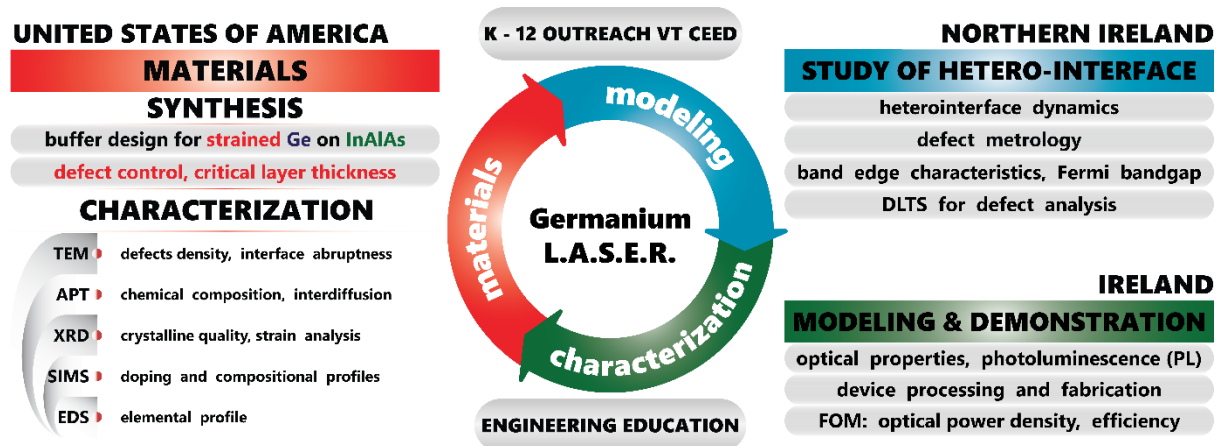


## CAPPA: PhD candidate

The Centre for Advanced Photonics & Process Analysis (CAPPA) is a research centre working in the fields of applied optics and photonics and is based at Munster Technological University (MTU). The centre has an active and varied research portfolio and number of industrial partners in various sectors including medical devices, electronics, food technology, pharmaceuticals and photonics.

This new post is part of the **US-Ireland R&D Partnership project** which includes three partners: US (Virginia Tech), NI (Ulster University) and RoI (MTU).



The main objective of this US-Ireland R&D Partnership project is to develop a novel Short-Wavelength-Infra-Red (SWIR) widely tuneable laser sources, in the range of 1.7 $\mu$ m to 2.5 $\mu$ m for Optical Coherence Tomography (OCT) and biomedical applications. The novel light sources will be based on a highly-strained germanium (Ge)-on-InGaAs material, integrated on GaAs and ultimately on Si substrate. An original **monolithic integration scheme of tuneable wavelength** Ge light source would create a new platform for nanoscale photonics and in particular for unique OCT imaging.

More information about the project can be found here:

<https://www.mtu.ie/news/mtu-cappa-centre-wins-funding-award>

In this project, CAPPA will use modelling software to solve a large variety of waveguides and gratings with various geometries to develop device design. Material characterization and device processing will be done by CAPPA at the MTU and Tyndall National Institute labs. After completion of all laser processing steps, the device will be examined, including current-voltage (I-V) and light-current (L-I)

characteristics, efficiency, threshold current, RF bandwidth and tuneability of optical spectra.

### **Reporting:**

The proposed role will be located primarily at Tyndall National Institute and MTU Cork. The PhD candidate will be supervised by Dr. Tomasz Ochalski and obligated to submit biannual reports to the MTU head of science and Science Foundation Ireland.

### **Doctoral candidate qualifications and duties:**

- Have a B.Sc., M.Sc. or equivalent (or be expected to graduate in the near future) in solid state physics, material engineering, optical systems or similar,
- Be able to travel to the third countries for secondments, short visits, conferences or meetings,
- Be able to write biannual reports, papers, conference proceedings,
- A publication record would be an advantage,
- Fluency in English and excellent written and oral presentation skills are essential.

### **For this position, there is desirable to have an experience in some of areas, such as:**

- Interest in commercialisation of the program results,
- Experience in working in a clean room environment,
- Knowledge about electrical and optical characterisation,
- Knowledge and/or experience in laser based system operation,
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### **The Interview Process**

At interview the candidates will be assessed under (but not limited to) a number of criteria:

- Appropriateness of the candidate to the role and assessment of current skillset
- Ability to manage projects and develop new ideas for research projects to contribute to the overall enhancement of research being carried out
- Fluency in written and presentation skills (English)
- Independent motivation and team contributions

### **Contact Details:**

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