



School	Electronic Engineering
Post title	Postdoctoral Researcher in Photonic Systems
Level on Framework	Level 1
Post duration	Fixed Term Contract up to 36 Months

Research Career Framework

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

The School of Electronic Engineering is seeking to appoint a highly motivated Postdoctoral Researcher to undertake leading edge research in the domain of high-speed optical communication systems. The successful applicant will join a multidisciplinary team to work in liaison with current researchers on the development of high-capacity optical transmission systems (wired and wireless) for future 6G networks.

The project will focus on Free Space Optical Communications (FSOC) - or wireless optical communication - which is emerging as a key disruptive technology that will meet the needs and KPIs of 6G and beyond. FSOC have been proposed as a means to wirelessly augment and support the existing wired and wireless backbone communications links through the provision of potentially 1,000x increase in data rates and throughput. The FreeSpace project is bringing together both industry and academic partners in Ireland to

develop new photonic integrated circuit technologies for high capacity free space optical systems.

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 Investigators. The programme of research will involve investigating the use of optical frequency combs and novel optical sources for a number of applications including;
 - free-space WDM optical transmission systems,
 - fast reconfigurable optical networks employing advanced modulation formats,
 - high-capacity optical switching fabrics.
- 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 assistance of and under the supervision of the Principal Investigator
- Supervise and assist undergraduate students working in this area with their research
- 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 learning 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 Physics or Electronic Engineering with some experience at postdoctoral level being preferable.

In addition, it is desirable that the candidate has experience in some of the following areas:

- Simulation of optical systems
- Optical frequency combs
- Optical free space communications
- Terahertz communications systems
- Coherent optical communication systems
- Experimental test-beds for photonic integrated circuits and systems

- Excellent team working and the ability to work in partnership with others and team working skills
- Report writing, time management and working to deadlines
- Presentation and academic article writing

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

Mandatory Training

Post holders will be required to undertake the following mandatory training: Orientation, GDPR, and Compliance. Other training may need to be undertaken when required.