



PhD Scholarship Advertisement Template

Fully Funded PhD Scholarship to upgrade a Single Puls Shock Tube (SPST) facility to perform experimental studies of pyrolysis and oxidation of fuels for combustion.

**Combustion Chemistry Centre
University of Galway, Ireland**

Application(s) are invited from suitably qualified candidates for full-time funded PhD scholarship(s) starting as soon as possible affiliated to the Combustion Chemistry Centre within School of Biological and Chemical Sciences at University of Galway.

University of Galway

Located in the vibrant cultural city of Galway in the west of Ireland, the University of Galway has a distinguished reputation for teaching and [research excellence](#)

For information on moving to Ireland please see www.euraxess.ie

Detailed Project Description [The Combustion Chemistry Centre, C³](#), is engaged in fundamental research on the combustion of fuels, particularly renewable fuels. Combustion is the ultimate interdisciplinary field, it requires knowledge of chemistry, physics, fluid dynamics, thermodynamics and mathematics. C³ is concerned with the application of combustion research to the design of energy-efficient engine and gas turbine combustion systems and the impact of their use on toxic and greenhouse gas emissions, thus helping address the problems of urban air pollution and climate change.

Detailed Project Description:

The coupling of experimental chemical combustion studies in our shock tube and rapid compression machine facilities, with detailed kinetic modelling is a unique feature of our research Centre.

C³ is helping deliver an integrated approach to the sustainable development of biofuels by joining with both the Microbial Bioenergy Group and with the Molecular Glyco-Biotechnology Group to generate and determine the suitability of biofuels for use in combustors for energy generation.

Shock tube speciation techniques can broadly be classified into two categories: (a) post-shock sampled and (b) time-resolved in-situ species measurements. A single-pulse shock tube (SPST) is a well-established reactor for post-shock sampling and analysis.

The PhD student recruited in this project will focus on the development, design, and upgrade the current SPST facility that helps in understanding fuel combustion and in developing the chemical mechanisms and rate constants for the decomposition of fuels to aid better understanding of their behavior to design energy-efficient engine and gas turbine combustion systems.



The student will be registered at the University of Galway and based in the C3 laboratory at the School of Biological and Chemical Sciences at University of Galway, Galway, Ireland.

The successful candidate will:

- Will be part of a research project on the combustion of gas/liquid/solid fuels.
- Upgrade the current SPST facility.
- Perform shock tube and rapid compression machine studies on fuels.
- Write and publish international peer-reviewed journal articles.
- Day to day responsibility for the performance of all duties associated with their research project, in recording, interpretation and validation of experimental data, and in dissemination of project results and outcomes.
- Assist in the maintenance of the existing facilities at C3 laboratory.
- The post holder will ensure research program requirements in terms of documentation of the project activities, milestones and major key deliverables are implemented and adhered to.
- The post holder will assist in the preparation of periodic scientific reports for this project, maintain confidentiality of background IP, foreground IP and research results, liaise with the members of the group, industry partners and TTO office on the identification of and patent protection of intellectual property generated in the work program.
- The successful candidate will also represent the research activities of the C3 research group as required at local, national and international events (including talks, panel discussions and meetings with funding agencies, industry representatives etc.

Qualifications/Skills required:

Essential Requirements:

- Candidates must have a good primary degree (First or Second Class Honours), or M.Sc. in an appropriate discipline (e.g., Chemistry, Petro-chemical, Mechanical Engineering)
- Good level of experience and competence in combustion chemistry
- Experience and competence in using experimental combustion facilities
- A demonstrated output in terms of published papers in peer-reviewed journals
- An interest in combustion
- Good writing and excellent communication skills are essential for this project, which will involve close collaboration with other members of C3 including industrial partners (Applicants whose first language is not English must show evidence of English proficiency (e.g. IELTS minimum 6.5, individual sections 5).

Please see link for details [entry requirements](#)

- Previous Project Management /Design/ Mechanical Engineering
- Relevant qualification in 2D and 3D such as CAD and Revit
- Basic mechanical and electrical skills



Desirable Requirements:

- Knowledge of experimental combustion facilities
- Prepared for laboratory work and extended periods of field work with modern analytical equipment.
- Ability to work independently and as part of a team
- Self-motivated, high level of initiative and excellent attention to detail
- Experience of working on industry-related projects, or in collaboration with industry
- Have a strong sense of urgency and ownership
- Have the ability to perform the duties specified effectively and efficiently
- Excellent organisation, communication, and time management skills

Living allowance (Stipend): €19,334 per annum, [tax-exempt scholarship award]

University fees: €5,666 (paid separate to stipend)

Start date: Position is available **immediately**.

Academic Entry Requirements: Candidates must have a good primary degree (First or Second Class Honours), or M.Sc. in an appropriate discipline (e.g., Chemistry, Petro-chemical, Mechanical Engineering)

To Apply for the Scholarship: Applications to include a covering letter, CV, and the contact details of three referees should be sent, via e-mail (in word or PDF only) to:

Ms Gráinne Morahan: email: grainne.morahan@universityofgalway.ie

Please put reference number **UoG -----** in the subject line of e-mail application.

Informal enquiries concerning the post may be made to:

Professor Henry Curran: henry.curran@universityofgalway.ie

Application Deadline: Friday 31st January 2024

Primary Supervisor name: Prof Henry Curran

- **Keywords:** (chemistry, combustion, renewable fuels, kinetic modelling) for University of Galway website