**An early stage researcher (ESR) position is available at Ulster University and Delft IMP as part of the Marie Curie European Industrial Doctorate project "REWATERGY"**

PhD student (3 years) – ESR 1 – *Investigation and development of electrocatalysts and electrochemical cells for the production of hydrogen from wastewater*.

REWATERGY is a Marie Curie European Industrial Doctorate (EID) training network funded by the European Commission within the Horizon 2020 research and innovation action. The REWATERGY programme aims to develop an academic-industrial partnership within the water-energy nexus.
Three research objectives set the foundation of this ambitious programme,

- enhance the energy recovery from wastewater streams inspired by the *circular economy* concept,
- improve the *energy efficiency* of water disinfection and removal of contaminants of emerging concern
- increase the *resilience* of distributed household safe drinking water systems addressing potential health and safety challenges.

The REWATERGY network comprises 3 universities (Rey Juan Carlos University (Spain), University of Cambridge (UK) and Ulster University (UK)) and 3 companies (Deft IMP (Netherlands), ProPhotonix (Ireland) and FCC Aqualia (Spain). The consortium is are recruiting 8 highly motivated PhD candidates, providing inter-sectoral training, which will qualify them for a career in academia and/or industry. Each ESR will crucially gain inter-sectoral experience in an individual ESR research project, with the main working period (36 months) of the ESR equally split into an academic and an industrial part of 18 months in at least 2 different countries.

This PhD student position will be hosted and hired by:

- Ulster University, Northern Ireland (UK). Duration: 18 months (October 2019 – March 2021)
- Delft IMP B.V., Delft (The Netherlands). Duration: 18 months (April 2021 – September 2022)

**Description of the work:**

This PhD student position offers an exciting and innovative research project for the synthesis and characterisation of novel photo/catalytic materials and the development of a photo/electrochemical cell for the generation of hydrogen from waste water components (e.g. ammonia and urea). At Ulster, the position will be based in the Photocatalysis group, led by Prof. J Anthony Byrne, based in NIBEC, which has World class nanofabrication and characterisation facilities. Here the research will focus on the synthesis of nano photo/catalytic materials and testing for photo/catalytic activity. Materials will be characterised using advanced analytical methods including HRTEM, XPS, XRD, BET etc. Selected materials will be incorporated into custom built photoelectrochemical cells for the reforming of waste compounds in water to hydrogen. In the second part of the project, a manufacturing route for the production of the selected catalyst will be investigated at Delft IMP using the coating technology atomic layer deposition. Delft IMP, founded in 2014, is a start-up company from Delft University of Technology that focuses on the development and commercialization of new methods to produce coated particles using atomic layer deposition.

**Requirements:**

- The candidate should be in the first four years of their research career. They should not have a doctoral degree and fulfil the eligibility criteria and mobility rule (see below)
- The candidate should hold or be about to obtain a Master's degree in Chemistry, Materials Science or relevant field (or at least equivalent to 2.1 Honours Degree in the UK).
- Excellent experimental skills including experience in laboratory research.
- Previous experience working with nanomaterials synthesis and characterisation, and/or atomic layer deposition technology will be an advantage.
- The ability to work both as part of the team, and independently, coupled with excellent communication, organisational and problem-solving skills.
- International students who require a Tier 4 visa will need to take a UK Home Office approved Secure English Language Test (SELT). The two approved providers are Trinity College London and IELTS (Academic). If you have studied at a UK institution or are from a majority English speaking country, as per the Home Office's list, you are exempt from having to provide this evidence.
- Availability to travel for training events and research secondments.
- The candidate must meet the PhD admission requirements of Ulster University Doctoral College, as the successful candidate will be expected to formally apply for admission: https://www.ulster.ac.uk/__data/assets/pdf_file/0010/152200/Regulations-for-the-Degree-of-Doctor-of-Philosophy.pdf

**ELIGIBILITY CRITERIA**: Recruiting is in accordance with the European rules for Marie Curie Initial Training Networks. Early-stage researchers (ESR) can be of any nationality. They must be, at the time of recruitment by the host organisation, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. The research career starts after the degree that enables a student to proceed with a PhD (usually, the Master degree).

**MOBILITY RULE:** At the time of the recruitment by the first host institution, the ESRs must not have resided or carried out their main activity (work, studies, etc.) in the country of their first host institution for more than 12 months in the 3 years immediately before the recruitment date. Short stays such as holidays and/or compulsory national service are not taken into account.

**Benefits**

- 3 years full time employment contract (starting 1st October 2019) corresponding to two 18 months contracts, one with each host.
- Attractive salary according to the living standards of the hosting country. UK gross salary 3440 €/month including mobility allowance from which the employee has to pay National Insurance, taxes and pension contributions. Taxes bands depend on personal circumstances (more info: https://www.gov.uk/income-tax-rates). Netherlands gross salary 3385 €/month including mobility allowance, taxation of about 27% depending on individual and familiar circumstances. Candidates should get information about the tax requirements associated to each country and their personal circumstances.
- Based in NIBEC at Ulster which is one of the most advanced and innovative Nanotechnology/Bioengineering Centres in Europe today (https://www.ulster.ac.uk/nibec/). Staff at Ulster have excellent working conditions.

- Be part of a small and enthusiastic international team, where own initiatives and ideas are encouraged, as well of be part of a growing start-up environment. See details on the website: http://delft-imp.nl
- Possibility to collaborate with international research groups engaged in the project

**How to apply**

Send your complete application before 26th April (first phase) or 31th May (second phase) filling this form:

http://rewatergy.eu/esr-application-form/

A single pdf file needs to be submitted including:

- a cover letter, stating your research motivation and interests; including relevant background (max 1 A4 page)
- at least 2 referees (including name, position and email address) (max 1 A4 page)
- CV, including academic background, previous industrial and/or research experience (max 2 A4 pages).
- Degree transcripts.
- English language qualification certificates

**Contact:**

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www.rewatergy.eu