



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

<b>Research Centre</b>	School of Chemical Sciences
<b>Post Title</b>	Postdoctoral Researcher for MultiMAT
<b>Level on Framework</b>	Level 1
<b>Post duration</b>	Fixed Term Contract 11 Months

### **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.

### **School of Chemical Science**

The School of Chemical Sciences is one of Ireland's most progressive and highest achieving Schools with outstanding facilities, housed within a modern and dynamic city campus. Our goal is to develop graduates with the ability to critically evaluate, and then to solve, chemical and pharmaceutical problems, preparing the highest quality graduates capable of meeting the challenges of modern industry and research. The School is highly successful at attracting large scale research funding, with our researchers having significant roles within nationally significant university/industry collaborative initiatives and European funded Integrated Training Networks. The School of Chemical Sciences is one of the leading academic schools within DCU and is ranked in the top 300 chemistry schools/departments in the world (QS Rankings), a reflection of the School's ambitious research activities and its undergraduate/postgraduate degree programmes.

## Research Career Framework

As part of this role the researcher will be required to participate in the DCU Research Career Framework (<http://dcu.ie/hr/ResearchersFramework/index.shtml>). This framework is designed to provide significant professional development opportunities to researchers and offer the best opportunities in terms of a wider career path. DCU has a strong track record in attracting both Irish and European Union research funding under Horizon 2020 (and all previous Framework programmes), Marie Curie Actions and Erasmus. We offer a dynamic and internationally focused environment in which you can advance your career.

## Background & Role

The School of Chemical Sciences at Dublin City University invites applications for a senior 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 position is available from June 2022, initially for one year, with the possibility of extension for two years. 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 developed in collaboration with Prof. Yann Pellegrin - Nantes University (France) and Prof. Robert Forster – DCU (Ireland).

We are seeking a Senior Postdoctoral Fellow (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 individuals 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 PD 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.

## Duties and Responsibilities:

Reporting to the Principal Investigators (PIs), the researcher will fulfil the duties which will include, but not be limited to:

- 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 PD 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 support 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

## **Qualifications and Experience**

### **Minimum Criteria**

- The successful candidate must have a PhD in electrochemistry, material sciences, materials chemistry and chemical sciences.
- 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) and/or electrochemical biosensors (immunoassay).
- 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.

### **Desirable Criteria**

The successful candidate will ideally possess the following:

- Postdoctoral experience, graduate qualification, e.g., in electrochemical biosensor, bioink formulation (optimisation and characterisation).
- Knowledge in electrochemistry/electrochemiluminescence 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.

### **Individuals will be assessed on the following competencies:**

**Discipline knowledge and Research skills** – Demonstrates the ability to design and implement part of a programme of research (for example by using critical thinking and the application of relevant research methodologies).

**Understanding the Research Environment** – Demonstrates a thorough understanding of the research environment both nationally and internationally and the ability to contribute substantially to grant applications.

**Communicating Research** – Demonstrates the ability to communicate their research effectively to the research community and wider society (for example by publishing their research in high quality peer reviewed journals) and the ability to teach and tutor students.

**Managing and Leadership skills** - Successfully manages research projects including the management and supervision of postgraduates and/or junior research staff.