Research Centre:	Advanced Processing Technology Research Centre
Post title:	Postdoctoral Researcher - Automated Materials Testing
Level on Framework:	Level 1
Post duration:	Fixed Term Contract Up to 11 Months

Dublin City University

Dublin City University www.DCU.ie 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 and Transformation', it is committed to the development of talent, and the discovery and translation of knowledge that advances society and the economy. DCU is the Sunday Times Irish University of the Year 2021.

The University is based on three academic campuses in the Glasnevin-Drumcondra region of north Dublin. It currently has more than 18,000 students 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 creating a transformative student experience, and its positive social and economic impact. This exceptional commitment on the part of its staff and students has led to DCU's ranking among the top 2% of universities globally. It also consistently features in the world's Top 100 Young Universities (currently in QS Top 70 Under 50, Times Higher Top 150 Under 100).

DCU is placed 84th in the world, in the Times Higher Education University Impact Rankings – measuring higher education institutions' contributions towards the UN Sustainable Development Goals. Over the past decade, DCU has also been the leading Irish university in the area of technology transfer, as reflected by licensing of intellectual property.

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 academic career.

Project Overview & Role Profile

Characterisation of heat pump core component designs

I-Form Advanced Manufacturing Research Centre are seeking Post-Doctoral Researchers and Research Assistants to work on a project that will develop the next generation of nitinol based heat pumps.

A large focus of this project is on the optimisation of a core element in a heat pump system, the product of a partner company. The nitinol material will be metal 3D printed in various formats and tested. The core structure design will be optimised for achieving a combination of high strength and high latent heat capacity and release rate. This will provide a basis for the heat pump system enhancement. The design freedom of metal AM will thereby be investigated to allow for improved heat exchange efficiency and robustness.

In this role, a rig to control the stress level on the core and the temperature of the core, will be implemented. Sensors to record strain, temperature, stress and displacement will be used to characterise the material response, the efficiency of the system, and to enhance the process control.

Principle Duties and Responsibilities

Reporting to his/her Principal Investigator the Postdoctoral Researcher will:

- Conduct research in the area(s) relevant to the project.
- Provide assistance/advice within the group on the automation and testing topics.
- Assist the Principal Investigator and the research group in the design and development of the specific research programme.
- Produce top quality journal and conference publications, in collaboration with the PIs.
- Support the development of proposals for research funding.
- Participate in Centre activities, including industry showcases, annual reviews and industry and agency visits to the Insight labs.
- Carry out administrative work associated with the programme of research as necessary
- Other tasks relevant to successfully implementing the assigned research programme.

Qualifications, Skills and Experience Required

The candidate must have a PhD in materials and manufacturing engineering with a focus on automation and control using control software such as LabVIEW. The team is seeking high performance, aspiring applicants with a desire to discover new knowledge and to drive forward advanced materials and manufacturing technologies.

In addition, it is desirable that the candidate has a subset of the following skills:

- An ability to design and/or implement a substantial programme of research including initiating and directing new research programmes.
- Demonstrated ability in conveying their research nationally and internationally (for example by publishing in high quality peer reviewed journals of international standing, presentation at conference and through interaction with industrial partners).
- Experience in assisting with the supervision of postgraduate students would also be desirable as would financial management of a research project.
- A demonstrated ability of good communication skills will be sought.

Mandatory Training:

The post holder will be required to undertake the following mandatory compliance training: Orientation, Health and Safety and Intellectual Property and Data Protection training. Other training may need to be undertaken when required.

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