



PhD Position Available

MarTERA ERA-NET Cofund Scheme

NEMO: NEw biomimetic Lab-on-Chip device for marine water MOnitoring

Background

In order to sustain surface and marine water quality as advocated by international directives, there is a growing need for sensors that can enable accurate and rapid in-situ quantification of Persistent Organic Pollutants (POPs). Because of their refractory biodegradation properties and potential toxicity, these chemicals represent a real danger for the marine environment. The rapid and sensitive monitoring of POPs remains a major unmet need. NEMO aims to develop new generation Lab-on-Chip (LoC) miniaturized sensor platforms for the quantitative determination of POPs in marine waters. POPs including polycyclic aromatic hydrocarbons and perfluorocarbon compounds are targeted as well as emerging contaminants such as UV organic filters. The overarching aim of the NEMO programme is to develop deployable lab-on-chip electrochemistry-based systems that will underpin developments for commercial automated and portable sensing platforms for marine deployment that are highly sensitive, robust, and reusable in order to facilitate in-situ monitoring of POPs worldwide geographical and temporal scales.

This PhD project under NEMO will be carried out at the DCU Water Institute in collaboration with the University of Toulon. The project will investigate electrochemical molecularly imprinted polymer (MIP) materials as a recognition phase for targeting POPs in marine waters. Combining highly selective MIP materials with electrochemical detection is an exciting prospect as a highly innovative and new sensor technology. MIP-based sensors will be incorporated into LoC devices where, combined with sample handling and other functionalities, will be designed to deliver autonomous, deployable platforms for the monitoring of the marine environment.

Eligibility Criteria

Candidates should have a minimum of a 2.1 honours undergraduate degree in a chemistry-related discipline. Practical research experience in some or all of the following sub-disciplines would be ideal: analytical chemistry, materials chemistry and electrochemistry.

Application Procedure

Interested candidates should send a cover letter and CV to Dr Aoife Morrin (aoife.morrin@dcu.ie). Evidence of English language proficiency for non-native speakers based on IELTS (or similar) score of 6.5 (or similar local requirements) must also be supplied at time of application.

Application Deadline

Friday 29th May 2020

Responsibilities and duties of postgraduate researcher appointed to this position

Reporting to the project supervisors, the postgraduate researcher will:

- Conduct a specified programme of research as summarised above under the supervision and direction of the project supervisors.
- Engage in the dissemination of the results of the research in which he/she is engaged with the support of and under the supervision of the Project Supervisors
- Engage in appropriate training and development opportunities as required by the project supervisors, the School or Research Centre, or the University
- Engage in laboratory demonstration duties as assigned by the Head of School under the direction of the Project Supervisors
- Liaise with both internal and external stakeholders, and present research summaries to visitors, including existing/potential industry and academic partners/collaborators, and representatives of funding agencies.
- Carry out administrative work associated with the programme of research as necessary
- Attend and contribute to group meetings, seminars and workshops.
- Perform any other functions related to the programme of research as required by the project supervisors.