SPEAR Research Programme: Fully Funded PhD Opportunities in Integrated Photonics

Atlantic Technological University (ATU), Letterkenny Campus
In partnership with Ulster University, Tyndall National Institute, and Seagate Technology
Duration: 4 years (Full-time)
Expected Start Date: 1st October 2025
Location: Letterkenny, Co. Donegal, Ireland

SPEAR Project Background and Description

The Semiconductor and Photonics Education and Research (SPEAR) Centre, funded by PEACEPLUS and managed by the Special EU Programmes Body (SEUPB), is an €8.5 million cross-border project that will provide ATU and Ulster University with access to an all-island network of research groups and industry partners. The project receives strategic support from Tyndall and advisory support from Seagate Technology.

The SPEAR Centre is a photonics research, training, and innovation response to the challenges outlined in the EU Chips Act 2023, while also addressing existing deficits in high-skill/high-value employment and research infrastructure in the border region.

The Centre aims to build research capacity in integrated photonics and semiconductor technologies, contributing to the development of Ireland's and Northern Ireland's deep-tech innovation ecosystem. It seeks to train the next generation of scientists and engineers to support growth in sectors such as healthcare, telecommunications, advanced manufacturing, and sensor networks.

A key element of the project is a doctoral training initiative comprising 15 PhD students, delivered in collaboration with Ulster University, Tyndall National Institute, and Seagate Technology, a global leader in data storage and photonics innovation.

Four PhD students will be based at ATU Donegal and will join a collaborative Doctoral College alongside PhD students at Ulster University and Tyndall National Institute. This initiative involves co-supervised research, joint training activities, summer schools, industry engagement, and access to advanced infrastructure.

These fully funded PhDs offer the opportunity to conduct high-impact, applied research while developing valuable professional skills in both academia and industry.

Main Research Themes at ATU

Applicants may express interest in one or more of the following key research areas. PhD projects will be available in:

- Next-generation optical/Photonics 6G networks for future communications
- Photonics-driven antenna systems
- Photonics for networked wearable sensor communications
- Advanced signal processing and AI for optical communications
- Photonics-based innovation in healthcare, IoT, sports, and agri-tech
- Photonics for smart manufacturing

Projects will be co-supervised with partner institutions and will span disciplines including optics, wireless systems, embedded systems, electronics, machine learning, and signal processing.

Main Objectives

- Advance integrated photonics applications in smart manufacturing, wireless communications, and sensing across the cross-border PEACEPLUS region
- Design and validate novel optical imaging or communication systems
- Incorporate AI or embedded hardware for high-performance photonics platforms
- Collaborate with partners and SMEs in the PEACEPLUS region to solve challenges through the deployment of photonics/optics technologies

Candidate Requirements

Applications are invited from graduates who meet the following criteria:

- Hold a first-class or upper second-class honours degree (or international equivalent) in:
    - Electronic Engineering
    - Photonics
    - Physics
    - Applied Computing
    - Biomedical Engineering
    - Or a closely related discipline

- Demonstrated ability to:
    - Write technical reports and prepare scientific publications
    - Deliver presentations to diverse audiences
    - Work both independently and collaboratively in a research team
    - Manage time and research tasks effectively
- Equipped with the highest level of scientific and engineering research skills required to develop new integrated photonic technologies for diverse applications, as well as the entrepreneurial, leadership, and teamwork capabilities needed to excel in industry
- Highly self-motivated with a clear interest in interdisciplinary and applied research
- **Fluency in English is essential.** Candidates whose first language is not English must meet ATU's minimum English language requirements (e.g. IELTS 6.0 overall, with no component below 5.5 or equivalent)

Funding Notes

Each of the four PhD positions includes:

- Full coverage of EU/UK academic fees
- Tax-free stipend of €25,000 per annum for four years
- Coverage of project-related research expenses and travel support

These positions are funded by PEACEPLUS, managed by the Special EU Programmes Body (SEUPB).

Application Procedure

Interested applicants should submit their application as a single PDF document to:
Nick.Timmons@atu.ie
Subject line: SPEAR PhD Application – [Your Name]

The PDF should include:

1. A one-page cover letter indicating your preferred research theme and motivation
2. A CV (maximum 2 pages)
3. Academic transcripts
4. Contact details for two academic referees

Application Deadline: 12th September 2025 – early application is strongly recommended.

Informal Enquiries

Dr. Nick Timmons – Nick.Timmons@atu.ie

ATU is committed to supporting equality, diversity, and inclusion across all research activities.