



## Further Particulars:

### Research Associate in the III-V/Si Materials and Devices

- Job Title:** Research Associate – III-V/Si Materials and Devices
- Department:** Electronic and Electrical Engineering
- Reports to** UCL Principal Investigator of EU H2020 project: “High Performance and High Yield Heterogeneous III-V/Si Photonic Integrated Circuits using a Thin and Uniform Bonding Layer (PICTURE)”
- Grade:** Research Associate Grade 7, £34,635 to £39,644 per annum inclusive of London Allowance of £3031 per annum.
- Start Date:** The position is for a period of 18 months in the first instance, further funding to support the most may be available.

If the successful candidate has not yet been awarded their PhD, appointment will be made as a Research Assistant (Grade 6). Payment at Grade 7 will be backdated to the date of final submission of the PhD thesis including corrections, once the PhD has been awarded.

Research Assistant: Grade 6, point 24-26. Salary range £30,316 to £31,967 (inc. London Allowance of £3,031 pa).

## **Project Outline**

The data rate of the signals being transported in today's networks is increasing at a steady pace. However, data transport technologies will soon reach major limits, in terms of power consumption, device density and weight of the network key subsystems. One of the ways to push such limits is to utilise photonic integrated circuits (PICs). The objective of PICTURE (High Performance and High Yield Heterogeneous III-V/Si Photonic Integrated Circuits using a Thin and Uniform Bonding Layer) project is to develop a photonic integration technology by bonding multi-III-V-dies of different epitaxial stacks to SOI wafers with a thinner and uniform dielectric bonding layer. In this project, we will develop direct growth of high performance quantum-dot lasers and selective area growth on bonded templates for high density future generation of PICs. The project is coordinated by III-V Lab, and includes University of Southampton, CEA, University College London, Imec, Tyndall, Argotech and Nokia Bell Labs.

In the PICTURE project, UCL is responsible for developing high-quality GaAs buffer layer on GaAs/SiO<sub>2</sub>/Si substrates developed at CEA LETI and high-performance InAs/GaAs quantum-dot lasers and DFB lasers on it. UCL will also lead WP3 on III-V materials and devices grown on III-V/SiO<sub>2</sub>/Si substrates. This Research Associate post will join the Photonics Group, and work with Professor Huiyun Liu and Dr Siming Chen with the state-of-the-art group IV and III-V Molecular Beam Epitaxy (MBE) facilities at the department of Electronic and Electrical Engineering, and advanced device-processing facilities in London Centre for Nanotechnology.

### **Duties and Responsibilities**

The Research Associate in the materials and devices will be responsible for the growth of III-V materials using the state-of-the-art group IV and III-V MBE facilities at the department of Electronic and Electrical Engineering, and advanced device-processing in London Centre for Nanotechnology. Aspects of the role include:

- Developing high-quality III-V materials growth and/or device fabrication techniques.
- Maintenance of the MBE facilities.
- Providing supervision and training for undergraduate and postgraduate students.
- Visiting consortium partner institutions to perform joint experiments and assisting visitors from partner institutions.
- Communicating with consortium partners via reports and presentations at progress meetings.
- Publishing the research outcomes in leading journals in the field and at conferences.
- Contribute to the overall activities of the research team and department as required.

As duties and responsibilities change, the job description will be reviewed and amended in consultation with the postholder, and will carry out any other duties as are within the scope, spirit and purpose of the job as requested by the line manager or Head of Department/Division

## **PERSON SPECIFICATION**

### **Qualification/Skills Required**

- A PhD (or about to submit) or equivalent degree in semiconductor devices and quantum physics or a related area. (essential).
- A first degree in engineering or physical sciences subject. (essential)
- Proven capability in the growth of III-V materials using MBE and/or device fabrication techniques (essential).
- Ability to characterise and analyse semiconductor materials and devices (essential).
- Expertise in semiconductor lasers and optoelectronic devices (essential).
- Track record of publishing in peer-reviewed journals and conferences (essential).
- Ability to organise and plan work effectively to meet deadlines (essential).
- Working knowledge in semiconductor device fabrication (essential).
- Experience of maintaining laboratory equipment (desirable).
- Experience of collaborating with partner institutions as a part for a consortium (desirable).
- Willingness to develop an independent research area (desirable).

### **Personal**

- Excellent interpersonal skills (essential).
- Ability to present complex scientific ideas to audiences with different backgrounds in a clear and effective manner (essential).
- Commitment to high quality research (essential).
- Ability to work collaboratively and as part of a team (essential).
- Commitment to UCL's policies, e.g. equal opportunity, health and safety (essential).

## **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, however, 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 now the largest comprehensive university in London with more than 4,000 academic and research staff in 72 departments. The main campus of UCL is located in central London, within a few minutes walking distance from 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 currently hosts international renowned research groups in Communications and Information Systems; Photonics; Optical Networks; Microwaves, Radar and Optics; Electronic Materials, Devices and Nanotechnology. For more information about the department and our research achievements, please visit the website <http://www.ee.ucl.ac.uk>

**Further information regarding UCL may be found at:**

[www.ucl.ac.uk/](http://www.ucl.ac.uk/)

**Information about the departments may be found at:**

[www.ee.ucl.ac.uk](http://www.ee.ucl.ac.uk)

## **HOW TO APPLY**

Please apply online via the following link:

[www.ucl.ac.uk/hr/jobs](http://www.ucl.ac.uk/hr/jobs)

**Job reference 1720905**

If you experience any problems please contact Vicky Coombes at [v.coombes@ucl.ac.uk](mailto:v.coombes@ucl.ac.uk) quoting reference 1720905

Interested applicants are encouraged to make informal enquiries to Professor Huiyun Liu, [huiyun.liu@ucl.ac.uk](mailto:huiyun.liu@ucl.ac.uk), 020 7679 3983, or Dr Siming Chen, [siming.chen@ucl.ac.uk](mailto:siming.chen@ucl.ac.uk).

Thank you for your interest in this position.

UCL Taking Action for Equality