



Research Centre

School of Chemical Sciences/Biodesign Europe

Post title

Postdoctoral Researcher in Polymer Chemistry

Level on Framework

Level 1

Post duration

11 Months Fixed Term Contract

Dublin City University

Dublin City University (DCU) is a leading innovative European University. It is proud to be one of the world's leading Young Universities and is among the world's top 2% globally. 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 SFI-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 presence of fungal diseases poses a significant threat to global crop production, causing a loss of 7-24% of commodity crops annually and costing over €180 billion worldwide. Traditional fungicides, when applied to crop foliage, often face challenges with their effectiveness due to susceptibility to rainfall. The incorporation of polymeric 'stickers' into antifungal formulations offers a promising solution to enhance resistance to environmental factors. However, the current use of petrochemical-based excipients raises concerns regarding their impact on CO₂ emissions, environmental pollution, and soil degradation.

Our innovative LeafLock project seeks to address this challenge by developing sustainable and biodegradable aliphatic polyester 'stickers'. These biobased polyesters will be synthesised through the ring-opening polymerisation of monomers derived from unwanted by-products of biofuel production and woody biomass. This research aims to revolutionise crop protection and soil health, safeguarding agriculture for future generations. As a Postdoctoral Researcher in Polymer Chemistry, you will play a pivotal role in the development of sustainable polymer stickers for the enhanced delivery of fungicides and biostimulants. Your work will contribute to the LeafLock project's objectives, which include designing biodegradable polymers and polymer networks for sustainable agriculture.

Principal Duties and Responsibilities

Reporting to their Principal Investigator the Postdoctoral Researcher will;

- Conduct research on the synthesis of biodegradable aliphatic polyesters.
- Develop and optimise polymerisation methodologies.
- Characterise polymer properties and their performance in fungicide formulations.
- Collaborate with a multidisciplinary team of researchers and industry partners.
- Publish research findings in peer-reviewed journals.
- Mentor and guide graduate students in related research areas.

Minimum Criteria

Applicants should have a PhD in Polymer Chemistry. In addition, it is desirable that the candidate has:

- Knowledge of small molecule/monomer synthesis and characterisation (NMR and IR spectroscopy, mass spectrometry etc.)
- Hands-on experience of ring-opening polymerisation techniques
- Knowledge of polymer characterisation such as SEC/GPC, DSC, TGA etc.
- Research experience in formulation of polymer-based nano/micro particles.
- Evidence of publication of research articles in relevant fields.
- The ability to work in collaborative projects and possess excellent communication skills.

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