



Water Institute

Research Centre:	DCU Water Institute
Post title:	Post-Doctorate researcher in Multiphase Flow specialising in the study of micro bubble plume and dissolved oxygen mixing
Level on Framework:	Level 1
Post duration:	24 months Fixed Term Contract

Research Career Framework

As part of this role the researcher will be required to participate in the DCU Research Career Framework. This framework is designed to provide significant professional development opportunities to Researchers and offer the best opportunities in terms of a wider career path.

Overview

The DCU Water Institute is a large, multidisciplinary research unit based in state-of-the-art facilities situated on the campus of Dublin City University. Arising from success in recent proposals we are now seeking applications for the following research position in DCU.

Background and Role

Applications are invited for a highly motivated and talented Post-Doctoral Researcher to conduct computational and laboratory based experimental research in micro bubble plume mixing and oxygen dissolution. The successful candidate will be responsible for the development and benchmarking of two computational solvers based, on the one hand, on a Lagrangian model coupled with a dissolved oxygen transport equations and, on the other hand, on a Euler-Euler solution. The code will also be extended to capture the effect of mixers using momentum source terms. Validation will initially involve comparison with experimental tests conducted at lab scale with an existing aeration rig equipped with shadow sizing characterisation and fast response DO sensing. The research will be conducted in collaboration with an Industrial partner, Sulzer Pump Solutions Ireland Ltd and an important part of the project will involve the design and build of a large purpose built hydraulic test facilities. The successful candidate will also work with a team of engineers, a consultant and a research assistant on the specification of the facility and subsequent full scale validation tests.

Applicants should be qualified Mechanical engineers or equivalent. A PhD or equivalent is essential and the successful candidate must have a proven track record of research and development in the areas that are directly relevant to the position. S/he must have research experience in the following areas: (i) Computational Fluid Dynamics of multiphase flow and (ii) experimental characterisation of gas and/or solid particle transport and (iii) hydraulic system design.

The post is full-time and fixed term for 24 months. The role may involve travel between DCU and the Industrial Partner site in Co. Wexford.

Principal Duties and Responsibilities

Reporting to his Principal Investigator the Postdoctoral Researcher will:

- Conduct, with a very high degree of technical competence a specified programme of research and scholarship under the supervision and direction of the Principal Investigator
- Disseminate the outcomes of the research in which he/she is engaged including publishing in high quality peer reviewed journals of international standing.
- Support the PI and research group in the design and development and implementation of the broader research programme.
- Support if required, the development of proposals for research funding.
- Take responsibility as requested for day-to-day advice and support of graduate research students associated with the research group.
- Mentor, assist and train as appropriate and as directed, the research graduate students and more junior postdoctoral fellows within the group.
- Contribute to reporting, site visit preparation and other administrative management work associated with your programme of research and the research group.
- Contribute to teaching and outreach activities of the group.
- Liaise with stakeholders such as industry and collaborators.
- Engage in appropriate training and development opportunities as required by the Principal Investigator, the School or Research Centre, or the University.
- Carry out administrative work associated with the programme of research as necessary.

Minimum Criteria

The candidate should possess the following criteria:

- A track record of research which demonstrates capacity to develop complex computational simulation tools and C++ solvers for the study of multiphase flow systems using OpenFOAM™ or similar tool.
- Experience of computational modelling using a range of state of the art Computational Fluid Dynamics and CAD solutions;
- Research experience involving (gas or solid) particle transport characterisation using particle image analysis techniques such as shadow sizing;
- A minimum of PhD or equivalent research experience (including industrial R&D)
- Proven ability to work in teams and manage projects;
- Excellent communication and writing skills are essential.

Salary: commensurate with experience and qualification as per IUA research salary scales (Starting Post-Doctoral Salary of €37,223 per annum)

Closing date: 15th March 2019

Candidates will be assessed on the following competencies:

Discipline knowledge and Research skills – Demonstrates knowledge of a research discipline and the ability to conduct a specific programme of research within that discipline.

Understanding the Research Environment – Demonstrates an awareness of the research environment (for example funding bodies) and the ability to contribute to grant applications.

Communicating Research – Demonstrates the ability to communicate their research with their peers and the wider research community (for example presenting at conferences and publishing research in relevant journals) and the potential to teach and tutor students.

Managing & Leadership skills - Demonstrates the potential to manage a research project including the supervision of undergraduate students.

Informal enquiries to:

Dr. Yan Delauré, School of Mechanical and Manufacturing Engineering, DCU, Dublin 9, Ireland

E-mail: yan.delaware@dcu.ie

Phone: +353 (0)1 7008886

Please do not send applications to this email address, instead apply as described below.

Application Procedure

To apply for this role, applications should include a CV and covering letter and be submitted with the application form to the Human Resources Department as outlined below. Application forms are available from the DCU Current Vacancies (open Competitions) website at <http://www.dcu.ie/vacancies/current.shtml> and also from the Human Resources Department, Dublin City University, Dublin 9. Tel: +353 (0) 1 700 5149

Please clearly state the role that you are applying for in your application and email subject line: **Job Ref #1157 Researcher in Multiphase Flow specialising in the study of micro bubble plume and dissolved oxygen mixing**

Applications should be submitted by email to hr.applications@dcu.ie or by Fax: +353 (0)1 7005500 or by post to the Human Resources Department, Dublin City University, Dublin 9. Tel: +353 1 700 5149; Fax: +353 1 700 5500 Email: hr.applications@dcu.ie

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