PhD fellowship in reactive fluid dynamics

Description

Within the MaSNEC project, the Nonlinear Physical Chemistry Unit (NLPC) of the Université libre de Bruxelles (ULB) invites applications for one PhD fellowship to begin in October 2017 or soon after.

MaSNEC (Material Synthesis in Non-Equilibrium Conditions) is a project funded by the European Union (EU) through the M-ERA.NET network. This network has been established to support and increase the coordination of European research and innovation programmes and related funding in materials science and engineering. This project involving 4 European partners is coordinated by NLPC. It aims at advancing our ability to grow innovative surfaces and control their properties via material synthesis in non-equilibrium conditions maintained by diffusive gradients of concentration or convective flows.

The successful candidate will conduct experiments in the context of flow-driven precipitation in porous media. A project summary is included at the end of this announcement.

Type of appointment

48 months full time. The successful candidate must have appropriate authorization to work in the EU before employment begins.

Salary

Approximately 1900€ net per month.

Required Qualifications

Completed MSc or equivalent in Chemistry, Physics or related fields. Good oral and written communication skills (in English) to work in a multidisciplinary team environment.

Preferred Qualifications

Good programming skills to post-process and analyze experimental data through image analysis. Ability to write scientific publications and deliver scientific presentations in English.

Contact Person

Prof. Anne De Wit and Prof. Fabian Brau
Université libre de Bruxelles (ULB), Nonlinear Physical Chemistry Unit
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Application Procedure

Applicants should submit a cover letter including a brief but detailed statement of interest, a curriculum vitae and the name and address of two persons of reference to both A. De Wit and F. Brau via email.

Deadline

Review of applications will begin on June 20, 2017, and continue until the position is filled.
Project summary

Research performed at NLPC focuses on the experimental and theoretical study of spatio-temporal patterns and dynamics emerging from the coupling between chemical reactions and hydrodynamic flows. The research to be developed in the context of the MaSNEC project aims to grow innovative materials and control their properties via synthesis in non-equilibrium conditions maintained through convective flows due to injection of one reactant into the other. The successful candidate will develop new experimental protocols to take advantage of imposed out-of-equilibrium constraints to synthesize thermodynamically unstable solid polymorphs, structured surfaces, composite coatings and multilayered tubes. He/She will assess how hydrodynamic flows affect precipitation reactions at the macroscale to investigate how the amount and spatio-temporal distribution of precipitate depends on the experimental conditions. He/She will also develop strategies to control the growth of precipitation structures at the macroscale.