Research Centre

PRECISION

Plasma Technology for Nano Manufacturing

Post title

Postdoctoral Researcher

CMOS Applications

Level on Framework

Level 1

Post duration

18 Months

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.

Background & Role

Precision is a Strategic Research Cluster supported by Science Foundation Ireland and our Industrial partners. The Cluster is hosted by the National Centre for Plasma Science and Technology (NCPST) at Dublin City University and the Surface Engineering Group at University College Dublin. The Cluster aims to develop the scientific and technological knowledge needed for present and future manufacturing applications using plasmas, with a specific emphasis on nano-scale products, process reliability, manufacturing costs and advanced materials processing. This project aims to develop a number of processes for the synthesis, patterning and characterisation of a variety of materials, including low-k dielectric materials for advanced nano-electronic fabrication.

Principal Duties and Responsibilities

Reporting to his/her Principal Investigator the Postdoctoral Researcher will conduct a specified programme of research under the supervision and direction of the Principal Investigator, which will include the following:

• Design and engineer plasma processes and their characterisation with a variety of sensors and instrumentation
• Study the impact of post-processing, such as etch and ashing, on the materials composition and properties
• Engage in research on the fundamentals of the deposition and optimisation of these materials
• Apply a full set of state-of-the-art advanced metrology tools to these materials systems
• Assist in identifying and developing future research and funding initiatives
• Engage in the dissemination of the results of the research in which he/she is engaged with the support of and under the supervision of the Principal Investigator
• Engage in appropriate training and development opportunities as required by the Principal Investigator, the School or Research Centre, or the University.
• Engage in teaching and teaching support as assigned by the Head of School under the direction of the Principal Investigator
• Liaise with both internal and external stakeholders including industry and academic partners/collaborators
• Carry out administrative work associated with the programme of research as necessary.
**Minimum Criteria**
Applicants should have a PhD in Electronic Engineering, Physics, Materials Science, Applied Physics, Chemistry or a cognate discipline. In addition the candidate must have significant experience in:

- Nanomaterials characterization including some or preferably all of: x-ray diffraction imaging (XRDI) and high-resolution x-ray diffraction (HR-XRD), x-ray reflectivity (XRR), grazing incidence in-plane diffraction, confocal micro-Raman spectroscopy (uRS), micro-photoluminescence (uPL), secondary ion mass spectrometry (SIMS), and X-ray photoelectron spectroscopy (XPS).

- Plasma and chemical synthesis of thin film structures, including halide and mixed oxide thin films, and SILSESQUIOXANES

**Salary:** €37,750 - €46,255

**Closing date:** 13\(^{th}\) March 2012

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**

Application forms are available at: [http://www.dcu.ie/vacancies/APPLICATION_FORM_8pg.doc](http://www.dcu.ie/vacancies/APPLICATION_FORM_8pg.doc) and from the Human Resources Department, Dublin City University, Dublin 9. Tel: (01) 700 5149; Fax: (01) 700 5500

Email: hr.applications@dcu.ie

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