



Applications are invited from suitably qualified candidates for the following position:

<b>Research Centre</b>	School of Physical Sciences
<b>Post title</b>	Postdoctoral Researcher Electronic transport and valleytronics in two-dimensional heterostructures
<b>Level on Framework</b>	Level 1
<b>Post duration</b>	12 months fixed term contract

### **Dublin City University**

Dublin City University (DCU) is a young, ambitious and vibrant university, with a mission ‘to transform lives and societies through education, research, innovation and engagement’. Known as Ireland’s ‘University of Enterprise’, DCU is a values-based institution, committed to the delivery of impact for the public good. DCU was named Sunday Times Irish University of the Year 2021.

DCU is based on three academic campuses in the Glasnevin-Drumcondra region of north Dublin. More than 18,000 students are enrolled across five faculties – Science and Health, DCU Business School, Computing and Engineering, Humanities and Social Sciences and DCU Institute of Education.

DCU is committed to excellence across all its activities. This is demonstrated by its world-class research initiatives, its cutting-edge approach to teaching and learning, its focus on delivering a transformative student experience, and its positive social and economic impact. The university continues to develop innovative programmes in collaboration with industry, such as the DCU Futures suite of degrees, which are designed to equip graduates with the skills and knowledge required in a rapidly evolving economy.

DCU’s pursuit of excellence has led to its current ranking among the top 2% of universities globally. It is also one of the world’s Top Young Universities (QS Top 100 Under 50, Times Higher Top 150 Under 100). In the Times Higher Education University Impact Rankings 2021, DCU ranked 23rd in the world for its approach to widening participation in higher education and its ongoing commitment to eradicating poverty, while it ranks 38th globally for its work in reducing inequality and 89th globally for gender equality.

The university is ranked 23rd in the world and first in Ireland for its graduate employment rate, according to the 2020 QS Graduate Employability Rankings. Over the past decade, DCU has been the leading Irish university in the area of technology transfer, as reflected by licensing of intellectual property.

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**

A 1-year postdoctoral position, supported by the Irish Research Council Laureate programme, is available in the School of Physical Sciences, Dublin City University, under the supervision of Dr Stephen Power. This theoretical / computational project will focus on electronic transport and valleytronics in two-dimensional heterostructures. In particular, we will examine substrate and interface-induced valley transport and valley Hall effects in graphene-based heterostructures, using a combination of large-scale tight-binding, quantum transport and effective Hamiltonian approaches.

### **Principal Duties and Responsibilities**

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

### **Minimum Criteria**

Applicants should have a PhD in theoretical/computational condensed matter physics or a closely related field. Previous experience modelling electronic transport in 2D materials is essential.

Highly Desirable:

- Familiarity with Dirac Hamiltonian techniques and/or valley phenomena

In addition, it is desirable that the candidate will have:

- a proven ability to carry out research projects with a degree of independence
- a strong publication record appropriate to their career stage
- excellent spoken and written English
- strong team-working skills
- strong programming skills, preferably Python or C.
- proficiency with high-performance computing and high-quality scientific graphics production

**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

### **Essential Training**

The postholder will be required to undertake the following essential compliance training: Orientation, Health & Safety and Data Protection (GDPR). Other training may need to be undertaken when required.

### **Salary Scale:**

IUA Postdoctoral Researcher Salary Scale - €39,523 - €41,940\*

*Appointment will be commensurate with qualifications and experience and in line with current Government pay policy*

**Closing date:** 16<sup>th</sup> September 2022

**For more information on DCU and benefits, please visit [Why work at DCU?](#)**

**Informal Enquiries in relation to this role should be directed to:**

Dr. Stephen Power, School of Physical Science, Dublin City University.

Email: [stephen.r.power@dcu.ie](mailto:stephen.r.power@dcu.ie)

### **Application Procedure:**

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

Applications should be submitted by e-mail with your completed application form to [stephen.r.power@dcu.ie](mailto:stephen.r.power@dcu.ie)

**Please clearly state the role that you are applying for in your application and email subject line: #RF246 Post-Doctoral Researcher in Electronic transport and valleytronics in two-dimensional heterostructures**

*Dublin City University is an equal opportunities employer. In line with the Employment Equality Acts 1998 – 2015, the University is committed to equality of treatment for all those who engage with its recruitment, selection and appointment processes. The University's Athena SWAN Bronze Award signifies the University's commitment to promoting gender equality and addressing any gender pay gaps. Information on a range of university policies aimed at creating a supportive and flexible work environment are available in the DCU Policy Starter Packs*