

Applications are invited from suitably qualified candidates for the following position:

Research Centre	School of Chemical Sciences, Faculty of Science and Health
Post Title	Postdoctoral Researcher - Machine learning
Level on Framework	Level 1
Post Duration	2.5 Year Fixed Term Contract

Dublin City University

Dublin City University (DCU) is a leading innovative European University, proud to be one of the world's leading Young Universities. DCU is known as Ireland's University of Impact, with a mission to 'transform lives and societies' and focuses on addressing global challenges in collaboration with key national and international partners and stakeholders.

DCU has over 20,000 students in five faculties spread across three academic campuses in the Glasnevin-Drumcondra area of North Dublin. Thanks to its innovative approach to teaching and learning, the University offers a 'transformative student experience' that helps to develop highly sought-after graduates. DCU is currently No. 1 in Ireland for Graduate Employment Rate, and for graduate income (CSO).

DCU is a research-intensive University and is home to a number of Research Ireland-funded Research Centres. The University participates in a range of European and international research partnerships. DCU is also the leading Irish university in the area of technology transfer as reflected by licensing of intellectual property.

As a 'People First' institution, DCU is committed to Equality, Diversity and Inclusion - a University that helps staff and students to thrive. The University is a leader in terms of its work to increase access to education, and is placed in the world's Top 10 for reducing inequalities in the Times Higher Education Impact Rankings.

Research Career Framework

As part of this role the researcher will be required to participate in the DCU Research Career Framework. This framework is designed to provide significant professional development opportunities to Researchers and offer the best opportunities in terms of a wider career path.

Background & Role

The School of Chemical Sciences (SCS) at Dublin City University (DCU) invites applications for a Postdoctoral Researcher as part of a new collaborative project between DCU, HT Materials Science Ltd (HTMS) and Exergyn Ltd. This project, DLCool, has been awarded under the seventh round of the Disruptive Technologies Innovation Fund (DTIF7). The main goal of the DLCool project is to accelerate the development and deployment of next generation heat transfer fluids for use in solid-state heat pumps, direct to chip cooling and other applications, such as EVs and battery storage systems.

The focus of the successful candidate will be to develop AI tools which accelerate the identification of candidate fluids, by applying machine learning, in particular physics-informed neural networks (PINNs), to optimise the thermal properties of nanofluids for use in direct cooling systems. Expertise in the development and application of PINNs in material design is an essential pre-requisite for this role.

As an industry-academia collaboration, the candidate will work on real industry problems and contribute to developing technologies which will have a profound effect on environmental challenges worldwide.

Principal Duties and Responsibilities

Reporting to the Principal Investigator (PI), the researcher will work as part of a cross-functional collaborative team. You will be dealing with scientists to understand their requirements, and sources of data and knowledge in relation to materials, processes, ageing, reliability and other characteristics. You will build and test models in an iterative way to achieve the overall goal of reducing experimental time and improve accuracy. Other duties include:

- Conduct and deliver a programme of research to the highest standard under the supervision and direction of the PI.
- Support the PI and the industry partners team on project planning to ensure all milestones and deliverables are met, particularly regarding developing the ML models to guide selection of nanofluids with optimal thermal, viscosity and related properties.
- Support the work of other PD researchers and PhD students.
- Supervise and assist undergraduate students working in this area with their research (4th year projects).
- Provide weekly updates and a monthly written report on progress.
- Engage in teaching and teaching support as assigned by the Head of School under the direction of the PI.
- Produce a full report and presentation at the end of the contract.
- Support the team's ongoing communication and dissemination efforts including social media and project website.
- Liaise with both internal and external stakeholders including industry and academic partners/ collaborators.
- Engage in appropriate training and development opportunities as required by the Principal Investigator, the School or Research Centre, or the University.

- Carry out administrative work associated with the programme of research as necessary.

Minimum Criteria

Essential

- The successful candidate must have a PhD in computational chemistry, machine learning or a related area.
- In addition, have expertise in one or more of the following areas: developing PINN models, modelling carbon-based nanomaterials, modelling nanomaterial dispersity and viscosity, predicting thermal conductivity and the DMTA cycle.
- Must have demonstrable high-level Python programming skills.

Desirable

The successful candidate will ideally possess the following:

- Postdoctoral experience in developing PINN models to predict the thermal properties of nanofluids.
- Experience developing, benchmarking and implementing LLM and other ML models for materials studies.
- Experience working as part of an industry-academic consortium.
- Strong work ethic, creative thinking and dedication to problem solving.
- Excellent interpersonal skills, verbal, and written communication skills.
- Good organisational skills with an ability to prioritise and work independently.
- Proven ability to work in a team and innovate in a multi-stakeholder environment.

Candidates will be assessed on the following competencies:

Discipline knowledge and Research skills – Demonstrates knowledge of a research discipline and the ability to conduct a specific programme of research within that discipline

Understanding the Research Environment – Demonstrates an awareness of the research environment (for example funding bodies) and the ability to contribute to grant applications

Communicating Research – Demonstrates the ability to communicate their research with their peers and the wider research community (for example presenting at conferences and publishing research in relevant journals) and the potential to teach and tutor students

Managing & Leadership skills - Demonstrates the potential to manage a research project including the supervision of undergraduate students

Essential Training

The postholder will be required to undertake the following essential compliance training:

- Orientation
- Health & Safety

- Data Protection (GDPR)
- Cyber Security Awareness
- AI Literacy

Other training may need to be undertaken when required.

Salary Scale:

IUA Postdoctoral Researcher Salary Scale: €46,305 – €50,168 (Point 1 - 4)

Appointment will be commensurate with qualifications and experience and in line with current Government pay policy.

Closing date: Friday, 7th November 2025

Remote Working Policy

DCU operates a Remote Working Policy. Employees may be approved for up to 2 days of remote working per week (or an appropriate pro-rata amount for those part time). Any remote working arrangement will be reflective of the predominant on-campus working environment and the core University value of 'Student Focused'.

Employees will be based on campus or at either of the partner company facilities for the majority of their working week to ensure a sustained on campus engagement and experience. The terms of the [remote working policy](#) will apply.

For more information on DCU and benefits, please visit [Why work at DCU?](#)

Informal Enquiries in relation to this role should be directed to:

Dr Darren Fayne, Assistant Professor, School of Chemical Sciences, Dublin City University.

Phone + 353 (0)1 7005308

Email: darren.p.fayne@dcu.ie

Please do not send applications to this email address, instead apply as described below.

Application Procedure:

Please submit your application through the online system. In order to be considered for the role to which you are applying for, you must upload:

- 1) Curriculum Vitae
- 2) Cover Letter
- 3) Completed application form (blank forms can be downloaded from the bottom of the Vacancy).

Please note, if all items are not uploaded, the application will be deemed incomplete, and will not be processed.

Dublin City University is an equal opportunities employer.

In line with the Employment Equality Acts 1998 – 2015, the University is committed to equality of treatment for all those who engage with its recruitment, selection and appointment processes.

The University's Athena SWAN Silver Award signifies the University's commitment to promoting gender equality and addressing any gender pay gaps. Information on a range of university policies aimed at creating a supportive and flexible work environment are available in the [DCU Policy Starter Packs](#)

