

SFI funded PhD Postgraduate Researcher position

University College Cork, Ireland
Department of Physics, School of Chemistry & Environmental Research Institute
College of Science, Engineering and Food Science

Topic: A new cavity-enhanced detector for CARIBIC

Supervisors/Principal Investigator: Prof. Andy Ruth

PhD Overview

A PhD position is available in the Physics Department/Environmental Research Institute at University College Cork for the development and commissioning of a trace gas absorption instrument and its application in the international CARIBIC project (Civil Aircraft for the Regular Investigation of the atmosphere Based on an Instrument Container; <http://www.caribic-atmospheric.com/>). CARIBIC is an innovative project in the area of atmospheric sciences and climate research with the goal to investigate and monitor important chemical and physical processes in the Earth's atmosphere by taking regular and highly sensitive concentration measurements of atmospheric trace constituents during long distance commercial flights. The consortium of CARIBIC partners employ and further develop a unique airfreight container with automated scientific equipment which samples air within the cargo bay of a commercial passenger aircraft, an Airbus A350-800 by Lufthansa. The successful candidate will be expected to drive the implementation and testing of a proto-type cavity-based absorption instrument (CARDINO) for this airborne platform, and to develop data retrieval and analysis procedures. The work will be performed in close collaboration with our partners at the *Institute for Meteorology and Climate Research (IMK), Karlsruhe Institute of Technology (KIT)*, Germany and the *Chemical Science Division of the Earth System Research Laboratory (NOAA)*, Boulder (CO), USA.

The PhD fellowship is funded through Science Foundation Ireland for a maximum of 4 years; it will involve travel and short-term research visits in Germany (Karlsruhe Institute of Technology).

Expected Skill Set

We are seeking a strongly motivated, enthusiastic person with a high level of initiative, capable of working independently and within a team. The candidate should have fluent English and excellent communication, organization, planning and interpersonal skills with a strong innovative spirit.

The successful applicant should have a strong interest in instrument development for atmospheric applications. Ideally, the candidate should have outstanding experimental, engineering and IT skills (e.g. CAD), as well as some experience in optics and spectroscopy. Some know-how in interfacing, electrics and electronics, as well as in experimental data retrieval is very desirable.

Key Duties and Responsibilities

- The PhD candidate will conduct a specified programme of research under the supervision of Prof. Andy Ruth.
- Contribute to the design, construction and operation of the airborne spectroscopic device CARDINO.
- Conduct experiments and tests as required by the research programme.
- Analyse, visualise and report data in model-useable formats.
- Use results to improve mechanisms for the atmospheric oxidation of VOCs and the formation of SOA.
- Work with other researchers in the CARIBIC network and at Karlsruhe Institute of Technology.

Qualifications and Experience

- Minimum 2:1 undergraduate degree (or equivalent) in physics, engineering, chemistry, or a similar discipline.
- Appropriate technical competence and accomplishment, including the use of programming and analytical tools for data analysis and data visualisation.
- Basic understanding of spectroscopy, gases and aerosols.
- Some knowledge of atmospheric processes (pollutants, main sources, basic meteorological processes).
- Enthusiasm and an awareness of atmospheric science and climate research for society.
- A commitment to gaining practical experience working on a research project.
- 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/>

Diversity

To help address gender under-representation in science, applications from female applicants are strongly encouraged, as are those from international students and other under-represented groups. This reflects UCC's commitment to providing a diverse and open environment for students and staff.

For informal enquiries on the position candidates should contact: Prof Andy Ruth, a.ruth@ucc.ie , +353-21-4902057

Funding details: €18,000 stipend per annum. EU tuition fees will be covered (for non-EU applicants additional fees may be incurred).

Duration: 48 Months

Start Date: 1 Oct 2022

To Apply

Please send:

1. Short cover letter describing your motivation for applying for the position and how your experience and expertise match the research topic.
2. CV, including lists of relevant courses taken, research/industry projects performed, relevant experience and any publications.
3. Contact details of two academic references.

to Prof A.Ruth, a.ruth@ucc.ie, quoting “**CARIBIC PhD**” in the subject line of your email.

Supplementary Information on the Department/Research Centre is available at the following URL:

<http://www.physics.ucc.ie/> <https://www.ucc.ie/en/chemistry/> <https://www.ucc.ie/en/crac/>