PostDoc Job Opportunity

DUBLIN CITY UNIVERSITY	First Name	Last Name	email		Institute	Address
PI name & contact details:	Yan	Delauré	yan.delaure@dcu.ie		DUBLIN CITY UNIVERSITY	Glasnevin, Dublin 9, Ireland.
School:	Mechanical and Manufacturing Engineering					
Research Centre / group affiliation:	Water Institute and Centre for Scientific Computing and Compex System Modelling					
Research group / centre website:	http://sci-sym.dcu.ie/index.php?option=com_content&view=article&id=58&Itemid=73					

Brief summary of research group / centre activity:

The Energy and Environmental Flow Modelling group is part of Dublin City University's Centre for Scientific Computing and Complex System modelling and as well as being affiliated to the unversity newly established Water Institute . Its core activities are centred on the development of Computational Fluid Dynamics models for a range of energy and environmental flows and its main expertise is in multiphase and free surface flow as well as rotodynamic machines. The group is also establishing experimental research capabilities with a again a particular focuss on multiphase flow characterisation. Problems currently under investigation includes multiphase flow through waste water pumps and bubbly flow for aeration and stirring processes.

Description of postdoctoral project on offer:

Pumping of sand, water and gas mixtures can pose significant challenges due to the abrasive nature of the solid liquid mixture. The presence of gas fractions can poses further challenges but could also provide some useful lubrication properties when present in the form of micro bubbles. Air bubbles can flow faster than solid particles and the higher lift forces can be exploited to increase the gas fraction near pipe walls. The proposed project aims to model this complex three phase flow problem using a Euler-Euler method. Standard test cases will be considered before extending the study to flow through specific centrifugal pumps. The project is to include experimental validation and will involve a industrial partner

Please indicate the core skills or disciplines that are required for this position: Computational Fluid Dynamics of muliphase flow or related, Navier Stokes solvers including OpenFOAM, Fluent or similar, LES turbulence modelling, Numerical Methods, C++ programming, Experimental fluid mechanics with including PIV would be an advantage