

PhD Studentship in the Electrical Detection of Atmospheric Radicals

Air quality and climate change are among the biggest societal challenges that we face today. Atmospheric free radicals, particularly hydroxyl ($\bullet\text{OH}$) and nitrate ($\bullet\text{NO}_3$), are the drivers of chemical processes that determine atmospheric composition and thus influence local and global air quality and climate. Atmospheric radicals influence greenhouse gas lifetimes (climate change), the formation of atmospheric acids (acid rain) and the production of ground-level ozone and secondary organic aerosols (photochemical smog, regional air quality) which affects the health of humans, animals and plants. This PhD position is part of a new European project called RADICAL, which is focused on developing the science and technology to electrically detect and quantify atmospheric radicals using next-generation technologies. The PhD student will work with a team of scientists in UCC and several other European institutes to design, fabricate and test new miniature sensors for the radicals.

Key duties and responsibilities

- The PhD candidate will conduct a specified programme of research under the supervision of Prof Justin Holmes, Prof John Wenger and Dr Stig Hellebust.
- The successful candidate must be able to work at the interfaces between material science and atmospheric chemistry. Significant interdisciplinary interactions with European collaborators will be required.
- Good communication, organisation, interpersonal skills and the ability to work within a project team are essential.

Additional tasks will include:

- The dissemination of results at conferences and through scientific articles
- Supervision of Bachelor or Master students
- Attendance at postgraduate training courses
- Regular reporting of research data
- Involvement in Educational and Public Engagement (EPE) activities.

Qualifications

- Minimum 2:1 undergraduate degree (or equivalent) in chemistry, physics, materials science or a similar discipline.
- Enthusiasm and an awareness of atmospheric chemistry issues in society.
- Applicants whose first language is not English must show evidence of English proficiency, please check the minimum requirements at:
<https://www.ucc.ie/en/study/comparison/english/>

Funding Details

This full-time PhD position is funded for up to 4 years including a stipend of €18,000 per annum. The studentship will cover fees at the rate for EU students.

The scholarship for the PhD degree is subjected to academic approval, and the candidate will be enrolled in one of the general degree programmes at UCC.

Further information

The PhD candidate will work with a team of scientists in two research groups, the Materials Chemistry and Analysis Group and the Centre for Research into Atmospheric Chemistry.

The Materials Chemistry and Analysis Group (MCAG), led by Prof. Justin Holmes, research new materials for electronic, energy, environmental and catalytic applications, addressing key

challenges in nanoscale science and sustainability. The group use a diverse range of techniques to grow, assemble, modify and characterise materials, including cutting-edge nanofabrication, microscopy and spectroscopic approaches. More information on the MCAG can be found at the following link: <https://www.ucc.ie/en/mcag/>

The Centre for Research into Atmospheric Chemistry (CRAC), led by Prof. John Wenger, conducts research on atmospheric composition and its influence on climate, air quality, health and the environment. The centre is equipped with state-of-the-art facilities for: (i) Laboratory simulations of atmospheric processes, (ii) Development of new atmospheric measurement techniques, (iii) Field measurements and modelling to determine sources and impacts of pollution. More information on the CRAC can be found at the following link: <https://www.ucc.ie/en/crac/>

As part of the School of Chemistry (<https://www.ucc.ie/en/chemistry/>), the MCAG and CRAC are fully committed to equality, diversity and inclusion in every area of work, for both students and colleagues. The School of Chemistry is proud to hold an Athena SWAN Bronze Award.

Application Procedure

Please email the following information to Prof. Justin Holmes (j.holmes@ucc.ie) as a **single PDF file**:

- A one-page cover letter outlining any relevant experience and your reasons for wanting to participate in the project.
- A Curriculum Vitae including your education history, courses, awards and skills. Also, if appropriate, please include details of any publications and conference presentations.

The deadline for applications is **1 June 2020**. Applications received after the deadline will **not be considered**. Please quote "RADICAL PhD Studentship" on the subject line of your email.

All interested candidates irrespective of age, gender, disability, race, religion or ethnic background are encouraged to apply.

Informal enquiries about the post should be made by email to either Prof. Justin Holmes (j.holmes@ucc.ie) or Prof. John Wenger (j.wenger@ucc.ie).

About University College Cork (UCC)

UCC is an award-winning institution with a history of independent thinking stretching back over 170 years. UCC has a student population of over 21,000. The University was named Irish University of the Year by the Sunday Times in 2017. In 2015, UCC was also named as top performing university by the European Commission funded U-Multirank system, based on obtaining the highest number of "A" scores (21 out of 28 metrics) among a field of 1200 universities. UCC has been ranked as one of the leading universities in the world for sustainable social and economic impact, in the inaugural 2019 Times Higher Education (THE) University Impact rankings.