

PhD Scholarship in Fluid Dynamics at the University of Louvain

Thermal frontal polymerization (TFP) is a process that converts a monomer solution (liquid) into solid polymer via propagation of a localized reaction zone, called "front". Initiated by a brief local energy source, the front is self-sustained by the heat generated by the polymerization reaction. Allowing for rapid and uniform synthesis, TFP has gained interest as a fast, energy-efficient solution for advanced manufacturing, like cure-on-demand materials or composites.

POLYFRONT is a joint research project between the Free Universities of Brussels (VUB and ULB), University of Louvain (UCLouvain) and Louisiana State University (LSU) that aims at advancing the current state-of-the-art in the modeling and simulation of TFP. Within the framework of this project, one PhD scholarship is available at the University of Louvain.

The proposed doctoral research involves the development and numerical implementation of two-phase flow thermomechanical models, analysis of convective instabilities (buoyancy driven and surface-tension driven), and numerical simulations based on high-performance computing techniques.

The scholarship includes a competitive salary, full insurance and social benefits, coverage of expenses for participation in conferences & workshops, and full access to modern computing facilities.

Required qualifications and skills:

- A master degree in a relevant engineering principle or in exact sciences (chemistry, mathematics, physics), preferably with a background in fluid mechanics or applied/computational mathematics.
- Good grades are required for admission to the doctoral programme of UCLouvain: the average grade of the master degree should be at least 70/100.
- Good programming skills in a language such as C/C++, Fortran or Python,
- Ability to efficiently communicate read and write in English.

Information for the research activities of our group can be found in <https://sites.google.com/site/mvpapalexandris/>

Interested applicants are invited to submit a detailed CV, transcripts of academic records (grades), a statement of research interests and names of 2 references to Prof. M. Papalexandris, miltos@uclouvain.be