

Post-doctoral Research Associate Position

Electronically active thin-films for new concepts of nano-devices



Employer

The LISE (Laboratoire Interfaces et Systèmes Electrochimiques) and LRS (Laboratoire de Réactivité de Surface) laboratories are two associated research units of the CNRS (« Unités Mixtes de Recherche »), which are localized at Sorbonne Université, on the Jussieu campus, Paris 5th. They are one of the partner of the cubic project funded by the « Agence Nationale de la Recherche ». The electrodeposition of the functional molecules to lead thin-films and their characterizations will be carried out in these two neighbor laboratories. The other partners of the project are the IPCM (Institut Parisien de Chimie Moléculaire) also localized on the Jussieu campus, and the LCC (Laboratoire de Chimie de Coordination) in Toulouse. The candidate will also work to in collaboration with these two partners.

Duration : 18 months

Starting : asap

Closing date for application: 31/01/22

Location : Sorbonne Université, 4 place Jussieu, 75005 Paris

Project

The “cubic” project aims at exploring **new concepts of nano-devices for molecular electronics**. More specifically, cubic develops a simple processing approach to target electronically-active ultrathin-films electrodeposited onto conductive substrates. The thin-films are further integrated into two- or three-electrodes electronic devices. The project is of fundamental interest. It does not aim at replacing specific actual electronic devices, but it explores the potentialities of these original molecular-based material once inserted into device configuration. The post-doctoral research associate will participate to the design, the synthesis and characterization of electronically-active thin films deposited on conductive substrates. More specifically, the research associate will prepare the films by electro-deposition of molecular functional molecules, the electronic states of which can be reversibly switched between multiple electronic states. The obtained molecular films will be then fully characterized by a variety of surface science techniques. The functional molecules, which are dual redox and magnetic cubic switches¹ are being synthesized in the IPCM, and the device construction is mainly carried out in Toulouse.

Profile

We are looking for a highly motivated candidate, with a Ph.D. thesis in the field of nanomaterial characterization, and who ideally has some knowledge in electrochemistry, surface characterization (AFM, C-AFM, XPS), and coordination chemistry. More generally, we are seeking for a team partner, who is well-organized, and shows curiosity.

Contacts :

Laure.fillaud@sorbonne-universite.fr

Jessem.landoulsi@sorbonne-universite.fr

Emmanuel.maisonhaute@sorbonne-universite.fr

Christophe.methivier@sorbonne-universite.fr

Rodrigue.lescouezec@sorbonne-universite.fr

Link to the application web page: <https://emploi.cnrs.fr/Offres/CDD/UMR8235-LAUFIL-002/Default.aspx>

¹ see for example : J. Glatz et al., *J. Am. Chem. Soc.*, **2022**, 144, 24, 10888–10901 ; J. Glatz, et al. *Chem. Commun.* **2020**, 56, 10950 – 10953 ; A. Benchohra, et al. *Chem. Commun.* **2020**, 56, 6587 – 6589.