

# Post-doctoral position at Nancy, France

## Expert in electrochemistry/bioelectrochemistry of redox proteins

Deadline for application: July 1, 2017

### Project Description

Secondary metabolites produced by plants often display interesting properties for pharmaceutical or cosmetic purposes. The structure of these molecules can be very complex making their chemical synthesis almost difficult if not impossible. Their supply can therefore quickly become a real problem since it is closely related to the availability and the extraction of plant biomass. A solution to overcome this problem relies 1) on the production of the enzymes responsible for their synthesis in microorganisms and 2) by using these enzymes to produce the desired molecule *in vitro* from commercially available precursors.

Cytochrome P450s are described as being responsible for the synthesis of a large number of secondary metabolites. To be active, these membrane bound mono-oxygenases must be associated to a NADPH P450 reductase. The catalyzed reactions are generally based on the activation of molecular oxygen, followed by the insertion of one of the oxygen atoms into the substrate and the reduction of the second atom to form water. This reaction requires the presence of NADPH as cofactor, which is then a limiting and relatively expensive element.

The aim of this project is to implement an original electrochemical system allowing using cytochrome P450s to biosynthesize molecules of interest while NADPH is regenerated by electrochemistry. The project brings together researchers from four laboratories, LCPME (Mathieu Etienne, bioelectrochemistry, <http://www.lcpme.cnrs-nancy.fr>), LRGP (François Lapique, electrochemical engineering, <http://lrgp-nancy.cnrs.fr>), IJL (Alain Celzard, elaboration of carbonaceous materials, <http://ijl.univ-lorraine.fr>) and LAE (Alain Hehn, production of proteins, <http://lae.univ-lorraine.fr>).

### Position Description

This is a two years post-doctoral position. The post requires theoretical and laboratory experience in electrochemistry. Knowledge in the field of redox proteins is desirable. Knowledge in carbon materials, in particular for electrochemical application, is an asset. Responsibilities vary according to qualifications and desires of candidate: it can include both practical work in the lab and direction of masters and undergraduate students with supervision of senior member. Being the core of a project from a local collaborative network, the duties also involve contact point with project partners, elaboration of reports, drafts and final submission of international publications. A high degree of initiative is expected.

### Requirements

Minimum studies: PhD in chemistry with a specialization in electrochemistry or bioelectrochemistry of redox proteins. Excellent written and oral communication skills in English are a must. Knowledge of French language will be appreciated.

Minimum experience: 0-18 months post PhD

Minimum requirements: PhD degree. Excellent knowledge of English.

Desired requirements: Experience and autonomy in research, ability to work in team.

Nationality: Applications from any country will be considered.

Contract type: Postdoctoral researcher

Salary: ~26 000 €/yr

### Contact

Dr. Mathieu ETIENNE

Laboratoire de Chimie Physique et Microbiologie pour l'Environnement, LCPME

<http://www.lcpme.cnrs-nancy.fr>

+33 372 747382

[mathieu.etienne@univ-lorraine.fr](mailto:mathieu.etienne@univ-lorraine.fr)