PhD Studentship: Thin-film Lithium Niobate integrated photonics for optical communications

Department: Electronic & Electrical Engineering

Supervisor: Doctor Alfonso Ruocco

Starting date: September 2020

Duration of study: Full Time - up to four years fixed term

Application deadline: 31st August 2020

The studentship will cover Home/EU tuition fees and an annual stipend (tax free) of no less than £17,285, increasingly annually with inflation. The studentship is funded for up to 4 years on a full-time basis.

Thin-film Lithium Niobate integrated photonics for optical communications

The last decades have seen the advent and development of new integrated photonics platforms for optical communications: examples of these are Silicon on Insulator (SOI), Silicon Nitride (SiN) and Indium Phosphate (InP), for instance. This scientific fervour spared one of material platforms that enable the optical communication revolution: Lithium Niobate (LN). The low index contrast offered by traditional LN photonics prevaricated the advantages of its plethora of optical properties. The introduction on the market of thin-film Lithium Niobate On Insulator (LNOI) changed the balance of the scientific interest. This new paradigm for integrated photonics can not only ignite a new optical communication revolution but opens up entirely new on-chip photonics applications.

Additional information

The candidate will investigate LNOI and LNOI hybrids integrated photonics platforms. He will be responsible for the design, fabrication and characterization of modulators, light sources and detectors (among others) and their integration into high complexity photonic systems. The aim is to develop a new class of photonic integrated circuits (PIC) based on LNOI to defy the status quo and establish new standards for high-speed and high-efficiency optical communications.

We are looking for candidates with undergraduate degrees (1st or strong 2:1, or equivalent) in physics or electronic engineering, highly interested in hands-on experimental studies, with interests and background knowledge in semiconductor physics or photonics, and aptitude and enthusiasm for experimental research.
Eligibility
Applicants must meet the EPSRC eligibility conditions to be eligible for the award. Applicants must have no restrictions on their right to live in the UK permanently and have been resident in the UK for three years immediately prior to the studentship commencing.

Applicants should have, or expect to achieve, a degree (1st or 2:1) in Physics, Electronic Engineering, or similar.

How to apply
This studentship is available to start from September 2020. Applications should be made using the UCL postgraduate study application form and marked to the attention of Dr Alfonso Ruocco, Department of Electronic and Electrical Engineering. For further information, interested candidates may contact Dr Alfonso Ruocco (ar930@cam.ac.uk) with a covering letter and a CV (including marks/grades achieved on current courses).

Closing date: 31 August 2020.

About UCL and the Department of Electronic and Electrical Engineering
University College London (UCL) was founded in 1826 as the third university in England, after Oxford and Cambridge. UCL is the first university in England to admit students of any race, class or religion, and the first to welcome women on equal terms with men. UCL is organized into 11 constituent faculties, within which there are over 100 departments, institutes and research centres. UCL has 983 professors and more than 7000 academic staffs who are dedicated to research and teaching of the highest standards. Its student community is almost 36,000, the largest in the UK. There are 29 Nobel Prize winners and three Fields medalists amongst UCL’s alumni and current and former staff. UCL is the top rated university in the UK for research excellence (REF2014). It has a strong tradition and large knowledge base in medical research with a dedicated institute on Healthcare Engineering and 10+ hospitals. UCL has world-class support for researchers and has been voted the best place for postdoctoral researchers to work for consecutive years by The Scientist magazine. The main campus of UCL is located in central London, close to British Museum, West-End and Thames River.
The Department of Electronic and Electrical Engineering at UCL was established by Professor Sir Ambrose Fleming in 1885 and has a very strong research culture, state-of-the-art research equipment and facilities, and a very rich history of many fundamental research achievements in electronic and electrical engineering. The department has received top ratings in every UK research evaluation carried out to date.

Further information regarding UCL may be found at: www.ucl.ac.uk/

Information about the departments may be found at: www.ucl.ac.uk/eee