



**Dublin City University**  
**Biomedical Diagnostics Institute, School of Physical Sciences**

**Postdoctoral Researcher**  
**Simulation of Centrifugal Microfluidic “Lab-on-a-Disc” Systems**  
**(12 Month Contract)**

Based at Dublin City University (DCU), the Biomedical Diagnostics Institute (BDI) was established in 2005 through a Science Foundation Ireland Centre for Science, Engineering & Technology (CSET) award, in addition to significant industry funding. The Biomedical Diagnostics Institute (BDI) carries out cutting-edge research focuses on the development of novel, high-performance bioanalytical devices. Our world-class research team currently includes four industry partners (Becton Dickinson, Alere, Biosurfit and Analog Devices) and four clinical and academic institutions: the Royal College of Surgeons Ireland (RCSI) in Dublin, the National Centre for Biomedical Engineering Science (NCBES) at NUI Galway, the Tyndall National Institute (TNI) in Cork and the host institution at Dublin City University (DCU).

**Research Careers 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.

**Role:**

The Microfluidic Platforms group led by Professor Jens Ducreé is currently seeking an ambitious, highly motivated Postdoctoral researcher to advance large-scale integration of next-generation centrifugal microfluidic technologies towards decentralised testing in applications such as biomedical “point-of-care” diagnostics, environmental monitoring and food safety. Similar to integrated circuits in microelectronics, the engineering of these smart, multi-parameter “Lab-on-a-Disc” biosensors requires efficient design software based on a fluidic networks constituted by lumped-element descriptors such pressure head (voltage source), flow resistance (electric resistance), compressibility (capacitance). In a project funded by the Science Foundation Ireland (SFI), the postdoctoral researcher will develop a computational model for individual microfluidic unit operation such as pumping, valving, metering and mixing structures through computational fluid dynamics (CFD) followed by their embedding into a network simulation.

**Duties and Responsibilities:**

All duties are carried out under the supervision of Prof. Jens Ducreé. The deliverables of the postdoctoral researcher's work are defined in work programmes of relevant research projects and in direct communication with the Principal Investigator.

The duties and responsibilities associated with this position include, but are not restricted to the following:

- Developing a computational model for individual microfluidic unit operation such as pumping, valving, metering and mixing structures through computational fluid dynamics (CFD) followed by their embedding into a network simulation
- Tutoring/mentoring undergraduate and postgraduate students
- Writing manuscripts for publication in scientific journals and conferences
- Assuming project management, administrative and infrastructural responsibilities and contributing to authoring research proposals and intellectual property applications as well as their management
- Actively supporting collaboration with existing and the development of relationships with new academic and commercial partners.

**Requirements and Qualifications:**

The successful candidate must hold a PhD in a related field and be a productive researcher with a proactive attitude, excellent presentation and publication skills, and the proven ability to interact with a highly interdisciplinary team and linked industrial partners.

In addition, a proven background in at least one of these fields would be desirable:

- Design and simulation tools of (micro-)fluidic systems (e.g. CFD, network simulation tools, CAD),
- Engineering of microfluidic lab-on-a-chip systems

**Salary:** €37,750

Appointment will be commensurate with qualifications and experience

**Closing Date:** Wednesday 21<sup>st</sup> January

**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:**

Prof. Jens Ducreé, E-mail: [jens.ducree@dcu.ie](mailto:jens.ducree@dcu.ie)

[www.bdi.ie](http://www.bdi.ie) and [www.dcu.ie/microfluidics](http://www.dcu.ie/microfluidics)

**Application procedure:**

A CV with list of publications, a cover letter outlining specific interest and qualifications for advertised position along with the DCU application form should be submitted.

Application forms are available from the DCU Current Vacancies (Open Competitions) website

at <http://www4.dcu.ie/hr/vacancies/current.shtml> and also from the Human Resources

Department, Dublin City University, Dublin 9. Tel: +353(0)1 700 5149; Fax: +353(0)1 700 5500

Email: [hr.applications@dcu.ie](mailto:hr.applications@dcu.ie)

Applications should be submitted by email to [hr.applications@dcu.ie](mailto:hr.applications@dcu.ie) or by Fax: [+353 \(0\)1 7005500](tel:+353(0)17005500) or by post to the Human Resources Department, Dublin City University, Dublin 9. Human Resources Department, Dublin City University, Dublin 9.

***Dublin City University is an equal opportunities employer***

