



National Centre for Plasma  
Science & Technology



<b>Research Centre</b>	<b>National Centre for Plasma Science and Technology</b>
<b>Post Title</b>	<b>Postdoctoral Researcher (Laser Ablation with Applications in Analytical Sciences)</b>
<b>Level on Framework</b>	<b>Level 1</b>
<b>Post Duration</b>	<b>Fixed term contract for up to 2 years</b>

As part of this role the successful candidate will be required to participate in the DCU Research Career Framework (<http://www.dcu.ie/hr/ResearchersFramework>). 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:**

Arising from a recent Science Foundation Ireland Investigator Programme (IvP) award, the following Postdoctoral research position is now available in Dublin City University. This SFI IvP programme has at its core the overarching objective of improving limits-of-detection for atomic and molecular species in laser ablation based analytical sciences (LAAS). This particular position will focus on translating the basic research results and associated experimental setups of the programme into physical embodiments that can be readily retrofitted to existing commercial instruments (e.g., LIBS, LA-ICP-MS, MALDI-TOF, etc.) or could be developed into or deployed directly as potential commercial instruments. The successful applicant will join a mature intense laser matter interactions group within the National Centre for Plasma Science and Technology and School of Physical Sciences which comprises 5 senior faculty, 2 existing postdoctoral fellows and 10 PhD students. Our group also has many active international collaborations. Details of the laser facilities at our laboratories in DCU can be seen at: <http://www.physics.dcu.ie/~jtc/expfacil.html>.

#### **Principal Duties and Responsibilities:**

This Postdoctoral position will be primarily focused on the further development of LAAS from an applications standpoint. As such it will focus on working closely with people in the group who are focused on scientific fundamentals underpinning LAAS and translating these into prototype systems and embodiments that can be used in the further and effective engagement commercial partners. It is expected that successful applicant will be able to work well along the continuum from fundamental laser ablation science through physical embodiment(s) design/construction to potential commercial deployments.

Reporting to Principal Investigator, Professor John T. Costello, the Postdoctoral Researcher will:

- Conduct a specified programme of research and system development in laser ablation for analytical sciences at DCU (and potentially at international partner laboratories)
- Engage vigorously 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. This will include preparing journal articles (from first draft to final submitted manuscripts) and conference presentations on results of the programme, giving talks and presenting posters at national and international workshops, conferences, etc.
- Assist the Principal Investigator, in collaboration with DCU-INVENT, in the management

- of intellectual property arising from this SFI IvP
- Assist the Principal Investigator in identifying and developing future research directions (and associated) funding initiatives in the broad domain of intense laser matter interactions
- Assist the Principal Investigator in developing future research project and programme grant applications
- Supervise and assist research students and interns in the research group
- Liaise with both internal and external stakeholders including industry and academic partners/collaborators
- Carry out any appropriate administration associated with the programme of research as necessary
- Engage in appropriate training and development opportunities as required by the Principal Investigator, the School, the Research Centre, or the University
- Engage in any appropriate teaching and/or teaching support as assigned by the Head of School under the direction of the Principal Investigator

**Minimum Criteria:**

Applicants should have a PhD in experimental laser plasma generation with very strong and demonstrable experience and hands-on skills in experimental design for laser ablation. They should also be able to demonstrate experience of designing and building experimental systems from the ground up, in addition to developing innovative ideas in intense laser matter interactions. They should have a publication record, preferably in high impact journals, (appropriate to career stage) in intense laser matter interactions. Experience of intense laser matter interactions modelling is desirable.

**Salary:** €37,750 - €41,181  
*Subject to qualifications and experience*

**Closing date:** 7<sup>th</sup> March 2014

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

**Discipline knowledge and Research skills**

- Demonstrates deep knowledge of the fundamental physics, design and optimization of high power laser systems
- Demonstrates deep knowledge of the fundamental physics and applications of intense laser interactions with matter (solids and gases)
- Demonstrates a deep knowledge of experimental system design for laser ablation including optical and vacuum design, radiation and particle detector development, data processing code development, etc.
- Demonstrates the ability to conduct with a high degree of autonomy a specified programme of research and system development within the domain of laser ablation and laser plasma generation

**Understanding the Research Environment**

- Demonstrates a knowledge of the key research individuals, groups and centres globally working in the intense laser matter interactions communities
- Demonstrates an awareness of the research environment (for example funding bodies) and the potential to contribute to grant applications for activities from basic research through to full commercialization

**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)
- Demonstrates an ability to work in an environment where protocols around IP protection are in force

- Demonstrates the capacity to communicate and collaborate very effectively with all members of the group, as well as national and international academic and targeted industrial partners.
- Demonstrates the potential to teach and tutor students

**Informal enquiries to:**

For further information on general aspects of this position please contact:

Professor John Costello, School of Physical Sciences and NCPST, DCU, Dublin 9

E-mail: [John.Costello@dcu.ie](mailto:John.Costello@dcu.ie)

Phone: +353 (0)1 700 7869

**Application Procedure:**

Application forms are available from the DCU Current Vacancies (Open Competitions) website at <http://www4.dcu.ie/hr/vacancies/current.shtml> and also from the Human Resources Department, Dublin City University, Dublin 9. Tel: +353 (0)1 700 5149; Fax: +353 (0)1 700 5500 Email: [hr.applications@dcu.ie](mailto:hr.applications@dcu.ie)

Applications should be submitted by e-mail to [hr.applications@dcu.ie](mailto:hr.applications@dcu.ie) or by Fax: +353 (0)1 700 5500 or by post to the Human Resources Department, Dublin City University, Dublin 9.

**Note:** Applicants should include a full and up to date CV, including a list of publications and conference presentations, with their applications.

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