



POLITECNICO
MILANO 1863

DIPARTIMENTO DI ENERGIA



NanoLab Talk

Tuesday, 16th october, 2018 – 11.30

Seminar Room 1° floor

Department of Energy – Cesnef (Building 19) via Ponzio 34/3 Milan
Politecnico di Milano

“The solid-liquid interface and nanomicroscopy (solinano) lab: current activities of the new inter- departmental facility”

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Abstract:

A fruitful collaboration between the Energy, Physics and Chemistry Departments gave the possibility to open the Solid-Liquid Interface and Nanomicroscopy (SoLINano) lab, which is an inter-Departmental facility of the Politecnico di Milano. SoLINano lab is equipped with both scanning tunneling and atomic force microscopy (STM and AFM, respectively) that can work immersed inside a liquid. When STM and AFM are coupled with an electrochemical cell (EC-STM, EC-AFM), samples can be studied during electrochemical processes induced by applying specific potentials to the samples. The target of these microscopies is to explore the morphological evolution of surfaces in more realistic conditions with respect to vacuum environments.

During its first 3-years of activity, SoLINano lab has focused the research to problems related to lead-acid batteries. Here, in fact, graphite electrodes are exposed to diluted sulphuric acid media, which induces a progressive detriment of the electrode. Graphite dissolution in acid environments and a possible strategy for its protection is the main topic of the talk. Some perspectives of the next SoLINano activities will be outlined.

About the speaker:

Gianlorenzo Bussetti (GB) followed the Master of Science in Physics at the University of Rome Tor Vergata. His thesis work, entitled "Measurements of Anisotropy in Surface Reflectance Infrared (IR-RAS) on the optical-transition of dangling bonds in Si (111) electron-phonon interaction and 2x1 as a function of temperature", was held under the supervision of Em. Prof. G. Chiarotti. GB succeeded his PhD thesis with a study on the optical properties of organic films ("Thin and ultra-thin organic layers investigated by Reflectance Anisotropy Spectroscopy"). The results and their applications in the field of solid state devices (namely gas sensors) have allowed GB to win the Giulotto prize and to be called by the Institute des Nanosciences de Paris (Paris-INSP-France) and the J. Kepler University of Linz (Austria). In 2009, GB spent some months in the team of Prof. K. Wandelt in Bonn, where he started to work with a home-made EC-STM.

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