



EPSRC Centre for Doctoral Training in

# PHOTONIC INTEGRATION AND ADVANCED DATA STORAGE

## CALLING ALL SCIENCE AND ENGINEERING GRADUATES

DO YOU WANT TO JOIN AN INNOVATIVE,  
MULTIDISCIPLINARY PHD PROGRAMME COVERING  
ELECTRICAL AND OPTICAL ENGINEERING,  
MATERIALS AND PHYSICS?

- Open vast career paths from Data Storage to Bioscience
- Gain a PG Certificate in Innovation & Entrepreneurship
- Access an exclusive course on Global Leadership led by Industry Partner Seagate Technology
- Apply now for a fully funded PhD studentship earning £14,296 per year for 4 years



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Queen's University  
Belfast

**EPSRC**

Engineering and Physical Sciences  
Research Council



University  
of Glasgow



## ABOUT THE CENTRE

The Centre for Doctoral Training (CDT) is a partnership between Queen's University Belfast (QUB) and the University of Glasgow (UoG). We provide opportunities for well qualified students from diverse backgrounds to research the novel scientific and engineering developments in highly manufacturable photonic and integration technologies related to the storage of digital information technologies.

## ABOUT THE PROGRAMME

Our 4-year PhD programme is delivered by leading academics from both Queen's University Belfast and the University of Glasgow, and leads to a unique joint research degree from both universities.

Due to the substantial investment in the Centre from the Engineering and Physical Sciences Research Council, the Department of the Economy NI, both universities and industry, we are able to provide 4-year studentships which cover tuition fees and provide an annual maintenance stipend of £14,296.

In the first year, our students spend time at both universities where they complete a range of scientific and technical courses, engage in exploratory research projects and a summer research project, before choosing and embarking on their substantive PhD research project in the second year.

## INNOVATION, LEADERSHIP AND MANAGEMENT SKILLS

CDT students undertake courses and skills training in entrepreneurship, leadership, management and innovation, which are completed on an interdisciplinary basis with other PhD students from QUB and Trinity College Dublin, and lead to the highly regarded Postgraduate Certificate in Innovation and Entrepreneurship. During their PhD, students also manage their own research and training budget that covers bench costs and supports travel between the universities and to conferences/meetings.

*"I would highly recommend this CDT; in addition to fantastic facilities, world-class research and excellent industrial support across QUB and UoG, this 4-year programme provides initial taught courses which gives you more confidence in choosing a PhD project which suits you best"*

## ELIGIBILITY

We welcome applications and enquiries from interested UK and EU applicants who have (or hope to have) a Physical Science (Physics, Chemistry), Electrical Engineering, Materials, or Chemical Engineering degree with at least a 2:1 (BSc/Masters). Apply via our website [www.cdt-piads.ac.uk](http://www.cdt-piads.ac.uk).

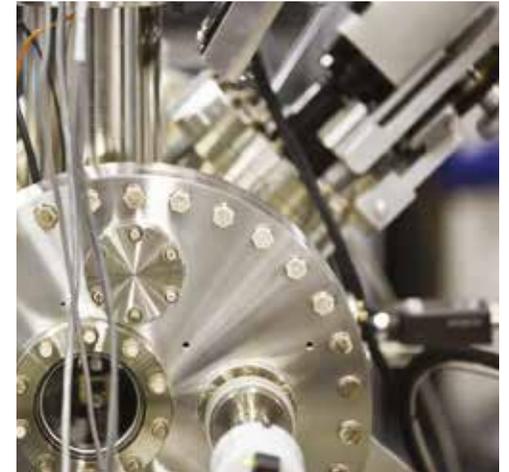
## ABOUT THE RESEARCH

CDT students undertake a diverse and exciting range of topical doctoral research projects which cut across physics, materials and electrical and optical engineering through to applications as diverse as data storage and biosciences. They benefit from access to state of the art experimental and computational facilities in Physics and at the James Watt Nanofabrication Centre at UoG, alongside the Centre for Nanostructured Media at QUB.

The available research projects fall under five research themes:

- Ultra-reliable semiconductor lasers operating in a hostile environment (high temperatures of around 100°C and potentially high pressure)
- Low cost planar lightwave circuit platforms for coupling lasers into passive waveguides and suitable for volume manufacture
- Novel nanoplasmonic devices and antennas capable of operating in extreme environments (high temperatures around 300°C and pressures up to 10 atm)
- Advanced materials for magnetic recording optimised for high temperature fluctuations through composition, layering and patterning on  $\mu\text{m}$  and  $\text{nm}$  scales
- Characterisation and failure analysis using scanning probe and electron microscopy and x-ray material analysis

These themes encompass our expertise in underlying science and materials for next-generation data storage and information-processing technologies, taking advantage of a critical mass of staff from the Schools of Physics and Astronomy, School of Engineering at UoG and the Centre for Nanostructured Media at QUB. All international strategies foresee an increasing role for advanced functional materials, optics, and optical excitations in a host of applications; particularly on an ever-diminishing dimensional scale.





## WORKING WITH INDUSTRY

The programme has been designed and delivered in close consultation with our impressive range of industrial partners. Our students benefit from ongoing opportunities to engage with our industrial partners such as annual conclaves, industrial seminars, site visits, opportunities for internships and industrial project supervision. Students also have exclusive access to the tailored "Teamwork and collaboration skills in a cross-geographical environment" programme which is delivered by Seagate Technology as part of their Global Leadership programme.

## EMPLOYMENT PROSPECTS

CDT students develop sophisticated technical, research and management skills and are well equipped to progress to a range of research and development, technical and management roles in industry and academia. Our programme is a gateway to a vast array of career paths from data storage and semiconductors through to telecommunications and biophotonics.

"The Global Leadership course included a well-balanced composition of multicultural skills and concepts delivered by very supportive Seagate Technology staff mentors using the highest standards of training materials from the Harvard Business School. The WebEx virtual meeting training demonstrated practically how the various concepts could be implemented in real global business situations. For me it gave a real insight to the skills needed to undertake collaborative research with partners in different geographic locations."

**ALI MUGAHID**  
(CDT PIADS STUDENT)



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