



## Funded Ph'D position

### Title

**Assembly and electrochemical interrogation of multi-enzymatic nanosystems organized on bar-coded viral scaffolds.**

**Keywords :** *Biomolecular Electrochemistry, Viral Nanotechnology, Enzymatic cascade, AFM-SECM microscopy.*

### Project Summary:

This project aims at assembling integrated multienzymatic systems on nanometer sized scaffolds, consisting in viral nanoparticles, and to probe their catalytic response using a *multi-scale electrochemical approach*. An innovative biotechnology will allow us to position multiple enzymes working in cascade on the surface of particles of the tobacco mosaic virus (TMV, harmless to humans) with an unprecedented degree of spatial control. Studying these systems, at the ensemble scale by cyclic voltammetry, but also at the single viral particle scale by AFM-SECM microscopy, will allow us to gain fundamental understanding on how the positional control of enzymes on nanoscaffold can modulate their catalytic activity.

This interdisciplinary project will be conducted in collaboration with two international research groups specialized in viral nanotechnology:

- Thierry Michon's group, INRA, Fruit biology and pathology, UMR 1332, Univ. Bordeaux, France.
- Christina Wege's group, Institute of biomaterials and biomolecular Systems, Univ. Stuttgart, Germany.

### Funding

**French Ministry of Research Grant. Doctoral School ED 388** - Chimie physique et Chimie Analytique de Paris Centre (<http://www.ed388.upmc.fr/>).

**Starting date:** September /October 2017. **Duration:** 3 years.

**Gross salary:** Approx. 1700 € per month

### Host Laboratory

Laboratory of Molecular Electrochemistry (LEM) University Paris Diderot / UMR CNRS 7591, Bât. Lavoisier 15, rue Jean-Antoine de Baïf, 75205 Paris, France (<http://www.lemp7.cnrs.fr/>).

**Group:** « **Biomacromolecular systems. Electron transport at the nanoscale.** »

**Leader:** Christophe Demaille

### Candidate Profile

We are seeking for a Ph'D candidate having a Master in physical chemistry, nanosciences or biophysics. The candidate should show strong affinity for lab work and be rigorous and organized.

**A plus:** *Past experiences in nano(bio) electrochemistry, local probe microscopies (AFM,..)*

### Candidacy

Interested candidates should send a Curriculum Vitae and a motivation letter via email to **Christophe Demaille** [demaille@univ-paris-diderot.fr](mailto:demaille@univ-paris-diderot.fr) - Tel : +33(0)157278797