



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

Research Centre	School of Chemical Sciences
Post title	Postdoctoral Researcher MultiMAT – Development of Functional 3D printable advanced (bio)inks.
Level on Framework	Level 1
Post duration	Fixed Term Contract up to 12 Months

Dublin City University

Dublin City University (DCU) is a young, ambitious and vibrant university, with a mission ‘to transform lives and societies through education, research, innovation and engagement’. Known as Ireland’s ‘University of Enterprise’, DCU is a values-based institution, committed to the delivery of impact for the public good. DCU was named Sunday Times Irish University of the Year 2021.

DCU is based on three academic campuses in the Glasnevin-Drumcondra region of north Dublin. More than 18,000 students are enrolled across five faculties – Science and Health, DCU Business School, Computing and Engineering, Humanities and Social Sciences and DCU Institute of Education.

DCU is committed to excellence across all its activities. This is demonstrated by its world-class research initiatives, its cutting-edge approach to teaching and learning, its focus on delivering a transformative student experience, and its positive social and economic impact. The university continues to develop innovative programmes in collaboration with industry, such as the DCU Futures suite of degrees, which are designed to equip graduates with the skills and knowledge required in a rapidly evolving economy.

DCU’s pursuit of excellence has led to its current ranking among the top 2% of universities globally. It is also one of the world’s Top Young Universities (QS Top 100 Under 50, Times Higher Top 150 Under 100). In the Times Higher Education University Impact Rankings 2021, DCU ranked 23rd in the world for its approach to widening participation in higher education and its ongoing commitment to eradicating poverty, while it ranks 38th globally for its work in reducing inequality and 89th globally for gender equality.

The university is ranked 23rd in the world and first in Ireland for its graduate employment rate, according to the 2020 QS Graduate Employability Rankings. Over the past decade, DCU has been the leading Irish university in the area of technology transfer, as reflected by licensing of intellectual property.

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 at Dublin City University invites applications for a Postdoctoral Researcher in materials science, polymer science and (bio)ink formulation to work on the formulation and optimisation of multicomponent bioactive bioinks, e.g., biomolecules incorporation in a conductive stimuli-responsive polymers matrix, that will enable the sensors to be 3D printed at low temperatures. The goal of this specific project is to develop stable advanced functional bioinks, e.g., active biomolecules incorporated in an electronically conducting, stimuli-responsive polymer matrix, allowing sensor platforms to be 3D (bio)printed at low temperatures in complex printed architectures. The project will be develop in collaboration with Prof. Yann Pellegrin - Nantes University (France) and Prof. Robert Forster – DCU (Ireland).

We are seeking a Postdoctoral Researcher (PD) with a PhD in materials science/polymer science/ biosensor/electrochemistry focused strongly on the formulation and optimisation of inks for 3D (bio) printing as well as experience in 3D (bio)printing and ink/materials characterisation.

Successful candidates will be required to have good understanding of the interaction between (conductive) polymers, organic solvents and biomolecules (antibodies) within the bioink. Also, the stability, biodegradability, cytotoxicity and bioactivity of the 3D bioprinted structures will also be investigated by the PD.

The successful candidate will join a multidisciplinary research team working to formulate a multicomponent smart bioink, optimise and test the 3D (bio) printed sensor structures. The bioinks developed will be applied on the creation of a reliable, stable and reproducible (bio)sensors platform that allows multianalyte detection, e.g., pathogen detection – E. Coli and Salmonella.

Knowledge of the key aspects of electrochemical biosensor design, e.g., sensitivity, background noise, available potential window, and how these are influenced by the ink composition is an advantage.

Principal Duties and Responsibilities

Reporting to the Principal Investigator the Postdoctoral Researcher will:

- Conduct and deliver a programme of research to the highest standard under the supervision and direction of the PI.
 - Assist the PIs on project planning to ensure all milestones and deliverables are met particularly regarding the practical demonstration of the bioink formulation and sensor technology.
 - Assist the work of other Post-Doctoral researchers on the programme.
 - Supervise and assist undergraduate students working in this area with their research.
 - Provide weekly updates and a monthly written report on progress.
 - Engage in teaching and teaching assistance as assigned by the Head of School under the direction of the Principal Investigator.
 - Compile, analyse and interpret data generated in the project on an ongoing basis.
 - Produce a full report and presentation at the end of the contract.
 - Assist 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

- Applicants should have a PhD in material sciences, materials chemistry, polymer science, or 3D printable bioinks for electrochemical application.
- Laboratory experience in (bio)ink formulation using nanomaterials, biomolecules (proteins, nucleic acids and cells), 3D bioprinted structures characterisation (e.g., rheology, cytocompatibility, bioactivity loss, layer stacking, filament fall, extrusion force, shelf-life and compression tests).
- Demonstrated strong work ethic, as well as an independent and creative mind set and a deep commitment to problem-solving.
- Excellent interpersonal skills as well as verbal and written communication skills.
- Very good organisational skills with an ability to prioritise workloads and to work successfully on their own initiative.

In addition, it is desirable that the candidate has experience in:

- Postdoctoral experience, graduate qualification, e.g., in bioink formulation, optimisation and characterisation.
- Knowledge in electrochemistry is desirable.

- Demonstrated ability to work as part of a collaborative team and to innovate in an organisational environment with multiple academic, clinical and industrial stakeholders.

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