



Research Centre Fraunhofer Project Centre for Embedded Bioanalytical Systems at Dublin City University (FPC@DCU) – a joint initiative of Science Foundation Ireland and Fraunhofer-Gesellschaft

Post title Senior Researcher/Postdoc in Systems integration and control, instrumentation, fluidic flow control implementation and testing

Level on Framework Level 2

Post duration Fixed term 12 months

Background & Role

An opportunity has arisen to join an exciting research project where the stated ambition is to spin-out the technology into a start-up company on the successful conclusion of the project. The position is located in the innovative, Fraunhofer Project Centre for Embedded Bioanalytical Systems at Dublin City University – Ireland’s University of Enterprise (FPC@DCU). This technology-led centre develops next-generation life-science technologies for the benefit of people and society.

The role involves development of systems to high technology readiness levels (TRLs) within the FPC@DCU which operates at the challenging crossroads of microsystems engineering and life sciences. Common fields of application are Point-of-Care in-vitro diagnostics, pharma, life-science research, agrifood and environmental monitoring. Furthermore, you will support the business development and project management teams of the FPC@DCU in their interactions with industry, academia and funding agencies.

Project Summary: Nucleic acid handling towards Next Generation Sequencing (NGS).

Nucleic acid library preparation/clean-up is a critical part of sample preparation for next-generation sequencing (NGS), as well as for many other applications and FPC@DCU is developing a Lab-on-a-Disc (LoaD) solution in this area. Based on its extensive expertise and background IP in microfluidics, the FPC@DCU will develop an affordable, automated, microfluidic system, which delivers reproducible, high-quality outputs while minimising reagent use. FPC@DCU’s patented, event-triggered dissolvable-film (DF) valve technology provides an unparalleled level of robust, multiplexed flow control which enables development of highly integrated, single-use LoaD cartridges for handling samples and reagents. Pursuing a design-for-manufacture and scale-up strategy compatible with industry standard mass manufacturing practices, FPC@DCU will deliver early prototypes that can be rapidly replicated for evaluation by early adopter customers.

Principal Duties and Responsibilities

Reporting to the NGS PREP project PI.

Technical duties will include but will not be limited to:

- Conduct a specified programme of research within the NGS PREP Enterprise Ireland Commercialisation Fund Project under the supervision and direction of the project PI.
- Leading all activities relating to the Systems Design, implementation and integration of the key instrument/s that will operate the disposable “Lab-on-a-Disc” (LoaD) cartridge. The control protocol will include operations such as on-disc temperature control, external actuation control, spindle motor assembly and control, software interface and communication.
- Testing the developed instrument prototype under various conditions and working in co-ordination with the biological team to enable key operations required for microfluidic implementation of the said protocols.
- User interaction and design.
- Developing and maintaining relevant design control documentation.
- Assisting development and testing of microfluidic disc solutions for the sequencing prep chemistry and attaining required KPIs.
- Sourcing components and methods to implement required system operations.
- Support, quality control and testing of developed microfluidic products.
- Microfluidic LoaD product system integration.

Additional duties will include:

- Support of project management, reporting and interactions with key project members.
- Carry out administrative work to support the programme of research where required, including regular funding agency reports and internal reports etc.
- Support engagement with industry and other external parties in areas relevant to the project.
- Authoring of scientific publications, technical reports and marketing activities as may be required to support the commercialisation activities of the project as directed by, with the support of and under the supervision of the Principal Investigator
- Gain experience and contribute to grant writing with the support of and under the supervision of the Principal Investigator
- Engage in appropriate training and professional development opportunities as required by the Director, FPC@DCU or University in order to develop research skills and competencies.
- Take leadership and contribute to generation of papers, reports and funding proposals as agreed with the Principal Investigator.

The role may involve domestic and international travel.

Minimum Criteria

Applicants must have a solid technical expertise in instrumentation, systems control & integration and communication esp. for dealing with microfluidic systems and have a track record of successful research and development projects and of bringing prototypes from concept to functional products.

Industry experience in the key areas is highly desirable. A background in a subset of the following areas is required:

- A Ph.D., along with an MSc or Bachelor Degree in Electrical/ Mechanical / Biomedical Engineering or related Engineer/ Science degree.
- 2+ Years' Experience designing Systems integration platforms and cross-interactivity of sensors and flow control preferably in the centrifugal microfluidics space.
- Solid working knowledge of designing with hardware and software communication interfaces for multi-sensor platforms, SolidWorks and Electronics/software interfacing of devices with hands-on ability to build, test and validate functional prototypes preferably to the TRL of a spin-out company.
- Design, development and system level integration of microfluidic platform with actuation, temperature and centrifugal flow control systems among others.
- Understanding of polymer microfabrication techniques and rapid prototyping for microfluidics.
- Clear understanding of handling biological fluids (esp. Nucleic Acids towards next gen sequencing) and protocols associated with their chemistries esp. on a microfluidic system.

Research Career Framework

As part of this role you will be required to participate in the DCU Research Career Framework <http://dcu.ie/hr/ResearchersFramework/index.shtml>. This framework is designed to provide significant professional development opportunities to researchers and offer the best opportunities in terms of a wider career path.

In this role you will have access to competent technical, infrastructural and administrative support and the opportunity to evolve a multi-faceted skillset in an environment where you closely collaborate with world-class Irish and international companies and research organisations. Further career opportunities will arise with the success of the FPC@DCU.

DCU has a strong track record in attracting both Irish and European Union research funding under Horizon 2020, previous Framework Programmes, Marie Curie Actions and Erasmus. We offer a dynamic and internationally-focused environment in which to advance your academic and/or research career.

Salary: *€37,223 - €48,205

**Appointment will be commensurate with qualifications and experience will be made on the appropriate point of the salary scale, in line with current Government pay policy.*

Closing date: 28th March 2019

Candidates will be assessed on the following competencies:

Discipline specific knowledge and Research Skills (demonstrates knowledge of a research discipline and the ability to conduct a specific programme of research within that discipline)

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)

Understanding the Research Environment (demonstrates an awareness of the research environment (e.g. funding bodies) and takes responsibility for how their research is conducted)

Informal enquiries to: Dr. Rohit Mishra (rohit.mishra@dcu.ie)

Application Procedure:

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

Applications should be submitted by e-mail to hr.applications@dcu.ie or by Fax: +353 (0)1 700 5500 or by post to the Human Resources Department, Dublin City University, Dublin 9.

Please clearly state the role that you are applying for in your application and email subject

line: Job Ref 1134A Postdoctoral Researcher, Level according to experience

Dublin City University is an equal opportunities employer