

MORPHOLOGICAL AND COMPOSITIONAL ANALYZES OF SURFACES

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Thin films made of various materials are used in many scientific, technological and industrial environments. They are deposited through a variety of physical, chemical and electrochemical techniques. In all these fields, it is essential to measure the thickness, the colour, the morphological and compositional of the deposit because the properties of mechanical strength, corrosion, costs, optics and visual appearance depend on this feature. We present a new method for thickness determination [1] of metal coating from galvanic industries. In the same field color measurement is one of the most important step in quality control at the end of the assembly line and in the research and development process for a variety of industrial applications printings, textiles, automotive and electroplating. Especially for electroplating, color inspection is a primary indicator of surface quality. Alteration of lightness, hue, and saturation are usually associated to surface defects or changes in galvanic baths composition and deposition efficiency. The purpose of our study is focused on the fashion applications, is to take an overview of conditions and techniques of color evaluation, effectively implemented from companies, and to find out the most accurate, and at the same time economically sustainable one [2]. Finally, for a simultaneous control of the morphological and structural growth of a film under the control of the potential, more complex techniques are needed. Some new experimental arrangements will be presented in the field of EC-SRM (Electrochemical-Synchrotron Radiation Methodologies) [3,4].

[1] W. Giurlani, M. Innocenti and A. Lavacchi, *Coatings* (2018), 8, 84.

[2] 152 W. Giurlani, F. Gambinossi, E. Salvietti, M. Passaponti and M. Innocenti, *ECS Transactions*, 80 (10) 757-766 (2017).

[3] E. Salvietti, A. Giaccherini, F. Gambinossi, M.L. Foresti, M. Passaponti, F. Di Benedetto and M. Innocenti, Cap. 5, From the book: *Semiconductors - Growth and Characterization*, Edited by Rosalinda Inguanta and Carmelo Sunseri, ISBN 978-953-51-3884-6, Print ISBN 978-953-51-3883-9, Published: March 7, 2018 under CC BY 3.0 license. <http://dx.doi.org/10.5772/intechopen.71014>, (2018), pag. 89-108.

[4] A. Giaccherini, F. Russo, F. Carlà, A. Guerri, R. A. Picca, N. Cioffi, S. Cinotti, G. Montegrossi, M. Passaponti, F. Di Benedetto, R. Felici and M. Innocenti.

Applied Surface Science 432 (2018) 53–59.



Regione Toscana

