

THE UNIVERSITY OF MANCHESTER
PARTICULARS OF APPOINTMENT
FACULTY OF SCIENCE & ENGINEERING
SCHOOL OF CHEMICAL ENGINEERING & ANALYTICAL SCIENCE
RESEARCH ASSOCIATE IN COMPUTATIONAL MODELLING OF FLOWS OF EMULSIONS
VACANCY REF: S&E-12858

Salary: Grade 6 £32,236 to £39,609 per annum, depending on experience
Hours: Full time
Duration: Fixed term available immediately for 2.5 years
Location: Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:

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BACKGROUND

Applications are invited for a fully funded 2.5 years postdoctoral research associate (PDRA) to be conducted in the School of Chemical Engineering & Analytical Science in the University of Manchester. This project is a collaborative project supported by an EU Innovation Action involving a large consortium of academic institutions and private sectors and aims at establishing a new European Virtual Marketplace for material modelling.

Overall Purpose of the Job

The successful candidate for this position will participate in the development of a novel computational workflow to model the processing of emulsions. The workflow will combine different modelling techniques at different scales (from atomistic to continuum) and will be tested and validated against experimental data obtained in the laboratories of Unilever. The PDRA will work on the development of a model to simulate the flow of emulsions at the droplets scale using the Lattice-Boltzmann method and implement it into the Virtual Materials Market Place (VIMMP) created by the consortium.

The PDRA will work closely with researchers in Électricité de France (EDF), Politecnico di Torino (Italy) and Unilever. The project requires a strong link between the team developing the methodology and those developing the marketplace where the workflow will be implemented, therefore pre-knowledge in at least one scientific programming language is a requirement. The PDRA will be also involved in the knowledge transfer activities with all the industry stakeholders and will have the opportunity to directly work with several small and large private companies collaborating in developing the marketplace.

Key Responsibilities, Accountabilities or Duties

The range of duties will include:

- Develop research objectives and proposals for own or joint research
- Use new research techniques and methods
- Write up research work for publication and internal reports
- Use initiative and creativity to identify areas for research, develop new research methods and extend the research portfolio
- Use creativity to analyse and interpret research data and draw conclusions on the outcomes
- Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration
- Manage own research and administrative activities, with guidance if required. Attend and contribute to relevant meetings
- Plan and manage own research activity in collaboration with others
- Balance with help the competing pressures of research and administrative demands and deadlines
- Be involved in the assessment of student knowledge and supervision of projects
- Conduct individual and collaborative research projects
- Continually update knowledge and understanding in the field
- Translate knowledge of advances in the subject area into research activity
- Deal with routine communication using a range of media
- Communicate complex information, orally, in writing and electronically
- Prepare proposals and applications to external bodies
- Communicate material of a specialist or highly technical nature
- Liaise with colleagues and students
- Join external networks to share information and identify potential sources of funds
- Work with colleagues on joint projects, as required
- Contribute to collaborative decision making with colleagues in areas of research
- Use research resources, laboratories and workshops as appropriate
- Be aware of the risks in the work environment and the potential impact on his/her own work and that of others

PERSON SPECIFICATION

Essential:

- Have, or be about to obtain, a relevant PhD/D. Phil (or equivalent) in Chemical Engineering, Mechanical Engineering, Physics, Applied Mathematics or other areas relevant to the position requirements
- Applicants should have experience in continuum simulations of flows using the Lattice-Boltzmann method
- Good theoretical background in fluid dynamics, turbulence and multiphase flows
- Have experience in programming in a scientific language
- Have experience in developing flow models or algorithms
- Excellent communication and interpersonal skills
- Excellent time management and organisational skills
- Ability to work independently and as part of a team
- Ability to liaise confidently and effectively with a range of individuals
- Flexible approach to dealing with research problems as they arise
- Willingness to learn and develop new methodologies/theory
- Ability to present in both written and oral publications

- Ability to meet deadlines
- Strong journal publication record, appropriate to stage of career
- The ability to evaluate complex data
- Ability to contribute to broader management and administrative processes
- Ability to assess and organise resources
- Understand equal opportunity issues as they may impact on areas of research content

Desirable:

- It is also desirable that candidates have expertise in one or more of the following: (i) complex /non-Newtonian fluids; (ii) Colloidal Science
- Experience of working in a multidisciplinary project and working with industry