



WORK EXPERIENCE

06/2024 – CURRENT Sesto Fiorentino, Italy

RESEARCH FELLOW (ON GOING) UGO SCHIFF CHEMISTRY DEPARTMENT DICUS

Project title: Biomimetic nano-architectures for the aerosol treatment of coronavirus-related diseases

10/2023 – 03/2024 Bruxelles, Belgium

ERASMUS+ TRAINEESHIP (6 MONTHS) P&G INNOVATION CENTER

Development of new nanostructured delivery technologies for hair care products

05/2023 – 09/2023 Sesto Fiorentino, Italy

RESEARCH FELLOW (5 MONTHS) UGO SCHIFF CHEMISTRY DEPARTMENT DICUS

Project title: Nano-architectures for the diagnostic of neurodegenerative diseases

05/2022 – 01/2023 Sesto Fiorentino, Italy

CURRICULAR INTERNSHIP FOR MASTER DEGREE IN CHEMISTRY LM-54 (CURRICULUM: SUPRAMOLECULAR CHEMISTRY, MATERIALS AND NANOSYSTEMS) (9 MONTHS) UGO SCHIFF CHEMISTRY DEPARTMENT DICUS

Experimental research activity: Study of the effect of a new neuroprotector on the fibrillation process of alpha-synuclein in membrane models.

· Study of alpha-synuclein fibrillation process in specific conditions and characterization of the protein conformations via **Fluorescence and UV-Visible spectroscopy, Circular Dichroism (CD), Dynamic Light Scattering (DLS) and Zeta potential**.

· Oligomeric and fibrillar species production for the interaction analysis with Langmuir monolayers, at the liquid-air interface (used to mimic neuronal membrane), with and without the neuroprotector.

· Morphological characterization of the monolayers after the interaction with different protein conformations using **Brewster Angle Microscopy (BAM)** interfaced with the Langmuir trough **Nima 710**, measuring the surface area ($\text{\AA}^2/\text{mol}$) variations as function of time, at the typical pressure for cellular membranes.

· Surface pressure (π) - surface area ($\text{\AA}^2/\text{mol}$) isotherms and surface pressure (π) - surface potential (ΔV) isotherms registration with a set up assembled in the Department of Chemistry (**Am ionizing electrodes method**) interfaced with the Langmuir trough **Nima 516**.

· Characterization of monolayer samples transferred from the liquid-air interface (via **Horizontal transfer on solid support**), with **Confocal Laser Scanning Microscopy (CLSM)** and **Circular Dichroism (CD)**.

Software:

· Igor, OriginLab, ImageJ, Dichroweb, BestSel, Microsoft Office

06/2020 – 07/2020 Sesto Fiorentino

CURRICULAR INTERNSHIP FOR BACHELOR DEGREE L-27 (CURRICULUM: CHEMISTRY) (1 MONTH) UGO SCHIFF CHEMISTRY DEPARTMENT DICUS

Experimental research activity: Synthesis of polyamine receptors, containing pyrene and anthracene units, for the coordination and recognition of emerging pollutants.

· Synthesis of polyamine ligands containing aromatic compounds, used as fluorimetric chemosensors for Ketoprofen recognition.

· Synthesis of coordination complexes with metal ion Zn (II), used as anchor point for ionizable Ketoprofen groups.

· Characterization of host-guest compounds by **UV-Vis and Fluorescence spectrophotometric titrations**.

· Characterization of the synthesized ligands by **Fluorescence and UV-Vis spectrophotometry** and **Nuclear Magnetic Resonance ($^1\text{H-NMR}$)**

Software:

· OriginLab, Chemdraw, Microsoft Office



EDUCATION AND TRAINING

11/2020 – 05/2023 Sesto Fiorentino

MASTER DEGREE IN CHEMISTRY LM-54 CURRICULUM: SUPRAMOLECULAR CHEMISTRY, MATERIALS AND NANOSYSTEMS University of Florence

Experimental skills acquired:

- Synthesis and characterization of Silver nanoparticles, nanoprisms, nanowires, nanorods and Zinc Oxide Quantum Dots.
- Ferrofluids synthesis and characterization.
- PMMA opals synthesis.
- Layer-by-Layer adsorption (LbL), Self-Assembled Monolayers (SAM) and Langmuir-Blodgett films (LB)
- Thermogravimetric analysis (TGA), Differential scanning calorimetry (DSC)
- Competitive ELISA essay rIgG/antiIgG
- Software: ImageJ, Sasview

Website www.unifi.it Final grade 110/110 cum laude |

Thesis Study of the effect of a new neuroprotector on the fibrillation process of alpha-synuclein in membrane models

09/2015 – 10/2020 Sesto Fiorentino, Italy

BACHELOR DEGREE IN CHEMISTRY L-27 University of Florence

- Organic synthesis, synthesis product characterization and data analysis provided to predict an unknown compound
- Nuclear Magnetic Resonance ($^1\text{H-NMR}$, $^{13}\text{C-NMR}$)
- Complexometric, potentiometric, conductimetric titrations
- IR, UV-Vis, Fluorescence, Atomic Mass (MS) spectroscopy
- Gas Chromatography (GC), thin layer chromatographic separation (TLC) and column separation
- Inorganic synthesis
- Cryoscopy, Voltammetry, Conductimetry
- Differential scanning calorimetry (DSC)
- Programming language: F90

Website www.unifi.it Final grade 97/110 |

Thesis Synthesis of polyamine receptors, containing anthracene and pyrene units, for the coordination and recognition of emerging pollutants

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH B2		B2	B2	B2	B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Windows | Microsoft Office | SasView | ImageJ | IgorPro | OriginLab | Google Drive | LaTeX

CONFERENCES AND SEMINARS

01/07/2024 – 03/07/2024 Florence, Italy

SBFSchoolFlorence2024

3rd International Summer School on Science-based Formulation

Link <https://sites.google.com/view/sciencebasedformulation>



04/07/2024 – 05/07/2024 Florence, Italy

IsoDays 2024

6th Italian Soft Days Conference

Link <https://sites.google.com/view/isodays2024/isodaysflorence2024>

22/07/2024 – 25/07/2024 Evora, Portugal

ECOF18

18th European Conference on Organized Films

Oral presentation: Fibrillar aggregation of alpha-synuclein at the outer surface of model membranes

Link <https://ecof.events.chemistry.pt/>

23/02/2022 – 24/02/2022 ONLINE

Seminar 'Build a future with chemistry' - FEDERCHIMICA

● **DRIVING LICENCE**

Driving Licence:B

Francesca Serventi

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