The Institute of Condensed Matter and Nanosciences (IMCN) from UCLouvain, Bio and Soft Matter (BSMA) group, has a vacancy for a:

**Post-doctoral fellow (m/f)**

The division of Bio & Soft Matter (BSMA) of IMCN conducts research in the field of biomaterials, and of organic or hybrid materials and devices. The general vision shared by BSMA members is that advanced functional, biological or structural properties can be obtained by assembling at the proper scale elements such as monomer units, (bio)macromolecules, or nanoparticles. This rational design requires a thorough understanding of the correlation between structure and properties at different spatial scales, at surfaces and in the bulk, which is why a strong expertise in (bio)chemical, physical and morphological characterization, from the molecular to the micrometer level, is being developed in BSMA.

**Project description**

Enzymes, the proteins used by Nature as catalysts, are often surface- and volume-confined in biological systems. Cascades of enzymes are also found in vivo, in which the product of a first transformation serves as the substrate for a second one. To benefit from their unique properties with a view to develop green chemistry approaches, enzymes must be immobilized in bioreactors. The aim of this project is to understand the effect of confinement and co-localization on enzyme activity, which is a key to developing efficient bioprocesses. For that purpose, enzyme-loaded nanostructured membranes will be designed and fabricated with a high degree of control on their architecture, from the molecular level to the micrometer-scale.

More precisely, the post-doc candidate will be involved in the design and fabrication of enzyme-loaded nanostructured membranes with a high degree of control on their architecture, using the unique combination of templating within intersected cylindrical nanopores and of layer-by-layer deposition, notably using enzyme-polyelectrolyte complexes. The enzymatic activity of these membranes will then be measured and related to their geometrical parameters. The stability of the obtained membranes will be tested in configurations that prefigure the continuous conditions needed for applications in biocatalysis at real scale.

**Research profile**

PhD in Chemistry, Bioengineering or Materials Science.
Expertise in self-assembly methods, enzymatic catalysis, surface modification and/or surface analysis techniques are required.

**Eligibility**

The candidate should fulfill the conditions of international mobility (within the last three years, two years at least must have been spent outside Belgium).

**Type of contract**

Full-time post-doc fellowship
Duration : 1 year with possible extension
Project funded by F.R.S.-FNRS

**How to apply?**

Interested candidates should apply by sending the following documents :

- Curriculum Vitae including a (self)-assessment of language level
- A covering letter including the applicant’s motivation
- Names and contact information of two referees
to: Prof. Christine Dupont (christine.dupont@uclouvain.be) and Prof. Sophie Demoustier-Champagne (sophie.demoustier@uclouvain.be)

The position is open starting from **April 1st, 2019**.