



UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

PhD Research Studentship

A 3-year EPA-funded PhD studentship is available in the Environmental Research Institute at University College Cork to study impacts of microplastics on fresh water organisms. The project is a collaboration between Prof Marcel Jansen (<http://plantstress.ucc.ie/>), Prof John O'Halloran (<https://www.ucc.ie/en/teachlearn/people/johnohalloran/>) and Dr Frank van Pelt (<http://publish.ucc.ie/researchprofiles/C007/fvanpelt>). The student will be based in the School of Biological, Earth and Environmental Sciences at UCC.

Microplastics comprise small plastic particles that are widespread in the marine environment and have negative impacts on a broad range of marine species. Yet, relatively little is known about microplastics in the fresh water environment. A recent report on microplastics in the fresh water environment refers to "scarcity of information" on critical topics such as sources, environmental fate, and biological impacts. The objective of the project is to explore the impacts of different microplastics on fresh water aquatic organisms using standardised assays, focussing on representative species and biological endpoints. The project will also analyse the trophic mobility and bioaccumulation of microplastics. The data generated will be a stepping stone towards biomonitoring and bioremediation approaches.

The successful applicant will hold a good (at least 2.1 honours), relevant degree with a specialization in biology. Applications by graduates with a masters degree are particularly welcomed. The ideal candidate has experience in toxicological studies, and has expertise in handling green algae, invertebrates and/or mollusc species. A solid background in chemistry would also be an advantage. The student should be highly motivated, independent, fluent in English and have excellent laboratory skills. We expect the student to work within the timetable set for the project. The student will be enrolled in the UCC postgraduate degree programme.

This is a three-year fixed-term studentship (fellowship circa. €21,500 pa inclusive of postgraduate fees). The successful applicant must be available to start April 1st, 2017.

Closing date for applications is February 10, 2017. Applications should include a full CV, a covering letter describing the interest and background of the applicant relevant to the area of research, and contact details of two referees. The successful applicant will be asked to proceed through the Postgraduate Applications Centre (PAC, <http://www.pac.ie>) for formal registration.

Applications can be emailed to Prof Jansen at m.jansen@ucc.ie. Informal enquiries can be directed to Professor Marcel Jansen at +353 (0)21 4904558.

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Postgraduate (PhD and MSc) positions available at the Environmental Research Institute, University College Cork, Ireland

Three postgraduate research positions are available at the Environmental Research Institute (ERI) at University College Cork as part of the Irish EPA funded NEWTRIENTS project. The project is a collaboration between:

- Prof Gavin Burnell (<http://publish.ucc.ie/researchprofiles/D026/gburnell>),
- Prof Jerry Murphy (<https://www.ucc.ie/en/civileng/people/profjerrydmurphy/>),
- Prof Marcel Jansen (<http://plantstress.ucc.ie/>),
- Dr. Niall O' Leary (<http://research.ucc.ie/profiles/D021/noleary>),
- Dr. David Wall (<http://www.marei.ie/people/david-wall/>),
- Dr. Paul Bolger (<https://www.ucc.ie/en/eri/people/administrative/paulbolger/>)
- Dr. Maria O'Mahoney (<http://research.ucc.ie/profiles/D026/momahoney>).

The Environmental Research Institute is an internationally recognised Institute for environmental, marine and energy research dedicated to the understanding and protection of our natural environment and to developing innovative technologies, tools and services to facilitate a transformation to a low carbon, resource efficient society. The Institute brings together over 300 environmental researchers from across science, engineering, business and humanities to address complex environmental challenges in a multi-disciplinary approach. The ERI incorporates a number of environmental research centres including Marine Renewable Energy Ireland (MaREI), the Aquaculture and Fisheries Development Centre (AFDC) and the Centre for Research on Atmospheric Chemistry (CRAC) and has substantial research facilities at its two dedicated buildings on Lee Road, Cork and the Beaufort Building, Ringaskiddy along with environmental research facilities across the UCC campus.

The ambition of the NEWTRIENTS project is to demonstrate a circular economy approach to processing dairy industry wastewater, resulting in a paradigm shift from wastewater treatment to closed loop reuse of valuable components present in the effluent within the local and global economy. The NEWTRIENTS project will develop two novel linked technologies for the recovery of resources from dairy industry wastewater, i.e. (1) secondary treatment via acidogenic fermentation and aerobic dynamic feeding approaches to recover biodegradable polymers and (2) tertiary treatment for the production of duckweed which can serve as a high-value agricultural feed.

PhD-1 will predominantly work with Prof Jansen on optimising growth of Lemnaceae on dairy industry waste waters. The focus will be on the manipulation of growth, determining

growth rates and assessing biomass and protein yields under indoor, and outdoor conditions, and in pre-commercial bioreactors. The successful applicant will hold a good, relevant undergraduate degree with a specialization in environmental sciences and/or plant biology. Applications by graduates with a master's degree are particularly welcomed. The student should be highly motivated, independent, fluent in English and have excellent laboratory skills. The student will be enrolled in the UCC postgraduate degree programme. This is a 4-year post with a starting date of April 1, 2017.

PhD-2 will work with Dr. O' Leary, Prof Jerry Murphy and Dr. David Wall on optimisation/characterisation of bioreactor systems for mixed microbial sludge recovery of biopolymers (polyhydroxyalkanoates) from dairy wastewater derived VFAs at laboratory and pilot scales. An additional key component of the study will involve the application of metagenomic profiling techniques and *in silico* analyses to characterise the microbial communities underpinning system optimisations. The proposed research seeks to build upon recent successful work at the host institute in this area (<http://www.epa.ie/pubs/reports/research/waste/research190.html>). The successful applicant will need to demonstrate a strong potential to bridge the disciplines of microbiology/biotechnology and engineering. A high quality, relevant undergraduate degree is essential, while experience in bioreactor systems operation/characterisation would be advantageous. Applications by graduates with a master's degree are particularly welcomed. The student should be highly motivated, independent, fluent in English and have excellent laboratory skills. The student will be enrolled in the UCC postgraduate degree programme. This is a 4-year post with a starting date of April 1, 2017.

MSc-1 will predominantly work with Dr. O' Leary on the operation of aerobic, biological sequencing batch reactors for the pre-treatment of dairy processing wastewaters. The work is intended to identify SBR parameters allowing optimised integration with downstream Lemnaceae cultivation. The research will largely focus on SBR set up and optimisation coupled with chemical analyses to monitor parameter/performance impacts. The successful applicant will hold a good, relevant undergraduate degree in a related discipline (e.g. biological sciences, process engineering, biotechnology). The student should be highly motivated, independent, fluent in English and have excellent laboratory skills. The student will be enrolled in the UCC MSc postgraduate degree programme. This is a 2-year post with a starting date of April 1, 2017.

All posts provide an annual stipend and EU-fees. Closing date for applications for the postgraduate positions is February 10, 2017. Applications should include a full CV, a covering letter describing the interest and background of the applicant relevant to the area of research, and contact details of two referees. The successful applicant will be asked to proceed through the Postgraduate Applications Centre (PAC, <http://www.pac.ie>) for formal registration.

Applications can be emailed to Dr. O'Mahoney at M.OMahoney@ucc.ie. Informal enquiries can be directed to Prof Marcel Jansen (m.jansen@ucc.ie) or Dr Niall O' Leary (n.oleary@ucc.ie).