

If the granting authority decides to object to a transfer or exclusive licence, it must formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information it has requested).

No transfer or licensing may take place in the following cases:

- pending the granting authority decision, within the period set out above
- if the granting authority objects
- until the conditions are complied with, if the granting authority objection comes with conditions.

A beneficiary may formally notify a request to waive the right to object regarding intended transfers or grants to a specifically identified third party, if measures safeguarding EU interests are in place. If the granting authority agrees, it will formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information requested).

Limitations to transfers and licensing due to strategic assets, interests, autonomy or security reasons of the EU and its Member States

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security reasons, the beneficiaries may not transfer ownership of their results or grant licences to third parties which are established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless they have requested and received prior approval by the granting authority.

The request must:

- identify the specific results concerned
- describe in detail the new owner or licensee and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or license on the strategic assets, interests, autonomy or security of the EU and its Member States.

The granting authority may request additional information.

Access rights to results and background

Exercise of access rights — Waiving of access rights — No sub-licensing

Requests to exercise access rights and the waiver of access rights must be in writing.

Unless agreed otherwise in writing with the beneficiary granting access, access rights do not include the right to sub-license.

If a beneficiary is no longer involved in the action, this does not affect its obligations to grant access.

If a beneficiary defaults on its obligations, the beneficiaries may agree that that beneficiary no longer has access rights.

Access rights for implementing the action

The beneficiaries must grant each other access — on a royalty-free basis — to background needed to implement their own tasks under the action, unless the beneficiary that holds the background has — before acceding to the Agreement —:

- informed the other beneficiaries that access to its background is subject to restrictions, or
- agreed with the other beneficiaries that access would not be on a royalty-free basis.

The beneficiaries must grant each other access — on a royalty-free basis — to results needed for implementing their own tasks under the action.

Access rights for exploiting the results

The beneficiaries must grant each other access — under fair and reasonable conditions — to results needed for exploiting their results.

The beneficiaries must grant each other access — under fair and reasonable conditions — to background needed for exploiting their results, unless the beneficiary that holds the background has — before acceding to the Agreement — informed the other beneficiaries that access to its background is subject to restrictions.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

Access rights for entities under the same control

Unless agreed otherwise in writing by the beneficiaries, access to results and, subject to the restrictions referred to above (if any), background must also be granted — under fair and reasonable conditions — to entities that:

- are established in an EU Member State or Horizon Europe associated country
- are under the direct or indirect control of another beneficiary, or under the same direct or indirect control as that beneficiary, or directly or indirectly controlling that beneficiary and

- need the access to exploit the results of that beneficiary.

Unless agreed otherwise in writing, such requests for access must be made by the entity directly to the beneficiary concerned.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

Access rights for the granting authority, EU institutions, bodies, offices or agencies and national authorities to results for policy purposes — Horizon Europe actions

In Horizon Europe actions, the beneficiaries which have received funding under the grant must grant access to their results — on a royalty-free basis — to the granting authority, EU institutions, bodies, offices or agencies for developing, implementing and monitoring EU policies or programmes. Such access rights do not extend to beneficiaries' background.

Such access rights are limited to non-commercial and non-competitive use.

For actions under the cluster 'Civil Security for Society', such access rights also extend to national authorities of EU Member States for developing, implementing and monitoring their policies or programmes in this area. In this case, access is subject to a bilateral agreement to define specific conditions ensuring that:

- the access rights will be used only for the intended purpose and
- appropriate confidentiality obligations are in place.

Moreover, the requesting national authority or EU institution, body, office or agency (including the granting authority) must inform all other national authorities of such a request.

Additional access rights

Where the call conditions impose additional access rights, the beneficiaries must comply with them.

COMMUNICATION, DISSEMINATION, OPEN SCIENCE AND VISIBILITY (— ARTICLE 17)

Dissemination

Dissemination of results

The beneficiaries must disseminate their results as soon as feasible, in a publicly available format, subject to any restrictions due to the protection of intellectual property, security rules or legitimate interests.

A beneficiary that intends to disseminate its results must give at least 15 days advance notice to the other beneficiaries (unless agreed otherwise), together with sufficient information on the results it will disseminate.

Any other beneficiary may object within (unless agreed otherwise) 15 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the results may not be disseminated unless appropriate steps are taken to safeguard those interests.

Additional dissemination obligations

Where the call conditions impose additional dissemination obligations, the beneficiaries must also comply with those.

Open Science

Open science: open access to scientific publications

The beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. In particular, they must ensure that:

- at the latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a trusted repository for scientific publications
- immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g. CC BY-NC, CC BY-ND) and
- information is given via the repository about any research output or any other tools and instruments needed to validate the conclusions of the scientific publication.

Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.

Metadata of deposited publications must be open under a Creative Commons Public Domain Dedication (CC 0) or equivalent, in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: publication (author(s), title, date of publication, publication venue); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

Open science: research data management

The beneficiaries must manage the digital research data generated in the action ('data') responsibly, in line with the FAIR principles and by taking all of the following actions:

- establish a data management plan ('DMP') (and regularly update it)
- as soon as possible and within the deadlines set out in the DMP, deposit the data in a trusted repository; if required in the call conditions, this repository must be federated in the EOSC in compliance with EOSC requirements
- as soon as possible and within the deadlines set out in the DMP, ensure open access — via the repository — to the deposited data, under the latest available version of the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC 0) or a licence/dedication with equivalent rights, following the principle 'as open as possible as closed as necessary', unless providing open access would in particular:

- be against the beneficiary's legitimate interests, including regarding commercial exploitation, or
 - be contrary to any other constraints, in particular the EU competitive interests or the beneficiary's obligations under this Agreement; if open access is not provided (to some or all data), this must be justified in the DMP
- provide information via the repository about any research output or any other tools and instruments needed to re-use or validate the data.

Metadata of deposited data must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: datasets (description, date of deposit, author(s) and embargo); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for related publications and other research outputs.

Open science: additional practices

Where the call conditions impose additional obligations regarding open science practices, the beneficiaries must also comply with those.

Where the call conditions impose additional obligations regarding the validation of scientific publications, the beneficiaries must provide (digital or physical) access to data or other results needed for validation of the conclusions of scientific publications, to the extent that their legitimate interests or constraints are safeguarded (and unless they already provided (open) access at publication).

Where the call conditions impose additional open science obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) immediately deposit any research output in a trusted repository and provide open access to it under a CC BY licence, a Public Domain Dedication (CC 0) or equivalent. As an exception, if the access would be against the beneficiaries' legitimate interests, the beneficiaries must grant non-exclusive licenses — under fair and reasonable conditions — to legal entities that need the research output to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

Plan for the exploitation and dissemination of results including communication activities

Unless excluded by the call conditions, the beneficiaries must provide and regularly update a plan for the exploitation and dissemination of results including communication activities.

SPECIFIC RULES FOR CARRYING OUT THE ACTION (— ARTICLE 18)

Implementation in case of restrictions due to strategic assets, interests, autonomy or security of the EU and its Member States

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security, the beneficiaries must ensure that none of the entities that participate as affiliated entities, associated partners, third parties giving in-kind contributions, subcontractors or recipients of financial support to third parties are established in countries

which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless otherwise agreed with the granting authority.

The beneficiaries must moreover ensure that any cooperation with entities established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) does not affect the strategic assets, interests, autonomy or security of the EU and its Member States.

Specific rules for MSCA actions

When implementing MSCA Doctoral Networks (DN), Postdoctoral Fellowships (PF) and COFUND actions, the beneficiaries must respect the following conditions:

- take all measures to implement the principles set out in Annex II to the Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe³ ('the European Charter for Researchers') and ensure that the researchers and all participants involved in the action are aware of them
- ensure that the researchers enjoy at the place of the implementation at least the same standards and working conditions as those applicable to local researchers holding a similar position
- ensure that the employment contract, other direct contract or fixed-amount-fellowship agreement (see Article 6) specifies:
 - the name of the supervisor(s) for the research training activities
 - the starting date and duration of the research training activities
 - the monthly support for the researcher under this Agreement (in euro and, if relevant, in the currency in which the remuneration is paid)
 - the obligation of the researcher to work exclusively for the action, unless part-time for professional reasons is allowed and has been approved (and for MSCA-DN and MSCA-PF: not to receive, for activities carried out in the frame of the action, other incomes than those received from the beneficiary or other entities mentioned in Annex 1)
 - the working pattern of the researcher
 - the arrangements related to the intellectual property rights (during implementation of the action and afterwards), in particular full access — on a royalty-free basis — for the researcher to background and results needed for their activities under the action

³ Council Recommendation C/2023/1640 of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe, Annex II (OJ C, C/2023/1640, 29.12.2023).

- the obligation of the researcher to inform as soon as possible about events or circumstances likely to affect the implementation of the action or the compliance with requirements under the Agreement (see Article 19)
- the obligation of the researcher to maintain confidentiality (see Article 13)
- the obligation of the researcher to ensure the visibility of EU funding in communications or publications and in applications for the protection of results (see Articles 17)
- where set out in the call conditions, the obligation of the researcher to carry out a mandatory return period of 12 months
- assist the researchers in the administrative procedures related to the recruitment
- inform the researchers about:
 - the description, conditions, location and timetable for the implementation of the research training activities
 - the rights and obligations toward the researchers under this Agreement
 - the obligation of the researchers to complete and submit — at the end of the research training activities — the evaluation questionnaire and — two years later — follow-up questionnaire provided by the granting authority
- ensure full access — on a royalty-free basis — for the researchers to background and results needed for their activities under the action
- ensure that the researchers do not have to bear any costs for the implementation of the action as described in Annex 1
- provide training and the necessary means for implementing the action (or ensure that such training and means are provided by other participants in the action)
- ensure that the researchers are adequately supervised and receive appropriate career guidance
- ensure that personalised career development plans are established, support their implementation and update in view of the needs of the researchers
- ensure an appropriate exposure to the non-academic sector (if applicable)
- respect the maximum limit for secondments set out in the call conditions
- respect the conditions for the outgoing and return phases set out in the call conditions (if any)
- ensure that the researchers are informed that they are ‘Marie Skłodowska-Curie fellows’
- for MSCA-DN and MSCA-COFUND:

- advertise and publish vacancies internationally, including on the web-sites requested by the granting authority, indicating the gross salary (not including employer's social contributions) to be offered to the researcher
- recruit the researchers, following an open, transparent, merit-based, impartial and equitable recruitment procedure (for postdoctoral programmes in MSCA-COFUND: with regular selection rounds and international peer review), on the basis of:
 - their scientific skills and the relevance of their research experience
 - the impact of the proposed training on the researcher's career
 - a fair gender representation (by promoting genuine equal access opportunities throughout the recruitment process)

The selection committees must bring together diverse expertise, have an adequate gender balance and include members from different countries and with relevant experience to assess the candidates.

- ensure that no conflict of interest exists in or arises from the recruitment
- for MSCA-DN and MSCA-PF:
 - ensure that the researchers do not receive, for activities carried out in the frame of the action, other incomes than those received from the beneficiaries (or other entities mentioned in Annex 1)
 - host the researchers at their premises (or at the premises of other participants in the action)
- for MSCA-COFUND where doctoral or post-doctoral programmes are implemented as financial support to third parties through implementing partners:
 - ensure that the implementing partners comply with the same standards and procedures for implementing the research training activities, including the recruitment and working conditions for researchers, the specific rules for MSCA-COFUND actions and the specific rules on ethics and research integrity set out in Annex 5
 - implement effective monitoring and oversight arrangements towards the implementing partners, covering all aspects relating to the action
 - ensure effective and reliable reporting by the implementing partners, covering the activities implemented, information on indicators, as well as the legality and regularity of the expenditure claimed
 - ensure that the implementing partners provide that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the final recipients.

When implementing Horizon Europe MSCA Staff Exchanges (MSCA-SE), the beneficiaries must respect the following conditions:

- take all measures to implement the principles set out in Annex II to the Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe⁴ ('the European Charter for Researchers') and ensure that the seconded staff and all participants involved in the action are aware of them
- ensure that the seconded staff enjoys at the place of the implementation at least the same standards and working conditions as those applicable to local staff holding a similar position
- assist the seconded staff with the administrative procedures related to their secondment
- inform the seconded staff about:
 - the description, conditions, location and timetable for the implementation of the secondment
 - the rights and obligations of the beneficiary toward the seconded staff under this Agreement
 - the obligation of the seconded staff to complete and submit — at the end of the secondment — the evaluation questionnaire and — two years later — the follow-up questionnaire provided by the granting authority
 - the arrangements related to the intellectual property rights between the beneficiary and the seconded staff (during the secondment and afterwards), in particular full access — on a royalty-free basis — for the staff to background and results needed for their activities under the action
 - the obligation of the seconded staff to maintain confidentiality (see Article 13)
 - the obligation of the seconded staff to ensure the visibility of EU funding in communications or publications and in applications for the protection of results (see Article 17)
- ensure that the seconded staff do not have to bear any costs for the implementation of the action as described in Annex 1
- provide training and the necessary means for implementing the action (or ensure that such training and means are provided by other participants in the action)
- ensure that the seconded staff are adequately mentored
- ensure that the rights and obligations of the seconded staff remain unchanged during the secondment
- ensure full access — on a royalty-free basis — for the staff to background and results needed for their activities under the action

⁴ Council Recommendation C/2023/1640 of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe, Annex II (OJ C, C/2023/1640, 29.12.2023).

- if appropriate, ensure that seconded staff are reintegrated after the secondment
- ensure that the seconded staff are covered by an adequate medical insurance scheme
- ensure that the seconded staff have the relevant expertise for the action
- use the top-up allowance (see Article 6) to contribute to the subsistence, accommodation and travel of the seconded staff.

Specific rules for ERA Fellowship actions

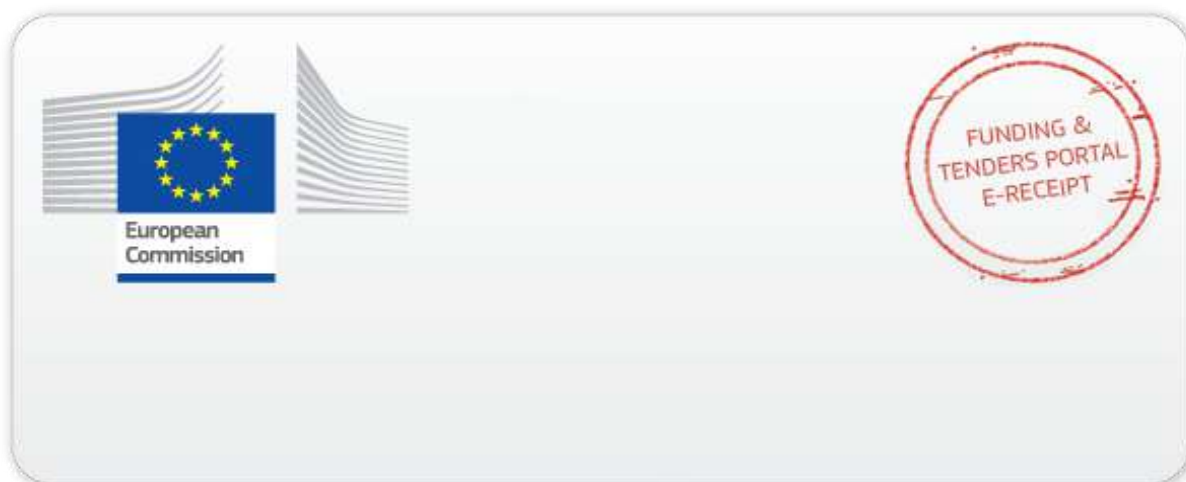
When implementing ERA Fellowships, the beneficiaries must respect the following conditions:

- take all measures to implement the principles set out in Annex II to the Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe⁵ ('the European Charter for Researchers') and ensure that the researchers and all participants involved in the action are aware of them
- ensure that the researchers enjoy at the place of the implementation at least the same standards and working conditions as those applicable to local researchers holding a similar position
- ensure that the employment contract, other direct contract or fixed-amount-fellowship agreement (see Article 6) specifies:
 - the name of the supervisor(s) for the research training activities
 - the starting date and duration of the research training activities
 - the monthly support for the researcher under this Agreement (in euro and, if relevant, in the currency in which the remuneration is paid)
 - the obligation of the researcher to work exclusively for the action, unless part-time for professional reasons is allowed and has been approved (and not to receive, for activities carried out in the frame of the action, other incomes than those received from the beneficiary or other entities mentioned in Annex 1)
 - the working pattern of the researcher
 - the arrangements related to the intellectual property rights (during implementation of the action and afterwards), in particular full access — on a royalty-free basis — for the researcher to background and results needed for their activities under the action

⁵ Council Recommendation C/2023/1640 of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe, Annex II (OJ C, C/2023/1640, 29.12.2023).

- the obligation of the researcher to inform as soon as possible about events or circumstances likely to affect the implementation of the action or the compliance with requirements under the Agreement (see Article 19)
- the obligation of the researcher to maintain confidentiality (see Article 13)
- the obligation of the researcher to ensure the visibility of EU funding in communications or publications and in applications for the protection of results (see Articles 17)
- where set out in the call conditions, the obligation of the researcher to carry out a mandatory return period of 12 months
- assist the researchers in the administrative procedures related to the recruitment
- inform the researchers about:
 - the description, conditions, location and timetable for the implementation of the research training activities
 - the rights and obligations toward the researchers under this Agreement
 - the obligation of the researchers to complete and submit — at the end of the research training activities — the evaluation questionnaire and — two years later — follow-up questionnaire provided by the granting authority
- ensure full access — on a royalty-free basis — for the researchers to background and results needed for their activities under the action
- ensure that the researchers do not have to bear any costs for the implementation of the action as described in Annex 1
- provide training and the necessary means for implementing the action (or ensure that such training and means are provided by other participants in the action)
- ensure that the researchers are adequately supervised and receive appropriate career guidance
- ensure that personalised career development plans are established, support their implementation and update in view of the needs of the researchers
- ensure an appropriate exposure to the non-academic sector (if applicable)
- respect the maximum limit for secondments set out in the call conditions
- respect the conditions for the outgoing and return phases set out in the call conditions (if any)
- ensure that the researchers are informed that they are ‘ERA fellows’
- ensure that the researchers do not receive, for activities carried out in the frame of the action, other incomes than those received from the beneficiaries (or other entities mentioned in Annex 1)

- host the researchers at their premises (or at the premises of other participants in the action)



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EUROPEAN RESEARCH COUNCIL EXECUTIVE AGENCY (ERCEA)

ERCEA.C – Grant Management Department
C.3 – Grant Management & Granting Coordination

GRANT AGREEMENT

Project 101039890 — ELECTRA

PREAMBLE

This **Agreement** ('the Agreement') is **between** the following parties:

on the one part,

the **European Research Council Executive Agency (ERCEA)** ('EU executive agency' or 'granting authority'), under the powers delegated by the European Commission ('European Commission'),

and

on the other part,

1. 'the coordinator':

UNIVERSITA DEGLI STUDI DI FIRENZE (UNIFI), PIC 999895789, established in Piazza San Marco 4, Florence 50121, Italy,

Unless otherwise specified, references to 'beneficiary' or 'beneficiaries' include the coordinator and affiliated entities (if any).

If only one beneficiary signs the grant agreement ('mono-beneficiary grant'), all provisions referring to the 'coordinator' or the 'beneficiaries' will be considered — mutatis mutandis — as referring to the beneficiary.

The parties referred to above have agreed to enter into the Agreement.

By signing the Agreement and the accession forms, the beneficiaries accept the grant and agree to implement the action under their own responsibility and in accordance with the Agreement, with all the obligations and terms and conditions it sets out.

The Agreement is composed of:

Preamble

Terms and Conditions (including Data Sheet)

- Annex 1 Description of the action¹
- Annex 2 Estimated budget for the action
- Annex 2a Additional information on unit costs and contributions (if applicable)
- Annex 3 Accession forms (if applicable)²
- Annex 3a Declaration on joint and several liability of affiliated entities (if applicable)³
- Annex 4 Model for the financial statements
- Annex 5 Specific rules (if applicable)

¹ Template published on [Portal Reference Documents](#).

² Template published on [Portal Reference Documents](#).

³ Template published on [Portal Reference Documents](#).

TERMS AND CONDITIONS

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DATA SHEET

1. General data

Project summary:

Project summary
ELECTRA aims at understanding and controlling the interaction between magnetic molecules and electric fields, called Spin-Electric (SE) effect. Molecules have several characteristics that make them appealing for information technology (small size, monodispersity, chemical tunability, quantum behaviour). Nowadays, electric fields are the most environmentally friendly and precise way to target a single molecule. Therefore, understanding how to tailor and control the SE effects will trigger the design of less energy-demanding, more efficient, and smaller devices. However, the SE effects on molecules are still poorly explored and rationalized, largely due to the absence of a generally applicable experimental technique. Therefore, this project proposes the realisation of a novel experimental technique to detect SE effects on any magnetically anisotropic material, with no a priori restrictions. The versatility of the technique will allow the study of both single crystals and thin films, which is vital in the perspective of using these systems in nanostructures. A rational synthetic plan will exploit the versatility of chemistry to unravel the role and importance of three chemically tunable properties (spin-orbit coupling, nature of the donor atoms, and structural rigidity) on the onset of the SE effects in coordination complexes. Moreover, the effect of temperature and magnetic field on the SE effects will be assessed using super-sensitive molecular probes. The rationalization of the effect will be obtained by combining ab initio calculations and phenomenological models. The positive completion of ELECTRA will deliver an unprecedented understanding of the SE effects in molecules and chemical guidelines for synthesizing highly performant molecular architectures with SE effects on-demand to be used in the field of information technology.

Keywords:

- Coordination chemistry
- Structural properties of materials
- Characterisation methods of materials
- Molecular architecture and Structure

Project number: 101039890

Project name: ELEctrically ConTRolled magnetic Anisotropy

Project acronym: ELECTRA

Call: ERC-2021-STG

Topic: ERC-2021-STG

Type of action: HORIZON ERC Grants

Granting authority: European Research Council Executive Agency

Grant managed through EU Funding & Tenders Portal: Yes (eGrants)

Project starting date: fixed date: 1 June 2022

Project end date: 31 May 2027

Project duration: 60 months

Consortium agreement: No

2. Participants

List of participants:

N°	Role	Short name	Legal name	Ctry	PIC	Total eligible costs (BEN and AE)	Max grant amount
1	COO	UNIFI	UNIVERSITA DEGLI STUDI DI FIRENZE	IT	999895789	1 498 784.00	1 498 784.00

N°	Role	Short name	Legal name	Ctry	PIC	Total eligible costs (BEN and AE)	Max grant amount
Total						1 498 784.00	1 498 784.00

Coordinator:

- UNIVERSITA DEGLI STUDI DI FIRENZE (UNIFI)

3. Grant**Maximum grant amount, total estimated eligible costs and contributions and funding rate:**

Total eligible costs (BEN and AE)	Funding rate (%)	Maximum grant amount (Annex 2)	Maximum grant amount (award decision)
1 498 784.00	100	1 498 784.00	1 498 784.00

Grant form: Budget-based**Grant mode:** Action grant**Budget categories/activity types:**

- A. Personnel costs
 - A.1 Employees, A.2 Natural persons under direct contract, A.3 Seconded persons
 - A.4 SME owners and natural person beneficiaries
- B. Subcontracting costs
- C. Purchase costs
 - C.1 Travel and subsistence
 - C.2 Equipment
 - C.3 Other goods, works and services
- D. Other cost categories
 - D.2 Internally invoiced goods and services
 - D.7 ERC additional funding
 - D.8 ERC additional funding (subcontracting, FSTP and internally invoiced goods and services)
- E. Indirect costs

Cost eligibility options:

- In-kind contributions eligible costs
- Parental leave
- Project-based supplementary payments
- Average personnel costs (unit cost according to usual cost accounting practices)
- Limitation for subcontracting
- Travel and subsistence:
 - Travel: Actual costs
 - Accommodation: Actual costs
 - Subsistence: Actual costs

- Equipment: depreciation only
- Indirect cost flat-rate: 25% of the eligible direct costs (categories A-D, except volunteers costs, subcontracting costs, financial support to third parties and exempted specific cost categories, if any)
- VAT: Yes
- Other ineligible costs

Budget flexibility: Yes (no flexibility cap)

4. Reporting, payments and recoveries

4.1 Continuous reporting (art 21)

Deliverables: see Funding & Tenders Portal Continuous Reporting tool

Progress reports (ERC Scientific Report): Yes (deadline for submission, 60 days after end of period)

Progress report No	Month from	Month to
1	1	30
2	31	60

4.2 Periodic reporting and payments

Reporting and payment schedule (art 21, 22):

Reporting					Payments	
Reporting periods			Type	Deadline	Type	Deadline (time to pay)
RP No	Month from	Month to				
					Initial prefinancing	30 days from entry into force/10 days before starting date – whichever is the latest
					Interim payment	90 days from receiving periodic report
					Interim payment	90 days from receiving periodic report
					Final payment	90 days from receiving periodic report

Prefinancing payments and guarantees:

Prefinancing payment	
Type	Amount
Prefinancing 1 (initial)	599 513.60

Reporting and payment modalities (art 21, 22):

Mutual Insurance Mechanism (MIM): Yes

MIM contribution: 5% of the maximum grant amount (74 939.20), retained from the initial prefinancing

Restrictions on distribution of initial prefinancing: The prefinancing may be distributed only if the minimum number of beneficiaries set out in the call conditions (if any) have acceded to the Agreement and only to beneficiaries that have acceded.

Interim payment ceiling (if any): 90% of the maximum grant amount

Exception for revenues: Yes

No-profit rule: Yes

Late payment interest: ECB + 3.5%

Bank account for payments:

IT88A0200802837000041126939

Conversion into euros: Double conversion

Reporting language: Language of the Agreement

4.3 Certificates (art 24):

Certificates on the financial statements (CFS):

Conditions:

Schedule: only at final payment, if threshold is reached

Standard threshold (beneficiary-level):

- financial statement: requested EU contribution to costs $\geq$ EUR 430 000.00

Special threshold for beneficiaries with a systems and process audit(see Article 24): financial statement: requested EU contribution to costs $\geq$ EUR 725 000.00

4.4 Recoveries (art 22)

First-line liability for recoveries:

Beneficiary termination: Beneficiary concerned

Final payment: Each beneficiary for their own debt

After final payment: Beneficiary concerned

Joint and several liability for enforced recoveries (in case of non-payment):

Individual financial responsibility: Each beneficiary is liable only for its own debts (and those of its affiliated entities, if any)

5. Consequences of non-compliance, applicable law & dispute settlement forum

Suspension and termination:

Additional suspension grounds (art 31)

Additional termination grounds (art 32)

Applicable law (art 43):

Standard applicable law regime: EU law + law of Belgium

Dispute settlement forum (art 43):

Standard dispute settlement forum:

EU beneficiaries: EU General Court + EU Court of Justice (on appeal)

Non-EU beneficiaries: Courts of Brussels, Belgium (unless an international agreement provides for the enforceability of EU court judgements)

6. Other

Specific rules (Annex 5): Yes

Standard time-limits after project end:

Confidentiality (for X years after final payment): 5

Record-keeping (for X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

Reviews (up to X years after final payment): 2

Audits (up to X years after final payment): 2

Extension of findings from other grants to this grant (no later than X years after final payment): 2

Impact evaluation (up to X years after final payment): 5 (or 3 for grants of not more than EUR 60 000)

CHAPTER 1 GENERAL

ARTICLE 1 — SUBJECT OF THE AGREEMENT

This Agreement sets out the rights and obligations and terms and conditions applicable to the grant awarded for the implementation of the action set out in Chapter 2.

ARTICLE 2 — DEFINITIONS

For the purpose of this Agreement, the following definitions apply:

Actions — The project which is being funded in the context of this Agreement.

Grant — The grant awarded in the context of this Agreement.

EU grants — Grants awarded by EU institutions, bodies, offices or agencies (including EU executive agencies, EU regulatory agencies, EDA, joint undertakings, etc.).

Participants — Entities participating in the action as beneficiaries, affiliated entities, associated partners, third parties giving in-kind contributions, subcontractors or recipients of financial support to third parties.

Beneficiaries (BEN) — The signatories of this Agreement (either directly or through an accession form).

Affiliated entities (AE) — Entities affiliated to a beneficiary within the meaning of Article 187 of EU Financial Regulation 2018/1046⁴ which participate in the action with similar rights and obligations as the beneficiaries (obligation to implement action tasks and right to charge costs and claim contributions).

Associated partners (AP) — Entities which participate in the action, but without the right to charge costs or claim contributions.

Purchases — Contracts for goods, works or services needed to carry out the action (e.g. equipment, consumables and supplies) but which are not part of the action tasks (see Annex 1).

Subcontracting — Contracts for goods, works or services that are part of the action tasks (see Annex 1).

In-kind contributions — In-kind contributions within the meaning of Article 2(36) of EU Financial

⁴ For the definition, see Article 187 Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012 ('EU Financial Regulation') (OJ L 193, 30.7.2018, p. 1): "**affiliated entities** [are]:

- (a) entities that form a sole beneficiary [(i.e. where an entity is formed of several entities that satisfy the criteria for being awarded a grant, including where the entity is specifically established for the purpose of implementing an action to be financed by a grant)];
- (b) entities that satisfy the eligibility criteria and that do not fall within one of the situations referred to in Article 136(1) and 141(1) and that have a link with the beneficiary, in particular a legal or capital link, which is neither limited to the action nor established for the sole purpose of its implementation".

Regulation 2018/1046, i.e. non-financial resources made available free of charge by third parties.

Fraud — Fraud within the meaning of Article 3 of EU Directive 2017/1371⁵ and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995⁶, as well as any other wrongful or criminal deception intended to result in financial or personal gain.

Irregularities — Any type of breach (regulatory or contractual) which could impact the EU financial interests, including irregularities within the meaning of Article 1(2) of EU Regulation 2988/95⁷.

Grave professional misconduct — Any type of unacceptable or improper behaviour in exercising one's profession, especially by employees, including grave professional misconduct within the meaning of Article 136(1)(c) of EU Financial Regulation 2018/1046.

Applicable EU, international and national law — Any legal acts or other (binding or non-binding) rules and guidance in the area concerned.

Portal — EU Funding & Tenders Portal; electronic portal and exchange system managed by the European Commission and used by itself and other EU institutions, bodies, offices or agencies for the management of their funding programmes (grants, procurements, prizes, etc.).

CHAPTER 2 ACTION

ARTICLE 3 — ACTION

The grant is awarded for the action **101039890 — ELECTRA** ('action'), as described in Annex 1.

ARTICLE 4 — DURATION AND STARTING DATE

The duration and the starting date of the action are set out in the Data Sheet (see Point 1).

CHAPTER 3 GRANT

ARTICLE 5 — GRANT

5.1 Form of grant

The grant is an action grant⁸ which takes the form of a budget-based mixed actual cost grant (i.e. a

⁵ Directive (EU) 2017/1371 of the European Parliament and of the Council of 5 July 2017 on the fight against fraud to the Union's financial interests by means of criminal law (OJ L 198, 28.7.2017, p. 29).

⁶ OJ C 316, 27.11.1995, p. 48.

⁷ Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

⁸ For the definition, see Article 180(2)(a) EU Financial Regulation 2018/1046: '**action grant**' means an EU grant to finance "an action intended to help achieve a Union policy objective".

grant based on actual costs incurred, but which may also include other forms of funding, such as unit costs or contributions, flat-rate costs or contributions, lump sum costs or contributions or financing not linked to costs).

5.2 Maximum grant amount

The maximum grant amount is set out in the Data Sheet (see Point 3) and in the estimated budget (Annex 2).

5.3 Funding rate

The funding rate for costs is 100% of the action's eligible costs.

Contributions are not subject to any funding rate.

5.4 Estimated budget, budget categories and forms of funding

The estimated budget for the action is set out in Annex 2.

It contains the estimated eligible costs and contributions for the action, broken down by participant and budget category.

Annex 2 also shows the types of costs and contributions (forms of funding)⁹ to be used for each budget category.

If unit costs or contributions are used, the details on the calculation will be explained in Annex 2a.

5.5 Budget flexibility

The budget breakdown may be adjusted — without an amendment (see Article 39) — by transfers (between participants and budget categories), as long as this does not imply any substantive or important change to the description of the action in Annex 1.

However:

- changes to the budget category for volunteers (if used) always require an amendment
- changes to budget categories with lump sums costs or contributions (if used; including financing not linked to costs) always require an amendment
- changes to budget categories with higher funding rates or budget ceilings (if used) always require an amendment
- addition of amounts for subcontracts not provided for in Annex 1 either require an amendment or simplified approval in accordance with Article 6.2
- other changes require an amendment or simplified approval, if specifically provided for in Article 6.2
- flexibility caps: not applicable.

⁹ See Article 125 EU Financial Regulation 2018/1046.

ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS AND CONTRIBUTIONS

In order to be eligible, costs and contributions must meet the **eligibility** conditions set out in this Article.

6.1 General eligibility conditions

The **general eligibility conditions** are the following:

(a) for actual costs:

- (i) they must be actually incurred by the beneficiary
- (ii) they must be incurred in the period set out in Article 4 (with the exception of costs relating to the submission of the final periodic report, which may be incurred afterwards; see Article 21)
- (iii) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
- (iv) they must be incurred in connection with the action as described in Annex 1 and necessary for its implementation
- (v) they must be identifiable and verifiable, in particular recorded in the beneficiary's accounts in accordance with the accounting standards applicable in the country where the beneficiary is established and with the beneficiary's usual cost accounting practices
- (vi) they must comply with the applicable national law on taxes, labour and social security and
- (vii) they must be reasonable, justified and must comply with the principle of sound financial management, in particular regarding economy and efficiency

(b) for unit costs or contributions (if any):

- (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
- (ii) the units must:
 - be actually used or produced by the beneficiary in the period set out in Article 4 (with the exception of units relating to the submission of the final periodic report, which may be used or produced afterwards; see Article 21)
 - be necessary for the implementation of the action and
- (iii) the number of units must be identifiable and verifiable, in particular supported by records and documentation (see Article 20)

(c) for flat-rate costs or contributions (if any):

- (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2

- (ii) the costs or contributions to which the flat-rate is applied must:
 - be eligible
 - relate to the period set out in Article 4 (with the exception of costs or contributions relating to the submission of the final periodic report, which may be incurred afterwards; see Article 21)
- (d) for lump sum costs or contributions (if any):
 - (i) they must be declared under one of the budget categories set out in Article 6.2 and Annex 2
 - (ii) the work must be properly implemented by the beneficiary in accordance with Annex 1
 - (iii) the deliverables/outputs must be achieved in the period set out in Article 4 (with the exception of deliverables/outputs relating to the submission of the final periodic report, which may be achieved afterwards; see Article 21)
- (e) for unit, flat-rate or lump sum costs or contributions according to usual cost accounting practices (if any):
 - (i) they must fulfil the general eligibility conditions for the type of cost concerned
 - (ii) the cost accounting practices must be applied in a consistent manner, based on objective criteria, regardless of the source of funding
- (f) for financing not linked to costs (if any): the results must be achieved or the conditions must be fulfilled as described in Annex 1.

In addition, for direct cost categories (e.g. personnel, travel & subsistence, subcontracting and other direct costs) only costs that are directly linked to the action implementation and can therefore be attributed to it directly are eligible. They must not include any indirect costs (i.e. costs that are only indirectly linked to the action, e.g. via cost drivers).

In-kind contributions provided by third parties free of charge may be declared as eligible direct costs by the beneficiaries which use them (under the same conditions as if they were their own, provided that they concern only direct costs and that the third parties and their in-kind contributions are set out in Annex 1 (or approved ex post in the periodic report, if their use does not entail changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants; ‘simplified approval procedure’).

6.2 Specific eligibility conditions for each budget category

For each budget category, the **specific eligibility conditions** are as follows:

Direct costs

A. Personnel costs

A.1 Costs for employees (or equivalent) are eligible as personnel costs if they fulfil the general eligibility conditions and are related to personnel working for the beneficiary under an employment contract (or equivalent appointing act) and assigned to the action.

They must be limited to salaries (including net payments during parental leave), social security contributions, taxes and other costs linked to the remuneration, if they arise from national law or the employment contract (or equivalent appointing act) and be calculated on the basis of the costs actually incurred, in accordance with the following method:

{daily rate for the person
multiplied by
number of day-equivalents worked on the action (rounded up or down to the nearest half-day)}.

The daily rate must be calculated as:

{annual personnel costs for the person
divided by
215}.

The number of day-equivalents declared for a person must be identifiable and verifiable (see Article 20).

The actual time spent on parental leave by a person assigned to the action may be deducted from the 215 days indicated in the above formula.

The total number of day-equivalents declared in EU grants, for a person for a year, cannot be higher than 215, minus time spent on parental leave (if any).

For personnel which receives supplementary payments for work in projects (project-based remuneration), the personnel costs must be calculated at a rate which:

- corresponds to the actual remuneration costs paid by the beneficiary for the time worked by the person in the action over the reporting period
- does not exceed the remuneration costs paid by the beneficiary for work in similar projects funded by national schemes ('national projects reference')
- is defined based on objective criteria allowing to determine the amount to which the person is entitled

and

- reflects the usual practice of the beneficiary to pay consistently bonuses or supplementary payments for work in projects funded by national schemes.

The national projects reference is the remuneration defined in national law, collective labour agreement or written internal rules of the beneficiary applicable to work in projects funded by national schemes.

If there is no such national law, collective labour agreement or written internal rules or if the project-based remuneration is not based on objective criteria, the national project reference will be the average

remuneration of the person in the last full calendar year covered by the reporting period, excluding remuneration paid for work in EU actions.

If the beneficiary uses average personnel costs (unit cost according to usual cost accounting practices), the personnel costs must fulfil the general eligibility conditions for such unit costs and the daily rate must be calculated:

- using the actual personnel costs recorded in the beneficiary's accounts and excluding any costs which are ineligible or already included in other budget categories; the actual personnel costs may be adjusted on the basis of budgeted or estimated elements, if they are relevant for calculating the personnel costs, reasonable and correspond to objective and verifiable information

and

- according to usual cost accounting practices which are applied in a consistent manner, based on objective criteria, regardless of the source of funding.

A.2 and A.3 Costs for natural persons working under a direct contract other than an employment contract and costs for **seconded persons by a third party against payment** are also eligible as personnel costs, if they are assigned to the action, fulfil the general eligibility conditions and:

- (a) work under conditions similar to those of an employee (in particular regarding the way the work is organised, the tasks that are performed and the premises where they are performed) and
- (b) the result of the work belongs to the beneficiary (unless agreed otherwise).

They must be calculated on the basis of a rate which corresponds to the costs actually incurred for the direct contract or secondment and must not be significantly different from those for personnel performing similar tasks under an employment contract with the beneficiary.

A.4 The work of **SME owners** for the action (i.e. owners of beneficiaries that are small and medium-sized enterprises¹⁰ not receiving a salary) or **natural person beneficiaries** (i.e. beneficiaries that are natural persons not receiving a salary) may be declared as personnel costs, if they fulfil the general eligibility conditions and are calculated as unit costs in accordance with the method set out in Annex 2a.

B. Subcontracting costs

Subcontracting costs for the action (including related duties, taxes and charges, such as non-deductible or non-refundable value added tax (VAT)) are eligible, if they are calculated on the basis of the costs actually incurred, fulfil the general eligibility conditions and are awarded using the

¹⁰ For the definition, see Commission Recommendation 2003/361/EC: micro, small or medium-sized enterprise (SME) are enterprises

- engaged in an economic activity, irrespective of their legal form (including, in particular, self-employed persons and family businesses engaged in craft or other activities, and partnerships or associations regularly engaged in an economic activity) and
- employing fewer than 250 persons (expressed in 'annual working units' as defined in Article 5 of the Recommendation) and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

beneficiary's usual purchasing practices — provided these ensure subcontracts with best value for money (or if appropriate the lowest price) and that there is no conflict of interests (see Article 12).

Beneficiaries that are 'contracting authorities/entities' within the meaning of the EU Directives on public procurement must also comply with the applicable national law on public procurement.

Subcontracting may cover only a limited part of the action.

The tasks to be subcontracted and the estimated cost for each subcontract must be set out in Annex 1 and the total estimated costs of subcontracting per beneficiary must be set out in Annex 2 (or may be approved ex post in the periodic report, if the use of subcontracting does not entail changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants; 'simplified approval procedure').

C. Purchase costs

Purchase costs for the action (including related duties, taxes and charges, such as non-deductible or non-refundable value added tax (VAT)) are eligible if they fulfil the general eligibility conditions and are bought using the beneficiary's usual purchasing practices — provided these ensure purchases with best value for money (or if appropriate the lowest price) and that there is no conflict of interests (see Article 12).

Beneficiaries that are 'contracting authorities/entities' within the meaning of the EU Directives on public procurement must also comply with the applicable national law on public procurement.

C.1 Travel and subsistence

Purchases for **travel, accommodation** and **subsistence** must be calculated as follows:

- travel: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel
- accommodation: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel
- subsistence: on the basis of the costs actually incurred and in line with the beneficiary's usual practices on travel .

C.2 Equipment

Purchases of **equipment, infrastructure or other assets** used for the action must be declared as depreciation costs, calculated on the basis of the costs actually incurred and written off in accordance with international accounting standards and the beneficiary's usual accounting practices.

Only the portion of the costs that corresponds to the rate of actual use for the action during the action duration can be taken into account.

Costs for **renting or leasing** equipment, infrastructure or other assets are also eligible, if they do not exceed the depreciation costs of similar equipment, infrastructure or assets and do not include any financing fees.

C.3 Other goods, works and services

Purchases of **other goods, works and services** must be calculated on the basis of the costs actually incurred.

Such goods, works and services include, for instance, consumables and supplies, promotion, dissemination, protection of results, translations, publications, certificates and financial guarantees, if required under the Agreement.

D. Other cost categories

D.2 Internally invoiced goods and services

Costs for internally invoiced goods and services directly used for the action may be declared as unit cost according to usual cost accounting practices, if and as declared eligible in the call conditions, if they fulfil the general eligibility conditions for such unit costs and the amount per unit is calculated:

- using the actual costs for the good or service recorded in the beneficiary's accounts, attributed either by direct measurement or on the basis of cost drivers, and excluding any cost which are ineligible or already included in other budget categories; the actual costs may be adjusted on the basis of budgeted or estimated elements, if they are relevant for calculating the costs, reasonable and correspond to objective and verifiable information

and

- according to usual cost accounting practices which are applied in a consistent manner, based on objective criteria, regardless of the source of funding.

'Internally invoiced goods and services' means goods or services which are provided within the beneficiary's organisation directly for the action and which the beneficiary values on the basis of its usual cost accounting practices.

This cost will not be taken into account for the indirect cost flat-rate.

D.7 ERC additional funding

Costs for ERC additional funding (e.g. start-up costs, major equipment, access to large facilities, major experimental and field work costs) are eligible, if and as declared eligible in the call conditions, if they fulfil the general eligibility conditions, are calculated on the basis of the costs actually incurred, comply with the conditions set out in Points A and C for the underlying types of costs (personnel and purchases) and are incurred for activities eligible for such additional funding.

Changes to this cost category require either an amendment or, exceptionally, simplified approval (ex post in the periodic report). These changes may only be accepted provided that the objectives for which the additional funding was awarded remain the same.

D.8 ERC additional funding (subcontracting, FSTP and internally invoiced goods and services)

Costs for ERC additional funding (subcontracting, financial support to third parties (FSTP) and internally invoiced goods and services) are eligible, if and as declared eligible in the call conditions, if they fulfil the general eligibility conditions, are calculated on the basis of the costs actually incurred, comply with the conditions set out in Points B, D.1 and D.2 for the underlying types

of costs (subcontracting, financial support to third parties and internally invoiced goods and services) and are incurred for activities eligible for such additional funding.

Changes to this cost category require either an amendment or, exceptionally, simplified approval (ex post in the periodic report). These changes may only be accepted provided that the objectives for which the additional funding was awarded remain the same.

This cost will not be taken into account for the indirect cost flat-rate.

Indirect costs

E. Indirect costs

Indirect costs will be reimbursed at the flat-rate of 25% of the eligible direct costs (categories A-D, except volunteers costs, subcontracting costs, financial support to third parties and exempted specific cost categories, if any).

Contributions

Not applicable

6.3 Ineligible costs and contributions

The following costs or contributions are **ineligible**:

- (a) costs or contributions that do not comply with the conditions set out above (Article 6.1 and 6.2), in particular:
 - (i) costs related to return on capital and dividends paid by a beneficiary
 - (ii) debt and debt service charges
 - (iii) provisions for future losses or debts
 - (iv) interest owed
 - (v) currency exchange losses
 - (vi) bank costs charged by the beneficiary's bank for transfers from the granting authority
 - (vii) excessive or reckless expenditure
 - (viii) deductible or refundable VAT (including VAT paid by public bodies acting as public authority)
 - (ix) costs incurred or contributions for activities implemented during grant agreement suspension (see Article 32)
 - (x) in-kind contributions by third parties
- (b) costs or contributions declared under other EU grants (or grants awarded by an EU Member State, non-EU country or other body implementing the EU budget), except for the following cases:

- (i) Synergy actions: not applicable
- (ii) if the action grant is combined with an operating grant¹¹ running during the same period and the beneficiary can demonstrate that the operating grant does not cover any (direct or indirect) costs of the action grant
- (c) costs or contributions for staff of a national (or regional/local) administration, for activities that are part of the administration's normal activities (i.e. not undertaken only because of the grant)
- (d) costs or contributions (especially travel and subsistence) for staff or representatives of EU institutions, bodies or agencies
- (e) other :
 - (i) country restrictions for eligible costs: not applicable
 - (ii) costs or contributions declared specifically ineligible in the call conditions.

6.4 Consequences of non-compliance

If a beneficiary declares costs or contributions that are ineligible, they will be rejected (see Article 27).

This may also lead to other measures described in Chapter 5.

CHAPTER 4 GRANT IMPLEMENTATION

SECTION 1 CONSORTIUM: BENEFICIARIES, AFFILIATED ENTITIES AND OTHER PARTICIPANTS

ARTICLE 7 — BENEFICIARIES

The beneficiaries, as signatories of the Agreement, are fully responsible towards the granting authority for implementing it and for complying with all its obligations.

They must implement the Agreement to their best abilities, in good faith and in accordance with all the obligations and terms and conditions it sets out.

They must have the appropriate resources to implement the action and implement the action under their own responsibility and in accordance with Article 11. If they rely on affiliated entities or other participants (see Articles 8 and 9), they retain sole responsibility towards the granting authority and the other beneficiaries.

They are jointly responsible for the *technical* implementation of the action. If one of the beneficiaries fails to implement their part of the action, the other beneficiaries must ensure that this part is implemented by someone else (without being entitled to an increase of the maximum grant amount

¹¹ For the definition, see Article 180(2)(b) of EU Financial Regulation 2018/1046: ‘**operating grant**’ means an EU grant to finance “the functioning of a body which has an objective forming part of and supporting an EU policy”.

and subject to an amendment; see Article 39). The *financial* responsibility of each beneficiary in case of recoveries is governed by Article 22.

The beneficiaries (and their action) must remain eligible under the EU programme funding the grant for the entire duration of the action. Costs and contributions will be eligible only as long as the beneficiary and the action are eligible.

The **internal roles and responsibilities** of the beneficiaries are divided as follows:

(a) Each beneficiary must:

- (i) keep information stored in the Portal Participant Register up to date (see Article 19)
- (ii) inform the granting authority (and the other beneficiaries) immediately of any events or circumstances likely to affect significantly or delay the implementation of the action (see Article 19)
- (iii) submit to the coordinator in good time:
 - the prefinancing guarantees (if required; see Article 23)
 - the financial statements and certificates on the financial statements (CFS) (if required; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
 - the contribution to the deliverables and technical reports (see Article 21)
 - any other documents or information required by the granting authority under the Agreement
- (iv) submit via the Portal data and information related to the participation of their affiliated entities.

(b) The coordinator must:

- (i) monitor that the action is implemented properly (see Article 11)
- (ii) act as the intermediary for all communications between the consortium and the granting authority, unless the Agreement or granting authority specifies otherwise, and in particular:
 - submit the prefinancing guarantees to the granting authority (if any)
 - request and review any documents or information required and verify their quality and completeness before passing them on to the granting authority
 - submit the deliverables and reports to the granting authority
 - inform the granting authority about the payments made to the other beneficiaries (report on the distribution of payments; if required, see Articles 22 and 32)
- (iii) distribute the payments received from the granting authority to the other beneficiaries without unjustified delay (see Article 22).

The coordinator may not delegate or subcontract the above-mentioned tasks to any other beneficiary or third party (including affiliated entities).

However, coordinators which are public bodies may delegate the tasks set out in Point (b)(ii) last indent and (iii) above to entities with ‘authorisation to administer’ which they have created or which are controlled by or affiliated to them. In this case, the coordinator retains sole responsibility for the payments and for compliance with the obligations under the Agreement.

Moreover, coordinators which are ‘sole beneficiaries’¹² (or similar, such as European research infrastructure consortia (ERICs)) may delegate the tasks set out in Point (b)(i) to (iii) above to one of their members. The coordinator retains sole responsibility for compliance with the obligations under the Agreement.

The beneficiaries must have **internal arrangements** regarding their operation and co-ordination, to ensure that the action is implemented properly.

If required by the granting authority (see Data Sheet, Point 1), these arrangements must be set out in a written **consortium agreement** between the beneficiaries, covering for instance:

- the internal organisation of the consortium
- the management of access to the Portal
- different distribution keys for the payments and financial responsibilities in case of recoveries (if any)
- additional rules on rights and obligations related to background and results (see Article 16)
- settlement of internal disputes
- liability, indemnification and confidentiality arrangements between the beneficiaries.

The internal arrangements must not contain any provision contrary to this Agreement.

ARTICLE 8 — AFFILIATED ENTITIES

Not applicable

ARTICLE 9 — OTHER PARTICIPANTS INVOLVED IN THE ACTION

9.1 Associated partners

Not applicable

9.2 Third parties giving in-kind contributions to the action

Other third parties may give in-kind contributions to the action (i.e. personnel, equipment, other goods, works and services, etc. which are free-of-charge) if necessary for the implementation.

¹² For the definition, see Article 187(2) EU Financial Regulation 2018/1046: “Where several entities satisfy the criteria for being awarded a grant and together form one entity, that entity may be treated as the **sole beneficiary**, including where it is specifically established for the purpose of implementing the action financed by the grant.”

Third parties giving in-kind contributions do not implement any action tasks. They may not charge costs or contributions to the action, but the costs for the in-kind contributions are eligible and may be charged by the beneficiaries which use them, under the conditions set out in Article 6. The costs will be included in Annex 2 as part of the beneficiaries' costs.

The third parties and their in-kind contributions should be set out in Annex 1.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the third parties giving in-kind contributions.

9.3 Subcontractors

Subcontractors may participate in the action, if necessary for the implementation.

Subcontractors must implement their action tasks in accordance with Article 11. The costs for the subcontracted tasks (invoiced price from the subcontractor) are eligible and may be charged by the beneficiaries, under the conditions set out in Article 6. The costs will be included in Annex 2 as part of the beneficiaries' costs.

The beneficiaries must ensure that their contractual obligations under Articles 11 (proper implementation), 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the subcontractors.

The beneficiaries must ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the subcontractors.

9.4 Recipients of financial support to third parties

If the action includes providing financial support to third parties (e.g. grants, prizes or similar forms of support), the beneficiaries must ensure that their contractual obligations under Articles 12 (conflict of interest), 13 (confidentiality and security), 14 (ethics), 17.2 (visibility), 18 (specific rules for carrying out action), 19 (information) and 20 (record-keeping) also apply to the third parties receiving the support (recipients).

The beneficiaries must also ensure that the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) can exercise their rights also towards the recipients.

ARTICLE 10 — PARTICIPANTS WITH SPECIAL STATUS

10.1 Non-EU participants

Participants which are established in a non-EU country (if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use qualified external auditors which

are independent and comply with comparable standards as those set out in EU Directive 2006/43/EC¹³

- for the controls under Article 25: to allow for checks, reviews, audits and investigations (including on-the-spot checks, visits and inspections) by the bodies mentioned in that Article (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.).

Special rules on dispute settlement apply (see Data Sheet, Point 5).

10.2 Participants which are international organisations

Participants which are international organisations (IOs; if any) undertake to comply with their obligations under the Agreement and:

- to respect general principles (including fundamental rights, values and ethical principles, environmental and labour standards, rules on classified information, intellectual property rights, visibility of funding and protection of personal data)
- for the submission of certificates under Article 24: to use either independent public officers or external auditors which comply with comparable standards as those set out in EU Directive 2006/43/EC
- for the controls under Article 25: to allow for the checks, reviews, audits and investigations by the bodies mentioned in that Article, taking into account the specific agreements concluded by them and the EU (if any).

For such participants, nothing in the Agreement will be interpreted as a waiver of their privileges or immunities, as accorded by their constituent documents or international law.

Special rules on applicable law and dispute settlement apply (see Article 43 and Data Sheet, Point 5).

10.3 Pillar-assessed participants

Pillar-assessed participants (if any) may rely on their own systems, rules and procedures, in so far as they have been positively assessed and do not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries.

‘Pillar-assessment’ means a review by the European Commission on the systems, rules and procedures which participants use for managing EU grants (in particular internal control system, accounting system, external audits, financing of third parties, rules on recovery and exclusion, information on recipients and protection of personal data; see Article 154 EU Financial Regulation 2018/1046).

Participants with a positive pillar assessment may rely on their own systems, rules and procedures, in particular for:

- record-keeping (Article 20): may be done in accordance with internal standards, rules and procedures

¹³ Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts or similar national regulations (OJ L 157, 9.6.2006, p. 87).

- currency conversion for financial statements (Article 21): may be done in accordance with usual accounting practices
- guarantees (Article 23): for public law bodies, prefinancing guarantees are not needed
- certificates (Article 24):
 - certificates on the financial statements (CFS): may be provided by their regular internal or external auditors and in accordance with their internal financial regulations and procedures
 - certificates on usual accounting practices (CoMUC): are not needed if those practices are covered by an ex-ante assessment

and use the following specific rules, for:

- recoveries (Article 22): in case of financial support to third parties, there will be no recovery if the participant has done everything possible to retrieve the undue amounts from the third party receiving the support (including legal proceedings) and non-recovery is not due to an error or negligence on its part
- checks, reviews, audits and investigations by the EU (Article 25): will be conducted taking into account the rules and procedures specifically agreed between them and the framework agreement (if any)
- impact evaluation (Article 26): will be conducted in accordance with the participant's internal rules and procedures and the framework agreement (if any)
- grant agreement suspension (Article 31): certain costs incurred during grant suspension are eligible (notably, minimum costs necessary for a possible resumption of the action and costs relating to contracts which were entered into before the pre-information letter was received and which could not reasonably be suspended, reallocated or terminated on legal grounds)
- grant agreement termination (Article 32): the final grant amount and final payment will be calculated taking into account also costs relating to contracts due for execution only after termination takes effect, if the contract was entered into before the pre-information letter was received and could not reasonably be terminated on legal grounds
- liability for damages (Article 33.2): the granting authority must be compensated for damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement only if the damage is due to an infringement of the participant's internal rules and procedures or due to a violation of third parties' rights by the participant or one of its employees or individual for whom the employees are responsible.

Participants whose pillar assessment covers procurement and granting procedures may also do purchases, subcontracting and financial support to third parties (Article 6.2) in accordance with their internal rules and procedures for purchases, subcontracting and financial support.

Participants whose pillar assessment covers data protection rules may rely on their internal standards, rules and procedures for data protection (Article 15).

The participants may however not rely on provisions which would breach the principle of equal treatment of applicants or beneficiaries or call into question the decision awarding the grant, such as in particular:

- eligibility (Article 6)
- consortium roles and set-up (Articles 7-9)
- security and ethics (Articles 13, 14)
- IPR (including background and results, access rights and rights of use), communication, dissemination and visibility (Articles 16 and 17)
- information obligation (Article 19)
- payment, reporting and amendments (Articles 21, 22 and 39)
- rejections, reductions, suspensions and terminations (Articles 27, 28, 29-32)

If the pillar assessment was subject to remedial measures, reliance on the internal systems, rules and procedures is subject to compliance with those remedial measures.

Participants whose assessment has not yet been updated to cover (the new rules on) data protection may rely on their internal systems, rules and procedures, provided that they ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subject
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes
- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the personal data.

Participants must inform the coordinator without delay of any changes to the systems, rules and procedures that were part of the pillar assessment. The coordinator must immediately inform the granting authority.

Pillar-assessed participants that have also concluded a framework agreement with the EU, may moreover — under the same conditions as those above (i.e. not call into question the decision awarding the grant or breach the principle of equal treatment of applicants or beneficiaries) — rely on the provisions set out in that framework agreement.

SECTION 2 RULES FOR CARRYING OUT THE ACTION

ARTICLE 11 — PROPER IMPLEMENTATION OF THE ACTION

11.1 Obligation to properly implement the action

The beneficiaries must implement the action as described in Annex 1 and in compliance with the provisions of the Agreement, the call conditions and all legal obligations under applicable EU, international and national law.

11.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 12 — CONFLICT OF INTERESTS

12.1 Conflict of interests

The beneficiaries must take all measures to prevent any situation where the impartial and objective implementation of the Agreement could be compromised for reasons involving family, emotional life, political or national affinity, economic interest or any other direct or indirect interest ('conflict of interests').

They must formally notify the granting authority without delay of any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.

The granting authority may verify that the measures taken are appropriate and may require additional measures to be taken by a specified deadline.

12.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28) and the grant or the beneficiary may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 13 — CONFIDENTIALITY AND SECURITY

13.1 Sensitive information

The parties must keep confidential any data, documents or other material (in any form) that is identified as sensitive in writing ('sensitive information') — during the implementation of the action and for at least until the time-limit set out in the Data Sheet (see Point 6).

If a beneficiary requests, the granting authority may agree to keep such information confidential for a longer period.

Unless otherwise agreed between the parties, they may use sensitive information only to implement the Agreement.

The beneficiaries may disclose sensitive information to their personnel or other participants involved in the action only if they:

- (a) need to know it in order to implement the Agreement and
- (b) are bound by an obligation of confidentiality.

The granting authority may disclose sensitive information to its staff and to other EU institutions and bodies.

It may moreover disclose sensitive information to third parties, if:

- (a) this is necessary to implement the Agreement or safeguard the EU financial interests and
- (b) the recipients of the information are bound by an obligation of confidentiality.

The confidentiality obligations no longer apply if:

- (a) the disclosing party agrees to release the other party
- (b) the information becomes publicly available, without breaching any confidentiality obligation
- (c) the disclosure of the sensitive information is required by EU, international or national law.

Specific confidentiality rules (if any) are set out in Annex 5.

13.2 Classified information

The parties must handle classified information in accordance with the applicable EU, international or national law on classified information (in particular, Decision 2015/444¹⁴ and its implementing rules).

Deliverables which contain classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving classified information may be subcontracted only after explicit approval (in writing) from the granting authority.

Classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

Specific security rules (if any) are set out in Annex 5.

13.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 14 — ETHICS AND VALUES

14.1 Ethics

¹⁴ Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

The action must be carried out in line with the highest ethical standards and the applicable EU, international and national law on ethical principles.

Specific ethics rules (if any) are set out in Annex 5.

14.2 Values

The beneficiaries must commit to and ensure the respect of basic EU values (such as respect for human dignity, freedom, democracy, equality, the rule of law and human rights, including the rights of minorities).

Specific rules on values (if any) are set out in Annex 5.

14.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 15 — DATA PROTECTION

15.1 Data processing by the granting authority

Any personal data under the Agreement will be processed under the responsibility of the data controller of the granting authority in accordance with and for the purposes set out in the Portal Privacy Statement.

For grants where the granting authority is the European Commission, an EU regulatory or executive agency, joint undertaking or other EU body, the processing will be subject to Regulation 2018/1725¹⁵.

15.2 Data processing by the beneficiaries

The beneficiaries must process personal data under the Agreement in compliance with the applicable EU, international and national law on data protection (in particular, Regulation 2016/679¹⁶).

They must ensure that personal data is:

- processed lawfully, fairly and in a transparent manner in relation to the data subjects
- collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes

¹⁵ Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39).

¹⁶ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC ('GDPR') (OJ L 119, 4.5.2016, p. 1).

- adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed
- accurate and, where necessary, kept up to date
- kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and
- processed in a manner that ensures appropriate security of the data.

The beneficiaries may grant their personnel access to personal data only if it is strictly necessary for implementing, managing and monitoring the Agreement. The beneficiaries must ensure that the personnel is under a confidentiality obligation.

The beneficiaries must inform the persons whose data are transferred to the granting authority and provide them with the Portal Privacy Statement.

15.3 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 16 — INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE

16.1 Background and access rights to background

The beneficiaries must give each other and the other participants access to the background identified as needed for implementing the action, subject to any specific rules in Annex 5.

‘Background’ means any data, know-how or information — whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights — that is:

- (a) held by the beneficiaries before they acceded to the Agreement and
- (b) needed to implement the action or exploit the results.

If background is subject to rights of a third party, the beneficiary concerned must ensure that it is able to comply with its obligations under the Agreement.

16.2 Ownership of results

The granting authority does not obtain ownership of the results produced under the action.

‘Results’ means any tangible or intangible effect of the action, such as data, know-how or information, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights.

16.3 Rights of use of the granting authority on materials, documents and information received for policy, information, communication, dissemination and publicity purposes

The granting authority has the right to use non-sensitive information relating to the action and materials and documents received from the beneficiaries (notably summaries for publication, deliverables, as well as any other material, such as pictures or audio-visual material, in paper or electronic form) for policy, information, communication, dissemination and publicity purposes — during the action or afterwards.

The right to use the beneficiaries' materials, documents and information is granted in the form of a royalty-free, non-exclusive and irrevocable licence, which includes the following rights:

- (a) **use for its own purposes** (in particular, making them available to persons working for the granting authority or any other EU service (including institutions, bodies, offices, agencies, etc.) or EU Member State institution or body; copying or reproducing them in whole or in part, in unlimited numbers; and communication through press information services)
- (b) **distribution to the public** (in particular, publication as hard copies and in electronic or digital format, publication on the internet, as a downloadable or non-downloadable file, broadcasting by any channel, public display or presentation, communicating through press information services, or inclusion in widely accessible databases or indexes)
- (c) **editing or redrafting** (including shortening, summarising, inserting other elements (e.g. meta-data, legends, other graphic, visual, audio or text elements), extracting parts (e.g. audio or video files), dividing into parts, use in a compilation)
- (d) **translation**
- (e) **storage** in paper, electronic or other form
- (f) **archiving**, in line with applicable document-management rules
- (g) the right to authorise **third parties** to act on its behalf or sub-license to third parties the modes of use set out in Points (b), (c), (d) and (f), if needed for the information, communication and publicity activity of the granting authority
- (h) **processing**, analysing, aggregating the materials, documents and information received and **producing derivative works**.

The rights of use are granted for the whole duration of the industrial or intellectual property rights concerned.

If materials or documents are subject to moral rights or third party rights (including intellectual property rights or rights of natural persons on their image and voice), the beneficiaries must ensure that they comply with their obligations under this Agreement (in particular, by obtaining the necessary licences and authorisations from the rights holders concerned).

Where applicable, the granting authority will insert the following information:

“© – [year] – [name of the copyright owner]. All rights reserved. Licensed to the [name of granting authority] under conditions.”

16.4 Specific rules on IPR, results and background

Specific rules regarding intellectual property rights, results and background (if any) are set out in Annex 5.

16.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

ARTICLE 17 — COMMUNICATION, DISSEMINATION AND VISIBILITY

17.1 Communication — Dissemination — Promoting the action

Unless otherwise agreed with the granting authority, the beneficiaries must promote the action and its results by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1 and in a strategic, coherent and effective manner.

Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority.

17.2 Visibility — European flag and funding statement

Unless otherwise agreed with the granting authority, communication activities of the beneficiaries related to the action (including media relations, conferences, seminars, information material, such as brochures, leaflets, posters, presentations, etc., in electronic form, via traditional or social media, etc.), dissemination activities and any infrastructure, equipment, vehicles, supplies or major result funded by the grant must acknowledge EU support and display the European flag (emblem) and funding statement (translated into local languages, where appropriate):



Funded by the
European Union



Co-funded by the
European Union



Funded by the
European Union



Co-funded by the
European Union

The emblem must remain distinct and separate and cannot be modified by adding other visual marks, brands or text.

Apart from the emblem, no other visual identity or logo may be used to highlight the EU support.

When displayed in association with other logos (e.g. of beneficiaries or sponsors), the emblem must be displayed at least as prominently and visibly as the other logos.

For the purposes of their obligations under this Article, the beneficiaries may use the emblem without first obtaining approval from the granting authority. This does not, however, give them the right to exclusive use. Moreover, they may not appropriate the emblem or any similar trademark or logo, either by registration or by any other means.

17.3 Quality of information — Disclaimer

Any communication or dissemination activity related to the action must use factually accurate information.

Moreover, it must indicate the following disclaimer (translated into local languages where appropriate):

“Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them.”

17.4 Specific communication, dissemination and visibility rules

Specific communication, dissemination and visibility rules (if any) are set out in Annex 5.

17.5 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 18 — SPECIFIC RULES FOR CARRYING OUT THE ACTION

18.1 Specific rules for carrying out the action

Specific rules for implementing the action (if any) are set out in Annex 5.

18.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such a breach may also lead to other measures described in Chapter 5.

SECTION 3 GRANT ADMINISTRATION

ARTICLE 19 — GENERAL INFORMATION OBLIGATIONS

19.1 Information requests

The beneficiaries must provide — during the action or afterwards and in accordance with Article 7 — any information requested in order to verify eligibility of the costs or contributions declared, proper implementation of the action and compliance with the other obligations under the Agreement.

The information provided must be accurate, precise and complete and in the format requested, including electronic format.

19.2 Participant Register data updates

The beneficiaries must keep — at all times, during the action or afterwards — their information stored in the Portal Participant Register up to date, in particular, their name, address, legal representatives, legal form and organisation type.

19.3 Information about events and circumstances which impact the action

The beneficiaries must immediately inform the granting authority (and the other beneficiaries) of any of the following:

- (a) **events** which are likely to affect or delay the implementation of the action or affect the EU's financial interests, in particular:
 - (i) changes in their legal, financial, technical, organisational or ownership situation (including changes linked to one of the exclusion grounds listed in the declaration of honour signed before grant signature)
 - (ii) linked action information: not applicable
- (b) **circumstances** affecting:
 - (i) the decision to award the grant or
 - (ii) compliance with requirements under the Agreement.

19.4 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 20 — RECORD-KEEPING

20.1 Keeping records and supporting documents

The beneficiaries must — at least until the time-limit set out in the Data Sheet (see Point 6) — keep records and other supporting documents to prove the proper implementation of the action in line with the accepted standards in the respective field (if any).

In addition, the beneficiaries must — for the same period — keep the following to justify the amounts declared:

- (a) for actual costs: adequate records and supporting documents to prove the costs declared (such

as contracts, subcontracts, invoices and accounting records); in addition, the beneficiaries' usual accounting and internal control procedures must enable direct reconciliation between the amounts declared, the amounts recorded in their accounts and the amounts stated in the supporting documents

- (b) for flat-rate costs and contributions (if any): adequate records and supporting documents to prove the eligibility of the costs or contributions to which the flat-rate is applied
- (c) for the following simplified costs and contributions: the beneficiaries do not need to keep specific records on the actual costs incurred, but must keep:
 - (i) for unit costs and contributions (if any): adequate records and supporting documents to prove the number of units declared
 - (ii) for lump sum costs and contributions (if any): adequate records and supporting documents to prove proper implementation of the work as described in Annex 1
 - (iii) for financing not linked to costs (if any): adequate records and supporting documents to prove the achievement of the results or the fulfilment of the conditions as described in Annex 1
- (d) for unit, flat-rate and lump sum costs and contributions according to usual cost accounting practices (if any): the beneficiaries must keep any adequate records and supporting documents to prove that their cost accounting practices have been applied in a consistent manner, based on objective criteria, regardless of the source of funding, and that they comply with the eligibility conditions set out in Articles 6.1 and 6.2.

Moreover, the following is needed for specific budget categories:

- (e) for personnel costs: time worked for the beneficiary under the action must be supported by declarations signed monthly by the person and their supervisor, unless another reliable time-record system is in place; the granting authority may accept alternative evidence supporting the time worked for the action declared, if it considers that it offers an adequate level of assurance
- (f) additional record-keeping rules: not applicable

The records and supporting documents must be made available upon request (see Article 19) or in the context of checks, reviews, audits or investigations (see Article 25).

If there are on-going checks, reviews, audits, investigations, litigation or other pursuits of claims under the Agreement (including the extension of findings; see Article 25), the beneficiaries must keep these records and other supporting documentation until the end of these procedures.

The beneficiaries must keep the original documents. Digital and digitalised documents are considered originals if they are authorised by the applicable national law. The granting authority may accept non-original documents if they offer a comparable level of assurance.

20.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, costs or contributions insufficiently

substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 21 — REPORTING

21.1 Continuous reporting

The beneficiaries must continuously report on the progress of the action (e.g. **deliverables, milestones, outputs/outcomes, critical risks, indicators**, etc; if any), in the Portal Continuous Reporting tool and in accordance with the timing and conditions it sets out (as agreed with the granting authority).

Standardised deliverables (e.g. progress reports not linked to payments, reports on cumulative expenditure, special reports, etc; if any) must be submitted using the templates published on the Portal.

21.2 Periodic reporting: Technical reports and financial statements

In addition, the beneficiaries must provide reports to request payments, in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2):

- for additional prefinancings (if any): an **additional prefinancing report**
- for interim payments (if any) and the final payment: a **periodic report**.

The prefinancing and periodic reports include a technical and financial part.

The technical part includes an overview of the action implementation. It must be prepared using the template available in the Portal Periodic Reporting tool.

The financial part of the additional prefinancing report includes a statement on the use of the previous prefinancing payment.

The financial part of the periodic report includes:

- the financial statements (individual and consolidated; for all beneficiaries/affiliated entities)
- the explanation on the use of resources (or detailed cost reporting table, if required)
- the certificates on the financial statements (CFS) (if required; see Article 24.2 and Data Sheet, Point 4.3).

The **financial statements** must detail the eligible costs and contributions for each budget category and, for the final payment, also the revenues for the action (see Articles 6 and 22).

All eligible costs and contributions incurred should be declared, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Amounts that are not declared in the individual financial statements will not be taken into account by the granting authority.

By signing the financial statements (directly in the Portal Periodic Reporting tool), the beneficiaries confirm that:

- the information provided is complete, reliable and true
- the costs and contributions declared are eligible (see Article 6)
- the costs and contributions can be substantiated by adequate records and supporting documents (see Article 20) that will be produced upon request (see Article 19) or in the context of checks, reviews, audits and investigations (see Article 25)
- for the final periodic report: all the revenues have been declared (if required; see Article 22).

Beneficiaries will have to submit also the financial statements of their affiliated entities (if any). In case of recoveries (see Article 22), beneficiaries will be held responsible also for the financial statements of their affiliated entities.

21.3 Currency for financial statements and conversion into euros

The financial statements must be drafted in euro.

Beneficiaries with general accounts established in a currency other than the euro must convert the costs recorded in their accounts into euro, at the average of the daily exchange rates published in the C series of the *Official Journal of the European Union* (ECB website), calculated over the corresponding reporting period.

If no daily euro exchange rate is published in the *Official Journal* for the currency in question, they must be converted at the average of the monthly accounting exchange rates published on the European Commission website (InforEuro), calculated over the corresponding reporting period.

Beneficiaries with general accounts in euro must convert costs incurred in another currency into euro according to their usual accounting practices.

21.4 Reporting language

The reporting must be in the language of the Agreement, unless otherwise agreed with the granting authority (see Data Sheet, Point 4.2).

21.5 Consequences of non-compliance

If a report submitted does not comply with this Article, the granting authority may suspend the payment deadline (see Article 29) and apply other measures described in Chapter 5.

If the coordinator breaches its reporting obligations, the granting authority may terminate the grant or the coordinator's participation (see Article 32) or apply other measures described in Chapter 5.

ARTICLE 22 — PAYMENTS AND RECOVERIES — CALCULATION OF AMOUNTS DUE

22.1 Payments and payment arrangements

Payments will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

They will be made in euro to the bank account indicated by the coordinator (see Data Sheet, Point 4.2)

and must be distributed without unjustified delay (restrictions may apply to distribution of the initial prefinancing payment; see Data Sheet, Point 4.2).

Payments to this bank account will discharge the granting authority from its payment obligation.

The cost of payment transfers will be borne as follows:

- the granting authority bears the cost of transfers charged by its bank
- the beneficiary bears the cost of transfers charged by its bank
- the party causing a repetition of a transfer bears all costs of the repeated transfer.

Payments by the granting authority will be considered to have been carried out on the date when they are debited to its account.

22.2 Recoveries

Recoveries will be made, if — at beneficiary termination, final payment or afterwards — it turns out that the granting authority has paid too much and needs to recover the amounts undue.

Each beneficiary's financial responsibility in case of recovery is in principle limited to their own debt and undue amounts of their affiliated entities.

In case of enforced recoveries (see Article 22.4), affiliated entities will be held liable for repaying debts of their beneficiaries, if required by the granting authority (see Data Sheet, Point 4.4).

22.3 Amounts due

22.3.1 Prefinancing payments

The aim of the prefinancing is to provide the beneficiaries with a float.

It remains the property of the EU until the final payment.

For **initial prefinancings** (if any), the amount due, schedule and modalities are set out in the Data Sheet (see Point 4.2).

For **additional prefinancings** (if any), the amount due, schedule and modalities are also set out in the Data Sheet (see Point 4.2). However, if the statement on the use of the previous prefinancing payment shows that less than 70% was used, the amount set out in the Data Sheet will be reduced by the difference between the 70% threshold and the amount used.

The contribution to the Mutual Insurance Mechanism will be retained from the prefinancing payments (at the rate and in accordance with the modalities set out in the Data Sheet, see Point 4.2) and transferred to the Mechanism.

Prefinancing payments (or parts of them) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.2 Amount due at beneficiary termination — Recovery

In case of beneficiary termination, the granting authority will determine the provisional amount due for the beneficiary concerned. Payments (if any) will be made with the next interim or final payment.

The **amount due** will be calculated in the following step:

Step 1 — Calculation of the total accepted EU contribution

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the ‘accepted EU contribution’ for the beneficiary for all reporting periods, by calculating the ‘maximum EU contribution to costs’ (applying the funding rate to the accepted costs of the beneficiary), taking into account requests for a lower contribution to costs and CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the ‘total accepted EU contribution’ for the beneficiary.

The **balance** is then calculated by deducting the payments received (if any; see report on the distribution of payments in Article 32), from the total accepted EU contribution:

$$\begin{aligned} & \{ \text{total accepted EU contribution for the beneficiary} \\ & \text{minus} \\ & \{ \text{prefinancing and interim payments received (if any)} \} \}. \end{aligned}$$

If the balance is **positive**, the amount will be included in the next interim or final payment to the consortium.

If the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount due, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered and ask this amount to be paid to the coordinator (**confirmation letter**).

If payment is not made to the coordinator by the date specified in the confirmation letter, the granting authority may call on the Mutual Insurance Mechanism to intervene, if continuation of the action is guaranteed and the conditions set out in the rules governing the Mechanism are met.

In this case, it will send a **beneficiary recovery letter**, together with a **debit note** with the terms and date for payment.

The debit note for the beneficiary will include the amount calculated for the affiliated entities which also had to end their participation (if any).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

The amounts will later on also be taken into account for the next interim or final payment.

22.3.3 Interim payments

Interim payments reimburse the eligible costs and contributions claimed for the implementation of the action during the reporting periods (if any).

Interim payments (if any) will be made in accordance with the schedule and modalities set out the Data Sheet (see Point 4.2).

Payment is subject to the approval of the periodic report. Its approval does not imply recognition of compliance, authenticity, completeness or correctness of its content.

The **interim payment** will be calculated by the granting authority in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the interim payment ceiling

Step 1 — Calculation of the total accepted EU contribution

The granting authority will calculate the ‘accepted EU contribution’ for the action for the reporting period, by first calculating the ‘maximum EU contribution to costs’ (applying the funding rate to the accepted costs of each beneficiary), taking into account requests for a lower contribution to costs, and CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions from beneficiary termination (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the interim payment ceiling

The resulting amount is then capped to ensure that the total amount of prefinancing and interim payments (if any) does not exceed the interim payment ceiling set out in the Data Sheet (see Point 4.2).

Interim payments (or parts of them) may be offset (without the beneficiaries’ consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

22.3.4 Final payment — Final grant amount — Revenues and Profit — Recovery

The final payment (payment of the balance) reimburses the remaining part of the eligible costs and contributions claimed for the implementation of the action (if any).

The final payment will be made in accordance with the schedule and modalities set out in the Data Sheet (see Point 4.2).

Payment is subject to the approval of the final periodic report. Its approval does not imply recognition of compliance, authenticity, completeness or correctness of its content.

The **final grant amount for the action** will be calculated in the following steps:

Step 1 — Calculation of the total accepted EU contribution

Step 2 — Limit to the maximum grant amount

Step 3 — Reduction due to the no-profit rule

Step 1 — Calculation of the total accepted EU contribution

The granting authority will first calculate the ‘accepted EU contribution’ for the action for all reporting periods, by calculating the ‘maximum EU contribution to costs’ (applying the funding rate to the total accepted costs of each beneficiary), taking into account requests for a lower contribution to costs, CFS threshold cappings (if any; see Article 24.5) and adding the contributions (accepted unit, flat-rate or lump sum contributions and financing not linked to costs, if any).

After that, the granting authority will take into account grant reductions (if any). The resulting amount is the ‘total accepted EU contribution’.

Step 2 — Limit to the maximum grant amount

If the resulting amount is higher than the maximum grant amount set out in Article 5.2, it will be limited to the latter.

Step 3 — Reduction due to the no-profit rule

If the no-profit rule is provided for in the Data Sheet (see Point 4.2), the grant must not produce a profit (i.e. surplus of the amount obtained following Step 2 plus the action’s revenues, over the eligible costs and contributions approved by the granting authority).

‘Revenue’ is all income generated by the action, during its duration (see Article 4), for beneficiaries that are profit legal entities (— with the exception of income generated by the exploitation of results, which are not considered as revenues).

If there is a profit, it will be deducted in proportion to the final rate of reimbursement of the eligible costs approved by the granting authority (as compared to the amount calculated following Steps 1 and 2 minus the contributions).

The **balance** (final payment) is then calculated by deducting the total amount of prefinancing and interim payments already made (if any), from the final grant amount:

{final grant amount
minus

{prefinancing and interim payments made (if any)}.

If the balance is **positive**, it will be **paid** to the coordinator.

The amount retained for the Mutual Insurance Mechanism (see above) will be released and **paid** to the coordinator (in accordance with the rules governing the Mechanism).

The final payment (or part of it) may be offset (without the beneficiaries' consent) against amounts owed by a beneficiary to the granting authority — up to the amount due to that beneficiary.

For grants where the granting authority is the European Commission or an EU executive agency, offsetting may also be done against amounts owed to other Commission services or executive agencies.

Payments will not be made if the payment deadline or payments are suspended (see Articles 29 and 30).

If — despite the release of the Mutual Insurance Mechanism contribution — the balance is **negative**, it will be **recovered** in accordance with the following procedure:

The granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to recover, the final grant amount, the amount to be recovered and the reasons why
- requesting a report on the distribution of payments to the beneficiaries within 30 days of receiving notification and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received) and the coordinator has submitted the report on the distribution of payments, it will calculate the **share of the debt per beneficiary**, by:

(a) identifying the beneficiaries for which the amount calculated as follows is negative:

$$\left\{ \left\{ \begin{array}{l} \text{total accepted EU contribution for the beneficiary} \\ \text{divided by} \\ \text{total accepted EU contribution for the action} \end{array} \right\} \right.$$

$$\left. \begin{array}{l} \text{multiplied by} \\ \text{final grant amount for the action} \end{array} \right\},$$

$$\text{minus}$$

$$\left\{ \text{prefinancing and interim payments received by the beneficiary (if any)} \right\}$$

and

(b) dividing the debt:

$$\left\{ \begin{array}{l} \text{amount calculated according to point (a) for the beneficiary concerned} \end{array} \right.$$

divided by

the sum of the amounts calculated according to point (a) for all the beneficiaries identified according to point (a)}

multiplied by

the amount to be recovered}.

and confirm the amount to be recovered from each beneficiary concerned (**confirmation letter**), together with **debit notes** with the terms and date for payment.

The debit notes for beneficiaries will include the amounts calculated for their affiliated entities (if any).

If the coordinator has not submitted the report on the distribution of payments, the granting authority will **recover** the full amount from the coordinator (**confirmation letter** and **debit note** with the terms and date for payment).

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.3.5 Audit implementation after final payment — Revised final grant amount — Recovery

If — after the final payment (in particular, after checks, reviews, audits or investigations; see Article 25) — the granting authority rejects costs or contributions (see Article 27) or reduces the grant (see Article 28), it will calculate the **revised final grant amount** for the beneficiary concerned.

The **beneficiary revised final grant amount** will be calculated in the following step:

Step 1 — Calculation of the revised total accepted EU contribution

Step 1 — Calculation of the revised total accepted EU contribution

The granting authority will first calculate the ‘revised accepted EU contribution’ for the beneficiary, by calculating the ‘revised accepted costs’ and ‘revised accepted contributions’.

After that, it will take into account grant reductions (if any). The resulting ‘revised total accepted EU contribution’ is the beneficiary revised final grant amount.

If the revised final grant amount is lower than the beneficiary’s final grant amount (i.e. its share in the final grant amount for the action), it will be **recovered** in accordance with the following procedure:

The **beneficiary final grant amount** (i.e. share in the final grant amount for the action) is calculated as follows:

{total accepted EU contribution for the beneficiary

divided by

total accepted EU contribution for the action}

multiplied by

final grant amount for the action}.

The granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to recover, the amount to be recovered and the reasons why and
- requesting observations within 30 days of receiving notification.

If no observations are submitted (or the granting authority decides to pursue recovery despite the observations it has received), it will confirm the amount to be recovered (**confirmation letter**), together with a **debit note** with the terms and the date for payment.

Recoveries against affiliated entities (if any) will be handled through their beneficiaries.

If payment is not made by the date specified in the debit note, the granting authority will **enforce recovery** in accordance with Article 22.4.

22.4 Enforced recovery

If payment is not made by the date specified in the debit note, the amount due will be recovered:

- (a) by offsetting the amount — without the coordinator or beneficiary's consent — against any amounts owed to the coordinator or beneficiary by the granting authority.

In exceptional circumstances, to safeguard the EU financial interests, the amount may be offset before the payment date specified in the debit note.

For grants where the granting authority is the European Commission or an EU executive agency, debts may also be offset against amounts owed by other Commission services or executive agencies.

- (b) financial guarantee(s): not applicable
- (c) joint and several liability of beneficiaries: not applicable
- (d) by holding affiliated entities jointly and severally liable (if any, see Data Sheet, Point 4.4)
- (e) by taking legal action (see Article 43) or, provided that the granting authority is the European Commission or an EU executive agency, by adopting an enforceable decision under Article 299 of the Treaty on the Functioning of the EU (TFEU) and Article 100(2) of EU Financial Regulation 2018/1046.

If the Mutual Insurance Mechanism was called on by the granting authority to intervene, recovery will be continued in the name of the Mutual Insurance Mechanism. If two debit notes were sent, the second one (in the name of the Mutual Insurance Mechanism) will be considered to replace the first one (in the name of the granting authority). Where the MIM intervened, offsetting, enforceable decisions or any other of the above-mentioned forms of enforced recovery may be used mutatis mutandis.

The amount to be recovered will be increased by **late-payment interest** at the rate set out in Article 22.5, from the day following the payment date in the debit note, up to and including the date the full payment is received.

Partial payments will be first credited against expenses, charges and late-payment interest and then against the principal.

Bank charges incurred in the recovery process will be borne by the beneficiary, unless Directive 2015/2366¹⁷ applies.

For grants where the granting authority is an EU executive agency, enforced recovery by offsetting or enforceable decision will be done by the services of the European Commission (see also Article 43).

22.5 Consequences of non-compliance

22.5.1 If the granting authority does not pay within the payment deadlines (see above), the beneficiaries are entitled to **late-payment interest** at the rate applied by the European Central Bank (ECB) for its main refinancing operations in euros ('reference rate'), plus the rate specified in the Data Sheet (Point 4.2). The reference rate is the rate in force on the first day of the month in which the payment deadline expires, as published in the C series of the *Official Journal of the European Union*.

If the late-payment interest is lower than or equal to EUR 200, it will be paid to the coordinator only on request submitted within two months of receiving the late payment.

Late-payment interest is not due if all beneficiaries are EU Member States (including regional and local government authorities or other public bodies acting on behalf of a Member State for the purpose of this Agreement).

If payments or the payment deadline are suspended (see Articles 29 and 30), payment will not be considered as late.

Late-payment interest covers the period running from the day following the due date for payment (see above), up to and including the date of payment.

Late-payment interest is not considered for the purposes of calculating the final grant amount.

22.5.2 If the coordinator breaches any of its obligations under this Article, the grant may be reduced (see Article 29) and the grant or the coordinator may be terminated (see Article 32).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 23 — GUARANTEES

Not applicable

ARTICLE 24 — CERTIFICATES

24.1 Operational verification report (OVR)

Not applicable

24.2 Certificate on the financial statements (CFS)

If required by the granting authority (see Data Sheet, Point 4.3), the beneficiaries must provide

¹⁷ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (OJ L 337, 23.12.2015, p. 35).

certificates on their financial statements (CFS), in accordance with the schedule, threshold and conditions set out in the Data Sheet.

The coordinator must submit them as part of the periodic report (see Article 21).

The certificates must be drawn up using the template published on the Portal, cover the costs declared on the basis of actual costs and costs according to usual cost accounting practices (if any), and fulfil the following conditions:

- (a) be provided by a qualified approved external auditor which is independent and complies with Directive 2006/43/EC¹⁸ (or for public bodies: by a competent independent public officer)
- (b) the verification must be carried out according to the highest professional standards to ensure that the financial statements comply with the provisions under the Agreement and that the costs declared are eligible.

The certificates will not affect the granting authority's right to carry out its own checks, reviews or audits, nor preclude the European Court of Auditors (ECA), the European Public Prosecutor's Office (EPPO) or the European Anti-Fraud Office (OLAF) from using their prerogatives for audits and investigations under the Agreement (see Article 25).

If the costs (or a part of them) were already audited by the granting authority, these costs do not need to be covered by the certificate and will not be counted for calculating the threshold (if any).

24.3 Certificate on the compliance of usual cost accounting practices (CoMUC)

Not applicable

24.4 Systems and process audit (SPA)

Beneficiaries which:

- use unit, flat rate or lump sum costs or contributions according to documented (i.e. formally approved and in writing) usual costs accounting practices (if any) or
- have formalised documentation on the systems and processes for calculating their costs and contributions (i.e. formally approved and in writing), have participated in at least 150 actions under Horizon 2020 or the Euratom Research and Training Programme (2014-2018 or 2019-2020) and participate in at least 3 ongoing actions under Horizon Europe or the Euratom Research and Training Programme (2021-2025 or 2026-2027)

may apply to the granting authority for a systems and process audit (SPA).

This audit will be carried out as follows:

Step 1 – Application by the beneficiary.

Step 2 – If the application is accepted, the granting authority will carry out the systems and process

¹⁸ Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual accounts and consolidated accounts or similar national regulations (OJ L 157, 9.6.2006, p. 87).

audit, complemented by an audit of transactions (on a sample of the beneficiary's Horizon Europe or the Euratom Research and Training Programme financial statements).

Step 3 – The audit result will take the form of a risk assessment classification for the beneficiary: low, medium or high.

Low-risk beneficiaries will benefit from less (or less in-depth) ex-post audits (see Article 25) and a higher threshold for submitting certificates on the financial statements (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3).

24.5 Consequences of non-compliance

If a beneficiary does not submit a certificate on the financial statements (CFS) or the certificate is rejected, the accepted EU contribution to costs will be capped to reflect the CFS threshold.

If a beneficiary breaches any of its other obligations under this Article, the granting authority may apply the measures described in Chapter 5.

ARTICLE 25 — CHECKS, REVIEWS, AUDITS AND INVESTIGATIONS — EXTENSION OF FINDINGS

25.1 Granting authority checks, reviews and audits

25.1.1 Internal checks

The granting authority may — during the action or afterwards — check the proper implementation of the action and compliance with the obligations under the Agreement, including assessing costs and contributions, deliverables and reports.

25.1.2 Project reviews

The granting authority may carry out reviews on the proper implementation of the action and compliance with the obligations under the Agreement (general project reviews or specific issues reviews).

Such project reviews may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiary concerned and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent, outside experts. If it uses outside experts, the coordinator or beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The coordinator or beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information and data in addition to deliverables and reports already submitted (including information on the use of resources). The granting authority may request beneficiaries to provide such information to it directly. Sensitive information and documents will be treated in accordance with Article 13.

The coordinator or beneficiary concerned may be requested to participate in meetings, including with the outside experts.

For **on-the-spot visits**, the beneficiary concerned must allow access to sites and premises (including to the outside experts) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the review findings, a **project review report** will be drawn up.

The granting authority will formally notify the project review report to the coordinator or beneficiary concerned, which has 30 days from receiving notification to make observations.

Project reviews (including project review reports) will be in the language of the Agreement.

25.1.3 Audits

The granting authority may carry out audits on the proper implementation of the action and compliance with the obligations under the Agreement.

Such audits may be started during the implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the beneficiary concerned and will be considered to start on the date of the notification.

The granting authority may use its own audit service, delegate audits to a centralised service or use external audit firms. If it uses an external firm, the beneficiary concerned will be informed and have the right to object on grounds of commercial confidentiality or conflict of interest.

The beneficiary concerned must cooperate diligently and provide — within the deadline requested — any information (including complete accounts, individual salary statements or other personal data) to verify compliance with the Agreement. Sensitive information and documents will be treated in accordance with Article 13.

For **on-the-spot** visits, the beneficiary concerned must allow access to sites and premises (including for the external audit firm) and must ensure that information requested is readily available.

Information provided must be accurate, precise and complete and in the format requested, including electronic format.

On the basis of the audit findings, a **draft audit report** will be drawn up.

The auditors will formally notify the draft audit report to the beneficiary concerned, which has 30 days from receiving notification to make observations (contradictory audit procedure).

The **final audit report** will take into account observations by the beneficiary concerned and will be formally notified to them.

Audits (including audit reports) will be in the language of the Agreement.

25.2 European Commission checks, reviews and audits in grants of other granting authorities

Where the granting authority is not the European Commission, the latter has the same rights of checks, reviews and audits as the granting authority.

25.3 Access to records for assessing simplified forms of funding

The beneficiaries must give the European Commission access to their statutory records for the periodic assessment of simplified forms of funding which are used in EU programmes.

25.4 OLAF, EPPO and ECA audits and investigations

The following bodies may also carry out checks, reviews, audits and investigations — during the action or afterwards:

- the European Anti-Fraud Office (OLAF) under Regulations No 883/2013¹⁹ and No 2185/96²⁰
- the European Public Prosecutor's Office (EPPO) under Regulation 2017/1939
- the European Court of Auditors (ECA) under Article 287 of the Treaty on the Functioning of the EU (TFEU) and Article 257 of EU Financial Regulation 2018/1046.

If requested by these bodies, the beneficiary concerned must provide full, accurate and complete information in the format requested (including complete accounts, individual salary statements or other personal data, including in electronic format) and allow access to sites and premises for on-the-spot visits or inspections — as provided for under these Regulations.

To this end, the beneficiary concerned must keep all relevant information relating to the action, at least until the time-limit set out in the Data Sheet (Point 6) and, in any case, until any ongoing checks, reviews, audits, investigations, litigation or other pursuits of claims have been concluded.

25.5 Consequences of checks, reviews, audits and investigations — Extension of results of reviews, audits or investigations

25.5.1 Consequences of checks, reviews, audits and investigations in this grant

Findings in checks, reviews, audits or investigations carried out in the context of this grant may lead to rejections (see Article 27), grant reduction (see Article 28) or other measures described in Chapter 5.

Rejections or grant reductions after the final payment will lead to a revised final grant amount (see Article 22).

Findings in checks, reviews, audits or investigations during the action implementation may lead to a request for amendment (see Article 39), to change the description of the action set out in Annex 1.

Checks, reviews, audits or investigations that find systemic or recurrent errors, irregularities, fraud or breach of obligations in any EU grant may also lead to consequences in other EU grants awarded under similar conditions ('extension to other grants').

¹⁹ Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council of 11 September 2013 concerning investigations conducted by the European Anti-Fraud Office (OLAF) and repealing Regulation (EC) No 1073/1999 of the European Parliament and of the Council and Council Regulation (Euratom) No 1074/1999 (OJ L 248, 18/09/2013, p. 1).

²⁰ Council Regulation (Euratom, EC) No 2185/1996 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15/11/1996, p. 2).

Moreover, findings arising from an OLAF or EPPO investigation may lead to criminal prosecution under national law.

25.5.2 Extension from other grants

Results of checks, reviews, audits or investigations in other grants may be extended to this grant, if:

- (a) the beneficiary concerned is found, in other EU grants awarded under similar conditions, to have committed systemic or recurrent errors, irregularities, fraud or breach of obligations that have a material impact on this grant and
- (b) those findings are formally notified to the beneficiary concerned — together with the list of grants affected by the findings — within the time-limit for audits set out in the Data Sheet (see Point 6).

The granting authority will formally notify the beneficiary concerned of the intention to extend the findings and the list of grants affected.

If the extension concerns **rejections of costs or contributions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings
- (b) the request to submit revised financial statements for all grants affected
- (c) the correction rate for extrapolation, established on the basis of the systemic or recurrent errors, to calculate the amounts to be rejected, if the beneficiary concerned:
 - (i) considers that the submission of revised financial statements is not possible or practicable or
 - (ii) does not submit revised financial statements.

If the extension concerns **grant reductions**: the notification will include:

- (a) an invitation to submit observations on the list of grants affected by the findings and
- (b) the **correction rate for extrapolation**, established on the basis of the systemic or recurrent errors and the principle of proportionality.

The beneficiary concerned has **60 days** from receiving notification to submit observations, revised financial statements or to propose a duly substantiated **alternative correction method/rate**.

On the basis of this, the granting authority will analyse the impact and decide on the implementation (i.e. start rejection or grant reduction procedures, either on the basis of the revised financial statements or the announced/alternative method/rate or a mix of those; see Articles 27 and 28).

25.6 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, costs or contributions insufficiently substantiated will be ineligible (see Article 6) and will be rejected (see Article 27), and the grant may be reduced (see Article 28).

Such breaches may also lead to other measures described in Chapter 5.

ARTICLE 26 — IMPACT EVALUATIONS

26.1 Impact evaluation

The granting authority may carry out impact evaluations of the action, measured against the objectives and indicators of the EU programme funding the grant.

Such evaluations may be started during implementation of the action and until the time-limit set out in the Data Sheet (see Point 6). They will be formally notified to the coordinator or beneficiaries and will be considered to start on the date of the notification.

If needed, the granting authority may be assisted by independent outside experts.

The coordinator or beneficiaries must provide any information relevant to evaluate the impact of the action, including information in electronic format.

26.2 Consequences of non-compliance

If a beneficiary breaches any of its obligations under this Article, the granting authority may apply the measures described in Chapter 5.

CHAPTER 5 CONSEQUENCES OF NON-COMPLIANCE

SECTION 1 REJECTIONS AND GRANT REDUCTION

ARTICLE 27 — REJECTION OF COSTS AND CONTRIBUTIONS

27.1 Conditions

The granting authority will — at beneficiary termination, interim payment, final payment or afterwards — reject any costs or contributions which are ineligible (see Article 6), in particular following checks, reviews, audits or investigations (see Article 25).

The rejection may also be based on the extension of findings from other grants to this grant (see Article 25).

Ineligible costs or contributions will be rejected.

27.2 Procedure

If the rejection does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the rejection, the amounts and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the rejection (payment review procedure).

If the rejection leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

27.3 Effects

If the granting authority rejects costs or contributions, it will deduct them from the costs or contributions declared and then calculate the amount due (and, if needed, make a recovery; see Article 22).

ARTICLE 28 — GRANT REDUCTION

28.1 Conditions

The granting authority may — at beneficiary termination, final payment or afterwards — reduce the grant for a beneficiary, if:

- (a) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) the beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (see Article 25).

The amount of the reduction will be calculated for each beneficiary concerned and proportionate to the seriousness and the duration of the errors, irregularities or fraud or breach of obligations, by applying an individual reduction rate to their accepted EU contribution.

28.2 Procedure

If the grant reduction does not lead to a recovery, the granting authority will formally notify the coordinator or beneficiary concerned of the reduction, the amount to be reduced and the reasons why. The coordinator or beneficiary concerned may — within 30 days of receiving notification — submit observations if it disagrees with the reduction (payment review procedure).

If the grant reduction leads to a recovery, the granting authority will follow the contradictory procedure with pre-information letter set out in Article 22.

28.3 Effects

If the granting authority reduces the grant, it will deduct the reduction and then calculate the amount due (and, if needed, make a recovery; see Article 22).

SECTION 2 — SUSPENSION AND TERMINATION

ARTICLE 29 — PAYMENT DEADLINE SUSPENSION

29.1 Conditions

The granting authority may — at any moment — suspend the payment deadline if a payment cannot be processed because:

- (a) the required report (see Article 21) has not been submitted or is not complete or additional information is needed
- (b) there are doubts about the amount to be paid (e.g. ongoing audit extension procedure, queries about eligibility, need for a grant reduction, etc.) and additional checks, reviews, audits or investigations are necessary, or
- (c) there are other issues affecting the EU financial interests.

29.2 Procedure

The granting authority will formally notify the coordinator of the suspension and the reasons why.

The suspension will **take effect** the day the notification is sent.

If the conditions for suspending the payment deadline are no longer met, the suspension will be **lifted** — and the remaining time to pay (see Data Sheet, Point 4.2) will resume.

If the suspension exceeds two months, the coordinator may request the granting authority to confirm if the suspension will continue.

If the payment deadline has been suspended due to the non-compliance of the report and the revised report is not submitted (or was submitted but is also rejected), the granting authority may also terminate the grant or the participation of the coordinator (see Article 32).

ARTICLE 30 — PAYMENT SUSPENSION

30.1 Conditions

The granting authority may — at any moment — suspend payments, in whole or in part for one or more beneficiaries, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant.

If payments are suspended for one or more beneficiaries, the granting authority will make partial

payment(s) for the part(s) not suspended. If suspension concerns the final payment, the payment (or recovery) of the remaining amount after suspension is lifted will be considered to be the payment that closes the action.

30.2 Procedure

Before suspending payments, the granting authority will send a **pre-information letter** to the beneficiary concerned:

- formally notifying the intention to suspend payments and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

At the end of the suspension procedure, the granting authority will also inform the coordinator.

The suspension will **take effect** the day after the confirmation notification is sent.

If the conditions for resuming payments are met, the suspension will be **lifted**. The granting authority will formally notify the beneficiary concerned (and the coordinator) and set the suspension end date.

During the suspension, no prefinancing will be paid to the beneficiaries concerned. For interim payments, the periodic reports for all reporting periods except the last one (see Article 21) must not contain any financial statements from the beneficiary concerned (or its affiliated entities). The coordinator must include them in the next periodic report after the suspension is lifted or — if suspension is not lifted before the end of the action — in the last periodic report.

ARTICLE 31 — GRANT AGREEMENT SUSPENSION

31.1 Consortium-requested GA suspension

31.1.1 Conditions and procedure

The beneficiaries may request the suspension of the grant or any part of it, if exceptional circumstances — in particular *force majeure* (see Article 35) — make implementation impossible or excessively difficult.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the suspension takes effect; this date may be before the date of the submission of the amendment request and
- the expected date of resumption.

The suspension will **take effect** on the day specified in the amendment.

Once circumstances allow for implementation to resume, the coordinator must immediately request

another **amendment** of the Agreement to set the suspension end date, the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the amendment. This date may be before the date of the submission of the amendment request.

During the suspension, no prefinancing will be paid. Costs incurred or contributions for activities implemented during grant suspension are not eligible (see Article 6.3).

31.2 EU-initiated GA suspension

31.2.1 Conditions

The granting authority may suspend the grant or any part of it, if:

- (a) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed or is suspected of having committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.), or
- (b) a beneficiary (or a person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant
- (c) other:
 - (i) linked action issues: not applicable
 - (ii) the action has lost its scientific or technological relevance, for EIC Accelerator actions: the action has lost its economic relevance, for challenge-based EIC Pathfinder actions and Horizon Europe Missions: the action has lost its relevance as part of the Portfolio for which it has been initially selected

31.2.2 Procedure

Before suspending the grant, the granting authority will send a **pre-information letter** to the coordinator:

- formally notifying the intention to suspend the grant and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the suspension (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

The suspension will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification).

Once the conditions for resuming implementation of the action are met, the granting authority will formally notify the coordinator a **lifting of suspension letter**, in which it will set the suspension end date and invite the coordinator to request an amendment of the Agreement to set the resumption date (one day after suspension end date), extend the duration and make other changes necessary to adapt the action to the new situation (see Article 39) — unless the grant has been terminated (see Article 32). The suspension will be **lifted** with effect from the suspension end date set out in the lifting of suspension letter. This date may be before the date on which the letter is sent.

During the suspension, no prefinancing will be paid. Costs incurred or contributions for activities implemented during suspension are not eligible (see Article 6.3).

The beneficiaries may not claim damages due to suspension by the granting authority (see Article 33).

Grant suspension does not affect the granting authority's right to terminate the grant or a beneficiary (see Article 32) or reduce the grant (see Article 28).

ARTICLE 32 — GRANT AGREEMENT OR BENEFICIARY TERMINATION

32.1 Consortium-requested GA termination

32.1.1 Conditions and procedure

The beneficiaries may request the termination of the grant.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the date the consortium ends work on the action ('end of work date') and
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

The termination will **take effect** on the termination date specified in the amendment.

If no reasons are given or if the granting authority considers the reasons do not justify termination, it may consider the grant terminated improperly.

32.1.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before the end of work date (see Article 22). Costs relating to contracts due for execution only after the end of work are not eligible.

If the granting authority does not receive the report within the deadline, only costs and contributions

which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

Improper termination may lead to a grant reduction (see Article 28).

After termination, the beneficiaries' obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.2 Consortium-requested beneficiary termination

32.2.1 Conditions and procedure

The coordinator may request the termination of the participation of one or more beneficiaries, on request of the beneficiary concerned or on behalf of the other beneficiaries.

The coordinator must submit a request for **amendment** (see Article 39), with:

- the reasons why
- the opinion of the beneficiary concerned (or proof that this opinion has been requested in writing)
- the date the beneficiary ends work on the action ('end of work date')
- the date the termination takes effect ('termination date'); this date must be after the date of the submission of the amendment request.

If the termination concerns the coordinator and is done without its agreement, the amendment request must be submitted by another beneficiary (acting on behalf of the consortium).

The termination will **take effect** on the termination date specified in the amendment.

If no information is given or if the granting authority considers that the reasons do not justify termination, it may consider the beneficiary to have been terminated improperly.

32.2.2 Effects

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement, the explanation on the use of resources, and, if applicable, the certificate on the financial statement (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
- (iii) a second **request for amendment** (see Article 39) with other amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report

submitted and taking into account the costs incurred and contributions for activities implemented before the end of work date (see Article 22). Costs relating to contracts due for execution only after the end of work are not eligible.

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the second request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the second request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

Improper termination may lead to a reduction of the grant (see Article 31) or grant termination (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

32.3 EU-initiated GA or beneficiary termination

32.3.1 Conditions

The granting authority may terminate the grant or the participation of one or more beneficiaries, if:

- (a) one or more beneficiaries do not accede to the Agreement (see Article 40)
- (b) a change to the action or the legal, financial, technical, organisational or ownership situation of a beneficiary is likely to substantially affect the implementation of the action or calls into question the decision to award the grant (including changes linked to one of the exclusion grounds listed in the declaration of honour)
- (c) following termination of one or more beneficiaries, the necessary changes to the Agreement (and their impact on the action) would call into question the decision awarding the grant or breach the principle of equal treatment of applicants
- (d) implementation of the action has become impossible or the changes necessary for its

continuation would call into question the decision awarding the grant or breach the principle of equal treatment of applicants

- (e) a beneficiary (or person with unlimited liability for its debts) is subject to bankruptcy proceedings or similar (including insolvency, winding-up, administration by a liquidator or court, arrangement with creditors, suspension of business activities, etc.)
- (f) a beneficiary (or person with unlimited liability for its debts) is in breach of social security or tax obligations
- (g) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has been found guilty of grave professional misconduct
- (h) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed fraud, corruption, or is involved in a criminal organisation, money laundering, terrorism-related crimes (including terrorism financing), child labour or human trafficking
- (i) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) was created under a different jurisdiction with the intent to circumvent fiscal, social or other legal obligations in the country of origin (or created another entity with this purpose)
- (j) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed:
 - (i) substantial errors, irregularities or fraud or
 - (ii) serious breach of obligations under this Agreement or during its award (including improper implementation of the action, non-compliance with the call conditions, submission of false information, failure to provide required information, breach of ethics or security rules (if applicable), etc.)
- (k) a beneficiary (or person having powers of representation, decision-making or control, or person essential for the award/implementation of the grant) has committed — in other EU grants awarded to it under similar conditions — systemic or recurrent errors, irregularities, fraud or serious breach of obligations that have a material impact on this grant (extension of findings from other grants to this grant; see Article 25)
- (l) despite a specific request by the granting authority, a beneficiary does not request — through the coordinator — an amendment to the Agreement to end the participation of one of its affiliated entities or associated partners that is in one of the situations under points (d), (f), (e), (g), (h), (i) or (j) and to reallocate its tasks, or
- (m) other:
 - (i) linked action issues: not applicable
 - (ii) the action has lost its scientific or technological relevance, for EIC Accelerator actions: the action has lost its economic relevance, for challenge-based EIC Pathfinder actions

and Horizon Europe Missions: the action has lost its relevance as part of the Portfolio for which it has been initially selected

32.3.2 Procedure

Before terminating the grant or participation of one or more beneficiaries, the granting authority will send a **pre-information letter** to the coordinator or beneficiary concerned:

- formally notifying the intention to terminate and the reasons why and
- requesting observations within 30 days of receiving notification.

If the granting authority does not receive observations or decides to pursue the procedure despite the observations it has received, it will confirm the termination and the date it will take effect (**confirmation letter**). Otherwise, it will formally notify that the procedure is discontinued.

For beneficiary terminations, the granting authority will — at the end of the procedure — also inform the coordinator.

The termination will **take effect** the day after the confirmation notification is sent (or on a later date specified in the notification; ‘termination date’).

32.3.3 Effects

(a) for **GA termination**:

The coordinator must — within 60 days from when termination takes effect — submit a **periodic report** (for the last open reporting period until termination).

The granting authority will calculate the final grant amount and final payment on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before termination takes effect (see Article 22). Costs relating to contracts due for execution only after termination are not eligible.

If the grant is terminated for breach of the obligation to submit reports, the coordinator may not submit any report after termination.

If the granting authority does not receive the report within the deadline, only costs and contributions which are included in an approved periodic report will be taken into account (no costs/contributions if no periodic report was ever approved).

Termination does not affect the granting authority’s right to reduce the grant (see Article 28) or to impose administrative sanctions (see Article 34).

The beneficiaries may not claim damages due to termination by the granting authority (see Article 33).

After termination, the beneficiaries’ obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

(b) for **beneficiary termination**:

The coordinator must — within 60 days from when termination takes effect — submit:

- (i) a **report on the distribution of payments** to the beneficiary concerned
- (ii) a **termination report** from the beneficiary concerned, for the open reporting period until termination, containing an overview of the progress of the work, the financial statement, the explanation on the use of resources, and, if applicable, the certificate on the financial statement (CFS; see Articles 21 and 24.2 and Data Sheet, Point 4.3)
- (iii) a **request for amendment** (see Article 39) with any amendments needed (e.g. reallocation of the tasks and the estimated budget of the terminated beneficiary; addition of a new beneficiary to replace the terminated beneficiary; change of coordinator, etc.).

The granting authority will calculate the amount due to the beneficiary on the basis of the report submitted and taking into account the costs incurred and contributions for activities implemented before termination takes effect (see Article 22). Costs relating to contracts due for execution only after termination are not eligible.

The information in the termination report must also be included in the periodic report for the next reporting period (see Article 21).

If the granting authority does not receive the termination report within the deadline, only costs and contributions included in an approved periodic report will be taken into account (no costs/ contributions if no periodic report was ever approved).

If the granting authority does not receive the report on the distribution of payments within the deadline, it will consider that:

- the coordinator did not distribute any payment to the beneficiary concerned and that
- the beneficiary concerned must not repay any amount to the coordinator.

If the request for amendment is accepted by the granting authority, the Agreement is **amended** to introduce the necessary changes (see Article 39).

If the request for amendment is rejected by the granting authority (because it calls into question the decision awarding the grant or breaches the principle of equal treatment of applicants), the grant may be terminated (see Article 32).

After termination, the concerned beneficiary's obligations (in particular Articles 13 (confidentiality and security), 16 (IPR), 17 (communication, dissemination and visibility), 21 (reporting), 25 (checks, reviews, audits and investigations), 26 (impact evaluation), 27 (rejections), 28 (grant reduction) and 42 (assignment of claims)) continue to apply.

SECTION 3 OTHER CONSEQUENCES: DAMAGES AND ADMINISTRATIVE SANCTIONS

ARTICLE 33 — DAMAGES

33.1 Liability of the granting authority

The granting authority cannot be held liable for any damage caused to the beneficiaries or to third parties as a consequence of the implementation of the Agreement, including for gross negligence.

The granting authority cannot be held liable for any damage caused by any of the beneficiaries or other participants involved in the action, as a consequence of the implementation of the Agreement.

33.2 Liability of the beneficiaries

The beneficiaries must compensate the granting authority for any damage it sustains as a result of the implementation of the action or because the action was not implemented in full compliance with the Agreement, provided that it was caused by gross negligence or wilful act.

The liability does not extend to indirect or consequential losses or similar damage (such as loss of profit, loss of revenue or loss of contracts), provided such damage was not caused by wilful act or by a breach of confidentiality.

ARTICLE 34 — ADMINISTRATIVE SANCTIONS AND OTHER MEASURES

Nothing in this Agreement may be construed as preventing the adoption of administrative sanctions (i.e. exclusion from EU award procedures and/or financial penalties) or other public law measures, in addition or as an alternative to the contractual measures provided under this Agreement (see, for instance, Articles 135 to 145 EU Financial Regulation 2018/1046 and Articles 4 and 7 of Regulation 2988/95²¹).

SECTION 4 FORCE MAJEURE

ARTICLE 35 — FORCE MAJEURE

A party prevented by force majeure from fulfilling its obligations under the Agreement cannot be considered in breach of them.

‘Force majeure’ means any situation or event that:

- prevents either party from fulfilling their obligations under the Agreement,
- was unforeseeable, exceptional situation and beyond the parties’ control,
- was not due to error or negligence on their part (or on the part of other participants involved in the action), and
- proves to be inevitable in spite of exercising all due diligence.

Any situation constituting force majeure must be formally notified to the other party without delay, stating the nature, likely duration and foreseeable effects.

²¹ Council Regulation (EC, Euratom) No 2988/95 of 18 December 1995 on the protection of the European Communities financial interests (OJ L 312, 23.12.1995, p. 1).

The parties must immediately take all the necessary steps to limit any damage due to force majeure and do their best to resume implementation of the action as soon as possible.

CHAPTER 6 FINAL PROVISIONS

ARTICLE 36 — COMMUNICATION BETWEEN THE PARTIES

36.1 Forms and means of communication — Electronic management

EU grants are managed fully electronically through the EU Funding & Tenders Portal ('Portal').

All communications must be made electronically through the Portal, in accordance with the Portal Terms and Conditions and using the forms and templates provided there (except if explicitly instructed otherwise by the granting authority).

Communications must be made in writing and clearly identify the grant agreement (project number and acronym).

Communications must be made by persons authorised according to the Portal Terms and Conditions. For naming the authorised persons, each beneficiary must have designated — before the signature of this Agreement — a 'legal entity appointed representative (LEAR)'. The role and tasks of the LEAR are stipulated in their appointment letter (see Portal Terms and Conditions).

If the electronic exchange system is temporarily unavailable, instructions will be given on the Portal.

36.2 Date of communication

The sending date for communications made through the Portal will be the date and time of sending, as indicated by the time logs.

The receiving date for communications made through the Portal will be the date and time the communication is accessed, as indicated by the time logs. Formal notifications that have not been accessed within 10 days after sending, will be considered to have been accessed (see Portal Terms and Conditions).

If a communication is exceptionally made on paper (by e-mail or postal service), general principles apply (i.e. date of sending/receipt). Formal notifications by registered post with proof of delivery will be considered to have been received either on the delivery date registered by the postal service or the deadline for collection at the post office.

If the electronic exchange system is temporarily unavailable, the sending party cannot be considered in breach of its obligation to send a communication within a specified deadline.

36.3 Addresses for communication

The Portal can be accessed via the Europa website.

The address for paper communications to the granting authority (if exceptionally allowed) is the official mailing address indicated on its website.

For beneficiaries, it is the legal address specified in the Portal Participant Register.

ARTICLE 37 — INTERPRETATION OF THE AGREEMENT

The provisions in the Data Sheet take precedence over the rest of the Terms and Conditions of the Agreement.

Annex 5 takes precedence over the Terms and Conditions; the Terms and Conditions take precedence over the Annexes other than Annex 5.

Annex 2 takes precedence over Annex 1.

ARTICLE 38 — CALCULATION OF PERIODS AND DEADLINES

In accordance with Regulation No 1182/71²², periods expressed in days, months or years are calculated from the moment the triggering event occurs.

The day during which that event occurs is not considered as falling within the period.

‘Days’ means calendar days, not working days.

ARTICLE 39 — AMENDMENTS

39.1 Conditions

The Agreement may be amended, unless the amendment entails changes to the Agreement which would call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

Amendments may be requested by any of the parties.

39.2 Procedure

The party requesting an amendment must submit a request for amendment signed directly in the Portal Amendment tool.

The coordinator submits and receives requests for amendment on behalf of the beneficiaries (see Annex 3). If a change of coordinator is requested without its agreement, the submission must be done by another beneficiary (acting on behalf of the other beneficiaries).

The request for amendment must include:

- the reasons why
- the appropriate supporting documents and
- for a change of coordinator without its agreement: the opinion of the coordinator (or proof that this opinion has been requested in writing).

The granting authority may request additional information.

²² Regulation (EEC, Euratom) No 1182/71 of the Council of 3 June 1971 determining the rules applicable to periods, dates and time-limits (OJ L 124, 8/6/1971, p. 1).

If the party receiving the request agrees, it must sign the amendment in the tool within 45 days of receiving notification (or any additional information the granting authority has requested). If it does not agree, it must formally notify its disagreement within the same deadline. The deadline may be extended, if necessary for the assessment of the request. If no notification is received within the deadline, the request is considered to have been rejected.

An amendment **enters into force** on the day of the signature of the receiving party.

An amendment **takes effect** on the date of entry into force or other date specified in the amendment.

ARTICLE 40 — ACCESSION AND ADDITION OF NEW BENEFICIARIES

40.1 Accession of the beneficiaries mentioned in the Preamble

The beneficiaries which are not coordinator must accede to the grant by signing the accession form (see Annex 3) directly in the Portal Grant Preparation tool, within 30 days after the entry into force of the Agreement (see Article 44).

They will assume the rights and obligations under the Agreement with effect from the date of its entry into force (see Article 44).

If a beneficiary does not accede to the grant within the above deadline, the coordinator must — within 30 days — request an amendment (see Article 39) to terminate the beneficiary and make any changes necessary to ensure proper implementation of the action. This does not affect the granting authority's right to terminate the grant (see Article 32).

40.2 Addition of new beneficiaries

In justified cases, the beneficiaries may request the addition of a new beneficiary.

For this purpose, the coordinator must submit a request for amendment in accordance with Article 39. It must include an accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool.

New beneficiaries will assume the rights and obligations under the Agreement with effect from the date of their accession specified in the accession form (see Annex 3).

Additions are also possible in mono-beneficiary grants.

ARTICLE 41 — TRANSFER OF THE AGREEMENT

In justified cases, the beneficiary of a mono-beneficiary grant may request the transfer of the grant to a new beneficiary, provided that this would not call into question the decision awarding the grant or breach the principle of equal treatment of applicants.

The beneficiary must submit a request for **amendment** (see Article 39), with

- the reasons why
- the accession form (see Annex 3) signed by the new beneficiary directly in the Portal Amendment tool and

- additional supporting documents (if required by the granting authority).

The new beneficiary will assume the rights and obligations under the Agreement with effect from the date of accession specified in the accession form (see Annex 3).

ARTICLE 42 — ASSIGNMENTS OF CLAIMS FOR PAYMENT AGAINST THE GRANTING AUTHORITY

The beneficiaries may not assign any of their claims for payment against the granting authority to any third party, except if expressly approved in writing by the granting authority on the basis of a reasoned, written request by the coordinator (on behalf of the beneficiary concerned).

If the granting authority has not accepted the assignment or if the terms of it are not observed, the assignment will have no effect on it.

In no circumstances will an assignment release the beneficiaries from their obligations towards the granting authority.

ARTICLE 43 — APPLICABLE LAW AND SETTLEMENT OF DISPUTES

43.1 Applicable law

The Agreement is governed by the applicable EU law, supplemented if necessary by the law of Belgium.

Special rules may apply for beneficiaries which are international organisations (if any; see Data Sheet, Point 5).

43.2 Dispute settlement

If a dispute concerns the interpretation, application or validity of the Agreement, the parties must bring action before the EU General Court — or, on appeal, the EU Court of Justice — under Article 272 of the Treaty on the Functioning of the EU (TFEU).

For non-EU beneficiaries (if any), such disputes must be brought before the courts of Brussels, Belgium — unless an international agreement provides for the enforceability of EU court judgements.

For beneficiaries with arbitration as special dispute settlement forum (if any; see Data Sheet, Point 5), the dispute will — in the absence of an amicable settlement — be settled in accordance with the Rules for Arbitration published on the Portal.

If a dispute concerns administrative sanctions, offsetting or an enforceable decision under Article 299 TFEU (see Articles 22 and 34), the beneficiaries must bring action before the General Court — or, on appeal, the Court of Justice — under Article 263 TFEU.

For grants where the granting authority is an EU executive agency (see Preamble), actions against offsetting and enforceable decisions must be brought against the European Commission (not against the granting authority; see also Article 22).

ARTICLE 44 — ENTRY INTO FORCE

The Agreement will enter into force on the day of signature by the granting authority or the coordinator, depending on which is later.

SIGNATURES

For the coordinator

For the granting authority



ANNEX 1



Horizon Europe (HORIZON)

Description of the action (DoA)

Part A

Part B

DESCRIPTION OF THE ACTION (PART A)

COVER PAGE

Part A of the Description of the Action (DoA) must be completed directly on the Portal Grant Preparation screens.

PROJECT	
<i>Grant Preparation (General Information screen) — Enter the info.</i>	
Project number:	101039890
Project name:	ELectrically ConTRolled magnetic Anisotropy
Project acronym:	ELECTRA
Call:	ERC-2021-STG
Topic:	ERC-2021-STG
Type of action:	HORIZON-ERC
Service:	ERCEA/C/03
Project starting date:	fixed date: 1 June 2022
Project duration:	60 months

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Staff effort	6
List of deliverables	7
List of milestones (outputs/outcomes)	9
List of critical risks	9
ERC PI information	9

PROJECT SUMMARY

Project summary

Grant Preparation (General Information screen) — Provide an overall description of your project (including context and overall objectives, planned activities and main achievements, and expected results and impacts (on target groups, change procedures, capacities, innovation etc)). This summary should give readers a clear idea of what your project is about.

Use the project summary from your proposal.

ELECTRA aims at understanding and controlling the interaction between magnetic molecules and electric fields, called Spin-Electric (SE) effect. Molecules have several characteristics that make them appealing for information technology (small size, monodispersity, chemical tunability, quantum behaviour). Nowadays, electric fields are the most environmentally friendly and precise way to target a single molecule. Therefore, understanding how to tailor and control the SE effects will trigger the design of less energy-demanding, more efficient, and smaller devices. However, the SE effects on molecules are still poorly explored and rationalized, largely due to the absence of a generally applicable experimental technique. Therefore, this project proposes the realisation of a novel experimental technique to detect SE effects on any magnetically anisotropic material, with no a priori restrictions. The versatility of the technique will allow the study of both single crystals and thin films, which is vital in the perspective of using these systems in nanostructures. A rational synthetic plan will exploit the versatility of chemistry to unravel the role and importance of three chemically tunable properties (spin-orbit coupling, nature of the donor atoms, and structural rigidity) on the onset of the SE effects in coordination complexes. Moreover, the effect of temperature and magnetic field on the SE effects will be assessed using super-sensitive molecular probes. The rationalization of the effect will be obtained by combining ab initio calculations and phenomenological models. The positive completion of ELECTRA will deliver an unprecedented understanding of the SE effects in molecules and chemical guidelines for synthesizing highly performant molecular architectures with SE effects on-demand to be used in the field of information technology.

LIST OF PARTICIPANTS

PARTICIPANTS

Grant Preparation (Beneficiaries screen) — Enter the info.

Number	Role	Short name	Legal name	Country	PIC
1	COO	UNIFI	UNIVERSITA DEGLI STUDI DI FIRENZE	IT	999895789

LIST OF WORK PACKAGES

Work packages						
<i>Grant Preparation (Work Packages screen) — Enter the info.</i>						
Work Package No	Work Package name	Lead Beneficiary	Effort (Person-Months)	Start Month	End Month	Deliverable No(s)
WP1	Participation in the Open Research data Pilot	1-UNIFI	0.00	1	60	D1.1

Work package WP1 – Participation in the Open Research data Pilot

Work Package Number	WP1	Lead Beneficiary	1. UNIFI
Work Package Name	Participation in the Open Research data Pilot		
Start Month	1	End Month	60

Objectives
Participation in the Open Research data Pilot

Description
Participation in the Open Research data Pilot

STAFF EFFORT

Staff effort per participant		
<i>Grant Preparation (Work packages - Effort screen) — Enter the info.</i>		
Participant	WP1	Total Person-Months
Total Person-Months	0.00	0.0

LIST OF DELIVERABLES

Deliverables

Grant Preparation (Deliverables screen) — Enter the info.

The labels used mean:

Public — fully open ( automatically posted online)

Sensitive — limited under the conditions of the Grant Agreement

EU classified —RESTREINT-UE/EU-RESTRICTED, CONFIDENTIEL-UE/EU-CONFIDENTIAL, SECRET-UE/EU-SECRET under Decision [2015/444](#)

Deliverable No	Deliverable Name	Work Package No	Lead Beneficiary	Type	Dissemination Level	Due Date (month)
D1.1	Data Management Plan	WP1	1-UNIFI	OTHER	SEN - Sensitive	6

Deliverable – Data Management Plan

Deliverable Number	D1.1	Lead Beneficiary	1. UNIFI
Deliverable Name	Data Management Plan		
Type	OTHER	Dissemination Level	SEN - Sensitive
Due Date (month)	6	Work Package No	WP1

Description
Data Management plan

LIST OF MILESTONES

(None)

LIST OF CRITICAL RISKS

(None)

ERC PI INFORMATION

PI personal information										
PI No	Family Name	Birth Family Name	First Name	Gender	Title	Nationality	Date of Birth	Town of Birth	Country of Birth	Employer
PI-1	Perfetti	Perfetti	Mauro		Dr	Italy	16/Oct/88	La Spezia	Italy	University of Florence

PI personal information						
PI No	As From Date	Until Date	Hosted and Engaged by	Coordinator Contact (Principal Investigator)	Time Commitment for the Action (%)	Time Commitment in a MS/AC (%)
PI-1	1/6/2022		UNIFI	No	65	50

**ERC Starting Grant 2021
Research proposal [Part B1]**

ELEctrically ConTRolled magnetic Anisotropy

ELECTRA

Cover Page:

- PI - Mauro Perfetti
- HI - University of Florence
- Duration (months) - 60

ELECTRA aims at understanding and controlling the interaction between magnetic molecules and electric fields, called Spin-Electric (SE) effect. Molecules have several characteristics that make them appealing for information technology (small size, monodispersity, chemical tunability, quantum behaviour). Nowadays, electric fields are the most environmentally friendly and precise way to target a single molecule. Therefore, understanding how to tailor and control the SE effects will trigger the design of less energy-demanding, more efficient, and smaller devices. However, the SE effects on molecules are still poorly explored and rationalized, largely due to the absence of a generally applicable experimental technique. Therefore, this project proposes the realisation of a novel experimental technique to detect SE effects on any magnetically anisotropic material, with no a priori restrictions. The versatility of the technique will allow the study of both single crystals and thin films, which is vital in the perspective of using these systems in nanostructures. A rational synthetic plan will exploit the versatility of chemistry to unravel the role and importance of three chemically tunable properties (spin-orbit coupling, nature of the donor atoms, and structural rigidity) on the onset of the SE effects in coordination complexes. Moreover, the effect of temperature and magnetic field on the SE effects will be assessed using super-sensitive molecular probes. The rationalization of the effect will be obtained by combining ab initio calculations and phenomenological models. The positive completion of ELECTRA will deliver an unprecedented understanding of the SE effects in molecules and chemical guidelines for synthesizing highly performant molecular architectures with SE effects on-demand to be used in the field of information technology.

Cross domain nature of the project: The project deals with the study of the interplay between electric fields and molecular spins. The Methodology Section is split in two equally important parts: a synthetic plan that describes the synthesis of coordination complexes (Section 6.1, related to PE5) and the development and use of a new methodology to measure the investigated effects (Section 6.2, related to PE4). Therefore, I propose a cross-panel evaluation.

Section a: Extended Synopsis of the scientific proposal

1. Motivation

We are surrounded by devices that generate, handle and store information using bits. Since more than 15 years, we witness an exponential growth in data production.¹ The current technological state of the art cannot sustain this growth. To leap forward in the field of information technology, we must design devices that demand a low energy consumption, that can be realized with a small amount of material, and that can outperform the State-of-the-Art in terms of calculation power and efficiency. There are possible solutions to these issues.

The energy consumption can be efficiently diminished if we start writing, reading, and/or addressing the bits using electric fields, that can be easily generated, manipulated and confined.² For example, the high control that can be nowadays obtained over electric fields has been used to achieve atomic resolution with Scanning Tunnelling Microscopy (STM)³⁻⁴ and to measure Electron Paramagnetic Resonance (EPR) on single atoms.⁵ Concerning the miniaturization problem, an appealing solution might be using molecule-based devices instead of inorganic lattices (i.e. extended networks of atoms). The nanometric dimensions of molecules and their unmatched versatility suggest that their usage would increase the data density by at least two orders of magnitude.⁶⁻⁷ Moreover, the quantum properties of molecules constitute a valuable resource for increasing computational power.⁸ The rush for quantum supremacy (i.e. outperforming the current State-of-the-art classical information with quantum mechanical properties) is nowadays in full swing at a worldwide level.

In recent years, the EU has taken strategic actions to fund the development of Quantum Technologies primarily in the context of the the Quantum Flagship initiative.⁹ The ERC has also demonstrated interest in the field by financing ambitious projects to enhance the performances of magnetic molecules for information storage (Single Molecule Magnets, SMMs^{7, 10-12}) and quantum computation (Qubits, QBs¹³⁻¹⁴). For example, the projects ContraVib¹⁵ and AIDEMON¹⁶ aim at ameliorating these systems by exploring their vibrational structure and by machine learning, respectively. Therefore, we are building up knowledge that in few years will produce a significant improvement of the performances of molecular species in the field of information technology.

However, we lack fundamental understanding of how electric fields interact with the magnetic properties of molecules. More precisely, we must be able to comprehend, and consequently control, how an electric field affects the magnetic anisotropy (MA) of a material, i.e. the spatial dependence of its magnetic properties.^{2, 17} Nowadays it is well-established that a careful engineering of the MA is pivotal to achieve performant SMMs and QBs.¹⁷⁻²¹ In the last few years, this approach has lead to a huge enhancement of the barrier for the relaxation of the magnetization in SMMs,²²⁻²⁴ and to a remarkable increase of the coherence time of QBs.^{13, 18, 21, 25-26}

If we keep neglecting the interaction between MA and electric fields, we risk obtaining excellent SMMs and QBs that could be impossible to address using electric fields, a key tool for the devices of the future. ELECTRA will fill this gap by studying, in a step-by-step way, how electric fields act on the MA of the molecules (Figure I). This study will allow the rationalization of this interaction and will provide chemical guidelines to tailor molecular structures with spin-electric effects on-demand. ELECTRA is *timely*: we need to start this investigation immediately to gain, in few years, a comprehensive view that will allow to realistically exploit molecules in devices.

2. State of the art

The interactions between electric fields and the magnetic properties of materials are called Magneto Electric (ME) effects.²⁷⁻²⁹ ME effects have been thoroughly studied on inorganic lattices³⁰⁻³⁴ due to their appealing uses in devices for optical diodes, spin-wave generation, amplification and frequency conversion, modulation of optical waves, and others.³⁵ In the last 20 years, the improved technological level, theory development, and blooming applications have triggered a considerable interest in this field,³⁶ which is nowadays projected towards the use of ME effects in the field of information technology.² So far, studies on inorganic lattices are leading the field, and remarkably strong ME effects have been measured.³⁷⁻³⁸

Even though molecular materials are attracting much attention due to their appealing applications in spintronics,³⁹⁻⁴⁰ information storage^{7, 10-11} and manipulation,^{8, 13} they are much less investigated than inorganic lattices. For the rest of the proposal, I will call the interaction between magnetic molecules and electric field a *Spin-Electric* (SE) effect to emphasize that the systems that I intend to study are discrete entities with a spin,

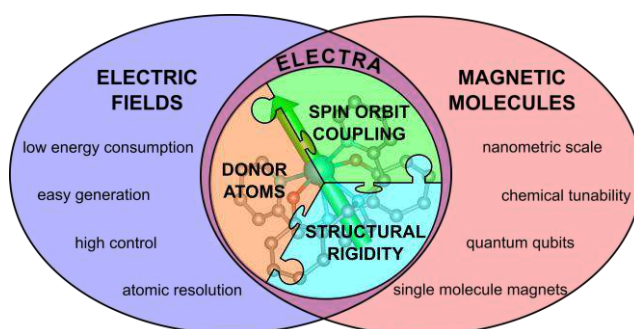


Figure I. ELECTRA aims at tailoring and controlling the interaction between electric field and magnetic molecules via chemical design.

rather than extended networks where the magnetic properties arise from long-range order. Most of the works reported so far on molecular species use the electric field to switch the spin state of the material⁴¹⁻⁴⁴ (e.g., spin-crossover compounds), to change the localization of the unpaired electron from one portion of the molecule to another⁴⁵⁻⁵¹ or to add or withdraw electrons of molecules trapped in a gate.⁵² Changes in dielectric permittivity have been observed as well.⁵³ These are intriguing results, but they are not the focus of ELECTRA that is designed to understand and exploit the influence of electric fields on the MA of magnetic molecules.

Studies closely related to ELECTRA are *rare* and *recent*.⁵⁴⁻⁶³ Theoretical studies highlight the appealing possibility to tune of the MA of QBs and SMMs (and consequently their performances) by applying electric fields.⁵⁴⁻⁵⁸ Experimentally, the ubiquitous technique used to get information about the SE effect is Electron Paramagnetic Resonance (EPR) spectroscopy in various flavours (spin echo, electric field modulated, or continuous wave).⁵⁹⁻⁶⁴ The reason for this is that SE effects on (yet unoptimized) molecular systems are generally weak, and the high sensitivity of EPR is an excellent tool to reveal them. Moreover, EPR can be exploited at best when the target phenomenon is the electric field's effect on the magnetic interaction, and that explains why most of the studied systems are polynuclear clusters or spin chains.⁶⁰⁻⁶³ However, EPR has two *flaws* that are particularly detrimental for studying SE effects. First, the sample *must have* an EPR signal; otherwise, it cannot be studied. Ions with an integer value of the spin or total angular momentum and highly anisotropic samples are often EPR silent at conventional frequencies.⁶⁵⁻⁶⁶ This first flaw cuts off about half of the molecules (of course, this is a rule of thumb, and exceptions are possible^{59, 67}). Moreover, many lanthanide complexes (that are excellent QBs⁶⁸ and SMMs²³⁻²⁴) have signals that exhibit a significant *broadening* with increasing temperature due to the fast relaxation, thus imposing only low-temperature studies. It is then clear that EPR constitutes a valuable resource, but if we want to understand the physical origin of the onset of SE effects, we need to develop a *generally applicable* technique.

3. Groundbreaking nature

The idea behind ELECTRA is simple, but groundbreaking: I have devised a new technique able to study SE effects on any anisotropic material. This revolutionary technique, that I will call *Torque Magnetometry in Electric Field*, will permit a long-sought systematic study on the connection between SE effects and molecular structure. Exploiting the general applicability of the technique, I have designed a rational synthetic plan that will deliver a precise idea of which *chemical parameters* must be tuned to obtain molecules with tailored SE effects. The project will also investigate the role of surface in perturbing SE effects, thus delivering a vital piece of information to proceed further in the exploitation of SE effects in devices. The experimental part of the project will also be flanked by theory to deliver *solid models* and handy *synthetic guidelines*.

4. Objectives

The objectives that are expected to be achieved during the project are:

- O1. Development of a new experimental technique able to study SE effects on *any* anisotropic magnetic molecule.
- O2. Assessment of the role of chemically tunable parameters (spin-orbit coupling, nature of the donor atoms and structural rigidity) on the onset of SE effects.
- O3. Determination of the role of external conditions (temperature, magnetic field) on the onset of SE effects.
- O4. Theoretical rationalization of the SE effects in magnetic molecules.
- O5. Identification of chemical guidelines to engineer molecular structures with controlled SE effects.
- O6. Assessment of the role of a surface in modifying the SE effects of molecular species.

5. Potential Impact

At a fundamental level, the positive completion of ELECTRA will provide vital knowledge about the interaction between magnetic properties and electric fields. This will allow the identification of the best chemical building blocks to assemble in order to tailor a molecular structure with *ad hoc* SE effects. The rationalization of the SE effects will lay the foundations to the controlled electric addressing of the single molecular spin, an important step towards building up a revolutionary, environmentally friendly and more efficient technology. In the longer term, this change of paradigm will have a crucial impact on the activities of diverse communities that use information technology as a tool for other purposes (e.g., security, communications, healthcare, economy).

6. Methodology

The methodology described in part B1 of this project is divided in three sections. A synthetic plan that shows how chemistry will be used to extract information about the best design for optimizing SE effects (Section 6.1), a brief description of the new experimental technique that will be developed during the project (Section 6.2) and a section that describes the theoretical framework that will be used to interpret the measurements and rationalize the results (Section 6.3).

6.1 Synthesis

I have formulated some hypotheses about the chemical parameters that could be used to tune the SE effects in molecular compounds. The chemical parameters that I propose to investigate are the *spin-orbit coupling*, the *nature of the donor atoms*, and the *structural rigidity*. Of course, all these effects will be present in a generic molecule, and their combined action will generate the overall SE response. However, chemistry offers a neat way out of this problem. It is possible to tailor molecular structures where only one of these parameters is varied and then extract its role by cross-comparison. Besides these chemically tunable parameters, I also propose to quantify and exploit the effect of the *external conditions* (magnetic field and temperature) by using a class of materials that my collaborators and I have discovered very recently: the magnetic anisotropy switches. In Figure II is reported a sketch of the scheme that will be used to understand the origin of the SE effect in molecular materials. All the structures that I plan to study are non-centrosymmetric, because the absence of inversion symmetry is a requirement to observe linear SE effects.^{31, 34}

6.1.1 Spin-Orbit Coupling

A recent paper suggests that the SE effect should scale up linearly with the value of the Spin-Orbit Coupling (SOC) constant of the paramagnetic ion in the structure.⁶⁴ An examination of the literature on extended lattices gives inconclusive results due to the lack of systematic studies. From the few meaningful comparisons that one could make, it seems that the effect on 4f elements is stronger than that on both 4d and 5f elements.⁶⁹⁻⁷² To clarify this point, I plan to investigate a non-centrosymmetric coordination complexes with different metal ion while maintaining the same (or sufficiently close) ligand structure and geometry. Particularly meaningful results are expected by comparing metals belonging to the same group of the periodic table. Moreover, a comparison between transition metals and lanthanides will be performed. I propose to exploit close variations of the bidentate 2-mercaptophenol ligand, which are known to bind many metal ions in a trigonal antiprismatic way,⁷³⁻⁸⁸ as building blocks to study a variety of isostructural complexes with different metal ions and therefore assess the role of the SOC in SE effects.

6.1.2 Nature of the donor atoms

Different donor atoms will impact several factors that could play a pivotal role in defining the SE effect. For example, the degree of covalency, has been advocated as a crucial factor in inorganic lattices.⁸⁹ Moreover, a recent theoretical study suggests that the polarizability of the halogen directly bonded to the metal could be exploited to tune the anisotropy barrier of SMMs and thus address their performances.⁵⁴ The two obvious choices of donor atoms to employ for a systematic comparison are the chalcogens and the halogens. I propose to study the former by changing the S atom of the 2-mercaptophenol-derived ligands proposed in the previous Section with Se and Te. Several Se-based complexes of transition metals and lanthanides with the desired coordination geometry have been reported.⁹⁰⁻⁹³ The integration of the results obtained here with the ones of the previous study will allow to isolate metal plus donor atoms building blocks to use in the next study.

6.1.3 Structural rigidity

The chemical structure of the ligand must also be accurately examined to gain insight into the SE effects. Indeed, the idea that the atom displacements and vibrations play a crucial role in generating large SE effects is widespread in the literature^{54, 64}, and pieces of evidence corroborate that a high electric field can stretch and deform bonds.⁹⁴⁻⁹⁵ It has also been considered as the coupling mechanism between the radio-frequency oscillating bias of a STM tip and the spin of adatoms sensed with single-atom STM-EPR.⁵

Chemistry can be exploited at best on this topic. I propose variations of the previously suggested ligands with electron withdrawing/donating groups or bulky moieties. Moreover, I propose to synthesize cage ligands by fusing three ligands together.⁹⁶

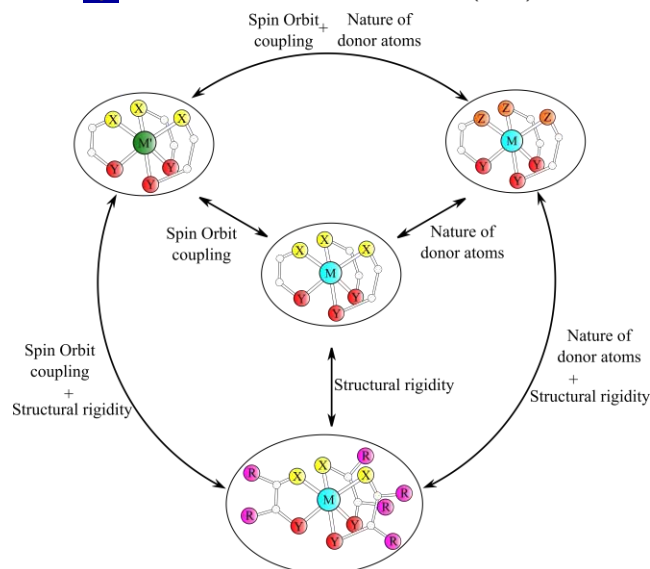


Figure II. Sketch of the chemical parameters that will be varied to understand their effect on the SE response of the samples.

6.1.4 External conditions

It would be important to understand how an electric field interacts with a different MA (e.g. easy axis or easy plane)⁹⁷ in a *chemically unaltered* molecular structure. My collaborators and I have recently discovered a class of materials that can change their MA by modifying external conditions, such as temperature and magnetic field, without changing the molecular structure.⁹⁸⁻⁹⁹ We have termed these molecules *magnetic anisotropy switches*. A pictorial view of the MA phase diagram of one of these molecules, $\text{Dy}(\text{H}_2\text{O})_9^{3+}$, shows how the MA of this complex can be tuned at will (Figure III).

Interestingly, it is possible to adjust the experimental conditions to trap the MA of these molecules at the edge between easy axis and easy plane anisotropy (see symbols in Figure III). This peculiarity makes the anisotropy switches exceptionally sensitive probes to any perturbation in the ligand field,⁹⁹ such as, I infer, the application of an electric field. Indeed, the electric field's effect would be to perturb the anisotropy towards an easy plane or easy axis type. In either case, there will be an immediate significant enhancement of the MA, the property that I intend to study with the experimental setup described in Section 6.2. The tunability of the switching point,¹⁰⁰ and the possibility to synthesize anisotropy switches with both lanthanides and transition metal ions,⁹⁷ offer a convenient way to explore the SE effect on the single-ion MA in a wide temperature and field range while keeping an exceptionally high sensitivity.

6.1.5 Films

The systematic study of the connection between chemical structure and SE effects will isolate excellent candidates to proceed a step further. Thin molecular films of such molecules will be studied to understand the role of the surface in modifying the SE effects. Indeed, it is known that the surface can affect the magnetic properties of molecules.¹⁰¹⁻¹⁰² The various chemical compositions and properties of the surfaces that can be achieved nowadays disclose many possibilities for this study, that will be a vital step towards the exploitation of SE effects in devices.

6.2 A novel technique: Torque Magnetometry in Electric Field (TMEF)

I propose to study systems that are variegated in elemental composition, crystal packing, and magnetic properties. This poses the apparent challenge on how to be able to study all of them in a consistent and comparable way. To tackle this problem, I will build up a new experimental setup.

An anisotropic molecule immersed in a magnetic field produces a magnetic torque that is proportional to its MA.¹⁰³ However, since ELECTRA aims at studying the SE effect, the sample must be also immersed in a uniform electric field. A sketch that describes the basic operational mode of the instrument that I propose to realize is shown in Figure IV. The idea is straightforward. A sample in form of single crystal or thin film will be attached to a flexible plate of a capacitor (i.e. a cantilever) and magnetized (Figure IV a). Applying a voltage between the plates will generate a homogenous electric field acting on the sample (Figure IV b). The effect of the electric field will be to modify the MA of the sample (green arrow in Figure IV) and will consequently create a magnetic torque that will force the cantilever to bend. The movement of the cantilever will be revealed optically, and will be a directly proportional to the SE effect. The cantilevers'

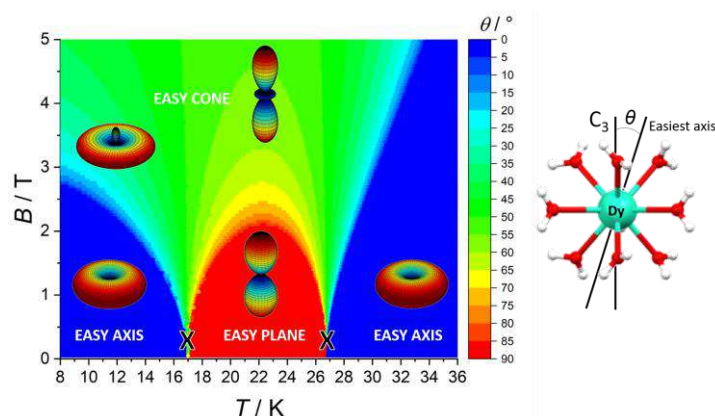


Figure III. MA phase diagram of $\text{Dy}(\text{H}_2\text{O})_9^{3+}$. The colour scale refers to the angle between the easiest axis (lowest free energy direction) and the C_3 axis of the molecule. The 3D shapes represent the free energy of the molecule at selected external conditions (T , B). The symbols show at which conditions the molecule can be trapped between easy axis and easy plane anisotropy.

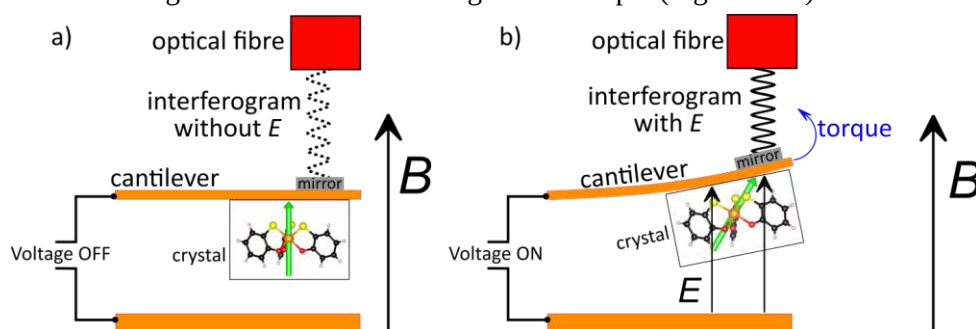


Figure IV. Core of the TMEF experimental setup. a) Without an electric field and b) with an electric field acting on the sample.

well-developed technology coupled with phase-sensitive optical detection (widely used for many ultra-sensitive techniques such as Atomic Force Microscopy)¹⁰⁴⁻¹⁰⁵ will allow to study SE effects on tiny crystals and thin films in a wide range of temperatures. Moreover, the setup will encompass the possibility to rotate the sample, therefore mapping the SE effect in the full space. Notably, the possibility to study any anisotropic system will be the key to perform the much needed systematic study proposed in Section 6.1.

The experimental characterization of the systems will be complemented by other techniques already present at the HI (e.g., DC and AC magnetometry, Luminescence) and by large-scale facility experiments (e.g., Inelastic Neutron Scattering). For those techniques that might become useful but are not present at the HI (e.g., Far Infrared spectroscopy In Field), I will start a collaboration (see Section 8).

6.3 Modelling

A thorough and bold study that explains the physical reasons behind a complex phenomenon such as the SE effect must entangle a solid model of the experimental evidence and an independent *ab initio* theoretical study.

6.3.1 Experimental modelling

ELECTRA will explore accurate phenomenological ways of modelling the SE effect.³⁴ The most widespread way of modelling the SE effect in literature is to estimate an effective variation of the position of the EPR transition.⁶⁰⁻⁶¹ The reason for this rather crude model, that hardly explains the origin behind the onset of the SE effect, is that often only the ground level transition is observed. TMEF is designed to gain information on more than one CF level at the same time due to the expected high sensitivity at high temperatures, therefore more accurate models that link the SE effect to the CF parameters will be explored. Since there is a direct link between CF parameters and molecular symmetry, this study will be a guide for SE-based molecular design.

6.3.2 Theory

A solid *ab initio* approach will be also employed. Density Functional Theory-based approaches will provide an independent way of assessing the origin of the effect in periodic frameworks (crystals or thin films) by monitoring the most relevant changes in geometrical parameters upon applying an electric field. Moreover, MA with and without the presence of an electric field will be computed *ab initio* (post-Hartree-Fock) on the obtained geometry when the electric field is applied along with selected directions. Notably, a fully computational approach will be precious to avoid over-parametrization in the phenomenological model.

7. Risk assessment

A certain degree of risk is involved at any stage of the project. Some syntheses could be challenging to pursue. I have examined alternative synthetic routes. Some compounds could be hard to crystallize in acentric space groups. Proper measurement conditions can be used to mitigate this risk. The complete assembly and tests of the TMEF setup could be delayed due to, e.g., late delivery of instrumental parts. I have devised a plan to start the characterization of the SE effects with other techniques present at the HI to gain preliminary evidence. Another potential risk is related to an insufficient sensitivity of the instrument. I have performed detailed calculations (considering the theory of elasticity, experimental noise, and field and temperature fluctuations) to design an experimental setup able to measure the targeted effects.

8. Working network

The designed Workplan and the instrumentation present at the HI make ELECTRA a standalone project, with minor collaborations. However, I highly value the exchange of ideas and competencies. I will encourage the enrolled PhDs to spend some time abroad to learn techniques not present at the HI (e.g., Far Infrared In-field at the lab of Dr. Milan Orlita, CNRS Grenoble) or a novel synthetic approach (e.g., lanthanocenes complexes at the lab of Prof. Jaisa Soares, Federal University of Paraná, Brazil). In the past, I have collaborated with all these people. Two people from the HI have agreed on collaborating to this project: Prof. Totti is an expert in cutting-edge *ab initio* calculations, and Mr. Cortigiani is a senior technician highly proficient in setup building and use of surface techniques.

9. Why me?

This project is highly novel. Its interdisciplinary nature, across chemistry and physics, requires a project leader with versatile skills: from experimental setup building to synthesis to experimental modelling and theory. I am a young researcher, but I believe that merging all the know-how that I have acquired during my career creates the perfect concoction for leading ELECTRA. I have considerable experience in building up and designing experimental setups (stemming from my PhD and my first PostDoc),^{103, 106-107} I have documented synthetic skills stemming from my Master Degree¹⁰⁸ (gold nanoparticles), Bachelor Degree¹⁰⁹⁻¹¹¹, PhD¹¹² (lanthanide complexes) and second PostDoc^{100, 113} (transition metal, lanthanide, and 3d-4f complexes). Spectroscopic and magnetic characterization techniques and data modelling are my primary expertise.^{97-100, 103, 112, 114-117} I have an extensive track record of accepted proposals at synchrotrons and neutron large-scale facilities.^{98-99, 115} I have published several papers where the experimental results were compared with *ab initio* calculations (e.g. on molecules containing transition metals,¹¹⁸ lanthanides¹⁰⁶ and actinides¹¹⁴) and I have a wide view of the available methods and of their potential.

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Section b: Curriculum vitae**PERSONAL INFORMATION**

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• EDUCATION

- 2016 PhD
Chemistry, Dept. of Chemistry U. Schiff, University of Florence, Italy
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- 2010 Bachelor
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• CURRENT POSITION

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• PREVIOUS POSITIONS

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Dept. of Chemistry, University of Copenhagen, Denmark
- 2017 – 2018 PostDoc
Dept. of Chemistry, University of Copenhagen, Denmark
- 2015 – 2017 PostDoc
Dept. of Chemistry, University of Stuttgart, Germany

• FELLOWSHIPS AND AWARDS

- 2021 R. Ciprian Prize for a young researcher in the field of Magnetism
Italian Association of Magnetism
- 2020 Winner of the competition "An idea for excellent science"
University of Florence
- 2019 Starting career Talk Grant
European Conference on Molecular Magnetism 2019
- 2018 Marie Curie Seal of excellence for a high score on a European Project
- 2016 Shortlisted for the Primo Levi Prize for a young Italian Chemist
(https://www.soc.chim.it/it/sci_giovani/premi/levi/finalisti2016)
- 2012 Scholarship, Dept. of Chemistry, University of Florence, Italy

• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

- 2017 – 2020 Co-supervision of 1 PhD (Niels Bonde), 2 Master students (Jens Christiansen and Niels Bonde), and 1 Bachelor student (Anna Manvell)
Dept. of Chemistry, University of Copenhagen, Denmark
- 2015 – 2016 Co-Supervision of 2 Bachelor Students (Thomas Hettich and Nadine Russenger)
Dept. of Chemistry, University of Stuttgart, Germany

• TEACHING ACTIVITIES

- 2020 – present Molecular Magnetism, Master in Chemistry, University of Florence (IT)
- 2020 – present General and Inorganic Chemistry, Bachelor in Pharmaceutical Chemistry, University of Florence (IT)
- 2020 – present General and Inorganic Chemistry, Bachelor in Natural Sciences, University of Florence

- (IT)
2018 Matlab for Beginners Bachelor, Master, and PhD in Chemistry, University of Copenhagen (DK)
2017 – 2018 Methods and Modelling, Master in Chemistry, University of Copenhagen (DK)
2016 Lab. of Physical Chemistry, Master in Material Sciences, University of Stuttgart (DE)

• **INSTITUTIONAL RESPONSIBILITIES**

- 2020 – present Department council member, Department of Chemistry, University of Florence, Italy.
2012 – 2015 Head of the Chemistry Section of "Open Lab" (University of Florence) association for introducing science among the youngsters

• **PARTICIPATION AT INTERNATIONAL SCIENTIFIC PROJECTS**

- 2017 – 2020 Modular Molecular Magnets, PI: Jesper Bendix, University of Copenhagen, From: Independent Research Fund Denmark (RFD).
2015 – 2017 Spektroskopische Untersuchungen an auf Lanthanoid-Ionen basierten Einzelmolekülmagneten, PI: Joris van Slageren, University of Stuttgart, From: Deutsche Forschungsgemeinschaft (DFG).
2011 – 2015 Molecular Nanomagnets at Surfaces: Novel Phenomena for Spin-based Technologies, PI: Roberta Sessoli, University of Florence, From: European Research Council (ERC).

• **REVIEWING ACTIVITIES**

- 2018 – present Reviewer for ACS, Wiley, RSC, and other publishers, see <https://publons.com/researcher/1559265/mauro-perfetti/peer-review/>.
2018 – present Review of Project of National Interest (PRIN), scientific projects funded by the Italian government.

• **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

- 2017 – 2020 Member, Research Network "Molecular Spintronics" COST action
2015 – present Member of the Italian Association for Magnetism (AIMagn)
2015 – present Member of the Italian Chemical Society, SCI, Inorganic Chemistry division
2015 – present Member of the National Interuniversity Consortium of Materials Science and Technology

• **MAJOR COLLABORATIONS**

Without any of my previous Supervisors

- Steve Liddle, actinides magnetism (University of Manchester, UK)
Lapo Bogani, very low temperature magnetic torque (University of Oxford, UK)
Roberto Caciuffo, actinides magnetism (Joint Research Council, Karlsruhe, DE)
Kira Vostrikova, lanthanide complexes (Nikolaev Institute of Inorganic Chemistry, Siberian Branch, RU)

Without my PhD Supervisor

- Jacques Ollivier, inelastic neutron scattering (Institute Laue Langevin, FR)
Jeffrey Long, high-temperature SMMs (University of Berkeley, USA)
Elena Bartolomé, heat capacity (Escola Universitària Salesiana de Sarrià, ES)
Laura Pereira, uranium complexes (University of Lisbon, PT)
Linda Doerrer, quantum qubits and molecular magnets (University of Boston, USA)
Milan Orlita, In-field IR spectroscopy (Laboratoire National des Champs Magnétiques Intenses, FR)
Jesper Bendix, coordination complexes (University of Copenhagen, DK)
Joris van Slageren, spectroscopy (University of Stuttgart, DE)



***Appendix: All current grants and on-going and submitted grant applications of the PI
(Funding ID)***

Current grants:

No funding.

Submitted grant applications:

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of the PI</i>	<i>Relation to current ERC proposal²</i>

**Section c: Early achievements track-record**➤ *Scientific production:*

- 1 full book, 1 chapter in book, 32 peer-reviewed papers in international journals including *Science*, *Angew. Chem.*, *Nat. Comm.*, *Chem. Sci.*, *Adv. Mat.*, *Adv. Func. Mat.*, 9 submitted as corresponding author, 13 as first author, 17 without my PhD supervisor.
- H-index (source: WOS): 16, Citations (source: WOS): 1550.
- Average IF: 8.640. Average IF without PhD supervisor: 9.048.
- Researcher unique identifiers: ORCID 0000-0001-5649-0449, WOS V-6040-2019, SCOPUS 37071095300

➤ *Invited presentations at conferences/meetings/international institutions:*

1. "The importance of magnetic anisotropy in molecular materials" – R. Ciprian Prize Talk – Italian Conference on Magnetism (online) 2021.
 2. "Shape and Magnetism of lanthanide complexes" – Invited Talk – Prof. Lapo Bogani, University of Oxford (UK) 2019
 3. "Shape and magnetism of f-elements complexes" – Invited Talk – Prof. Jeffrey Long, University of Berkeley (USA) 2019
 4. "On the thermal plasticity of magnetic anisotropy" – Invited Talk – 4th European Inorganic Chemistry Conference, Copenhagen (DK) 2017
 5. "Cantilever torque magnetometry: a powerful tool to characterize magnetic anisotropy" – Invited Talk – Prof. Radavan Herchel, University of Olomouc (CZ) 2016
 6. "Cantilever torque magnetometry: a powerful tool to characterize magnetic anisotropy" – Invited Talk – Dr. Jan Cechal, Central European Institute of Technology (CZ) 2016
- Other 11 Oral and 5 Poster Contributions at Contributions at International Conferences.

I graduated in Chemistry one year in advance with the highest mark *cum laude*. At that time, I had already realized that I wanted to pursue the Academic Career. I received a one-year Scholarship to wait for the beginning of the PhD cycle while working on my Master Project. The research that I have pursued during my Bachelor (low temperature magnetization dynamics in lanthanide complexes) and Master (grafting single molecules magnets on gold nanoparticles) is summarized in four high profile publications (1 *Chem. Comm.*, 2 *Angew. Chem.* and 1 *Small*). I have finished my 3-year PhD in Florence under the supervision of Prof. Sessoli in late 2015 (awarded 02/2016). The output of my PhD is summarized in 1 book and 1 book chapter (both without my PhD supervisor), and 15 peer reviewed articles. The day after the completion of my PhD, I moved to the University of Stuttgart for my first PostDoc (Supervisor: Prof. Van Slageren) where my research was designed to push the spectroscopic characterization of magnetic molecules beyond the State of the Art. During this period, I gained deep knowledge of experimental setup design by using several experimental techniques. I also had the possibility to explore the magnetic and spectroscopic behaviour of Actinide complexes, a research line that I currently pursue without any of my previous supervisors. I stayed in Stuttgart for 1.5 years and produced 4 papers (1 *Science*, 2 *Chem. Sci.* and 1 *Chem. Eur. J.*). I then decided to move to the University of Copenhagen (Supervisor Prof. Bendix), where the entire Inorganic Section is almost exclusively composed by synthetic chemists working with metal complexes. This choice was made to test if I was able to blend my expertise with the skills of the new group. The exchange of knowledge that followed was so fruitful that I was appointed Assistant Professor after 1 year. I have acquired synthetic skills, but at the same time, I had the possibility to test my ideas to exploit a rational design of molecules to improve their performances. I gladly wrote many successful proposals to access neutron facilities, and I fully exploited my programming skills to develop codes for data modelling and fit. I have produced 8 papers (e.g., *Nat. Comm.*, *Adv. Func. Mat.*). In 2020 I moved back to the University of Florence, where I won a position as non-tenure Assistant Professor, with salary fully covered by the Italian government, to do my own research and teaching. At the University of Florence, I am part of the Laboratory of Molecular Magnetism (LaMM, <https://www.lamm.unifi.it/>), a group of scientists that share common facilities. Each member of LaMM can access the instrumentation (magnetometers, EPR spectrometers...) by paying running costs such as the refrigeration liquid (Helium). These costs must be obtained via external funding because the Italian government does not give any funding to Assistant Professors. My PhD Supervisor is also member of LaMM because we share some research interests and we collaborate on some projects, but my research is fully independent. I have published several papers as first, only and/or corresponding author without my PhD supervisor on top-ranking journals (*Science*, *Chem. Sci.*, *Adv. Funct. Mat.*, *Nat. Comm.*...). More than 50% of my publications are without her contribution. From 2017, I have published only a single paper with her (that stemmed from my PhD) and another, where I am last and corresponding author, has been submitted. I have my own international network of collaborations in which my supervisor is not involved (see CV).

**Selected publications:**

1. Molecular order in buried layers of TbPc₂ Single-Molecule Magnets detected by torque magnetometry. M. Perfetti, M. Serri, L. Poggini, M. Mannini, D. Rovai, P. Saintavite, S. Heutz and R. Sessoli. *Advanced Materials*, **2016**, 28 (32), 6946-6951. [IF:27.398 CIT:16]
2. Cantilever torque magnetometry on coordination compounds: From theory to experiments. M. Perfetti*. *Corresponding author. *Coordination Chemistry Reviews*, **2017**, 348, 171-186. [IF:15.367 CIT:16]
3. Determination of the full electronic structure of a dinuclear dysprosium single molecule magnet without symmetry idealization. M. Perfetti, M. Gysler, Y. Rechkemmer-Patalen, P. Zhang, H. Taştan, F. Fischer, J. Netz, W. Frey, M. Hakl, M. Orlita, L. Ungur, L. Chibotaru, T. Brock-Nannestad, S. Piligkos and J. van Slageren. *Chemical Science*, **2019**, 10 (7), 2101-2110. [IF:9.346 CIT:27]
4. A linear Cobalt (II) complex with maximal orbital angular momentum from a non-aufbau ground state. P.C. Bunting, M. Atanasov, E. Damgaard-Møller, M. Perfetti, I. Crassee, M. Orlita, J. Overgaard, J. van Slageren, F. Neese and J. Long. *Science*, **2018**, 362 (6421), 1378. [IF:41.845 CIT:107]
5. Magnetic Anisotropy Switch: Easy Axis to Easy Plane Conversion and Vice Versa. M. Perfetti*, M. Sørensen, U.B. Hansen, H. Bamberger, S. Lenz, P.P. Hallmen, T. Fennell, G.G. Simeoni, A. Arauzo, J. Bartolomé, E. Bartolomé, K. Lefmann, H. Weihe, J. van Slageren and J. Bendix*. * Corresponding authors. *Advanced Functional Materials*, **2018**, 28 (32), 1801846. [IF:16.839 CIT:13]

I have selected these 5 publications because I believe they testify that I have the necessary competencies and scientific independence to be the leader of ELECTRA. PUB #1 is the most relevant output from my PhD (this is the only selected publication with my PhD supervisor). It describes how torque magnetometry can compete with synchrotron radiation in providing a detailed picture of the molecular orientation of anisotropic molecules on the surface. I have also shown that the unique sensitivity of the technique can be used to obtain information on molecular layers buried under a thick film of diamagnetic molecules, thus paving the way for the exploitation of magnetic anisotropy as a local probe to reconstruct molecular orientation. My results were validated by comparison with synchrotron light-based techniques, demonstrating a comparable sensitivity. I performed the entire work (experimental measurement, development of the model, simulations) except the synthesis and the deposition on the surface. This publication shows that I can push the sensitivity of experimental techniques to their limit by a rational control of the experimental setup. PUB #2 is a review on the use of torque magnetometry to study coordination complexes that I wrote as the unique author. I decided to include it because it summarizes how, at the end of my PhD, I had already gained scientific independence. I am considered a world leader of the technique, and I was also invited to give seminars on the technique at several Universities. PUB #3 is a result of my PostDoc at the University of Stuttgart. I have experimentally mapped the entire electronic structure of a dysprosium complex with no symmetry. This was never done before because the number of CF parameters to be determined (27) is usually prohibitively high. I showed that it is possible to gather enough experimental evidence by combining several spectroscopic techniques (Magnetic Circular Dichroism, FIR Spectroscopy in Field, Luminescence, High Field-High Frequency EPR). I performed the entire work (spectroscopic and magnetic measurements, modelling) except the *ab initio* calculations. I believe that this publication proves that I am sufficiently proficient in spectroscopic and magnetic measurements and in the data analysis that I can train others. PUB #4 is a combined synthetic, crystallographic, spectroscopic, and theoretical study. In the paper, it is shown how symmetry can avoid quenching of angular orbital momentum in first-row transition metals and thus generate huge magnetic anisotropy. The studied Cobalt complex currently detains the record of the highest barrier for the reversal of the magnetization for a transition metal complex and is amongst the best SMMs ever reported. The study was proposed by the University of Berkeley's collaborators and required constant feedback between all the partners involved. My contribution was to design a specific protocol to allow the manipulation and characterization of air-sensitive materials in the different spectrometers and the consequent spectroscopic measurements. A constant experiment-theory double feedback was key for the positive completion of this work. I believe that this work shows my proficiency in managing collaborations and working in teams involving many scientists with different competencies. PUB #5 was produced when I was an Associate Professor in Copenhagen. It deals with the discovery of the anisotropy switches. It is my favourite publication because it shows my scientific evolution. I have predicted the magnetic anisotropy switch phenomenon by calculations; I have consequently designed and performed the proper experiments and wrote dedicated programs to model and quantify the effect. I was fully independent at all stages of the work. I am first and corresponding author.

ERC Starting Grant 2021

Part B2

(not evaluated in Step 1)

Section a. State-of-the-art and objectives

In a nutshell

Large and exponentially growing quantities of information are generated each day, and must be processed and stored. Current and projected technologies will not satisfy this need. Also, for the processing of such amounts of information, scalable quantum technologies must be developed. Magnetic molecules potentially provide the solution to these problems but addressing them locally has proven to be elusive. Electrical addressing would solve this issue, and this proposal will therefore study spin-electric effects in magnetic molecules, develop appropriate experimental techniques, and hence provide chemical guidelines for tailoring *ad hoc* molecular structures with controlled spin-electric effects.

1. Motivation

We live in the information age: our everyday actions generate huge amounts of data that must be processed, analysed, and eventually stored. Every day of 2020, not less than 0.12 ZB of data were generated.¹ This is approximately 33% more data than in 2019, following a well-known exponential trend that lasts since 2005. It can be predicted that in 2033 the generated data per year will reach the mind-boggling amount of a “mole of bytes”. To handle this huge quantity of information we urgently need more efficient and environmentally friendly solutions. In this perspective, we are moving from classical information technology towards the exploitation of quantum effects in devices. The rush for quantum supremacy (i.e. outperforming the current State-of-the-art classical information by using quantum mechanical objects) is now in full swing and, once its goal is achieved, it is expected to have a significant impact in various fields ranging from medicine to economy, from artificial intelligence to cryptography.²

The two main challenges in the field of information technology are related to finding the best technological setup and the best material. Magnetic and electric fields are the two main alternatives to write, read and process information. Magnetic fields are currently more widespread, and their effect on the materials is well-known and rationalized.³ However, they cannot address small units such as single molecules because the field cannot be confined in such a small volume. Electric fields could, in principle, provide several strategic, environmental, and technological advantages because they can be applied with a higher degree of control.⁴⁻⁵ Electric fields applied on single atoms positioned on surfaces have been used for atomic manipulation,⁶ visualization⁷, and detection⁸. Moreover, electric fields can be generated and removed by simply applying or removing a voltage. This process has a small energy dissipation,⁴ and the practical realisation of instrumentation able to generate high electric fields is obtained starting from relatively inexpensive materials (i.e. no superconductor materials are required). Therefore, spreading the use of electric fields in the information industry has become a priority. Concerning the materials, the two main alternatives are inorganic lattices (i.e. extended networks of atoms) and molecules. Inorganic lattices are common and well-implemented in industrial processes, making them the most investigated choice.⁹⁻¹¹ Molecules are less investigated, and their application in the field is still scarce. On the other side, they represent the perfect platforms to play with plethora of parameters (bond lengths and geometry, elemental constituents, crystal symmetry...) to tailor the desired physical properties or boost their performances. Molecules retaining their magnetization for long time (Single Molecule Magnets, SMMs) are appealing for data storage purposes because they maintain their properties at the nanoscale (i.e. at the single-molecule level), conversely from inorganic lattices.¹²⁻¹⁸ SMMs could increase the data storage density (and thus reduce the device dimensions) by more than two orders of magnitude.¹⁹⁻²⁰ Other magnetic molecules, Quantum Qubits (QBs), are excellent candidates for quantum computation, due to their remarkably long coherence times.²¹⁻²⁹ Indeed quantum computation is expected to outperform classical computation and several companies consider this research one of their priorities (e.g., Google, IBM).

An essential element for engineering performant magnetic molecules is tuning their Magnetic Anisotropy (MA), i.e. the spatial dependence of the magnetic properties. Indeed, it is well-established that different shapes of MA³⁰ can be exploited for different purposes. For example, a sizeable easy axis type MA is desirable for highly performant SMMs,^{14-15, 31} and a small easy plane anisotropy can be used for optically active QBs.^{25, 28-}

^{29, 32} The progress made in the design of MA is testified by the exponential growth of the anisotropy barrier of SMMs^{14-15, 31} and by the increasingly long coherence times of QBs³²⁻³³ achieved in recent times. In the last few years, the EU has taken action to fund the development of Quantum Technology (QT), by creating the Quantum Flagship, where QT are defined as a research field of primary importance for energy, health and security.³⁴ The ERC has recently funded several projects that aim to improve the design of molecular systems for application in QT. For example, the projects ContraVib³⁵ and AI-DEMON³⁶ are devoted to finding new ways of enhancing the performances of magnetic molecules. In few years we will probably arrive at topping the performances of SMMs and QBs. However, we are overlooking a fundamental question: can we use electric fields to control the MA of molecules? It is remarkable how little we know about the interaction between magnetic molecules and electric fields, therefore an investigation must be undertaken given the fundamental interest on the topic. Notably, the optimization of the interaction between the MA of a molecular spin and the electric field is *not* just a rush for the largest effect, but it depends on the final application. For example, electric fields in QB can be used to manipulate the energy levels needed as basis for the computation,³⁷ thus relatively small shifts related to the low-lying states must be targeted. On the contrary, in SMMs the goal is to tune the energy barrier for the relaxation of the magnetization,³⁸ thus a significant impact on the MA must be engineered. Serendipitous approaches must be abandoned and a clear picture of the response of magnetic molecules to electric fields must be described. Considering the electric field as a key tool to operate at the single molecule level in the devices of the future, we must acquire this missing knowledge *immediately*. As pictorially shown in Figure I, ELECTRA will fill this gap by unveiling the relation between magnetic molecules and electric fields and by distilling chemical guidelines that will be used to tailor molecular architectures exhibiting the desired response to the electric field.

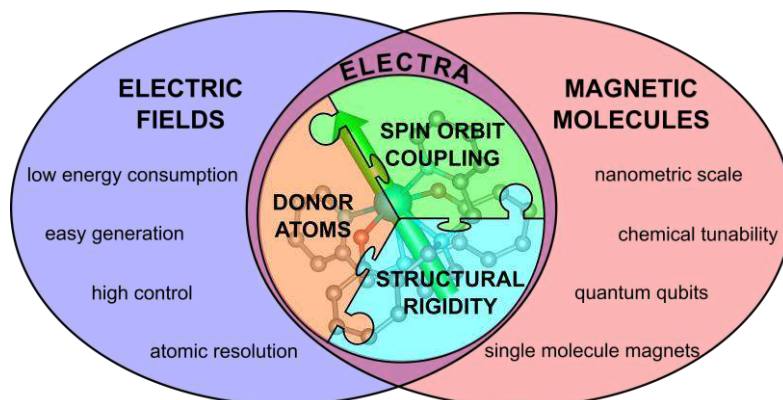


Figure I. ELECTRA aims at tailoring and controlling the interaction between electric field and magnetic molecules via chemical design.

2. State-of-the-art

The interaction between magnetic fields and electric properties of matter and the interaction between electric fields and magnetic properties of matter are called Magneto-Electric (ME) effects. ELECTRA aims at studying the latter category, so studies related to the application of magnetic field on, e.g., ferroelectric materials³⁹⁻⁴⁴ will not be discussed further. I will instead focus on studies that exploit electric fields to manipulate the magnetic response of the investigated material.⁴

Pioneering magnetic resonance studies concerning various ME effects have been published in 1960s.⁴⁵⁻⁴⁷ Later, Mims used spin-echo Electron Paramagnetic Resonance (EPR) to study many systems where an electric field caused shifts in the EPR lines.⁴⁸⁻⁵⁶ In the last years, the advancement of technology, the appearance of novel materials and the appealing technological applications of ME effects triggered a remarkable scientific interest in the topic.⁵⁷ The current literature is mostly focused on extended lattices, where the magnetic properties are governed by long-range interactions.⁴

ELECTRA is instead designed to study, understand, and tune the effect of an electric field on anisotropic magnetic molecules, a topic that has been little investigated. Since one of the goals of the project is to provide chemical guidelines to synthesize performant molecules to be used in devices, the molecular species will be investigated in the solid state (in form of single crystals and thin films). The molecules that I propose to study are mononuclear coordination complexes and are discrete, weakly interacting, entities. To highlight that the effects that I intend to study originate from molecular spins (i.e. not from long range order) I will hereafter call these effects **Spin-Electric (SE) effects**. Having a localized character of the spin is very convenient for three main reasons: I. the dimensions of the relevant unit to engineer scale down to a single molecule (miniaturization); II. the behaviour of molecules is dominated by quantum effects; III. the properties of an arbitrary assemble of molecules can be deduced by a simple symmetry-weighted sum of the property of the single entity.

Intriguing electrically-driven phenomena have been observed in spin-crossover molecules,⁵⁸ such as a switch of the spin state by exploiting the different polarizability of the low- and high-spin states⁵⁹⁻⁶⁰ or the deformation of the bonds.⁶¹ A similar phenomenon, related to the localization of electrons in different portions of a molecule or to a change in valence due to electric fields has been observed and studied.⁶²⁻⁶⁷ However, these studies deal with a change in the orbitals electron occupancy, which is not the phenomenon that ELECTRA targets.

Studies closely related to the research line that I propose here are very rare.^{37-38, 68-75} Most of the experimental studies are performed exploiting different variants of EPR spectroscopy,^{37, 68-71} and are often related to transition-metal based exchange-coupled systems.⁶⁸⁻⁷⁵ Only two of these papers deal with theoretical³⁸ and experimental³⁷ investigations of lanthanide complexes. Due to the limited number of studies, and their common methodology (EPR), several fundamental questions remain unanswered. In most measurements, it is not even clear which physical parameters of the system are perturbed by the electric field. The publication years and high quality of the most relevant bibliography is proof that ELECTRA is *timely* and deals with an *urgent* issue: we must exploit the interaction between the spin of molecules and the electric fields for device applications without relying on serendipitous approaches, and we need to do it *now*.

SE effects are usually difficult to observe because the conventionally used electric fields (10^4 - 10^5 Vm⁻¹) are typically 3-4 orders of magnitude smaller than the potential generated by the ligands (i.e. the ligand field).⁵⁵ Moreover, the response of a material can be labelled as linear or quadratic depending on the level of perturbation at which the electric field acts on the Hamiltonian parameters. Linear effects appear at the first order and are thus much stronger (typically 3 orders of magnitude) than quadratic effects.⁵⁵ It is thus convenient to focus on species that can exhibit linear effects. The most stringent requirement to exhibit a linear SE effect is the lack of inversion symmetry on the spin centre.

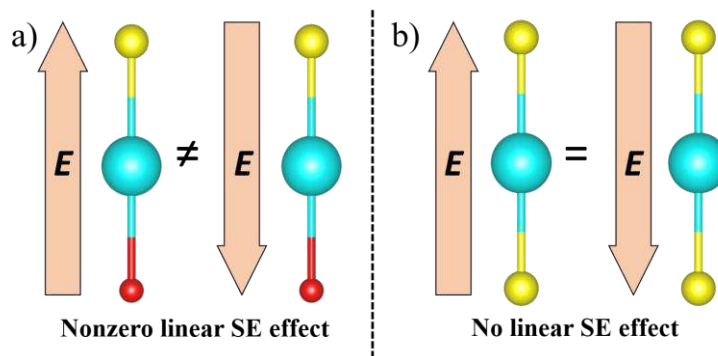


Figure II. Relation between the symmetry of the investigated site and the insurgence of linear SE effects. Chemically, this drawing can be compared with a metal ion (cyan) coordinated by two different (panel a) or identical (panel b) atoms. Only if the metal site does not occupy an inversion centre site, linear SE effects are possible.

Although more rigorous explanations are possible,^{45, 47} an intuitive argument is to recall the parity upon spatial inversion of the involved quantities: the spin is even (i.e. spin up and spin down are degenerate in zero field), while the electric field is odd (i.e. reversing the reference frame causes an inversion of the direction of the field). So, if an electric field is applied on a centrosymmetric spin site, there will be no linear effect. Figure II represents the simplest sketch of the relation between symmetry and insurgence of SE effects on an atom (cyan) surrounded by two other atoms (red and yellow) in a linear coordination. The linear effect is null only on centrosymmetric sites, but it is not so on crystals exhibiting an inversion centre that connects two non-centrosymmetric molecules. However, in this last case the effect can only be revealed using specific detection methods (see R2, in Section 6).

The high sensitivity of EPR allows the detection of tiny perturbations on the Hamiltonian parameters and it is also suitable for manipulating spins.^{8, 37} However, the dominance of EPR poses an obvious question: what about samples that are EPR *silent* (i.e. that do not exhibit a signal in the accessible experimental range)? The answer is straightforward: they *cannot* be studied. As a rule of thumb, non-Kramers ions (i.e., ions with an integer value of the spin or total angular momentum) are mostly EPR silent at conventional EPR frequencies and fields.⁷⁶ Moreover, good SMMs are characterized by a large, easy axis type MA (i.e. pure low-lying states, with a large value of the spin or total angular momentum), that is incompatible with the EPR selection rules.⁷⁷ Just these two categories reduce the number of possible candidates to observe SE effects by more than 50%. Furthermore, the quality of EPR signals is strongly dependent on temperature and magnetic dilution. High temperatures and high magnetic density tend to broaden the signals, often making them impossible to interpret. This is particularly relevant for anisotropic lanthanide complexes that are also predicted to have large SE effects.^{38, 78} It is finally necessary to emphasize that sufficiently high temperature (ideally, room temperature) and high magnetic density are mandatory requirements for practical applications of, e.g., SMMs in devices. These considerations highlight how the current State-of-the-art studying SE effects will unavoidably bring the field to a stalemate.



3. Idea and Objectives

I intend to go beyond the State-of-the-art by designing an *innovative way* of measuring SE effects, that I will call **Torque Magnetometry in Electric Field**. This technique will have no *a priori* restriction regarding the type of anisotropic molecule and will be therefore particularly useful for the systematic study that I propose. The influence of three *chemically tunable* parameters (spin-orbit coupling, nature of the donor atoms and structural rigidity) will be investigated in detail with the aim of distilling chemical guidelines to engineer coordination complexes with *ad hoc* SE effects. I have designed a synthetic plan that will allow to isolate the role of these parameters. Moreover, I intend to use a *new category* of molecules, the MA switches, as *super-sensitive electric field probes* to investigate the role of temperature and magnetic field in the onset of SE effects. The high sensitivity of TMEF will unlock the possibility to investigate molecular films on various *surfaces*. Therefore, another output of the project will be a description of the role of the surface in tuning the SE effects, a vital step in the path towards the exploitation of SE effects in devices.

I have identified 6 major objectives of this project. Some of them will be delivered relatively early on and will thus become functional in narrowing the focus of the remaining part of the project.

O1. Development of a new experimental technique to detect SE effects on any kind of anisotropic magnetic molecule (month 12).

O2. Disentanglement of the role and relative importance of the three most relevant chemically tuneable parameters likely to influence the SE effects in molecules: spin-orbit coupling, nature of the donor atoms and structural rigidity (month 36).

O3. Assessment of the role of external conditions (temperature and magnetic field) on the SE effects (month 36).

O4. Theoretical rationalization of the SE effects (month 48).

O5. Identification of chemical guidelines to obtain systems with *ad hoc* optimized SE effects (month 48).

O6. Assessment of the role of surface in perturbing the SE effects and identification of molecules that retain their SE effects on surface (month 60).

4. Potential Impact

ELECTRA aims at investigating how the MA of molecules responds to electric fields, a phenomenon of fundamental importance in chemistry and physics. The proposed benchmarking experiments will allow to distill chemical guidelines to design the appropriate molecular structure depending on the desired SE effect. The results of this project will lay the foundations for the electrical addressing of the single spin, a crucial step towards the engineerization of the future devices. The comprehension of the SE effect will be easily integrated with cutting edge technological setups that exploit electric fields to address single atoms.^{8, 10-11} For example, I envisage the design of 2D SMMs arrays where the electric field could be used as writing method (e.g. by fastly quenching the magnetization of the single molecule). Devices exploiting such principle will be smaller and less energy demanding compared to the State-of-the-art. Moreover, understanding the effect of the electric field on the electronic structure of QBs will promote the production of more efficient quantum computers that could operate at higher temperature, with lower energy consumption. This change of paradigm will consequently impact all the fields that use information technology as a tool for other purposes, e.g., security, communication, economy and healthcare. The consequent blooming of the field will preserve the leading role of the EU in this important research field.

If ELECTRA gets funded by the ERC scheme, I will create my research group. The team that will participate in this project will become a group of well-trained researchers with interdisciplinary competencies between chemistry and physics.

Section b. Methodology

5. Methodology

ELECTRA is based on four pillars:

- A rational choice of molecular structures prone to exhibit SE effects and their *synthesis*
- A novel *experimental setup* able to measure SE effects on any magnetically anisotropic molecule
- The *experimental investigation* of the SE effects
- The development of a *theoretical model* to rationalize the SE effects on molecules

Currently, we lack a fundamental understanding on the origin and behaviour of the interaction between the MA of molecules and the electric field. Thus, the most rational approach is to develop a synthetic plan that will deliver model chemical systems to be used for gaining the basic knowledge that is currently missing. The identification of the optimal building blocks to deliver the desired information stems from an analysis of the Hamiltonian matrix that describes the electronic structure of a generic molecule containing one isolated paramagnetic metal ion.

$$\mathcal{H} = \mathcal{H}_{SI} + \mathcal{H}_{CF} + \mathcal{H}_Z \quad eq.1$$

The first term ($\mathcal{H}_{SI}$) accounts for free ion terms, such as the electron-electron repulsion and the Spin-Orbit Coupling (SOC). The second term ($\mathcal{H}_{CF}$) contains all the appropriate operators to describe the splitting of the energy levels due to the presence of the ligands.⁷⁹ The combination of these two terms ($\mathcal{H}_{SI} + \mathcal{H}_{CF}$) delivers the energy level diagram in zero field. If a magnetic field is applied, the Zeeman term, $\mathcal{H}_Z$, must be added to the Hamiltonian. Other terms could be added to fully describe the systems (e.g., hyperfine or exchange interactions). These terms can play a role, but I have designed systems where they are negligibly small. Once the primary sources of SE effects are well established, a study on these terms will be considered.

The energy and composition of the states are, in general, dependent on the direction of the applied magnetic field. In other words, all the terms in *eq. 1* influence the spatial-dependent response of the system, i.e. its MA. If also an electric field is applied on a non-centrosymmetric magnetic site, all the terms in *eq. 1* will be perturbed.^{55, 74} Therefore, I have designed a synthetic plan that allows to assess the perturbation imposed by the electric field on each term of the Hamiltonian by chemical engineering the structure of the investigated molecules.

5.1 Synthesis

5.1.1 Synthetic plan

All the terms in *eq. 1* can be chemically controlled. I have analysed the data and hypotheses on the origin of the SE effects present in literature and isolated three chemically tunable parameters that are crucial to understand, and consequently engineer, the SE molecular response. These parameters are the **spin-orbit coupling**, the **nature of the donor atoms**, and the **structural rigidity**. The first parameter is related to the free ion part of the Hamiltonian, while the second and third parameters are related to the effect of the ligands on the electronic structure. In a generic molecule, all these factors generate the response of the system to the electric field. However, it is possible to exploit chemical design to extract the contribution of each specific parameter. A scheme that shows the parameters that will be studied is reported in Figure III. In addition to all these chemical parameters, I also intend to study the influence of external conditions (temperature, magnetic field) on the SE effects. To do so, I will use a class of molecules that my collaborators and I have recently discovered, called anisotropy switches.⁸⁰ In the following four sections, I describe the families of molecules that I selected as ideal platforms to develop this ERC project.

I. Spin-Orbit Coupling

A recent article suggests that SE effects should scale up linearly with the SOC constant of the paramagnetic ions in the structure.⁷⁸ Literature values on inorganic lattices seem to support this hypothesis to a certain extent;

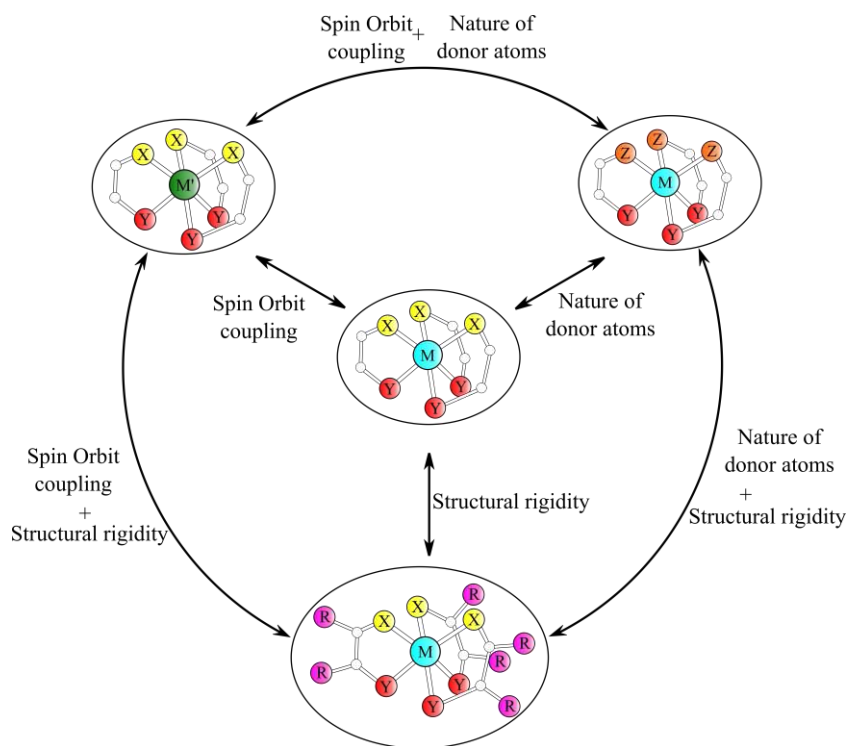


Figure III. Chemically tuneable parameters that will be studied to understand their role on the SE effects.

SE effects in lanthanides are usually one order of magnitude stronger than in first row transition metals^{52, 81-82} and SE effects on (quasi) isotropic metals (e.g. Mn^{2+} , Fe^{3+})⁸³⁻⁸⁵ are one to three orders of magnitude smaller compared to anisotropic counterparts.⁸⁶ However, there are also counterexamples: actinides have been shown to exhibit lower effects than lanthanides.⁸⁷ Of course, this comparison has severe limitations due to the different chemical environment (e.g., number and type of donor atoms, ligand structure) in the studies species.

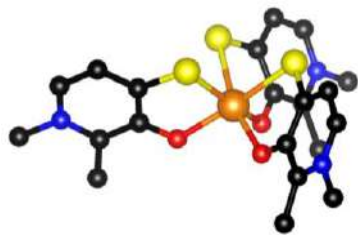


Figure IV. Structure of **1**. Fe-orange, S-yellow, O-red, N-blue, C-black. H atoms and counterions were omitted for clarity.

To clarify this point, I propose to compare molecules with the same number and type of donor atoms and same ligand structure but different metal ion. I intend to employ transition metal ions belonging to the same group of the periodic table and also compare transition metal ions and lanthanides in the same coordination environment. It is not trivial to find a ligand that binds all these ions in the same manner, and imposes the correct geometry to allow the onset of SE effects. I envisage starting the study by synthesizing compounds with (approximated) trigonal coordination environment with three S and three O donor atoms. An excellent ligand candidate is 3-oxy-1,2-dimethyl-4(1H)-pyridinethione-O,S because its complexes with Fe^{3+} (**1**, see Figure IV) crystallizes in the non-centrosymmetric R3c space group.⁸⁸ The distorted trigonal antiprismatic geometry of the complex imposes a S-Fe-O angle close to 180° , thus making this axis prone to exhibit a substantial SE effect.

Another axis that could show a large SE response is the C_3 axis of the molecule. If the S atom is replaced by an O atom, the linear SE effect is expected to (almost completely) vanish. This will constitute a useful chemical tool to distinguish true SE effects from spurious contributions.

The aforementioned ligand, and its close chemical variations, are known to bind many metal ions.⁸⁹⁻⁹⁶ Synthesizing molecules with same ligand structure as in **1**, and metal ions belonging to the same group of the periodic table will allow to extract the role of the SOC while keeping the ground spin state (S) constant. Two relevant couples to compare will be $\text{Cr}^{3+}/\text{Mo}^{3+}$ ($S = 3/2$) and $\text{Ru}^{3+}/\text{Os}^{3+}$ ($S = 1/2$). Similar structures with some of these metals have been already reported.⁹⁷⁻¹⁰⁴ Moreover, this comparison will also be extended to tripositive lanthanide ions (Ln) that are known to bind similar ligands.¹⁰⁵ This first study will allow to identify the role of the SOC of the metal ion.

II. Nature of the donor atoms

A change in nature of the donor atoms affects the type (i.e. covalent, ionic) and strength of the bonds and can, therefore, dramatically affect the magnetic properties and electronic structure of molecules. Although the most considerable SE effects are usually seen in extended highly ionic systems,⁵⁵ covalent bonds can play a significant role in determining the magnitude of linear SE effects.¹⁰⁶ A recent theoretical study reports that significant SE effects are expected to be observed if the electric field is pointed along the Ln-X bond ($X = \text{halogen}$) in $[\text{Er}\{\text{N}(\text{SiMe}_3)_2\}_3\text{Cl}]^-$ and in $\text{Dy}(\text{Cp}^{\text{Me}_3})_2\text{Cl}$.³⁸

There are two obvious choices of donor atoms with sufficiently similar chemical properties to be used as isostructural ligands: the chalcogens and the halogens. Therefore, I propose to investigate a variation of complex **1** with the S atoms substituted with Se atoms. The synthesis of similar Se-based derivatives, such as 3-oxy-2-methyl-4-selenone-iron(III) (**2** in Figure V), has been reported in the literature. They crystallize in the non-centrosymmetric R3c space group.¹⁰⁷ The central metal ions will be the same targeted in the previous study. The directions that will be particularly interesting to investigate are the C_3 axis and the O-M-Se bonds. A high-risk-high-gain attempt could be the synthesis of the Te-derivatives, especially the ones encompassing a Ln-Te bond (see R1 in Section 6). Indeed, the crystallographic database reports, to date, 38 molecules with such bond, with only 10 substantially different chemical structures. However, if successful, it will deliver rare complexes with Ln-Te bonds, some of which are not reported in literature yet (e.g., Dy-Te or Nd-Te). Alternative complexes with similar geometry are the lanthanide chalcogenides of formula $(\text{THF})_3\text{Ln}(\text{EPh})_3$ ($E = \text{chalcogen}$). The S and Se derivatives have been reported and can be synthesized in mild conditions. They crystallize in the P63 chiral space group with one magnetically inequivalent molecule per unit cell.¹⁰⁸ The results stemming from this investigation and from the study on the role of SOC will deliver a clear picture of suitable metal plus donor atoms building blocks to use for the following study.

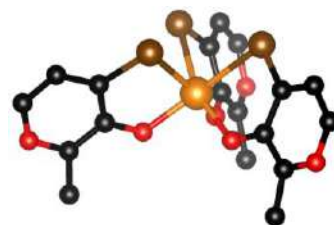


Figure V. Structure **2**. Fe-orange, Se-brown, O-red, C-black. H atoms and counterions were omitted for clarity.

III. Structural rigidity

The idea that atomic displacements play a crucial role in generating large SE effects is widespread in literature^{38, 78, 109}, and it is corroborated by evidence that a high electric field can stretch and deform bonds.¹¹⁰⁻¹¹¹ It has also been considered as the coupling mechanism between the radio-frequency oscillating bias of an STM tip and the spin of adatoms sensed with single-atom STM-EPR.⁸

To gain some insight into this matter, I propose to study the previously identified metal plus coordination environment building blocks with several ligand structures. Therefore, I envisage to synthesize variations of the ligands previously discussed. Many suitable structures are already reported in the crystallographic database. Some of them crystallize in chiral space groups,¹⁰⁷ while others crystallize in centric space groups.^{101, 104, 112} In this last case, a modification of the ligand (e.g., introducing chiral moieties on the rings) could promote the crystallization in suitable space groups, and, at the same time, modulate the vibrational structure of the molecule.

Another neat way to tune the structural rigidity is to fuse the three ligands into one. A target structure will be the S,O-system derived from a symmetric macrobicyclic ligand (**3** in Figure VI), for which the O,O-version is reported as an optimal ligand for tripositive metals.¹¹³

I also plan to include a comparison between complexes of ions belonging to the same period (e.g. first row transition metals) but with different proclivity for Jahn Teller distortion, that has been advocated as a source of strong SE effects in inorganic lattices.¹⁰⁹

It will be also imperative to compare the result obtained from this part of ELECTRA with the literature on spin-phonon and vibronic effects on QBs¹¹⁴⁻¹¹⁷ and SMMs^{12-14, 118-119}, which are nowadays advocated as a major source of decoherence and spin reversal. This comparison will allow to distill a *comprehensive chemical guide* to obtain electrically addressable and highly performant magnetic molecules.

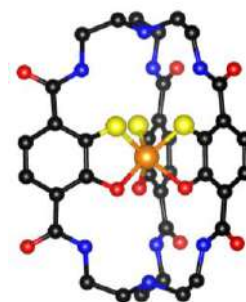


Figure VI. Structure of **3**, with three O-donor atoms substituted by S atoms. Fe-orange, N-blue, S-yellow, O-red, C-black. H atoms, solvent molecules and counterions were omitted.

IV. External conditions

External conditions such as temperature, electric fields and magnetic fields influence the magnetic and electric properties of matter, so they will also modify SE effect. Measurements with variable temperatures and fields will obviously be performed on all the samples (see Section 5.2.1), but it will be essential to test how *different MA shapes* (e.g., easy plane or easy axis) stemming from a *single chemical structure* interact with an electric field. Indeed, this will allow to isolate the influence of the MA shape on the SE effects from the chemical structure. Recently, my collaborators and I have disproved the common belief that, in general, a specific

molecular structure can be uniquely connected to one type of MA by discovering the *anisotropy switches*.^{30, 80, 120-121} These are molecules where the MA can be controlled by using external physical variables such as magnetic field and temperature and are unexpectedly common in the field of molecular magnetism.^{30, 121} A simple way of visualizing the MA at any temperature and magnetic field is looking at the anisotropy phase diagram, such as the one reported in Figure VII for $\text{Dy}(\text{H}_2\text{O})_9^{3+}$, **4**. Different molecules exhibit wildly different diagrams, where the switching points (e.g., conditions at which the MA changes, that in Figure VII correspond to a change in colour) can appear at any temperature.^{30, 121} $\text{Dy}(\text{H}_2\text{O})_9^{3+}$ constitutes a good starting point for this investigation because it can crystallize with many counter ions and other molecules that can impose different

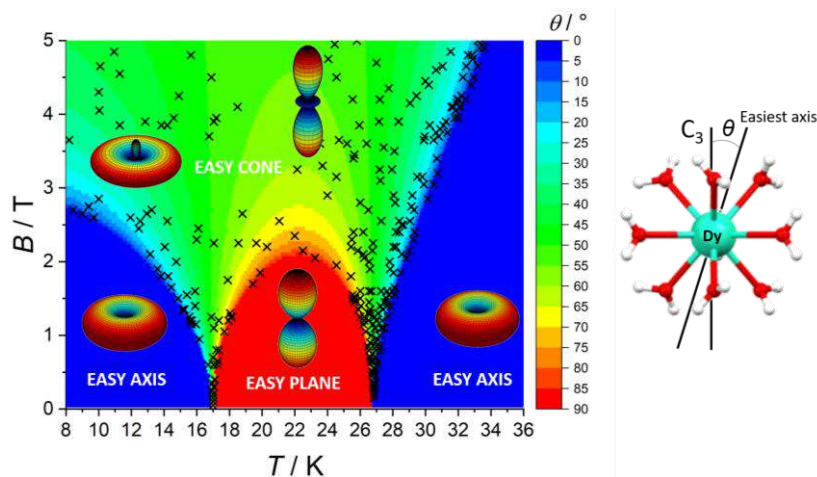


Figure VII. Magnetic anisotropy phase diagram of $\text{Dy}(\text{H}_2\text{O})_9^{3+}$, **4**. The colour scale of the plot refers to the angle between the lowest free energy direction (e.g., the easiest axis) and the C_3 axis of the molecule. The 3D shapes represent the anisotropic part of the free energy at selected external conditions (T , B). The symbols represent the experimental conditions at which the system is expected to be mostly sensitive to electric fields.



crystal packings, although maintaining a similar coordination geometry. For example, an acentric crystal space group can be obtained using Br⁻ as a counter ion and dioxane as co-crystallization molecule.¹²²

If the experimental conditions are set at the switching point between two different anisotropy shapes, the molecules will be extremely sensitive to any external perturbation. In other words, they can be considered trapped in a “pseudo-isotropic condition” between two opposite anisotropy shapes, both with large MA (see, e.g., the point at ca. 27 K and 0.5 T in Figure VII). I thus propose to test their sensitivity to electric fields in this condition. Indeed, if the electric field changes this situation in any way, there will be an immediate gain in MA, that is the quantity that I intend to detect (see Section 5.2). The magnitude of the enhancement will depend on the temperature and field at which the sample is set and can be thus optimized once the effect has been rationalized. To test the feasibility of this approach, I have assumed a relative SE effect of $5 \cdot 10^{-6}$ (towards the lower end of literature values^{37, 55, 70}) on the CF parameters, and then identified the points in the diagram where the MA would change the most due to the presence of the electric field (black symbols in Figure VII). Most of these points lie at the edge between two different shapes of MA (i.e. different colours in Figure VII), confirming the exceptional sensitivity of the MA switches to the electric field. Interestingly, if this enhanced sensitivity is experimentally confirmed, it would open the possibility to use these materials as local probes to detect the presence of electric fields.

5.1.2 Films

The investigation of single crystals will lead to the rationalization of the connection between chemical structure, external conditions, and SE effects. I envisage proceeding a step further in the direction of providing a complete picture of the SE effects in view of their future exploitation. Therefore, I propose to study thin films of the most promising candidates identified in the previous part of the project. The Host Institution (HI) is well-equipped for fabricating smooth surfaces (e.g. noble metals and oxides), and all the instrumentation required to evaporate molecular samples on the surface in ultra-high vacuum conditions and to check the quality of the obtained films is already present. Moreover, literature reports show that the surface influences the magnetic behaviour,¹²³⁻¹²⁴ with rare exceptions¹²⁵. It is thus reasonable to expect a change in the SE response of the samples. This study will investigate this aspect in order to understand the most important chemical features that a molecule should possess to maintain its SE behaviour and how the effect changes on a surface, with the aim of controlling it.

5.2 Experimental characterization

5.2.1 Torque Magnetometry in Electric Field

MA can be evaluated by measuring the magnetic moment of sample along different directions. If the sample is in the form of a single crystal, the technique is called standard Single Crystal Magnetometry, and it has been successfully used to study the MA of several compounds.¹²⁶⁻¹²⁸ Unfortunately, the relatively low sensitivity of the magnetometer and the dominance of the isotropic part of the free energy over its anisotropic part severely limit the temperature range and the type of samples that can be studied. A powerful alternative to standard single-crystal magnetometry is constituted by Cantilever Torque Magnetometry (CTM).¹²⁹⁻¹³³ This technique can detect the torque of sub-mm-sized crystals and even of nanometric scale thin films, provided that they exhibit a certain degree of order.¹³⁴ The torque moment of an anisotropic sample is proportional to its MA.¹²⁹ I propose here the realization of an innovative setup to go beyond the State-of-the-art in measuring SE effects. In the conventional way of using CTM, a sample in the form of a single crystal is fixed on top of a capacitor's flexible upper plate (the cantilever).¹²⁹ When a magnetic field is applied, the anisotropic crystal will tend to align the easiest axis along the field, thus provoking a torque moment. The physical motion of the sample causes an elastic response of the cantilever, and consequently a change in the distance between the two plates. The strength of the torque moment is proportional to the deflection that in turn is proportional to the change in capacitance that is measured.¹²⁹

Since ELECTRA aims at observing the effect of an electric field on a sample, an electrical detection is out of the question, and the sample must be also immersed in an electric field. Therefore, I plan to develop a new Torque Magnetometry setup, as schematically reported in Figure VIII, in order to measure SE effects. Hereafter, I will call this technique with the acronym **TMEF (Torque Magnetometry in Electric Field)**. The sample (a single crystal or a thin film) will be placed in between the capacitor plates, and an AC voltage will be applied between the plates. This will cause the onset of an alternating electric field directed perpendicular to the plates that will cover the entire sample area. The basic operational principle of the technique is reported

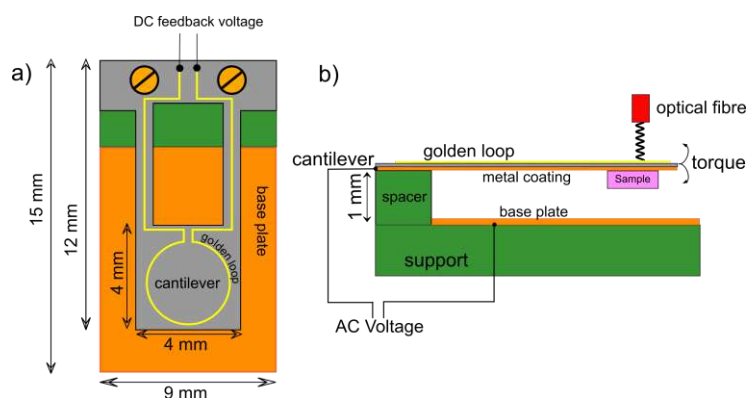


Figure VIII. Core of the TMEF experimental setup. a) top view of the cantilever where the golden loop attached to the feedback circuit will be deposited. b) side view where the position of the sample (between the plates) and the optical fibre are shown.

in Figure IV of part B1. Remarkably, this electric field will be more homogeneous compared to the field commonly employed for magnetoelectric investigations via EPR, which is usually generated using two parallel wires surrounded by an insulator.^{37, 68-71} Moreover, the technique will not require metalation of the crystal faces, a process that can be detrimental to the pristine crystal properties. The sample will be inserted with the aid of high-resolution microscopes, present in the crystallographic facility of the HI, or mounted on a movable cantilever that will be subsequently screwed to the spacers. The cantilever's deflection

will be detected optically by measuring the interference of the Fabry-Pérot cavity formed by the cantilever and an optical fibre approaching the cantilever from the opposite side compared to the sample space. Cantilever-based technology is well developed and is widely used in AFM to reach atomic sensitivities.¹³⁵ An experimental setup that exploits this interferometric detection was recently reported in the literature, and, in appropriate experimental conditions, it has a deflection detection limit due to noise of 0.1 nm.¹³⁶ Similar setups with higher resolution have been reported.¹³⁷⁻¹³⁸

As explained in the State-of-the-art section, SE effects are small perturbations on the Hamiltonian, dominated by free ion and CF terms. Thus, the purely magnetic torque is expected to dominate over the electrically-induced magnetic torque by several orders of magnitude. A golden loop attached to a DC current generator will be placed on the side of the cantilever that faces the optical fibre to overcome this difficulty. Whenever the magnetic field is changed, a feedback loop controlling the DC generator will be triggered. Depending on the changes in the cantilever's distance (detected by the optical fibre), a certain dc current will flow in the loop. This will create a magnetic moment that will have the same magnitude but opposite sign, with respect to the one generated by the sample, as customarily done for calibrating torque magnetometers. In this way, at any magnetic field, the cantilever will be maintained in the zero-deflection state and, at the same time, will provide information on the magnitude of the magnetic torque (proportional to the current flowing in the loop). If the electric field influences the MA of the sample, the cantilever will start oscillating. The magnitude of this oscillation will be a direct measurement of the SE effect.

The designed experimental setup will be versatile enough to provide information on both single crystals and thin films of molecules. The measurements on the non-centrosymmetric samples that I have proposed as model systems will be performed with an AC electric field. A lock-in detection at the oscillation frequency of the apparatus coupled with a 2-omega down-mixing technique¹³⁹⁻¹⁴⁰ will assure that oscillations due to Coulomb force between the plates and eventual instability of the feedback current will be filtered off, allowing a clean detection of the SE effect of the sample. The HI will grant full and permanent access to a split-coil horizontal magnet that can be used to generate magnetic fields up to 10 T and can stabilize temperatures between 1.8 and 300 K. Considering a separation between the plates of the order of 1 mm, electric fields of the order of 10^4 Vm⁻¹ (comparable with State-of-the-Art^{37, 70-71}) will be readily achievable. This novel instrument, equipped with a rotator, will allow to investigate several orientations of the sample with respect to the magnetic field. This will be pivotal in reconstructing the relation between molecular structure and SE effect.

The novelty of the technique will require a high degree of customization in the instrumentation. To deliver a well-defined budget, I have already identified several highly-specialized companies that can provide customized parts of the instrument. The rod, cabling, and optical fibre with a piezoelectric motor could be delivered by Attocube,¹⁴¹ a company specialized in cryogenic instrumentation. PoliFab¹⁴², a laboratory of Politecnico di Milano specialized in the fabrication of cantilevers and microcircuits with cutting-edge lithographic techniques, could fabricate the cantilever (made of silicon or silicon nitride) complete of golden loop and conducting plate. The capacitance bridge that I plan to use must generate AC fields with a frequency between 50 Hz and 20 kHz, and could be bought from Andeen-Hagerling¹⁴³, a leading company in the fabrication of highly sensitive capacitive bridges. All these companies have already provided a quotation (see Budget).



5.2.2. TMEF compared to State-of-the-art.

TMEF will be exceptionally more sensitive than traditional CTM (at least 4 orders of magnitude) due to the implementation of several novelties in the experimental setup described in Section 5.2.1 and others (e.g., vertical rotation axis to avoid the effect of gravity during the rotation). However, since it is meant to detect nanometric deflections derived from SE effects, it will not be suitable to detect big magnetic torque moments typical of highly anisotropic samples in high magnetic fields.

It is also meaningful to compare TMEF with EPR. The degree of information extracted with EPR will not be matched with TMEF on samples that exhibit electronic structures composed by several states in a narrow energy range (e.g., hyperfine splittings or small exchange interactions). However, EPR has the severe limitations of being applicable only on samples with an allowed transition in the experimental range and of losing signal intensity (especially at high temperature and on concentrated samples) due to the fast spin-spin relaxation. TMEF will have *no a priori restrictions* on the type of the studied anisotropic materials. *High temperatures* will be less problematic because the high temperature decrease of the signal decrease will be efficiently compensated exploiting the quadratic dependence of torque on the magnetic field value. Moreover, when several states are populated, it has been shown that the level of detail on *CF parameters* delivered by torque detection is compatible to that accessible using spectroscopic techniques.¹⁴⁴⁻¹⁴⁵ Magnetically concentrated samples will not only be measurable with TMEF, but they will maximize the signal.

5.2.3 Other experimental techniques

A comprehensive understanding of the SE effect can only stem from a consolidated knowledge and complete parametrization of the electronic structure and magnetic properties of the investigated samples. Most of the instrumentation that will be used for this purpose is already present at the HI (magnetometers, EPR spectrometers, Luminescence Spectrometers) and I am fully proficient in all these techniques. However, it will also become valuable to investigate the vibrational structure of the samples, as it is fundamental in tuning the relaxation time of both SMMs^{117-119, 146}, and QBs.^{33, 114-116} I have an extensive track record of accepted proposals at neutron large scale facilities, and I have published several papers where Inelastic Neutron Scattering was used to map the vibrational structure of complexes and detect at the same time magnetic peaks.^{80, 120, 147} Moreover, I have an ongoing collaboration with Dr. Schnegg at BESSY, a large-scale facility in Berlin where it is possible to perform in-field THz spectroscopy. I also collaborate with Dr. Orlita (CNRS, Grenoble), who has the equipment to perform IR spectroscopy in field.^{31, 148-149}

5.3 Modelling

The level of understanding that ELECTRA aims to reach will not be possible without simulations, fits, and theoretical support. I thus propose to develop both a phenomenological and an *ab initio* model to rationalize the SE effects that I will measure during the project.

5.3.1 Experimental modelling

The phenomenological modelling of SE effects is usually realized by expressing the effect of the electric field on the parameters of the Hamiltonian. For example, EPR-detected measurements, that can often access only the transition between the lowest lying levels, typically evaluate the effect as an “effective” variation of the *g* value of the ground state per unit of electric field applied.⁷⁰⁻⁷¹ Rarely, and only if the study is performed on oriented single crystals, the effect is parametrized with a third-rank SE tensor that describes the coupling between *g* and the electric field.⁵⁵ If the effect is estimated to impact the (even) CF parameters, the modelling can also be performed by estimating a variation of those parameters per units of electric field applied.³⁷ This is an acceptable approximation for those systems in which SE effects can be considered a small perturbation. However, the goal of ELECTRA is to optimize SE effects on molecules, thus I plan to use a more general method where odd terms of the CF potential will be considered, as they become crucial for materials with large SE effects.⁵⁵ This phenomenological model will be highly valuable as a quick feedback between synthesis and experiments, due to the straightforward connection between CF parameters and molecular symmetry.

5.3.2 *Ab initio* calculations

An *ab initio* computational study will also be performed. The use of a periodic framework is mandatory when working with crystals and thin films. Such a choice is also required by the necessity to consider all the possible interactions that can contribute to defining the molecular structure of interest (packing effects, next-neighbours polarization effects, etc.). Non-relativistic and scalar-relativistic Douglas-Kroll-Hess methods based on periodic Density Functional Theory (p-DFT) can guarantee the required accuracy of the geometrical parameters and monitor the effect of the applied static electric field on them. Mixed Gaussian and plane waves (GPW)¹⁵⁰⁻¹⁵² or pure plane waves (PW)¹⁵³⁻¹⁵⁵ can be used. MA can be, therefore, computed on the obtained geometries in electric fields or selectively applied to particular directions (e.g., the ones proposed in the synthetic plan). External fields can be applied in two ways: on a grid or analytically to the Gaussian Type Orbitals. In the former case, an analytical function is placed onto the grid or directly reading the potential on it. Such an approach is not periodic and can only be used with isolated molecules and slabs. On the contrary, periodic electric fields calculated analytically on the Gaussian basis can be applied using Berry phase formalism. Pure scalar-relativistic Douglas-Kroll-Hess methods within post-HF frameworks for Gaussians-based approaches will also be used on the single molecules extracted from p-DFT geometries allowing more accurate accounting of static and dynamic correlation needed for calculations of magnetic properties. In this regard, the spin-free wave functions will be obtained by using the complete active space self-consistent field (CASSCF) method for a state-average calculation of all roots that can arise from the considered active space. The spin-orbit interaction will be considered in the following restricted active space state interaction (RASSI) calculation by mixing all the state-averaged obtained multiplets. Dynamic correlation can be recovered by NEVPT2 approaches.¹⁵⁶⁻¹⁵⁸ MA strongly depends on low-lying electronic states whose relative population can be modulated even at very low temperatures and/or small perturbations. In this regard, this last class of methods allows the calculation of ground and excited states wavefunctions, which are critical to reproduce MA as a function of temperature. The analysis of the electronic structure (orbitals and energy ladder, CF parameters, etc.) in relation to the changes in the magnetic properties in the presence of the electric field will constitute valuable support both for the understanding of the phenomenon and for helping in reducing over-parametrization in the phenomenological model. The required multi-level approaches will be affordable through access to High-Performance Computing facilities of the HI. The full *ab initio* calculation of the SE effect will provide an independent way of assessing the role of all the discussed parameters in determining the SE response of the studied systems.

6. Risk assessment and mitigation

R1. *Some of the synthetic routes are difficult to pursue.* Risk level: High. Impact: Low. I have presented several molecules to be synthesized and studied in this project. Most of them can be trivially prepared in mild conditions. However, some compounds will be particularly challenging to synthesize, e.g., the complexes with a Ln-Te bond. If necessary, I will involve Dr. Tanini, a Researcher at the HI with whom I have an ongoing collaboration, who is an expert in the synthesis of organic molecules containing Se and Te.¹⁵⁹⁻¹⁶¹ Moreover, alternative routes have already been analysed. For example, the influence of the donor atoms could be studied on compounds exhibiting a metal-halogen bond. The mononuclear complexes Dy(bbpen)X (bbpen = N,N'-bis(2-hydroxybenzyl)-N,N'-bis(2-methylpyridyl)ethylenediamine, X=halogen) could be ideal candidates.³⁸ The Cl- and Br-derivative of this family are reported (the former is shown in Figure IX), and they are known to be highly performant SMMs.¹⁶² Variations of the ligand have been already reported.¹⁶³⁻¹⁶⁴ Prof. Jaisa Soares (Federal University of Paraná), an expert in synthesizing coordination complexes,¹⁶⁵⁻¹⁶⁸ has already synthesized some derivatives of this family¹⁶⁴ and manifested her interest in collaborating on this project, should this be necessary.

R2. *Some of the molecules do not crystallize in acentric groups.* Risk level: High. Impact: Low. If the study leads to a promising candidate that does not crystallize in an acentric space group, and that the attempts at playing with chiral groups or counterions are unsuccessful, the SE effect's measurement will not be possible by using the “traditional” AC lock-in detection mode. An efficient mitigation strategy is to apply a DC bias on top of the AC field. Indeed, the DC bias along a fixed direction is expected to “remove” the centrosymmetry of the structure allowing the disentanglement of the contributions belonging to the different molecules while keeping the high sensitivity typical of the lock-in detection mode.¹⁶⁹

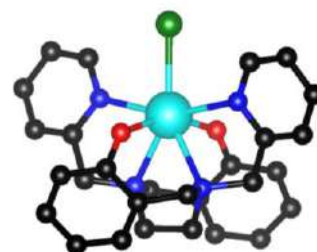


Figure IX. Structure of [Dy(bbpen)Cl], **5**. Dy-cyan, Cl-green, O-red, N-blue, C-black. H atoms and counterions were omitted for clarity.

R3. *Delays in the TMEF setup building.* **Risk level: Medium. Impact: Medium.** This risk comes naturally with the novelty of the proposed experimental technique. The Industrial and University partners that have expressed their will to contribute to the realization of the setup certainly mitigate this risk to a certain extent, but technical issues are likely to arise causing delays. If such issues should occur, I propose to start the investigation of SE effects by using the technology already available at the HI. For example, I propose to speed up and reinforce the experimental characterization with other techniques such as Electric Field Modulated EPR (whenever possible). I am familiar with the technique, and I have also identified $\text{Na}_3\text{Ln}(\text{ODA})_3 \cdot 2\text{NaBF}_4 \cdot 6\text{H}_2\text{O}$ (Ln = lanthanide tripositive ion; H_3ODA = oxodiacetic acid)¹⁷⁰ as ideal candidates (e.g. the Yb^{3+} derivative is expected to be EPR active) due to their spontaneous resolution in the R32 chiral space group. Some members of this family of compounds are also expected to be anisotropy switches.

R4. *The sensitivity of the experimental setup is too low.*

Risk level: Low. Impact: High. Although a certain degree of risk is, and must be, inherently connected to ERC projects, I have performed some preliminary calculations to check whether the proposed experimental setup would be sensitive enough to detect SE effects.

Considering an easily manufacturable cantilever (see dimensions in Figure VIII) and using the theory of elasticity,¹⁷¹ it is possible to calculate the torque that is required to induce the minimal measurable deflection of the cantilever. For example, for a deflection of 0.5 nm (five times larger than the noise of the closest setup reported in literature¹³⁶ and several orders of magnitude larger than the noise obtained with similar designs¹³⁷⁻¹³⁸), I calculated a torque of 3.3 pNm. Assuming a SE effect of $5 \cdot 10^{-6}$ on the CF parameters (towards the lower end of the shifts observed in molecules)^{37, 70-71} for a typically applied field of $5 \cdot 10^4 \text{ Vm}^{-1}$, I have calculated the change of magnetic torque induced by the electric field that occurs at $T = 5 \text{ K}$ and $B = 7 \text{ T}$ for a 50 μg crystal of $[\text{PPh}_4][\text{Dy}\{\text{Pt}(\text{SAC})_4\}_2]$ (PPh_4^+ = tetraphenylphosphonium cation, SAC = thioacetate) when the magnetic field is scanned in the *ac* crystallographic plane. I have chosen this molecule because the CF splitting is well-known and accurately determined with several experimental techniques.¹⁴⁷ Figure X shows that even SE effects on non-optimized systems are expected to be detectable with the proposed setup.

Moreover, there is ample room for improvement in the experimental conditions (e.g., if the noise is reduced to the literature value, if the temperature is decreased, the electric or magnetic field are increased etc...). However, sensitivity might become an issue for thin films. Traditional CTM can detect torques of 5 nm films of highly anisotropic molecules,¹³⁴ thus the enhanced sensitivity of TMEF is expected to compensate the decrease in signal due to the weakness of the SE effects and allow the measurement of such thicknesses. Lower thicknesses are expected to be measurable if the instrumental setup is modified, e.g., reducing the dimensions and thickness of the cantilever (exploiting AFM technology¹⁷²⁻¹⁷³) or by preparing films of molecules sandwiched between two conductive layers contacted with electrodes in order to significantly scale down the separation between the plates and thus increase the magnitude of the electric field by several orders of magnitude.

R5. *Difficulties in disentangling the contributions arising from the (possibly) different sources of SE effect.*

Risk level: Medium. Impact: High. I believe that the systems that I propose are good candidates to isolate the influence of a specific parameter on the resultant SE effect. However, it is conceivable that in some cases several contributions will be of comparable magnitude, and thus difficult to disentangle solely based on experiments. If this risk should occur, the input that the experiments will receive from the *ab initio* calculations will become crucial, therefore I intent to reallocate funding for reinforcing the theoretical modelling. For example, it could be convenient to hire a PhD working on the *ab initio* modelling that flanks the PostDoc (PD) already at budget.

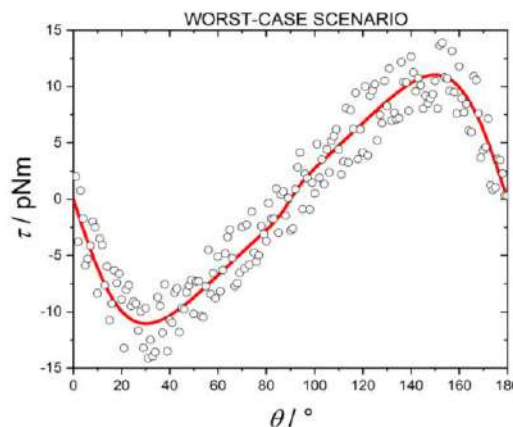


Figure X. Simulation of the worst case scenario for a torque (τ) vs. rotation angle (θ) measurement. Empty dots are the expected torque caused by the electric field summed to a supposed experimental noise of 3.3 pNm (corresponding to a vibration of the cantilever of 0.5 nm). The red line is the expected SE effect without noise.

7. Work Plan and Personnel

ELECTRA was conceived as a joint synthetic, experimental, and theoretical study. I have divided it into four main Work Packages (WP): Synthesis (**WP1**), Setup building (**WP2**), Measurements and phenomenological modelling (**WP3**), and *ab initio* modelling (**WP4**), as represented in the Gantt chart (Figure XI). Each WP encompasses several Tasks (Table 1). WP1, WP3, and WP4

are strongly interdependent, and a constant and rapid feedback between them will be the key to the smooth development of the project. This is a reason why a single leader that has the full view of the project is vital for ELECTRA. For example, if the experiments or the theory suggest that a particular molecular structure could be interesting to pursue, the synthetic efforts will be redirected towards that structure. Vice versa, if a synthetic route is a dead-end, the theory and experiments will be refocused to other targets.

The personnel will be hired to cover a wide range of different skills and will then constitute a greatly heterogeneous group in terms of know-how. I have personally appreciated the cross-fertilization that derives from working in a heterogeneous and international group. Gender balance and diversity issues will be, of course, considered. I have inserted at budget three 3-years contracts for PDs to work on specific WPs (**WP1**, **WP2**, **WP4**). Moreover, I propose three 3-year PhD positions (a full PhD cycle in Italy): one on **WP1**, and two on **WP3**. Importantly, I am fully convinced that a multidisciplinary education is essential to understand and face many of today's challenges. Consequently, the PDs will also work, to a minor extent, on other WPs. All the people involved will greatly benefit from the exchange of ideas when all the aspects of the project will be discussed.

WP1. Synthesis Duration: 5 years. **WP1** will deal with synthesis and will constitute the primary source of samples throughout the project. PD1, a skilled synthetic chemist, will start immediately to provide an overview of the feasibility of the proposed synthetic routes. In the first 12 months, PD1 is expected to work on isostructural complexes with different metals and on anisotropy switches. This will allow to have a remarkable quantity of samples ready to study when the experimental setup will be available/working. In the second year I expect to move towards the production of ligands with different donor atoms. At the beginning of the third year, PhD1 will flank PD1 to boost up productivity on all the open projects. At the end of year 3, I expect a clear picture of the most promising candidates, also for the study on surface, and thus easy handling of this WP by PhD1 and myself. The creation and characterization of films will be done at the HI in collaboration with Mr. Cortigiani. At the HI, I have my own chemistry lab where 2 people can work simultaneously (even maintaining physical distancing, should that be necessary).

WP2. Setup building Duration: 3 years. **WP2** will be dedicated to the experimental setup building and testing. PD2 will be mostly involved in this WP. Since the various parts of the setup will be provided by external companies and some quotations have been already issued, the instrument is expected to be assembled and tested by month 12. However, I want to be sure that the instrumental part can be easily handled, especially in view of future usage that is expected to be extended to several users. Therefore, PD2 will be also in charge of writing dedicated programs and create interfaces to ease the visualization of the experimental results. PD2 will also take care of investigating the possibility to enhance the sensitivity of the technique, especially for thin-film measurements.

WP3. Measurements and phenomenological model Duration: 4 years. This WP will be devoted to the experimental study and phenomenological modelling and will be divided into a preliminary "standard" characterization of the electronic structure and magnetic properties and the actual study of the SE effects using TMEF. This structure allows starting **WP3** at month 12, when several samples stemming from **WP1**, and the instrumental setup for TMEF, are expected to be available. I will supervise PhD2 and PhD3, which will characterize and model the magnetic properties, the electronic structure, and the SE response of the samples. They will also write user-friendly programs, to make them available to the community via the website dedicated to the project. Shifting the beginning of the two PhD positions by 1 year will allow me to dedicate more time to each student in the first part of her/his PhD program.

WP4. Ab initio modelling Duration: 3 years. **WP4** will start at month 12 and will be devoted to a full *ab initio* modelling of the SE effects. PD3 will work on this WP, and will be chosen considering her/his experience in *ab initio* calculations on molecular systems. To reinforce this part of the project, I have inserted at budget 6

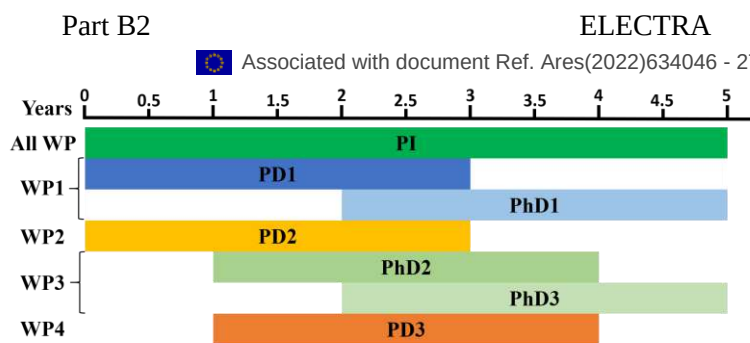


Figure XI. Gantt chart of the personnel. PI = Principal Investigator, PD = PostDoc.



person-months of Prof. Totti, an expert in *ab initio* modelling of magnetic molecules in crystal lattices and on the surface, who works at the HI.

WP	Task	Who	Description
1	1.1	PD1	Synthesis and chemical characterization of complexes to investigate the role of SOC
	1.2	PD1/PhD1	Synthesis and chemical characterization complexes to investigate the role of the nature of the donor atoms
	1.3	PD1/PhD1	Synthesis and chemical characterization complexes to investigate the role of structural rigidity
	1.4	PD1	Synthesis and chemical characterization complexes to investigate the role of external conditions
2	2.1	PD2	Complete assembly of the instrument
	2.2	PD2	Preliminary tests to find the optimal working conditions
	2.3	PD2/PhD2	Preliminary tests on synthesized samples
	2.4	PD2	Dedicated programs to create a user-friendly interface.
	2.5	PD2	Possibility to automatize sequences of measurements.
	2.6	PD2	Optimization of the experimental setup to reach the necessary sensitivity for investigating very thin films (< 5 nm)
3	3.1	PhD2	Measurements on compounds with different SOC and their phenomenological model.
	3.2	PhD3	Measurements on compounds with different donor atoms and their phenomenological model.
	3.3	PhD3	Measurements on compounds with different structural rigidity and their phenomenological model.
	3.4	PhD2	Measurements on anisotropy switches and their phenomenological model.
4	4.1	PD3	Assessment for the best computational protocols for the different systems in zero electric field
	4.2	PD3	Optimizations of geometries in the presence of different magnitudes/orientation of electric fields
	4.3	PD3	Calculations of the magnetic properties and theoretical rationalization of their evolution in the presence of the electric fields
	4.4	PD3	Inclusion of surface effects on the calculation
	4.5	PD3	Calculations of the magnetic properties and theoretical rationalization of their evolution in the presence of the electric fields and on surface

Table 1. Summary of the tasks that each WP will encompass. The involvement of each person in the tasks is reported in Column 3. The role of the PI is explained in the following Section.

Role of the PI

I am fully committed to this ERC project. I will dedicate 65% of my person-months to ELECTRA, which is the maximum that I can insert, considering teaching duties and other academic tasks that I must attend. I will supervise *all the WPs* and all the personnel involved at any stage of the process. However, considering the enrolled personnel and the timeline, I have identified some tasks that might require my specific attention in order to facilitate a smooth advancement of the project. During the first year I expect to be mostly involved in **WP2** and **WP4**. A fast realization of the TMEF setup is important for the rest of the project and a preliminary check of the most relevant theoretical tools will allow a smooth start of the work performed by PD3. In the second year I envisage a progressive involvement in the synthetic and experimental part of the project (**WP1** and **WP3**). I plan to explore and optimize the synthesis of the cage ligands to allow more flexibility in the complexation reactions. The third and fourth years will be the core of the project and I will thus be highly involved in all the WPs. The first experimental results will be analysed and a rational organization of the synthetic plan will be needed in order to focus the efforts on the most promising strategies. This is also when I foresee my involvement in the experiments on thin films. I plan to spend a significant amount of time in developing models and codes for the simulation and fit of the experiments. The contemporary presence of PhD1 and PhD2 at this stage will allow me to train them in these tasks. In the last year of the project I plan to mainly work on theory and modelling to distill a comprehensive and coherent overview of the results obtained during ELECTRA.



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RESOURCES

Salaries: 786 k€ for PI, Senior Staff (6 months), Technician (6 months), 3 PostDocs (3-years each), and 3 PhDs (3-years each).

a) PI. I will dedicate 65% of my time to ELECTRA, that is the maximum that I can allocate considering teaching duties and other academic tasks that I must attend. Therefore, I will be able to supervise the entire project at any stage and to closely supervise the WP dedicated to measurements, for which no PostDocs are requested. My total salary is 222 k€.

b) PostDocs. The salary of PostDocs is 33 k€/year, which is the maximum salary for a PostDoc in Italy. Total salary: 297 k€.

c) PhDs. The synthetic part of the project requires synthesis planning and practical skills that can be largely acquired through doing. Therefore, a PhD that flanks PD1 is required. The measurements are the core of the project. I will personally supervise the two PhDs that will be enrolled for WP3. Of course, two PhDs (the duration of a PhD is always 3 years in Italy) is the lowest possible number to assure a 5-year continuity in WP3. Total salary: 210 k€.

d) Other staff. 36 k€ for 6 months-person of Dr. Federico Totti that will aid the supervision of PD3, 21 k€ for 6 months-person of Mr. Brunetto Cortigiani, a technician that will aid with surface techniques.

Travel: 44 k€.

Conferences, seminars, symposia, and schools are the main ways in which the exchange of scientific knowledge takes place. I highly value the participation at these events, especially for the PhDs. I have calculated 1 event per year per PD and PI (5 for PI, 9 for PDs) and 1 event per year per PhD (9) at 1.2 k€ each. This gives a total of 27.6 k€. 6.4 k€ are dedicated to reimbursements of travel expenses for external advisors. 10 k€ (2 k€ per year) have been estimated for travels connected to large-scale facilities and short exchanges. This part of the budget is relatively low because part of the money allocated for PhDs salaries must be used for scientific exchange.

Equipment: 150 k€.

a) 43 k€ for the sample rod, cabling, and optical fibre

b) 73 k€ for capacitance bridge with variable AC frequency and external voltage up to 200 V

c) 34 k€ for minor instrumentation

Only depreciation costs will be charged to the project. The equipment purchased for the project will be entirely used for this project activities.

Consumables: 194 k€.

30 k€ (6 k€ per year) for chemical reagents and lab equipment. 114 k€ (22.8 k€ per year) for liquid He refrigeration. 50 k€ for cantilever fabrication, optimization, and assembly.

Publications and outreach: 20 k€.

3 k€ for the creation and maintenance of a dedicated website. I will also create a Twitter account of the group where the scientific output of the project will be posted. 17 k€ (3.4 k€ per year) for open access publication. I request this (low) amount for publication fees in journals not inserted in the agreement signed by the HI that covers the publication and open access fees for many Journals (e.g. Springer and ACS).

Other costs: 5 k€.

AUDIT certificate

ANNEX 1

ERC PERSONNEL COST BREAKDOWN

	A. Personnel costs					Total costs
	A.1, A2, A3 Employees (or equivalent), Natural persons under direct contract, Seconded persons					
	Principal Investigators	Senior staff	Post docs	Students	Other	
	a	b	c	d	e	
1 - UNIFI	222 000.00	36 303.00	297 000.00	210 000.00	20 724.00	786 027.00

ANNEX 2

ESTIMATED BUDGET FOR THE ACTION

	Estimated eligible ¹ costs (per budget category)											Estimated EU contribution ²				
	Direct costs										Indirect costs	Total costs	EU contribution to eligible costs			Maximum grant amount ⁶
	A. Personnel costs		B. Subcontracting costs	C. Purchase costs			D. Other cost categories			E. Indirect costs ³	Funding rate % ⁴		Maximum EU contribution ⁵	Requested EU contribution		
	A.1 Employees (or equivalent) A.2 Natural persons under direct contract A.3 Seconded persons		A.4 SME owners and natural person beneficiaries	B. Subcontracting	C.1 Travel and subsistence	C.2 Equipment	C.3 Other goods, works and services	D.2 Internally invoiced goods and services	D.7 ERC additional funding	D.8 ERC additional funding (subcontracting, FSTP and internally invoiced goods and services)	E. Indirect costs					
Forms of funding	Actual costs	Unit costs (usual accounting practices)	Unit costs ⁷	Actual costs	Actual costs	Actual costs	Actual costs	Unit costs (usual accounting practices)	Actual costs	Actual costs	Flat-rate costs ⁸					
	a1	a2	a3	b	c1	c2	c3	d2	d7	d8	e = 0,25 * (a1 + a2 + a3 + c1 + c2 + c3 + d7)	f = a + b + c + d + e	U	g = f * U%	h	m
1 - UNIFI	786 027.00	0.00	0.00	0.00	44 000.00	150 000.00	219 000.20	0.00	0.00	0.00	299 756.80	1 498 784.00	100	1 498 784.00	1 498 784.00	1 498 784.00

¹ See Article 6 for the eligibility conditions. All amounts must be expressed in EUR (see Article 21 for the conversion rules).

² The consortium remains free to decide on a different internal distribution of the EU funding (via the consortium agreement; see Article 7).

³ Indirect costs already covered by an operating grant (received under any EU funding programme) are ineligible (see Article 6.3). Therefore, a beneficiary/affiliated entity that receives an operating grant during the action duration cannot declare indirect costs for the year(s)/reporting period(s) covered by the operating grant, unless they can demonstrate that the operating grant does not cover any costs of the action. This requires specific accounting tools. Please immediately contact us via the EU Funding & Tenders Portal for details.

⁴ See Data Sheet for the funding rate(s).

⁵ This is the theoretical amount of the EU contribution to costs, if the reimbursement rate is applied to all the budgeted costs. This theoretical amount is then capped by the 'maximum grant amount'.

⁶ The 'maximum grant amount' is the maximum grant amount decided by the EU. It normally corresponds to the requested grant, but may be lower.

⁷ See Annex 2a 'Additional information on the estimated budget' for the details (units, cost per unit).

⁸ See Data Sheet for the flat-rate.

ANNEX 2a

ADDITIONAL INFORMATION ON UNIT COSTS AND CONTRIBUTIONS

SME owners/natural person beneficiaries without salary (Decision C(2020) 7115¹)

Type: unit costs

Units: days spent working on the action (rounded up or down to the nearest half-day)

Amount per unit (daily rate): calculated according to the following formula:

{EUR 5 080 / 18 days = **282,22**}
multiplied by
{country-specific correction coefficient of the country where the beneficiary is established}

The country-specific correction coefficients used are those set out in the Horizon Europe Work Programme (section Marie Skłodowska-Curie actions) in force at the time of the call (see [Portal Reference Documents](#)).

HE and Euratom Research Infrastructure actions²

Type: unit costs

Units³: see (for each access provider and installation) the unit cost table in Annex 2b

Amount per unit^{*}: see (for each access provider and installation) the unit cost table in Annex 2b

* Amount calculated as follows:

For trans-national access:

$$\frac{\text{average annual total trans-national access costs to the installation (over past two years)}^4}{\text{average annual total quantity of trans-national access to the installation (over past two years)}^5}$$

For virtual access:

$$\frac{\text{total virtual access costs to the installation (over the last year)}^6}{\text{total quantity of virtual access to the installation (over the last year)}^7}$$

Euratom staff mobility costs⁸

Monthly living allowance

Type: unit costs

¹ Commission [Decision](#) of 20 October 2020 authorising the use of unit costs for the personnel costs of the owners of small and medium-sized enterprises and beneficiaries that are natural persons not receiving a salary for the work carried out by themselves under an action or work programme (C(2020)7715).

² [Decision](#) of 19 April 2021 authorising the use of unit costs for the costs of providing trans-national and virtual access in Research Infrastructure actions under the Horizon Europe Programme (2021-2027) and the Research and Training Programme of the European Atomic Energy Community (2021-2025).

³ Unit of access (e.g. beam hours, weeks of access, sample analysis) fixed by the access provider in proposal.

⁴ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁵ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁶ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁷ In exceptional and duly justified cases, the granting authority may agree to a different reference period.

⁸ [Decision](#) of 15 March 2021 authorising the use of unit costs for mobility in co-fund actions under the Research and Training Programme of the European Atomic Energy Community (2021-2025).

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit*: see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

* Amount calculated as follows from 1 January 2021:

{**EUR 4 300** multiplied by
country-specific correction coefficient** of the country where the staff member is seconded}⁹

**Country-specific correction coefficients as from 1 January 2021¹⁰

EU-Member States¹¹

Country / Place	Coefficient (%)
Bulgaria	59,1
Czech Rep.	85,2
Denmark	131,3
Germany	101,9
Bonn	95,8
Karlsruhe	98
Munich	113,9
Estonia	82,3
Ireland	129
Greece	81,4
Spain	94,2
France	120,5
Croatia	75,8
Italy	95
Varese	90,7
Cyprus	78,2
Latvia	77,5
Lithuania	76,6
Hungary	71,9
Malta	94,7
Netherlands	113,9
Austria	107,9
Poland	70,9
Portugal	91,1
Romania	66,6
Slovenia	86,1

⁹ Unit costs for living allowances are calculated by using a method of calculation similar to that applied for the secondment to the European Commission of seconded national experts (SNEs).

¹⁰  For the financial statements, the amount must be adjusted according to the actual place of secondment. The revised coefficients were adopted in the Decision authorising the use of unit costs for the Fusion Programme co-fund action under the Research and training Programme of the European Atomic Energy Community 2021-2025. They are based on the 2020 Annual update of the remuneration and pensions of the officials and other servants of the European Union and the correction coefficients applied thereto (OJ C 428, 11.12.2020) to ensure purchasing power parity. The revised coefficient are applied as from 1 January 2021 through an amendment to the grant agreement.

¹¹ No correction coefficient shall be applicable in Belgium and Luxembourg.

Slovakia	80,6
Finland	118,4
Sweden	124,3

Third countries

Country/place	Coefficient (%)
China	82,2
India	72,3
Japan	111,8
Russia	92,7
South Korea	92,3
Switzerland	129,2
Ukraine	82,3
United Kingdom	97,6
United States	101,4 (New-York) 90,5 (Washington)

Mobility allowance

Type: Unit costs

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit: **EUR 600** per person-month; see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

Family allowance

Type: unit costs

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit: **EUR 660** per person-month; see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

Education allowance

Type: Unit costs

Units: months spent by the seconded staff member(s) on research and training in fission and fusion activities (person-month)

Amount per unit*: see (for each beneficiary/affiliated entity and secondment) the unit cost table in Annex 2b

*Amount calculated as follows from 1 January 2021:
{**EUR 283.82** x number of dependent children¹²}

¹² For the estimated budget (Annex 2): an average should be used. ( For the financial statements, the number of children (and months) must be adjusted according to the actual family status at the moment the secondment starts.)

ANNEX 4 HORIZON EUROPE MGA — MULTI + MONO

FINANCIAL STATEMENT FOR [PARTICIPANT NAME] FOR REPORTING PERIOD [NUMBER]

	Eligible ¹ costs (per budget category)															EU contribution ²				Revenues			
	Direct costs															Indirect costs	Total costs	EU contribution to eligible costs			Total requested EU contribution	Income generated by the action	
	A. Personnel costs		B. Subcontracting costs	C. Purchase costs			D. Other cost categories									E. Indirect costs ²		Funding rate % ³	Maximum EU contribution ⁴	Requested EU contribution			
	A.1 Employees (or equivalent)		A.4 SME owners and natural person beneficiaries	B. Subcontracting	C.1 Travel and subsistence	C.2 Equipment	C.3 Other goods, works and services	D.1 Financial support to third parties	D.2 Internally invoiced goods and services	D.3 Transnational access to research infrastructure unit costs	D.4 Virtual access to research infrastructure unit costs	[OPTION for HE PCP/PPPI: D.5 PCP/PPPI procurement costs]	[OPTION for Euratom Programme Cofund Actions: D.6 Euratom Cofund staff mobility costs]	[OPTION for HE ERC Grants: D.7 ERC additional funding]	[OPTION for HE ERC Grants: D.8 ERC additional funding (subcontracting, FSTP and internally invoiced goods and services)]	E. Indirect costs							
A.2 Natural persons under direct contract																							
A.3 Seconded persons																							
Forms of funding		Actual costs	Unit costs (usual accounting practices)	Unit costs ⁵	Actual costs	Actual costs	Actual costs	Actual costs	/ Actual costs	Unit costs (usual accounting practices)	/ Unit costs ⁵	/ Unit costs ⁵	/ Actual costs	/ Unit costs ⁵	/ Actual costs	/ Actual costs	Flat-rate costs ⁶						
		a1	a2	a3	b	c1	c2	c3	/ d1a	d2	/ d3	/ d4	/ d5	/ d6	/ d7	/ d8	e = 0,25 * (a1 + a2 + a3 +a+ c1 +c2 + c3 +d1a+d2+d3 +d4 +d5)+d6+ / +d7 +d8)	f = a+b+c+d+e	U	g = f*U%	h	m	n
XX – [short name beneficiary/affiliated entity]																							

The beneficiary/affiliated entity hereby confirms that:

The information provided is complete, reliable and true.

The costs and contributions declared are eligible (see Article 6).

The costs and contributions can be substantiated by adequate records and supporting documentation that will be produced upon request or in the context of checks, reviews, audits and investigations (see Articles 19, 20 and 25).

For the last reporting period: that all the revenues have been declared (see Article 22).

① Please declare all eligible costs and contributions, even if they exceed the amounts indicated in the estimated budget (see Annex 2). Only amounts that were declared in your individual financial statements can be taken into account lateron, in order to replace costs/contributions that are found to be ineligible.

¹ See Article 6 for the eligibility conditions. All amounts must be expressed in EUR (see Article 21 for the conversion rules).

² If you have also received an EU operating grant during this reporting period, you cannot claim indirect costs - unless you can demonstrate that the operating grant does not cover any costs of the action. This requires specific accounting tools. Please contact us immediately via the Funding & Tenders Portal for details.

³ See Data Sheet for the reimbursement rate(s).

⁴ This is the *theoretical* amount of EU contribution to costs that the system calculates automatically (by multiplying the reimbursement rates by the costs declared). The amount you request (in the column 'requested EU contribution') may be less.

⁵ See Annex 2a 'Additional information on the estimated budget' for the details (units, cost per unit).

⁶ See Data Sheet for the flat-rate.

ANNEX 5

SPECIFIC RULES

CONFIDENTIALITY AND SECURITY (— ARTICLE 13)

Sensitive information with security recommendation

Sensitive information with a security recommendation must comply with the additional requirements imposed by the granting authority.

Before starting the action tasks concerned, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task. The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary.

For requirements restricting disclosure or dissemination, the information must be handled in accordance with the recommendation and may be disclosed or disseminated only after written approval from the granting authority.

EU classified information

If EU classified information is used or generated by the action, it must be treated in accordance with the security classification guide (SCG) and security aspect letter (SAL) set out in Annex 1 and Decision 2015/444¹ and its implementing rules — until it is declassified.

Deliverables which contain EU classified information must be submitted according to special procedures agreed with the granting authority.

Action tasks involving EU classified information may be subcontracted only with prior explicit written approval from the granting authority and only to entities established in an EU Member State or in a non-EU country with a security of information agreement with the EU (or an administrative arrangement with the Commission).

EU classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority.

ETHICS (— ARTICLE 14)

Ethics and research integrity

The beneficiaries must carry out the action in compliance with:

- ethical principles (including the highest standards of research integrity)

¹ Commission Decision 2015/444/EC, Euratom of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

and

- applicable EU, international and national law, including the EU Charter of Fundamental Rights and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols.

No funding can be granted, within or outside the EU, for activities that are prohibited in all Member States. No funding can be granted in a Member State for an activity which is forbidden in that Member State.

The beneficiaries must pay particular attention to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of persons, the right to non-discrimination, the need to ensure protection of the environment and high levels of human health protection.

The beneficiaries must ensure that the activities under the action have an exclusive focus on civil applications.

The beneficiaries must ensure that the activities under the action do not:

- aim at human cloning for reproductive purposes
- intend to modify the genetic heritage of human beings which could make such modifications heritable (with the exception of research relating to cancer treatment of the gonads, which may be financed)
- intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer, or
- lead to the destruction of human embryos (for example, for obtaining stem cells).

Activities involving research on human embryos or human embryonic stem cells may be carried out only if:

- they are set out in Annex 1 or
- the coordinator has obtained explicit approval (in writing) from the granting authority.

In addition, the beneficiaries must respect the fundamental principle of research integrity — as set out in the European Code of Conduct for Research Integrity².

This implies compliance with the following principles:

- reliability in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources
- honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair and unbiased way

² European Code of Conduct for Research Integrity of ALLEA (All European Academies).

- respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment
- accountability for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts

and means that beneficiaries must ensure that persons carrying out research tasks follow the good research practices including ensuring, where possible, openness, reproducibility and traceability and refrain from the research integrity violations described in the Code.

Activities raising ethical issues must comply with the additional requirements formulated by the ethics panels (including after checks, reviews or audits; see Article 25).

Before starting an action task raising ethical issues, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task, notably from any (national or local) ethics committee or other bodies such as data protection authorities.

The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary, which shows that the documents cover the action tasks in question and includes the conclusions of the committee or authority concerned (if any).

VALUES (— ARTICLE 14)

Gender mainstreaming

The beneficiaries must take all measures to promote equal opportunities between men and women in the implementation of the action and, where applicable, in line with the gender equality plan. They must aim, to the extent possible, for a gender balance at all levels of personnel assigned to the action, including at supervisory and managerial level.

INTELLECTUAL PROPERTY RIGHTS (IPR) — BACKGROUND AND RESULTS — ACCESS RIGHTS AND RIGHTS OF USE (— ARTICLE 16)

Definitions

Access rights — Rights to use results or background.

Dissemination — The public disclosure of the results by appropriate means, other than resulting from protecting or exploiting the results, including by scientific publications in any medium.

Exploit(ation) — The use of results in further research and innovation activities other than those covered by the action concerned, including among other things, commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities.

Fair and reasonable conditions — Appropriate conditions, including possible financial terms or royalty-free conditions, taking into account the specific circumstances of the request for access, for example the actual or potential value of the results or background to which access is requested and/or the scope, duration or other characteristics of the exploitation envisaged.

FAIR principles — ‘findability’, ‘accessibility’, ‘interoperability’ and ‘reusability’.

Open access — Online access to research outputs provided free of charge to the end-user.

Open science — An approach to the scientific process based on open cooperative work, tools and diffusing knowledge.

Research data management — The process within the research lifecycle that includes the organisation, storage, preservation, security, quality assurance, allocation of persistent identifiers (PIDs) and rules and procedures for sharing of data including licensing.

Research outputs — Results to which access can be given in the form of scientific publications, data or other engineered results and processes such as software, algorithms, protocols, models, workflows and electronic notebooks.

Scope of the obligations

For this section, references to ‘beneficiary’ or ‘beneficiaries’ do not include affiliated entities (if any).

Agreement on background

The beneficiaries must identify in a written agreement the background as needed for implementing the action or for exploiting its results.

Where the call conditions restrict control due to strategic interests reasons, background that is subject to control or other restrictions by a country (or entity from a country) which is not one of the eligible countries or target countries set out in the call conditions and that impact the exploitation of the results (i.e. would make the exploitation of the results subject to control or restrictions) must not be used and must be explicitly excluded from it in the agreement on background — unless otherwise agreed with the granting authority.

Ownership of results

Results are owned by the beneficiaries that generate them.

However, two or more beneficiaries own results jointly if:

- they have jointly generated them and
- it is not possible to:
 - establish the respective contribution of each beneficiary, or
 - separate them for the purpose of applying for, obtaining or maintaining their protection.

The joint owners must agree — in writing — on the allocation and terms of exercise of their joint ownership (**‘joint ownership agreement’**), to ensure compliance with their obligations under this Agreement.

Unless otherwise agreed in the joint ownership agreement or consortium agreement, each joint owner may grant non-exclusive licences to third parties to exploit the jointly-owned results (without any right to sub-license), if the other joint owners are given:

- at least 45 days advance notice and
- fair and reasonable compensation.

The joint owners may agree — in writing — to apply another regime than joint ownership.

If third parties (including employees and other personnel) may claim rights to the results, the beneficiary concerned must ensure that those rights can be exercised in a manner compatible with its obligations under the Agreement.

The beneficiaries must indicate the owner(s) of the results (results ownership list) in the final periodic report.

Protection of results

Beneficiaries which have received funding under the grant must adequately protect their results — for an appropriate period and with appropriate territorial coverage — if protection is possible and justified, taking into account all relevant considerations, including the prospects for commercial exploitation, the legitimate interests of the other beneficiaries and any other legitimate interests.

Exploitation of results

Beneficiaries which have received funding under the grant must — up to four years after the end of the action (see Data Sheet, Point 1) — use their best efforts to exploit their results directly or to have them exploited indirectly by another entity, in particular through transfer or licensing.

If, despite a beneficiary's best efforts, the results are not exploited within one year after the end of the action, the beneficiaries must (unless otherwise agreed in writing with the granting authority) use the Horizon Results Platform to find interested parties to exploit the results.

If results are incorporated in a standard, the beneficiaries must (unless otherwise agreed with the granting authority or unless it is impossible) ask the standardisation body to include the funding statement (see Article 17) in (information related to) the standard.

Additional exploitation obligations

Where the call conditions impose additional exploitation obligations (including obligations linked to the restriction of participation or control due to strategic assets, interests, autonomy or security reasons), the beneficiaries must comply with them — up to four years after the end of the action (see Data Sheet, Point 1).

Where the call conditions impose additional exploitation obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) grant for a limited period of time specified in the request, non-exclusive licences — under fair and reasonable conditions — to their results to legal entities that need the results to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

Additional information obligation relating to standards

Where the call conditions impose additional information obligations relating to possible standardisation, the beneficiaries must — up to four years after the end of the action (see Data Sheet, Point 1) — inform the granting authority, if the results could reasonably be expected to contribute to European or international standards.

Transfer and licensing of results

Transfer of ownership

The beneficiaries may transfer ownership of their results, provided this does not affect compliance with their obligations under the Agreement.

The beneficiaries must ensure that their obligations under the Agreement regarding their results are passed on to the new owner and that this new owner has the obligation to pass them on in any subsequent transfer.

Moreover, they must inform the other beneficiaries with access rights of the transfer at least 45 days in advance (or less if agreed in writing), unless agreed otherwise in writing for specifically identified third parties including affiliated entities or unless impossible under the applicable law. This notification must include sufficient information on the new owner to enable the beneficiaries concerned to assess the effects on their access rights. The beneficiaries may object within 30 days of receiving notification (or less if agreed in writing), if they can show that the transfer would adversely affect their access rights. In this case, the transfer may not take place until agreement has been reached between the beneficiaries concerned.

Granting licences

The beneficiaries may grant licences to their results (or otherwise give the right to exploit them), including on an exclusive basis, provided this does not affect compliance with their obligations.

Exclusive licences for results may be granted only if all the other beneficiaries concerned have waived their access rights.

Granting authority right to object to transfers or licensing — Horizon Europe actions

Where the call conditions in Horizon Europe actions provide for the right to object to transfers or licensing, the granting authority may — up to four years after the end of the action (see Data Sheet, Point 1) — object to a transfer of ownership or the exclusive licensing of results, if:

- the beneficiaries which generated the results have received funding under the grant
- it is to a legal entity established in a non-EU country not associated with Horizon Europe, and
- the granting authority considers that the transfer or licence is not in line with EU interests.

Beneficiaries that intend to transfer ownership or grant an exclusive licence must formally notify the granting authority before the intended transfer or licensing takes place and:

- identify the specific results concerned
- describe in detail the new owner or licensee and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or licence on EU interests, in particular regarding competitiveness as well as consistency with ethical principles and security considerations.

The granting authority may request additional information.

If the granting authority decides to object to a transfer or exclusive licence, it must formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information it has requested).

No transfer or licensing may take place in the following cases:

- pending the granting authority decision, within the period set out above
- if the granting authority objects
- until the conditions are complied with, if the granting authority objection comes with conditions.

A beneficiary may formally notify a request to waive the right to object regarding intended transfers or grants to a specifically identified third party, if measures safeguarding EU interests are in place. If the granting authority agrees, it will formally notify the beneficiary concerned within 60 days of receiving notification (or any additional information requested).

Limitations to transfers and licensing due to strategic assets, interests, autonomy or security reasons of the EU and its Member States

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security reasons, the beneficiaries may not transfer ownership of their results or grant licences to third parties which are established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless they have requested and received prior approval by the granting authority.

The request must:

- identify the specific results concerned
- describe in detail the new owner and the planned or potential exploitation of the results, and
- include a reasoned assessment of the likely impact of the transfer or license on the strategic assets, interests, autonomy or security of the EU and its Member States.

The granting authority may request additional information.

Access rights to results and background

Exercise of access rights — Waiving of access rights — No sub-licensing

Requests to exercise access rights and the waiver of access rights must be in writing.

Unless agreed otherwise in writing with the beneficiary granting access, access rights do not include the right to sub-license.

If a beneficiary is no longer involved in the action, this does not affect its obligations to grant access.

If a beneficiary defaults on its obligations, the beneficiaries may agree that that beneficiary no longer has access rights.

Access rights for implementing the action

The beneficiaries must grant each other access — on a royalty-free basis — to background needed to implement their own tasks under the action, unless the beneficiary that holds the background has — before acceding to the Agreement —:

- informed the other beneficiaries that access to its background is subject to restrictions, or
- agreed with the other beneficiaries that access would not be on a royalty-free basis.

The beneficiaries must grant each other access — on a royalty-free basis — to results needed for implementing their own tasks under the action.

Access rights for exploiting the results

The beneficiaries must grant each other access — under fair and reasonable conditions — to results needed for exploiting their results.

The beneficiaries must grant each other access — under fair and reasonable conditions — to background needed for exploiting their results, unless the beneficiary that holds the background has — before acceding to the Agreement — informed the other beneficiaries that access to its background is subject to restrictions.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

Access rights for entities under the same control

Unless agreed otherwise in writing by the beneficiaries, access to results and, subject to the restrictions referred to above (if any), background must also be granted — under fair and reasonable conditions — to entities that:

- are established in an EU Member State or Horizon Europe associated country
- are under the direct or indirect control of another beneficiary, or under the same direct or indirect control as that beneficiary, or directly or indirectly controlling that beneficiary and
- need the access to exploit the results of that beneficiary.

Unless agreed otherwise in writing, such requests for access must be made by the entity directly to the beneficiary concerned.

Requests for access must be made — unless agreed otherwise in writing — up to one year after the end of the action (see Data Sheet, Point 1).

Access rights for the granting authority, EU institutions, bodies, offices or agencies and national authorities to results for policy purposes — Horizon Europe actions

In Horizon Europe actions, the beneficiaries which have received funding under the grant must grant access to their results — on a royalty-free basis — to the granting authority, EU institutions, bodies, offices or agencies for developing, implementing and monitoring EU policies or programmes. Such access rights do not extend to beneficiaries' background.

Such access rights are limited to non-commercial and non-competitive use.

For actions under the cluster 'Civil Security for Society', such access rights also extend to national authorities of EU Member States for developing, implementing and monitoring their policies or programmes in this area. In this case, access is subject to a bilateral agreement to define specific conditions ensuring that:

- the access rights will be used only for the intended purpose and
- appropriate confidentiality obligations are in place.

Moreover, the requesting national authority or EU institution, body, office or agency (including the granting authority) must inform all other national authorities of such a request.

Additional access rights

Where the call conditions impose additional access rights, the beneficiaries must comply with them.

COMMUNICATION, DISSEMINATION, OPEN SCIENCE AND VISIBILITY (— ARTICLE 17)

Dissemination

Dissemination of results

The beneficiaries must disseminate their results as soon as feasible, in a publicly available format, subject to any restrictions due to the protection of intellectual property, security rules or legitimate interests.

A beneficiary that intends to disseminate its results must give at least 15 days advance notice to the other beneficiaries (unless agreed otherwise), together with sufficient information on the results it will disseminate.

Any other beneficiary may object within (unless agreed otherwise) 15 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the results may not be disseminated unless appropriate steps are taken to safeguard those interests.

Additional dissemination obligations

Where the call conditions impose additional dissemination obligations, the beneficiaries must also comply with those.

Open Science

Open science: open access to scientific publications

The beneficiaries must ensure open access to peer-reviewed scientific publications relating to their results. In particular, they must ensure that:

- at the latest at the time of publication, a machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication, is deposited in a trusted repository for scientific publications
- immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (e.g. CC BY-NC, CC BY-ND) and
- information is given via the repository about any research output or any other tools and instruments needed to validate the conclusions of the scientific publication.

Beneficiaries (or authors) must retain sufficient intellectual property rights to comply with the open access requirements.

Metadata of deposited publications must be open under a Creative Commons Public Domain Dedication (CC 0) or equivalent, in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: publication (author(s), title, date of publication, publication venue); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the publication, the authors involved in the action and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for any research output or any other tools and instruments needed to validate the conclusions of the publication.

Only publication fees in full open access venues for peer-reviewed scientific publications are eligible for reimbursement.

Open science: research data management

The beneficiaries must manage the digital research data generated in the action ('data') responsibly, in line with the FAIR principles and by taking all of the following actions:

- establish a data management plan ('DMP') (and regularly update it)
- as soon as possible and within the deadlines set out in the DMP, deposit the data in a trusted repository; if required in the call conditions, this repository must be federated in the EOSC in compliance with EOSC requirements
- as soon as possible and within the deadlines set out in the DMP, ensure open access — via the repository — to the deposited data, under the latest available version of the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC 0) or a licence with equivalent rights, following the principle 'as open as possible as closed as necessary', unless providing open access would in particular:

- be against the beneficiary's legitimate interests, including regarding commercial exploitation, or
- be contrary to any other constraints, in particular the EU competitive interests or the beneficiary's obligations under this Agreement; if open access is not provided (to some or all data), this must be justified in the DMP
- provide information via the repository about any research output or any other tools and instruments needed to re-use or validate the data.

Metadata of deposited data must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for related publications and other research outputs.

Open science: additional practices

Where the call conditions impose additional obligations regarding open science practices, the beneficiaries must also comply with those.

Where the call conditions impose additional obligations regarding the validation of scientific publications, the beneficiaries must provide (digital or physical) access to data or other results needed for validation of the conclusions of scientific publications, to the extent that their legitimate interests or constraints are safeguarded (and unless they already provided the (open) access at publication).

Where the call conditions impose additional open science obligations in case of a public emergency, the beneficiaries must (if requested by the granting authority) immediately deposit any research output in a repository and provide open access to it under a CC BY licence, a Public Domain Dedication (CC 0) or equivalent. As an exception, if the access would be against the beneficiaries' legitimate interests, the beneficiaries must grant non-exclusive licenses — under fair and reasonable conditions — to legal entities that need the research output to address the public emergency and commit to rapidly and broadly exploit the resulting products and services at fair and reasonable conditions. This provision applies up to four years after the end of the action (see Data Sheet, Point 1).

Plan for the exploitation and dissemination of results including communication activities

Unless excluded by the call conditions, the beneficiaries must provide and regularly update a plan for the exploitation and dissemination of results including communication activities.

SPECIFIC RULES FOR CARRYING OUT THE ACTION (— ARTICLE 18)

Implementation in case of restrictions due to strategic assets, interests, autonomy or security of the EU and its Member States

Where the call conditions restrict participation or control due to strategic assets, interests, autonomy or security, the beneficiaries must ensure that none of the entities that participate as affiliated entities, associated partners, subcontractors or recipients of financial support to third

parties are established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) — unless otherwise agreed with the granting authority.

The beneficiaries must moreover ensure that any cooperation with entities established in countries which are not eligible countries or target countries set out in the call conditions (or, if applicable, are controlled by such countries or entities from such countries) does not affect the strategic assets, interests, autonomy or security of the EU and its Member States.

Recruitment and working conditions for researchers

The beneficiaries must take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers³, in particular regarding:

- working conditions
- transparent recruitment processes based on merit, and
- career development.

The beneficiaries must ensure that researchers and all participants involved in the action are aware of them.

Specific rules for ERC Grants

When implementing ERC Grants, the beneficiaries must ensure that the action tasks described in Annex 1 are performed under the guidance of the principal investigator.

In accordance with Article 21, beneficiaries must submit progress reports (scientific reports) and periodic reports according to the schedule and modalities set out in the Data Sheet (see Points 4.1 and 4.2). Reports must be prepared using the templates available in the Portal (ERC Scientific and Periodic reports).

The internal arrangements set out in Article 7 must cover the decision making procedures for scientific and grant management issues, the distribution of the EU contribution, internal dispute settlement and division of responsibilities for cases of rejection of costs or reduction of the grant.

In addition to the obligations set out in Article 17, communication and dissemination activities as well as infrastructure, equipment or major results funded by the grant must moreover display the following special logo:

³ Commission Recommendation 2005/251/EC of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (OJ L 75, 22.3.2005, p. 67).



In addition, the beneficiaries must respect the following conditions for the principal investigator and their team:

- host and engage the principal investigator for the whole duration of the action
- take all measures to implement the principles set out in the Commission Recommendation on the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers⁴ — in particular regarding working conditions, transparent recruitment processes based on merit and career development — and ensure that the principal investigator, researchers and third parties involved in the action are aware of them
- enter — before grant signature — into a Supplementary Agreement with the principal investigator, that specifies:
 - the obligation of the beneficiary to meet its obligations under the Grant Agreement
 - the obligation of the principal investigator to supervise the scientific and technological implementation of the action
 - the obligation of the principal investigator to assume the responsibility for the scientific reporting for the beneficiary and contribute to the financial reporting
 - the obligation of the principal investigator to meet the time commitments for implementing the action and for working in an EU Member State or Horizon Europe associated country, as set out in Annex 1
 - the obligation of the principal investigator to apply the beneficiary's usual management practices
 - the obligation of the principal investigator to inform the coordinator immediately of any events or circumstances likely to affect the Grant Agreement, such as:
 - a planned transfer of the action (or part of it) to a new beneficiary (see Article 41)
 - any personal grounds affecting the implementation of the action

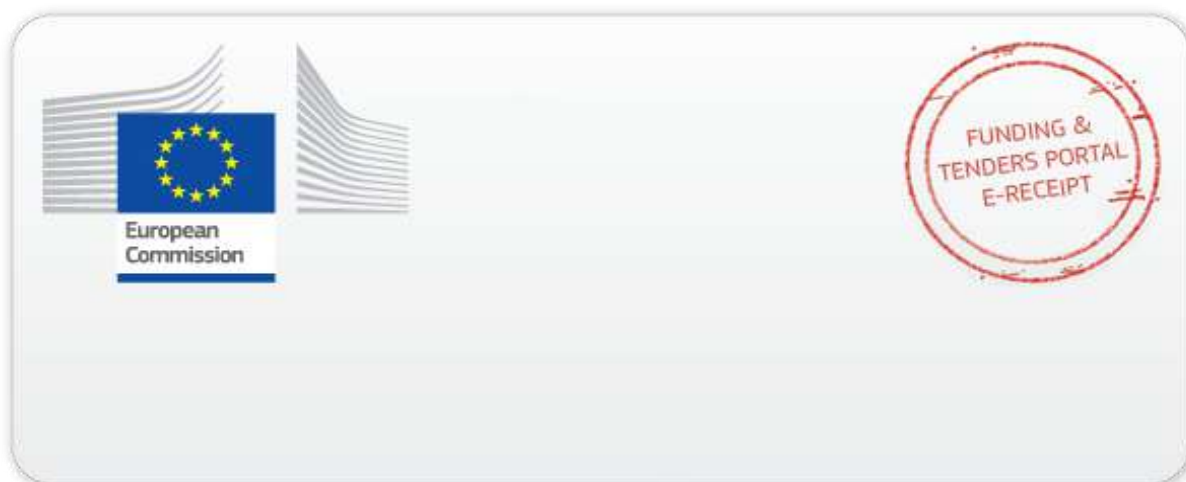
⁴ Commission Recommendation 2005/251/EC of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (OJ L 75, 22.3.2005, p. 67).

- any changes in the information that was used as a basis for signing the supplementary agreement
- any changes in the information that was used as a basis for awarding the grant
- the obligation of the principal investigator to ensure the visibility of EU funding in communications or publications and in applications for the protection of results (see Article 16 and 17)
- the arrangements related to the intellectual property rights — during the implementation of the action and afterwards —, in particular, the obligation of the principal investigator to uphold the intellectual property rights of the beneficiary and full access — on a royalty-free basis — for the principal investigator to background and results needed for their activities under the action
- the obligation of the principal investigator to maintain confidentiality (see Article 13)
- for transfers of the action to a new beneficiary (portability; see Article 41):
 - the right of the principal investigator to request the transfer, provided that the objectives of the action remain achievable
 - the obligation of the principal investigator to:
 - propose to the coordinator (in writing) to what extent the action will be transferred and the details of the transfer arrangement
 - provide a statement to the coordinator with the detailed results of the research up to the time of transfer
- the right of the bodies mentioned in Article 25 (e.g. granting authority, OLAF, Court of Auditors (ECA), etc.) to exercise their rights also towards the principal investigator
- the applicable law and the dispute settlement forum
- provide the principal investigator with a copy of the signed Agreement
- guarantee the principal investigator scientific independence, in particular for the:
 - use of the budget to achieve the scientific objectives
 - authority to publish as senior author and invite as co-authors those who have contributed substantially to the work
 - preparation of scientific reports for the action
 - selection and supervision of the other team members, in line with the profiles needed to conduct the research and in accordance with the beneficiary's usual management practices
 - possibility to apply independently for funding

- access to appropriate space and facilities for conducting the research
- provide — during the implementation of the action — research support to the principal investigator and the team members (regarding infrastructure, equipment, access rights, products and other services necessary for conducting the research)
- support the principal investigator and provide administrative assistance, in particular for the:
 - general management of the work and their team
 - scientific reporting, especially ensuring that the team members send their scientific results to the principal investigator
 - financial reporting, especially providing timely and clear financial information
 - application of the beneficiary's usual management practices
 - general logistics of the action
 - access to the electronic exchange system
- inform the principal investigator immediately (in writing) of any events or circumstances likely to affect the Agreement
- ensure that the principal investigator enjoys adequate:
 - conditions for annual, sickness and parental leave
 - occupational health and safety standards
 - insurance under the general social security scheme, such as pension rights
- allow the transfer of the Agreement to a new beneficiary, if requested by the principal investigator and provided that the objectives of the action remain achievable (portability; see Article 41). The beneficiary may object only on the basis that the transfer is not possible under national law. In particular, the beneficiary must:
 - agree with the principal investigator and the new beneficiary on a plan for the transfer of the intellectual property rights under the Agreement to the new beneficiary
 - transfer to the new beneficiary any part of the prefinancing received which is not covered by an approved financial report (if requested by the granting authority)
 - transfer to the new beneficiary the equipment purchased and used exclusively for the action against reimbursement of the costs that have not yet been depreciated (if requested by the principal investigator and the granting authority, and unless the transfer is not possible under national law).

For ERC grants with more than one principal investigator, the above-mentioned obligations must be ensured by each beneficiary towards their principal investigators and their teams (and by each principal investigator towards their beneficiary, the coordinator and the other principal investigators). Moreover, the following specificities must be observed:

- for the implementation of the action: the corresponding principal investigator bears the overall responsibility for the supervision of the scientific and technological implementation of the action, while the other principal investigators must contribute to the overall implementation and supervise each one their parts
- for the reporting: the corresponding principal investigator assumes the primary responsibility for the scientific reporting and contribution to the financial reporting, while the other principal investigators must contribute to both the scientific and financial reporting
- for events or circumstances likely to affect the Agreement: each principal investigator must inform the coordinator, their beneficiary and the other principal investigators
- for transfers of a part of the action by one of the principal investigators (portability; Article 41):
 - the corresponding principal investigator must verify that the beneficiary of the principal investigator and the coordinator were informed
 - the principal investigator concerned must provide the coordinator and their beneficiary with a statement on the detailed results of the research up to the time of transfer
- for the internal arrangements (Article 7): they must also cover settlement of disputes between the principal investigators and between them and the beneficiaries).



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SCHEDA DETTAGLIO COPERTURA FINANZIARIA SU PROGETTO DI RICERCA

Titolo programma di ricerca	Sintesi e caratterizzazione di molecole magnetiche per lo studio di effetti spin elettrici
GSD	03/CHEM-03
SSD	CHEM-03-A
Ente finanziatore Titolo del progetto di ricerca – acronimo - programma – CUP – n. Grant Agreement	European Commission Project name: ELEctrically ConTRolled magnetic Anisotropy Project acronym: ELECTRA Programma: ERC-2021-STG CUP: B95F22000160006 GA n°101039890
Responsabile del progetto	Prof. Mauro Perfetti
Durata del progetto	60 months (1/06/2022-31/05/2027)
Importo complessivo del finanziamento – Importo previsto nel budget alla voce “Personale” – Importo destinato alla copertura del contratto biennale	1.498.784,00€ 786.027,00€ 109.154,29€
Prefinanziamento già incassato	599.513,60€
Indicazione della copertura per le spese non rendicontabili (ad esempio IRAP, mensilità successive alla fine del progetto)	Spese generali del progetto
COAN per l'importo complessivo biennale	€ 109.154,29 - COAN n. 84337 del 19/06/2025
Indicazioni che devono essere riportate nel bando ai fini della rendicontazione (es. titolo, acronimo, n. Grant Agreement, CUP, eventuale necessità di loghi, ecc.)	Project name: ELEctrically ConTRolled magnetic Anisotropy, Project acronym: ELECTRA Programma: ERC-2021-STG, CUP: B95F22000160006, GA n°101039890
Altre informazioni utili (es. data indicativa di presa di servizio)	Logo ERC – presa di servizio 01/10/2025



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PROCEDURA COMPETITIVA PER LO SVILUPPO DELLE ATTIVITÀ DI RICERCA FONDAMENTALE, A VALERE SUL FONDO ITALIANO PER LA SCIENZA 2022 – 2023 (BANDO FIS 2)

DECRETO DI AMMISSIONE A FINANZIAMENTO

MACROSETTORE PE - PHYSICAL SCIENCES AND ENGINEERING

IL DIRIGENTE

VISTA la Legge 7 agosto 1990, n. 241 recante “Nuove norme in materia di procedimento amministrativo e di diritto di accesso ai documenti amministrativi”;

VISTA la Legge 31 dicembre 2009, n. 196 “Legge di contabilità e finanza pubblica” e ss.mm.ii.;

VISTA la Legge 30 dicembre 2010, n. 240, e successive modificazioni, recante “Norme in materia di organizzazione delle università, di personale accademico e reclutamento, nonché delega al Governo per incentivare la qualità e l'efficienza del sistema universitario”, e, in particolare, l'articolo 21 (Comitato Nazionale per la Valutazione della Ricerca);

VISTA la Legge 6 novembre 2012, n. 190, “Disposizioni per la prevenzione e la repressione della corruzione e dell'illegalità nella pubblica amministrazione”;

VISTO il Decreto Legislativo 14 marzo 2013, n. 33, “Riordino della disciplina riguardante gli obblighi di pubblicità, trasparenza e diffusione di informazioni da parte delle pubbliche amministrazioni”;

VISTO il Decreto-Legge 9 gennaio 2020, n. 1 (Gazzetta Ufficiale, Serie Generale, n. 6 del 9 gennaio 2020), “Disposizioni urgenti per l'istituzione del Ministero dell'istruzione e del Ministero dell'università e della ricerca”, convertito, con modificazioni, con Legge del 5 marzo 2020, n. 12;

VISTO il DPCM n. 164 del 30 settembre 2020 (Gazzetta Ufficiale, Serie Generale n. 309 del 14 dicembre 2020), recante il “Regolamento di organizzazione del Ministero dell'università e della ricerca” (di seguito, anche solo MUR);

VISTO il Decreto Ministeriale 19 febbraio 2021 (Gazzetta Ufficiale, Serie Generale, n. 74 del 26 marzo 2021), recante l'individuazione e la definizione dei compiti degli uffici di livello Dirigenziale non generale del MUR;

VISTO il Decreto-Legge 25 maggio 2021, n. 73, recante “Misure urgenti connesse all'emergenza da COVID-19, per le imprese, il lavoro, i giovani, la salute ed i servizi territoriali” (Gazzetta Ufficiale, Serie generale n. 123 del 25 maggio 2021), convertito, con modificazioni, con Legge 23 luglio 2021, n. 106 (Gazzetta Ufficiale, Serie Generale, n. 176 del 24 luglio 2021 - Suppl. Ordinario n. 25) che all'articolo 61 istituisce il Fondo italiano per la scienza;

VISTO il D.P.C.M. 8 agosto 2024, registrato alla Corte dei Conti in data 11 ottobre 2024, al n. 2611, con il quale è stato conferito al Dott. Vincenzo Di Felice l'incarico Dirigenziale di livello generale di Direttore della Direzione Generale della Ricerca;

VISTO il Decreto-legge 25 maggio 2021, n. 73, recante “Misure urgenti connesse all'emergenza da COVID-19, per le imprese, il lavoro, i giovani, la salute ed i servizi territoriali” (Gazzetta Ufficiale, Serie generale n. 123 del 25 maggio 2021), convertito, con modificazioni, con legge 23 luglio 2021, n. 106 (Gazzetta Ufficiale, Serie Generale, n. 176 del 24 luglio 2021 - Suppl. Ordinario n. 25) che all'articolo 61 istituisce il Fondo italiano



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per la scienza prevedendo che “1. *Al fine di promuovere lo sviluppo della ricerca fondamentale, è istituito, nello stato di previsione del Ministero dell'università e della ricerca, un apposito fondo, denominato “Fondo italiano per la scienza” con una dotazione iniziale di 50 milioni di euro per l'anno 2021 e di 150 milioni di euro a decorrere dall'anno 2022. Con Decreto del Ministro dell'università e della ricerca, da adottare entro novanta giorni dalla data di entrata in vigore della presente legge, sono stabiliti i criteri e le modalità per l'assegnazione delle risorse del fondo attraverso procedure competitive ispirate ai parametri dello European Research Council (ERC), con particolare riferimento alle tipologie denominate “Starting Grant” e “Advanced Grant”. Agli oneri derivanti dall'attuazione del presente articolo, determinati in 50 milioni di euro per l'anno 2021 e 150 milioni di euro a decorrere dall'anno 2022, si provvede ai sensi dell'articolo 77”;*

VISTA la Legge 30 dicembre 2021, n. 234 recante “*Bilancio di previsione dello Stato per l'anno finanziario 2022 e bilancio pluriennale per il triennio 2022-2024*” (GU Serie Generale n.310 del 31-12-2021 - Suppl. Ordinario n. 49) che, all'articolo 1, comma 311, ha disposto che “*La dotazione del Fondo italiano per la Ministero dell'università e della ricerca Segretariato Direzione generale della ricerca 3 scienza di cui all'articolo 61 del Decreto-Legge 25 maggio 2021, n. 73, convertito, con modificazioni, dalla Legge 23 luglio 2021, n. 106, è incrementata di 50 milioni di euro per l'anno 2023 e di 100 milioni di euro a decorrere dall'anno 2024*”;

VISTO il Decreto del Ministero dell'Economia e delle Finanze 31 dicembre 2021 recante “*Ripartizione in capitoli delle Unità di voto parlamentare relative al bilancio di previsione dello Stato per l'anno finanziario 2022 e per il triennio 2022-2024*” (GU Serie Generale n. 310 del 31-12-2021 - Suppl. Ordinario n. 50), ed in particolare la Tabella 11 ad esso allegata concernente lo stato di previsione del Ministero dell'Università e della Ricerca;

VISTA la Legge 29 dicembre 2022, n.197 recante “*Bilancio di previsione dello Stato per l'anno finanziario 2022 e bilancio pluriennale per il triennio 2023-2025*”;

VISTO il Decreto del Ministro dell'Economia e delle Finanze 29 dicembre 2023 “*Ripartizione in capitoli delle Unità di voto parlamentare relative al bilancio di previsione dello Stato per l'anno finanziario 2024 e per il triennio 2024-2026*” (GU Serie Generale n. 303 del 30-12-2022 - Suppl. Ordinario n. 41);

VISTO il Decreto del Ministro dell'Università e della Ricerca 22 luglio 2022, n. 919 relativo a “*Identificazione dei programmi di ricerca di alta qualificazione, finanziati dall'Unione europea o dal MUR di cui all'art. 1, comma 9, della Legge 4 novembre 2005, n. 230, e successive modificazioni*”, e in particolare l'art. 2 recante i “*Programmi di ricerca finanziati dal MUR*” in materia di chiamata diretta dei vincitori del programma “*FIS – Fondo Italiano per la Scienza*” in qualità di “*Principal Investigator*” (PI);

VISTO il D.M. 1° marzo 2023, n. 116, recante “*Nuove disposizioni procedurali per interventi diretti al sostegno delle attività di ricerca fondamentale, a valere sul Fondo italiano per la Scienza, di cui all'art 61 del Decreto-Legge 25 maggio 2021, n. 73 convertito con modificazioni dalla Legge 23 luglio 2021, n. 106*” che, nel disciplinare le modalità procedurali per l'utilizzo del Fondo Italiano per la Scienza ai fini dell'attuazione di interventi diretti al sostegno alla ricerca fondamentale, nel contesto dei programmi di ricerca di alta qualificazione, ha, altresì, abrogato il D.M. 15 luglio 2021, n. 841, la cui applicazione è limitata ai bandi già emanati;

VISTO il Decreto Direttoriale 1° agosto 2023, n. 1236 recante la “*Procedura competitiva per lo sviluppo delle attività di ricerca fondamentale, a valere sul fondo italiano per la scienza 2022-2023*” con il quale è stato emanato il Bando FIS 2, destinato a promuovere lo sviluppo della ricerca fondamentale secondo modalità consolidate a livello europeo, che si concretizzino in procedure competitive sul modello dell'European Research Council (ERC), con riferimento alle tipologie *Starting Grant*, *Consolidator Grant* e *Advanced Grant* che:

- o all'articolo 1:



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- comma 4 lett. c) dispone che *“attrattività del finanziamento anche nei riguardi dell’Organizzazione ospitante o Host Institution, con un incentivo del 10% del costo del progetto destinato alla stessa istituzione, nel caso in cui il PI non sia già dipendente strutturato (professori ordinari, professori associati e ricercatori a tempo indeterminato e personale ed equivalente ai sensi dell’art. 10, comma 5)”*;
- comma 5, lett. q) in cui l’Età accademica (EA) è definita come: *l’età accademica è rilevata dalla data della prima pubblicazione scientifica pertinente al settore prevalente indicato nella proposta progettuale*;
- all’articolo 8:
 - comma 1 prevede che *“La dotazione complessiva della procedura è pari a € 338.000.000,00 a lordo degli oneri per le attività di analisi tecnico-scientifiche, finanziarie e amministrativo-contabili e per le conseguenti attività di verifica, monitoraggio e controllo di cui all’art. 1 comma 551 della Legge 30 dicembre 2020, n. 178, pari ad € 10.140.000,00”*;
 - comma 2 che *“La dotazione finanziaria destinata al finanziamento dei progetti di ricerca, pari a € 327.860.000,00 è così ripartita: I. € 163.930.000,00 vengono destinati al finanziamento dello schema “Starting Grant”, II. € 81.965.000,00 vengono destinati al finanziamento dello schema “Consolidator Grant” III. € 81.965.000,00 vengono destinati al finanziamento dello schema “Advanced Grant”*”;
 - comma 5 dispone che *“Il MUR si riserva, in ogni caso di destinare eventuali economie rese disponibili a valere sulle proporzioni di cui al comma 4 al finanziamento di proposte progettuali utili a garantire il pieno utilizzo delle risorse.”* e al successivo comma 6 che *“Qualora nell’ambito di ciascuno schema di finanziamento la dotazione riservata ad uno o più settori ERC, sulla base dei decreti di riparto dei fondi complessivi disponibili per ogni settore, risulti superiore alla richiesta finanziabile si procederà d’ufficio, con successivo Decreto direttoriale pubblicato al termine della procedura di valutazione, alla redistribuzione di tale eccedenza all’interno del medesimo macrosettore proporzionalmente alle richieste economiche dei progetti utilmente collocati in graduatoria.”*
 - comma 7 prevede che *“Qualora, operata la redistribuzione di cui al comma precedente, la dotazione finanziaria assegnata a ciascuno schema di finanziamento risulti superiore alla richiesta finanziabile si procederà d’ufficio, con apposito Decreto direttoriale pubblicato alla redistribuzione di tale eccedenza progressivamente a favore dello schema di finanziamento immediatamente precedente/successivo (starting/advance/consolidator; consolidator/advance/starting; advance/starting/consolidator)”*;
- all’articolo 9 *“Dimensione finanziaria dei progetti, durata e termini di realizzazione”*
 - comma 1 dispone che *“Il finanziamento concedibile per ciascun progetto non potrà essere inferiore a: - 1,2 milioni di euro per lo schema “Starting Grant”; - 1,5 milioni di euro per lo schema “Consolidator Grant”; - 2,0 milioni di euro per lo schema “Advanced Grant”*;
 - comma 2 dispone che *“Il finanziamento concedibile per ciascun progetto non potrà essere superiore a: - 1,5 milioni di euro per lo schema “Starting Grant”; - 2,0 milioni di euro per lo schema “Consolidator Grant”; - 2,5 milioni di euro per lo schema “Advanced Grant”*;
 - comma 3 prevede che *“Nell’ambito delle proposte progettuali afferenti ai macrosettori PE: Mathematics, physical sciences, information and communication, engineering, universe and earth sciences; LS: Life Sciences è possibile richiedere un contributo aggiuntivo in conto capitale, per il finanziamento (o cofinanziamento) dell’acquisto di attrezzature da utilizzare presso la Host Institution; tale contributo non può superare il limite massimo di € 500.000,00 (cinquecentomila euro)*;
 - comma 4 ai sensi del quale *“La durata massima dei progetti è di 3 anni, a partire dalla data di avvio delle attività”* e il successivo comma 5 per cui *“La data di avvio ufficiale dei progetti è fissata al 90° giorno successivo all’emanazione del Decreto di ammissione al finanziamento”*.
- all’articolo 12 *“Attività di valutazione. I CdV e i Revisori”*,
 - comma 3 dispone che *“La verifica dei requisiti di partecipazione è effettuata dal MUR a posteriori per i soli progetti ammessi a finanziamento [...]”*;
 - comma 6 dispone che *“La valutazione tecnico scientifica delle proposte progettuali è effettuata dai Comitati di valutazione (CdV), uno per ciascuno dei ventotto settori di ricerca ERC, [...]”*;



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- comma 10 stabilisce che *“Le proposte progettuali sono valutate dai CdV che nella Fase 2 - Valutazione tecnico – scientifica progettuale possono avvalersi, ove necessario, di un revisore esterno competente, nel numero massimo complessivo disponibile. 11 I revisori esterni supportano l’attività del CdV fornendo gli elementi necessari alla valutazione della proposta progettuale.”*;
- all’articolo 13 (FASE 1 – Valutazione tecnico - scientifica preliminare) co. 5 prevede che *“Negli schemi Starting, Consolidator e Advanced Grant, saranno ammessi alla FASE 2 della valutazione un numero di proposte per ciascun settore e per ciascun sotto-settore ERC, in ogni caso complessivamente non superiore a tre volte il numero delle proposte finanziabili a budget massimo”*;
- all’articolo 14 (FASE 2 – Valutazione tecnico – scientifica progettuale) stabilisce che ai fini della definizione della graduatoria, il punteggio è composto dalla sommatoria del punteggio conseguito nella FASE 1 – Valutazione tecnico scientifica preliminare e nella FASE 2 – Valutazione tecnico scientifica – ex ante e che saranno ammessi alla terza fase un numero di progetti non superiore al doppio del numero dei progetti finanziabili a budget massimo;
- all’articolo 15 (Valutazione di congruità della proposta e definizione del finanziamento) dispone:
 - *il CNVR accede alla relativa documentazione e, nel rispetto dei punteggi finali attribuiti alle singole proposte, predispone, per ogni settore e per ogni schema di finanziamento, la graduatoria finale dei progetti;*
 - *il CNVR determina il costo congruo e l’ammontare del finanziamento riconoscibile anche applicando una rimodulazione dei costi esposti nella proposta assicurando almeno il contributo minimo previsto dal presente Bando all’articolo 9;*
 - *All’esito della valutazione ove i progetti abbiano maturato un punteggio ex aequo prevale la proposta progettuale presentata dal candidato avente minore età accademica;*
 - *Nel rispetto delle graduatorie, divise per settore e per schema di finanziamento, il MUR provvede alla pubblicazione dei decreti di approvazione delle stesse;*
 - *I decreti di approvazione delle graduatorie dei progetti, distinte per settore e per schema di finanziamento, secondo l’ordine di punteggio, contengono l’indicazione: • dei progetti ammessi al finanziamento, fino all’esaurimento delle risorse disponibili; • dei progetti idonei ma non finanziabili per esaurimento delle risorse;*
 - *Costituiscono allegato ai decreti di approvazione delle graduatorie di cui al precedente comma: • l’elenco dei progetti che, a conclusione della Fase 1 – valutazione tecnico scientifica preliminare, non sono ammessi alla Fase 2 - Valutazione tecnico – scientifica progettuale; • l’elenco dei progetti esclusi dal finanziamento, in quanto non hanno raggiunto il punteggio minimo di idoneità per essere ammessi al contributo a conclusione della Fase 2 - Valutazione tecnico – scientifica progettuale;*
 - *Dopo la pubblicazione dei decreti di cui al precedente comma, ogni PI accedendo all’area riservata della piattaforma CINECA può prendere visione delle schede di valutazione compilate nelle fasi di valutazione tecnico scientifica*

VISTA la nota prot. 7505 del 18 aprile 2024 avente ad oggetto *“Procedure competitive direzione generale ricerca - modalità di espletamento delle funzioni”*;

VISTO il Regolamento (UE) 2021/241, e in considerazione della Circolare n. 33, prot. 310398 del 31 dicembre 2021 del Ministero dell’Economia e delle Finanze, riguardante il principio di *“divieto di doppio finanziamento”*;

VISTI i Decreti Direttoriali prott. nn. 401 del 25 marzo 2024, 676 del 24 maggio 2024 e 677 del 24 maggio 2024, relativamente agli schemi di finanziamento *Starting Grant, Advanced Grant e Consolidator Grant*, con cui si è proceduto alla ripartizione dei fondi complessivi disponibili per ogni settore sulla base dei criteri stabiliti dagli art. 8 e 9 del Bando FIS 2, come di seguito riportati:



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Risorse assegnate €				
Macrosettore	Starting Grant	Consolidator Grant	Advanced Grant	Totale
LS - Life Sciences	54.366.554,54	28.115.323,49	27.293.679,33	109.775.557,36
PE - Physical Sciences and Engineering	72.057.214,55	31.861.536,00	31.870.105,48	135.788.856,03
SH - Social Sciences and Humanities	37.506.230,91	21.988.140,52	22.801.215,19	82.295.586,62
Totale	163.930.000,00	81.965.000,01	81.965.000,00	327.860.000,01

VISTA la normativa vigente in materia di Codice unico di progetto (di seguito CUP) e, in particolare:

- la delibera CIPE 27 dicembre 2002, n. 143;
- la Legge 16 gennaio 2003, n. 3, recante *“Disposizioni ordinamentali in materia di pubblica amministrazione”* e, in particolare, l’articolo 11, comma 2-bis, ai sensi del quale *“Gli atti amministrativi anche di natura regolamentare adottati dalle Amministrazioni di cui all’articolo 1, comma 2, del decreto legislativo 30 marzo 2001, n. 165, che dispongono il finanziamento pubblico o autorizzano l’esecuzione di progetti di investimento pubblico, sono nulli in assenza dei corrispondenti codici di cui al comma 1 che costituiscono elemento essenziale dell’atto stesso”*;
- la Legge 13 agosto 2010, n. 136 e successive modificazioni, che, tra l’altro, definisce le sanzioni applicabili in caso di mancata apposizione del CUP sugli strumenti di pagamento;
- la delibera CIPE numero 45 del 05 maggio 2011 (pubblicata in gazzetta ufficiale in data 07 ottobre 2011, numero: 234) *“Relazioni sul sistema monitoraggio investimenti pubblici (mip) e codice unico di progetto (cup) relative al primo e secondo semestre”* (deliberazione n. 45/2010);
- il Decreto-Legge 16 luglio 2020, n. 76 recante *“Misure urgenti per la semplificazione e l’innovazione digitale”* convertito con modificazioni dalla L. 11 settembre 2020, n. 120 e, in particolare, l’articolo 41 contenente la normativa attuativa della riforma del Codice Unico di Progetto (CUP), che ha modificato la legge istitutiva del CUP (Legge 16 gennaio 2003, n. 3, art. 11), integrandone l’articolo 11 con i commi da 2-bis a 2-sexies per cui il Codice Unico di Progetto il valore amministrativo di elemento essenziale degli atti di finanziamento o autorizzazione all’esecuzione dei progetti di investimento pubblico, in qualità di parametro identificativo univoco dell’investimento che l’amministrazione decide di realizzare, disponendo la nullità per *“Gli atti amministrativi anche di natura regolamentare adottati dalle Amministrazioni di cui all’articolo 1, comma 2, del decreto legislativo 30 marzo 2001, n. 165, che dispongono il finanziamento pubblico o autorizzano l’esecuzione di progetti di investimento pubblico ... in assenza dei corrispondenti codici [Codici Unici di Progetto, CUP] di cui al comma 1, che costituiscono elemento essenziale dell’atto stesso”* e che *“Le Amministrazioni che emanano atti amministrativi che dispongono il finanziamento pubblico o autorizzano l’esecuzione di progetti di investimento pubblico, associano negli atti stessi, il Codice Unico di Progetto dei progetti autorizzati al programma di spesa con l’indicazione dei finanziamenti concessi a valere su dette misure, della data di efficacia di detti finanziamenti e del*



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valore complessivo dei singoli investimenti. A tal fine il Dipartimento per la programmazione e il coordinamento della politica economica, il Dipartimento della Ragioneria Generale dello Stato e il Dipartimento per le Politiche di Coesione concordano modalità per fornire il necessario supporto tecnico per lo svolgimento dell'attività di cui al periodo precedente al fine di garantire la corretta programmazione e il monitoraggio della spesa di ciascun programma e dei relativi progetti finanziati.”;

- delibera CIPE 26 novembre 2020 n. 63, pubblicata in Gazzetta Ufficiale n. 84 dell'8 aprile 2021, che introduce la normativa attuativa della riforma, fra l'altro delimitando la portata soggettiva e oggettiva dell'istituto della nullità e regolando le modalità e le procedure con cui le amministrazioni emananti possono chiedere il supporto al DIPE per il controllo della lista dei CUP da allegare agli atti di finanziamento degli investimenti pubblici, così scongiurando i relativi profili di nullità;
- le “Linee guida per attuazione dell’art. 11, commi 2 -bis, 2 -ter, 2 -quater e 2 -quinqies, della legge 16 gennaio 2003, n. 3, come modificato dall’art. 41, comma 1, del decreto-legge 16 luglio 2020, n. 76”, di cui all'allegato 1 e al connesso allegato tecnico, che costituiscono parte integrante e sostanziale della delibera CIPE 26 novembre 2020 n. 63;

VISTO il Decreto Dirigenziale n. 22830 del 5 dicembre 2024, con il quale per il Macrosettore PE - *Physical Sciences and Engineering* sono state approvate le graduatorie finali nonché fornite indicazioni per l'avvio delle attività progettuali;

CONSIDERATO che, ai sensi di quanto disposto dall'art. 15 “*Valutazione di congruità della proposta e definizione del finanziamento*” del Decreto Direttoriale 1° agosto 2023, n. 1236, con il menzionato Decreto Dirigenziale nell'ambito delle graduatorie finali (Allegato A) sono stati individuati i progetti ammissibili al finanziamento fino all'esaurimento delle risorse disponibili (Allegato B) nonché i progetti idonei ma non finanziabili per esaurimento delle risorse (Allegato C);

CONSIDERATO che ai sensi del menzionato Decreto Dirigenziale:

- *il MUR dispone l'ammissione a finanziamento dei progetti individuati quali finanziabili ai sensi del precedente comma 1 successivamente alla verifica dei requisiti di partecipazione nel rispetto delle previsioni di cui all'articolo 12 comma 3 del Bando;*
- *I Principal Investigator individuati quali finanziabili ai sensi del precedente comma 1, entro 3 (tre) giorni dalla data di pubblicazione del presente provvedimento, trasmettono, in caso di rinuncia al contributo riconosciuto, specifica comunicazione. Tale comunicazione dovrà essere inviata, anche a mezzo della Host Institution, all'indirizzo mail dedicato alla procedura fis@mur.gov.it indicando sempre nell'oggetto “Bando FIS 2 - Rinuncia” nonché all'indirizzo PEC dericerca@pec.mur.gov.it;*
- *I Principal Investigator finanziabili (di cui all'allegato B) già risultati vincitori nell'ambito di specifici programmi di ricerca di alta qualificazione finanziati dall'Unione Europea o dal MUR con particolare riferimento a quelli individuati dal Decreto del Ministro dell'Università e della Ricerca, 22 luglio 2022, n. 919, verificano la possibilità, anche in termini di impegno temporale da dedicare alle attività progettuali, di accedere al contributo a valere sul Fondo italiano per la scienza comunicando al Ministero, entro il richiamato termine di 3 giorni di cui al precedente comma, le conseguenti determinazioni;*
- *Il contributo per la realizzazione del progetto verrà erogato in un'unica soluzione anticipata pari al 100% del contributo riconosciuto direttamente alle Host Institution;*



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- *Ai fini dell'erogazione si applicano le disposizioni di cui all'articolo 16, commi 7 e 8, del Bando nonché, in caso di revoca, le previsioni dell'articolo 18, comma 3. 7;*
- *I progetti hanno una durata massima di 3 anni. La data di avvio ufficiale dei progetti è fissata al 90° giorno successivo all'emanazione del Decreto di ammissione a finanziamento. Non sono pertanto ammissibili, neanche in termini di spesa, le attività che a tale data risultino essere state già effettuate o avviate;*
- *le Host Institution e i PI sono tenuti al rispetto delle previsioni delle "Linee guida di rendicontazione e la determinazione delle spese ammissibili" che saranno adottate dal Ministero con apposito provvedimento nonché al rispetto delle previsioni del "Disciplinare di concessione delle agevolazioni" allegato al Decreto di ammissione a finanziamento;*

RITENUTO di procedere all'adozione del presente Decreto di ammissione a finanziamento esclusivamente per le proposte progettuali per le quali si è conclusa positivamente la verifica dei requisiti di partecipazione nel rispetto delle previsioni di cui all'articolo 12 comma 3 del Bando e per i quali i *Principal Investigator* non hanno comunicato la rinuncia al finanziamento;

VISTO il Decreto n. 14101 del 16 luglio 2024 cui è stato disposto l'impegno, esercizio finanziario **2024** – Cap.7720/1 – della somma complessiva di **€188.000.000,00, residui lett, f) 2023**, destinata alle attività di analisi tecnico- scientifiche, finanziarie e amministrativo-contabili e per le conseguenti attività di verifica, monitoraggio e controllo e per il finanziamento dei progetti di ricerca come previsto dal comma 1 art. 8 del predetto DD 1236 del 1° agosto 2023 (risorse 2022) così suddivise:

- o per le attività di analisi tecnico-scientifiche, finanziarie e amministrativo-contabili e per le conseguenti attività di verifica, monitoraggio e controllo (art. 1 comma 551 della legge 30 dicembre 2020, n. 178) **€ 5.640.000,00;**
- o per il finanziamento dei progetti di ricerca **€ 182.360.000,00;**

VISTA la nota MEF UCB_MUR prot. 15614 del 26 luglio 2024 acquisita al prot. MUR n. 14836 del 26 luglio 2024 con cui è stato comunicato che il provvedimento n. **14101** del **16/07/2024** ha superato il controllo preventivo di regolarità amministrativo contabile previsto dalla normativa vigente con esito positivo e che l'atto è stato registrato al n. **159**, in data **26/07/2024** ai sensi del decreto legislativo n. 123 del 30/06/2011 dell'Art. 5, Comma 1.

Numero Sirgs: **2002**

Data Sirgs: **26/07/2024**

Capitolo spesa: **7720/01**

CONSIDERATO che dall'applicativo SICOGE relativamente al Decreto di impegno sopra richiamato risultano aperte le seguenti clausole:

- PARTITA n.2002-CL1-CAPITOLO 7720 PG 01;
- PARTITA n.2002-CL2-CAPITOLO 7720 PG 01.

RITENUTO che per il Macrosettore PE - *Physical Sciences and Engineering*, per ciascuno dei tre schemi di finanziamento *Starting Grant*, *Consolidator Grant* e *Advanced Grant*, è possibile procedere all'individuazione dei progetti ammessi a finanziamento e dei relativi contributi riconosciuti così come elencati nell'**ALLEGATO A – ELENCO DEI PROGETTI AMMESSI A FINANZIAMENTO E PIANO DEI COSTI E DEI CONTRIBUTI;**

ACQUISITI per le proposte progettuali ammesse a finanziamento come elencate nell'**ALLEGATO A – ELENCO DEI PROGETTI AMMESSI A FINANZIAMENTO E PIANO DEI COSTI E DEI CONTRIBUTI** e i Codici Unici Progetto (CUP);



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CONSIDERATO che i termini, le condizioni, le forme, le misure, le modalità di attuazione e gli obblighi di rendicontazione dell'Avviso sono indicati nell'**ALLEGATO B - DISCIPLINARE DI CONCESSIONE DELLE AGEVOLAZIONI**.

TUTTO CIÒ PREMESSO E CONSIDERATO

DECRETA

Articolo 1

Ammissione a finanziamento

1. Per il Bando FIS 2022 – 2023 di cui al Decreto Direttoriale 1° agosto 2023, n. 1236, per il Macrosettore PE - *Physical Sciences and Engineering* per ciascuno dei tre Schemi di finanziamento *Starting Grant, Consolidator Grant e Advanced Grant* sono ammesse a finanziamento le proposte progettuali come elencate nell'**ALLEGATO A – ELENCO DEI PROGETTI AMMESSI A FINANZIAMENTO E PIANO DEI COSTI E DEI CONTRIBUTI** che costituisce parte integrante e sostanziale del presente Decreto.
2. Le *Host Institution* e i *PI* sono tenuti al rispetto delle previsioni delle “*Linee guida di rendicontazione e la determinazione delle spese ammissibili*” che saranno adottate dal Ministero con apposito provvedimento nonché al rispetto delle previsioni dell'**ALLEGATO B - DISCIPLINARE DI CONCESSIONE DELLE AGEVOLAZIONI** che costituisce parte integrante e sostanziale del presente decreto.

Articolo 2

Avvio e conclusione delle attività progettuali

1. I progetti hanno una durata massima di 3 anni. La data di avvio ufficiale dei progetti è fissata al 90° giorno successivo all'emanazione del presente Decreto di ammissione a finanziamento pubblicato sul sito Istituzionale del MUR <https://www.mur.gov.it/it/aree-tematiche/ricerca/programmi-di-finanziamento/fis/fis-2> e sulla Piattaforma dedicata al seguente link <https://fis-submission.mur.gov.it/Bando-fis-2/>.

Articolo 3

Risorse finanziarie

1. L'importo di **€ 54.175.323,98** (cinquantaquattromilionicentosettantacinquemilatrecentoventitre/98) destinato al finanziamento nella forma del contributo alla spesa delle proposte progettuali come elencate **NELL'ALLEGATO A – ELENCO DEI PROGETTI AMMESSI A FINANZIAMENTO E PIANO DEI COSTI E DEI CONTRIBUTI**, parte integrante e sostanziale del presente decreto, per il Macrosettore PE - *Physical Sciences and Engineering*, per i tre Schemi di finanziamento *Starting Grant, Consolidator Grant e Advanced Grant*, è posto a valere sulle risorse di cui al Cap. **7720/01, esercizio di provenienza 2023**, (Sirgs: **2002 del 26/07/2024**) PARTITA n.2002.
2. L'erogazione dei contributi da parte del MUR è subordinata alla disponibilità delle risorse sul pertinente capitolo di bilancio.



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3. L'Amministrazione si riserva di effettuare controlli volti ad accertare il rispetto degli obblighi previsti dal provvedimento di ammissione a finanziamento, la veridicità delle dichiarazioni e delle informazioni prodotte, nonché l'ammissibilità delle spese rendicontate.

Articolo 4 ***Disposizioni finali***

1. A conclusione della verifica dei requisiti di partecipazione, nel rispetto delle previsioni di cui all'art. 12, comma 3 del Bando e fatte salve eventuali rinunce al finanziamento da parte dei PI, con successivi Decreti si procederà all'ammissione a finanziamento dei restanti progetti.
2. Il presente Decreto è pubblicato sul sito Istituzionale del Ministero <https://www.mur.gov.it/it/arce-tematiche/ricerca/programmi-di-finanziamento/fis/fis-2> nonché nella piattaforma CINECA raggiungibile al link <https://fis-submission.mur.gov.it/bando-fis-2/>.
3. La pubblicazione del presente Decreto ha valore di notifica a tutti gli effetti di Legge nei confronti di tutti i soggetti interessati.

Il presente Decreto è trasmesso agli organi di controllo per i seguiti di competenza.

Il Dirigente
Responsabile Unico del Procedimento
Laura Patella

SCHEDA DETTAGLIO COPERTURA FINANZIARIA SU PROGETTO DI RICERCA

Titolo programma di ricerca	Design High Throughput di Nanografeni open-shell attraverso metodi ab initio
GSD	03/CHEM-03
SSD	CHEM-03/A
Ente finanziatore Titolo del progetto di ricerca – acronimo – programma – CUP	Ministero dell'Università e della ricerca (MUR) Cod. progetto FIS-2023-02346 Titolo: In Silico Prototypes for Addressable and Scalable Molecular Quantum Gates Acronimo: iPAWNS CUP: B53C24009560001
Responsabile del progetto	Dr. Matteo Briganti
Durata del progetto	36 mesi (1/04/2025-31/03/2028)
Importo complessivo del finanziamento – Importo previsto nel budget alla voce “Personale” – Importo destinato alla copertura del contratto biennale	1.201.077,26€ 551.945,00€ 79.189,41€
Prefinanziamento già incassato	1.201.077,26€
Indicazione della copertura per le spese non rendicontabili (ad esempio IRAP, mensilità successive alla fine del progetto)	Spese generali del progetto
COAN per l'importo complessivo biennale	€ 79.189,41 – COAN n. 83739 del 18/06/2025
Indicazioni che devono essere riportate nel bando ai fini della rendicontazione (es. titolo, acronimo, n. Grant Agreement, CUP, eventuale necessità di loghi, ecc.)	Ministero dell'Università e della ricerca (MUR) Cod. progetto FIS-2023-02346 Titolo: In Silico Prototypes for Addressable and Scalable Molecular Quantum Gates Acronimo: iPAWNS CUP: B53C24009560001
Altre informazioni utili (es. data indicativa di presa di servizio)	LOGHI FIS – presa di servizio 01/10/2025