Imperial College London

Department of Mechanical Engineering

PhD Studentship in Numerical Modelling of Interfacial Transport Mechanisms

Applications are invited for a research studentship in the field of computational fluid dynamics, leading to the award of a PhD degree. The post is supported by a bursary and fees (at the UK/EU student rate) provided by the EPSRC. EPSRC candidates should fulfil the eligibility criteria for the award. Please check your suitability at the following web site:

http://www.epsrc.ac.uk/skills/students/help/Pages/eligibility.aspx

This PhD studentship is part of a research project that focuses on novel numerical methods that allow the accurate and robust prediction of the dominating transport mechanisms at interfaces between two immiscible fluids in microscopic geometries. The key challenge of this PhD project is to develop novel numerical methods to model heat and mass transfer at fluid interfaces that take into account the additional thermodynamic mechanisms relevant at small (microscopic) scales. The research student will then apply these methods to study the effect of heat and mass transfer on hydrodynamic systems in microscopic geometries and develop strategies to characterise heat transfer in such flows. Interesting questions associated with this research are, for instance, the interaction between evaporation and capillary instabilities as well as the influence of surface tension gradients on interfacial heat and mass transfer. A particular application example of this research is evaporation in cooling systems for microprocessors.

During this project they will acquire a detailed understanding of advanced numerical methods for interfacial flow modelling. Develop novel numerical methods to model interfacial heat transfer and phase change. Study the thermodynamics governing interfacial heat and mass transfer at the microscale. Study the hydrodynamics of capillary instabilities during interfacial heat and mass transfer. They will write scientific papers about their research in top-tier journals and present their research at project meetings and international conferences. They will also work in close collaboration with their supervisor and other PhD students in the research group.

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for the PhD degree at Imperial College London. You will have a 1st class honours degree in mechanical engineering or a related subject, and an enquiring and rigorous approach to research together with a strong intellect and disciplined work habits. A good knowledge of fluid dynamics and thermodynamics as well as a keen interest in computer programming are essential.

To find out more about research at Imperial College London in this area, go to:
http://www3.imperial.ac.uk/mechanicalengineering

For information on how to apply, go to:
http://www3.imperial.ac.uk/mechanicalengineering/study/pgresearch/opportunities

For further details of the post contact Dr Fabian Denner f.denner09@imperial.ac.uk. Interested applicants should send an up-to-date curriculum vitae to Dr Denner. Suitable candidates will be required to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry.

Closing date: until position is filled

Imperial Managers lead by example.

Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people.