ULB UNIVERSITÉ LIBRE DE BRUXELLES

Postdoc on reaction-diffusion-advection pattern formation

Description

Within the CREDI project, the Nonlinear Physical Chemistry Unit of the Université libre de Bruxelles invites applications for one ***Postdoc fellowship to begin in January 2023***.

CREDI ("Control of reaction-diffusion-convection fronts for environmental purposes") is a research project aiming to **characterize and control the properties of reaction-diffusion-advection fronts** to optimize their efficiency in terms of environmental gain. We will study both theoretically and experimentally two classes of fronts, *(i)* bimolecular A+B→C fronts, emblematic of CO_2 mineralization fronts in soils, and *(ii)* autocatalytic fronts. We seek to hire a postdoc who will perform **theoretical and numerical analyses of pattern formation around travelling reaction-diffusion fronts, both with and without advection or natural convection**. He/She will also develop postprocessing analysis of experimental data obtained in parallel in the group. Our objective is to investigate how the amount and spatio-temporal distribution of the product of the reaction depends on the geometry of the system and on possible injection of one reactant into another one.

Type of appointment

12 months full time starting January 2023 or as soon as possible after that. The contract can be extended for a second year upon mutual agreement. The salary is approximately 2500€ net/month.

Required Qualifications

PhD in Physics, Chemistry, Engineering or related fields. Good oral and written communication skills in English to work in a multidisciplinary team environment and be able to write scientific publications and deliver scientific presentations in English. Excellent knowledge of reaction-diffusion dynamics, instabilities and self-organization processes. Knowledge of hydrodynamics, convective instabilities and numerical integrations of flow equations is a plus. Good programming skills to develop numerical codes and to post-process and analyze experimental data through image analysis.

Contact Persons

Profs. Laurence Rongy and Anne De Wit

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Application Procedure and Deadline

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 L. Rongy and A. De Wit via email. **Review** of applications will **begin on December 10, 2022**, and continue until the position is filled.