Unité de catalyse et chimie des matériaux divisés
Université catholique de Louvain (UCL) – Louvain-la-Neuve (Belgique)

DOCTORAL FELLOWSHIP IN THE FIELD OF HETEROGENEOUS CATALYSIS

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Context and area of the proposed research:

In the framework of an important research project, fundamentally-oriented, in close collaboration with two laboratories of the UCL Chemistry Department (Inorganic materials Lab - CMAT and Organic chemistry Lab - CHOM), and a laboratory linked to the department of applied chemistry and bio-industries (Catalysis and divided materials Lab - CATA), the research will focus on the elaboration of supramolecular inorganic/organic hybrid materials with tunable functional properties.

A doctoral fellowship is offered for 3 to 4 years, starting October 1st, 2008.

The thesis will study the feasibility of hybridation of heteropolyanions in a supramolecular architecture zwitterionic matrix and their potentialities in heterogeneous catalysis. More precisely, this will be achieved in the framework of liquid phase selective oxidation reactions.

In a first stage, the project will focus on the making of thin films by among others spin-coating and the fine physico-chemical characterization of their structure and texture from the molecular scale to the materials grains. Beside IR, Raman, XPS, DRX, physi- and chemisorption techniques, imaging of the films by AFM-STM will constitute a key-approach. The research will be the core of the collaboration between CATA (Prof. E.M. Gaigneaux) and CMAT (Prof. M. Devillers) laboratories.

Profile

Candidates must hold a master degree (5-year cursus; to give an example of Belgian diplomas: bio-engineer in chemistry, civil engineer in chemistry, or master in chemistry), and
- have experienced through their graduation work the preparation and/or physico-chemical characterization of inorganic materials;
- or possess practical skills in many techniques related to these areas, which will be of use during the Ph.D. research.

Languages: a good knowledge of French and/or English is required.

Applications (CV + motivation letter showing the adequacy with the requested profile) should be sent right now to Eric Gaigneaux.