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: Postdoctoral Researcher (Level 1) in Systems integration and control, instrumentation, fluidic flow control implementation and testing.

Post duration: Fixed term contract up to 12 months.

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. The role may include teaching duties in support of module delivery.

Background:
Dublin City University (www.dcu.ie) is a research intensive, globally engaged, dynamic institution which has developed its own research specialists, established internationally recognized centres of excellence that have substantive collaborative links with leading universities and industrial partners. DCU is distinguished both by the quality and impact of its graduates and by its focus on the translation of knowledge into societal and economic benefit. Through its mission to transform lives and societies through education, research and innovation DCU acts as an agent of social, cultural and economic progress. DCU is Ireland’s fastest growing university and now hosts more than 17,000 students across its three academic campuses: DCU Glasnevin Campus, DCU St Patrick’s Campus and CU All hallows campus. DCU has a strong track record in attracting both Irish and European Union research funding under Horizon 2020 (and all previous Framework Programmes), Marie Curie Actions and Erasmus. We offer a dynamic and internationally-focused environment in which to advance your academic career.

Fraunhofer Project Centre for Embedded Bioanalytical Systems at Dublin City University – Ireland’s University of Enterprise (FPC@DCU) is a technology-led centre that develops next-generation life-sciences technologies for the benefit of people and society.

The Project:
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 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-sciences 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.

Candidate Role:
The suitable candidate will lead the project within the FPC@DCU in developing an instrument for the implementation and deployment of a microfluidics based solution. FPC@DCU’s patented microfluidic technology will be leveraged to provide an unparalleled level of robust, multiplexed flow control which enables development of highly integrated, single-use cartridges for handling samples and reagents.

**Principal Duties and Responsibilities**

Reporting to the project Principal Investigator technical duties will include but will not be limited to:

- Conduct a specified programme of research within the 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 (LabVIEW and/or others).
- 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 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.

**Qualifications, Skills and Experience Required:**

Applicants must have a PhD in Electrical/Mechanical/Biomedical Engineering/Physics or related Engineering or Science field of study. Applicants should have a minimum of 3 years solid technical expertise in instrumentation, systems control & integration and communication (dealing with microfluidic systems is a plus) and have a track record of successful research and development projects and of bringing prototypes from concept to functional systems. A background in a subset of the following areas is required:

- Demonstrable experience designing electro-mechanical 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.
- 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.
- Understanding of handling biological fluids and protocols associated with their chemistries esp. on a microfluidic system.
Mandatory Training
The post holder will be required to undertake the following mandatory compliance training: Orientation, Health and Safety and Intellectual Property and Data Protection training. Other training may need to be undertaken when required.