

**Research Centre:** I-Form, Advanced Manufacturing Research Centre  
**Post title:** Research Fellow - Radio Frequency Modelling & Analysis of Plasma Systems  
**Level on Framework:** Level 2  
**Post duration:** 2 Year Fixed-Term Contract

## Background

Dublin City University [www.dcu.ie](http://www.dcu.ie) is a research intensive, globally engaged, dynamic institution which has 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.

## 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.

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**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.

**DCU's Advanced Processing Technology Research Centre (APT)** focuses on state-of-the-art research activities in the areas of Production Technology, Product Design & Sustainability, Micro-

and Nano Systems Technology, Advanced Materials Engineering and Bio-Systems. The APT is a leading international research centre which as a primary goal strives to provide significant translational benefit to the wider community. Research projects undertaken within APT are conducted to a world class level and support local and internationally based enterprises. The APT research group has established a strong infrastructure of equipment and people in the area of processing technologies at DCU. APT's education and outreach events include seminars and courses which enable the transfer of processing technologies knowledge to the broader community.

## **Project and Role Background**

### **Radio Frequency Modelling and Experimental Analysis of Plasma Systems**

Researchers in APT have been developing world-leading non-contact, non-destructive *in situ* sensors to monitor Plasma Based Processing of materials for semiconductor manufacturing. Arising from recent industrial collaborations the following Postdoctoral research position is now available in Dublin City University (DCU). DCU has pioneered the development of radio frequency (RF) probing of low pressure industrial plasmas for manufacturing.

- This is an industrially-focused project, funded by industry, and the technology developed within DCU will remain proprietary to DCU.
- The candidate will actively explore the capabilities of novel RF probe designs, including necessary modifications and upgrades, to be followed by *in situ* testing on low pressure RF plasma systems.
- The captured data will be modelled and analysed to correlate the temporal and spectral content with variations in the process plasma process parameters, and their impact on the outcomes of those processes.
- This will require someone who possesses expertise in RF plasma modelling combined with radiofrequency electromagnetic component/circuit design and familiarity with the operation of low pressure RF plasma systems, particularly for semiconductor process applications.

## **Principle Duties and Responsibilities**

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

## **Candidate Requirements**

The team is looking for applications from high performing, aspiring candidates with a desire to discover new knowledge and to drive forward advanced manufacturing technologies.

The successful candidate will demonstrate the following:

Essential Criteria:

- PhD and/or significant industrial experience in applied or experimental physics, electronic engineering, or a cognate discipline.
- Previous experience in plasma physics modelling and/or RF engineering, semiconductor plasma processing and RF probe applications.
- Experience in SPICE, and/or Matlab + Simulink

The ideal candidate will also have:

- Proven ability in actively 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).
- Demonstrated ability of good communication skills.
- A high level of interpersonal and team working skills

**Candidates will be assessed on the following competencies:**

**Discipline Knowledge & 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 comprehension 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 & Leadership skills** – Successfully manages research projects including the management and supervision of postgraduates and/or junior research staff.

**Mandatory Training:**

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

**Closing Date: Wednesday 2nd December 2020**

**Salary: € 55,811 (Point 1 of the IUA Salary scale)**

*\*Appointment will be commensurate with qualifications and experience*

**Informal enquiries to:**

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Please do not send applications to this email address, instead apply as described below.

**Application Procedure**



**European Union**  
European Regional  
Development Fund



Application forms are available from the DCU Current Vacancies website at <https://www.dcu.ie/hr/vacancies/current.shtml>.

Applications must be submitted by e-mail 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 #RF1431 Research Fellow - Radio Frequency Modelling & Analysis of Plasma Systems**

**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).**