



<b>Research Centre:</b>	I-Form, Advanced Manufacturing Research Centre
<b>Post title:</b>	Postdoctoral Researcher- Heat Exchanger and Core Design, Heat Treatment and Testing
<b>Level on Framework:</b>	Level 1
<b>Post duration:</b>	2 Years

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. The role may include teaching duties to assist with module delivery.

### **Background**

Dublin City University ([www.dcu.ie](http://www.dcu.ie)) is a research intensive, globally engaged, dynamic institution which has developed its own research specialists, established internationally recognized centres of excellence that have substantive collaborative links with leading universities and industrial partners. DCU is distinguished both by the quality and impact of its graduates and by its focus on the translation of knowledge into societal and economic benefit. Through its mission to transform lives and societies through education, research and innovation DCU acts as an agent of social, cultural and economic progress. DCU is Ireland's fastest growing university and now hosts more than 17,000 students across its three academic campuses: DCU Glasnevin Campus, DCU St Patrick's Campus and CU All hallows campus. 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 to advance your academic career.

**I-FORM Advanced Manufacturing Research Centre:** The I-FORM Advanced Manufacturing Research Centre has been established by Science Foundation Ireland (SFI) to deliver high-impact, innovative

science and engineering research. I-FORM has particular focus on additive manufacturing ('3D printing') combined with advanced digital technologies applied in a precision manufacturing environment, see <http://www.i-form.ie/>

The Centre brings together a multi-disciplinary team of over 80 PhD and Post-Doc researchers in manufacturing engineering, materials and data science, in a cross-disciplinary and translational research environment. I-FORM operates in close collaboration with a global network of companies and collaborators.

### **The Project and the Role**

#### **Additive Manufacturing (AM) and 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 printed in wire and lattice formats. The lattice 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. In addition to this the fluid flow through the system will be optimised. A heat pump test rig will be developed for evaluation of the developed core elements. The design freedom of AM will be investigated to allow for improved heat exchange efficiency and robustness. In addition to these fundamental process development requirements, this project will be conducted with a focus toward achieving the next generation heat engine product design of a collaborating company.

In this role, straight wire based and heat exchanger designs for the core element of a heat pump will be designed, including calculation of heat transfer efficiency of these designs. In this role the effect of the heat treatment of these designs on microstructure of wire and metal PBF produced core designs will be fabricated with metal PBF and via conventional means and tested.

#### **Principle Duties and Responsibilities**

Please refer to the job description for a full list of duties and responsibilities associated with this role.

## **Qualifications, Skills and Experience Required**

The ideal candidate will have completed a PhD in Computer Science in a relevant discipline. The team is seeking high performance, aspiring applicants with a desire to discover new knowledge and to drive forward advanced manufacturing technologies.

Ideally the applicant will have the following skills;

- An ability to design and/or implement a substantial programme of research including initiating and leading 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.

**Postdoctoral salary:** \*€37,874 – 38'417

\* ***Appointments will be commensurate with qualifications and experience and will be made on the appropriate point of the salary scales, in line with current Government pay policy.***

**Closing Date:** 7<sup>th</sup> July 2020

**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

### **Application Procedure**

#### **Informal enquiries to:**

*Professor Dermot Brabazon, School of Mechanical & Manufacturing Engineering* E-mail:

[Dermot.brabazon@dcu.ie](mailto:Dermot.brabazon@dcu.ie) Phone: +353 (0)1 700 8213

Application forms are available from the DCU Current Vacancies (open Competitions) website at <http://www.dcu.ie/vacancies/current.shtml>. Applications should be submitted by e-mail with your completed application form to [hr.applications@dcu.ie](mailto:hr.applications@dcu.ie).

Please clearly state the role that you are applying for in your application and email subject line: Job Ref #RF1375 Postdoctoral Researcher – Heat Exchanger and Core Design, Heat Treatment and Testing

**Dublin City University is an equal opportunities employer and is committed to promoting gender equality reflected in its attainment of the Athena SWAN Bronze Award. Information on a range of university policies aimed at creating a supportive and flexible work environment are available at [www4.dcu.ie/policies/policy-starter-packs.shtml](http://www4.dcu.ie/policies/policy-starter-packs.shtml).**