



**Research Centre**

*National Centre for Plasma  
Science & Technology*

**Post title**

*Postdoctoral Researcher  
Plasma Processing for  
Selective Area Deposition*

**Post duration**

*4 Years*

**Background & Role**

**The Project**

This project aims to develop a novel process for selective area deposition for use in the semiconductor manufacturing industry. Selective area deposition is seen as a 'grand-challenge' in semiconductor manufacture as it allows development of features at a substrate surface without the need of (very costly) lithographic steps. The project is under the auspices of the AMBER centre (<http://www.ambercentre.ie>), and links researchers in Dublin City University, Trinity College Dublin and Intel Ireland. Financial support is from Science Foundation Ireland and Intel Ireland.

The overall goal is to develop a methodology that allows highly selective, direct deposition of material onto pre-selected regions (by the material of composition) of a substrate. The opportunity to make a significant impact to this overall objective has arisen because of our success in the use of block copolymer based methods that allow us to 'write' surface features by insertion of inorganic precursors into self-assembled structures. The research will focus on the combination of three steps: a) Surface preparation using plasma chemistry to passivate selected areas of the substrate; b) the selective deposition of a polymer brush at selected area of the substrate; c) the use of a solvent based method to include inorganic precursors and form coherent deposits at the selected sites. Critical for success is the development of an understanding of the surface chemistries induced by plasma processing as this provides the platform for the remainder of the research programme. This position focuses on this last aspect.

## **Principle Duties and Responsibilities**

The Postdoctoral Researcher will

- Have a wide knowledge of plasma processing and plasma diagnostics relevant to the work programme outlined above
- Bring an energetic and enterprising approach to the execution of the research programme
- Have inter-personal skills suitable for playing a role at the centre of a complex multi-disciplinary team, and in this context be ready to work closely with colleagues in other disciplines
- Be alert to unexpected opportunities arising during the research programme.
- Assume a major role in disseminating the results of the research, to the scientific community generally, the stakeholders and (where appropriate) the wider public
- Assist with the supervision of doctoral students working in the area of the project
- Contribute to teaching activities, in ways to be agreed with Heads of the Schools.
- Engage in appropriate training and development opportunities as required by the programme director, the School or Research Centre, or the University.

## **Minimum Criteria**

Applicants should have a PhD in a discipline relevant to plasma diagnostics or plasma processing. A broad knowledge of the field of plasma processing is essential.

**Discipline Knowledge & Research skills** –Demonstrates the ability to design and/or implement a substantial programme of research including initiating and leading new research programmes (for example by using critical judgement and an understanding of new research methodologies)

**Understanding the Research Environment** – Demonstrates a thorough understanding

of the research environment both nationally and internationally, the ability to secure significant research funding and where relevant the ability to apply for intellectual property rights and/or patents for their research

**Communicating Research** – Demonstrates excellence in communicating their research nationally and internationally (for example by publishing in high quality peer reviewed journals of international standing and through invitation to participate in commercial research) and the ability to deliver teaching based on their own research

**Managing & Leadership skills** – Successfully leads and manages research programmes including the management and supervision of a small research team and the financial management of research programmes.

**Salary:** \*€36,488 - €47,255 per annum

**\* 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:** 24<sup>th</sup> August 2017

## **Application Procedure**

### **Informal enquiries to:**

*Professor Miles Turner, School of Physical Sciences and National Centre for Plasma Science & Technology, DCU, Dublin 9, Ireland.*

E-mail: [miles.turner@dcu.ie](mailto:miles.turner@dcu.ie)

Phone: +353 (0)1 700 5298

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

## **Application Procedure**

Application forms are available from the DCU Current Vacancies (open Competitions) website at <http://www.dcu.ie/vacancies/current.shtml> and also from the Human Resources Department, Dublin City University, Dublin 9. Tel: +353 (0) 1 7005149.

Please clearly state the role that you are applying for in your application and email subject line: Job Ref 633 Postdoctoral Researcher Plasma Processing for Selective Area Deposition.

Applications should be submitted by email to [hr.applications@dcu.ie](mailto:hr.applications@dcu.ie) or by Fax: +353 (0)1 7005500 or by post to the Human Resources Department, Dublin City University, Dublin 9.

***Dublin City University is an equal opportunities employer***