PhD Opportunity in Water Analysis by Next-Generation Microfluidic Lab-on-a-Chip Technologies

Joined supervisors: Prof. Fiona Regan (Water Institute @ DCU) and Prof. Jens Ducrée (FPC@DCU)

Water represents a key resource of our lives and its quality has major impact on our health, environment and economies. The water we access through infrastructures or natures typically contain a wide range of molecules and bioparticles which may offer benefits or serious risks.

While our exposure to water is often immediate, i.e. we drink from a tap or dive into the water of a beautiful beach, analysis – if carried out at all - typically occurs with a significant delay linked to sample taking and the logistics to bring it to a centralised facility where expert staff is needed to perform the test; this might be too late.

In a joined initiative by DCU’s Water Institute and FPC@DCU – Ireland’s first Fraunhofer Project Centre for Embedded Bioanalytical Systems - this PhD project aims to extend the options of citizens and other, possibly commercial end users to comprehensively assess water quality. The project will develop a several test formats for identifying potentially hazardous molecules and pathogens that can be carried out “at-tap” or on-site in a highly automated and thus very user-friendly manner on a miniaturized and cost-efficient microfluidic “Lab-on-a-Chip” system.

An eventual technical goal will be to integrate panels of relevant test multi-step / multi-reagent test format on a single system to allow decentralised, multi-parameter screening of water samples by non-expert users. Prospectively, such powerful point-of-use sensors might also constitute a critical element towards building dense sensor networks feeding the Internet of Things and their exploitation for novel applications, e.g. in the context of big-data and artificial intelligence.

We are seeking an enthusiastic candidate with a BEng or BSc. in Engineering, Analytical Science, Physics or equivalent and a keen interest in environmental monitoring to work as part of a multidisciplinary team on this ambitious project.

Application:
Interested applicants should submit a Curriculum Vitae with cover letter explaining why you think you would be the best candidate for this research position. Applications should be sent to martina.kennedy@dcu.ie by June 30th 2019 and will jointly be evaluated by the two co-supervisors.

Informal queries:
Prof. Fiona Regan (fiona.regan@dcu.ie), DCU Water Institute
Prof. Jens Ducrée (jens.ducree@dcu.ie), FPC@DCU

Stipend: €16,000 per annum, tax free, plus university fees
Closing date: June 30th 2019, or until position is filled.

The candidates will need to check their formal eligibility according to the DCU guidelines.