



Further Particulars: Job Reference 1559227

## Research Associate in Radar Systems for Geolocation Monitoring of Boreholes through Ice

<b>Job Title:</b>	Research Associate
<b>Department:</b>	Electronic and Electrical Engineering
<b>Reports to</b>	Principal Investigator of UCL NERC project: <b>“Borehole location monitoring using phase-sensitive FMCW radar”</b>
<b>Grade:</b>	Research Assistant Grade 6, £29,485 - £31,091 per annum Research Associate Grade 7, £33,686 - £40,716 per annum
<b>Start Date:</b>	The position is available as soon as possible  The appointment is initially funded until the 29th May 2017 in the first instance, further funding may be available to support the post.  Quoted salaries include London Allowance of £2,948 per annum.

A PhD (or working towards a PhD) in a relevant subject is required. If the successful candidate has not completed their PhD yet, initial appointment will be made at Research Assistant level at Grade 6 point 24-26, on the UCL salary scale (£29,485 - £31,091 per annum), with payment at Grade 7 being backdated to the date of final submission of the PhD thesis (including corrections)

## **Project Outline**

Realising new radar systems for glaciology is the transformative step to create new methods to increase the scientific knowledge of the polar ice sheets. In this project, we aim to design and implement a borehole geolocation monitoring system based on advanced phase-sensitive FMCW radar techniques. The successful outcome will provide the basis for determining the trajectory of a borehole as it is being drilled, a key enabler towards the ability to cleanly sample subglacial lakes hidden more than 3 km beneath the ice surface and deploy geophysical sensors at the ice base. This project is expected to contribute to improving the measurement capability of the glaciological research community and open up new avenues of scientific exploration, for example within the pristine environment of subglacial lakes.

The problems we will address include the high precision location monitoring of the end of a borehole as it is being drilled through ice up to 3 km thick. The research will investigate the use of a radar approach to locate, with centimeter-precision, the x,y position of a frequency-shifted transponder while it is being lowered down a borehole through ice.

This project is funded by Natural Environment Research Council (NERC) and involves collaboration with the British Antarctic Survey and Scott Polar Research Institute University of Cambridge. The task of University College London is to carry out the radar system and transponder development. This Research Associate post will be part of Radar Group, and work with Dr. Lai Bun Lok and Prof. Paul Brennan with the state-of-the-art RF and microwave facilities at the department of Electronic and Electrical Engineering.

## **Research Associate in Radar Systems**

### **Duties and Responsibilities**

The Research Associate in Radar Systems will be responsible for carrying out the system development in the Department of Electronic and Electrical Engineering with assistance from members of UCL academic staff, other undergraduate and postgraduate student support, and technical staff. The following is indicative of the duties and responsibilities associated with this post:

- Lead on the development of the radar and transponder system.
- Develop new radar system and carry out independent research in related field.
- Regularly communicate and work in close collaboration with the other consortium members at British Antarctic Survey and University of Cambridge.
- Provide supervision, advice and guidance to undergraduate project and PhD students.
- Travel to consortium partner institutions to perform joint experiments and assist any visiting researchers from partner institutions.
- Contribute to the preparation of reports and the presentation of results at progress meetings.
- Publish research in leading journals and present it at national and international conferences.
- Contribute to the overall activities of the research team and department as required.
- Ensure that equipment is safe and maintained in working order and to maintain an awareness of UCL Fire and Health and Safety regulations.
- Actively follow UCL policies including Equal Opportunities policies

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.

The post is to be held in the UCL Department of Electronic and Electrical Engineering working in close collaboration with the British Antarctic Survey and Scott Polar Research Institute University of Cambridge.

## **PERSON SPECIFICATION**

### **Qualification/Skills Required**

- PhD in relevant area of RF and microwave electronics (or about to submit) (essential).
- A first degree in engineering or physical sciences subject. (essential)
- Proven capability in RF system design and testing (essential)
- Proven capability in antenna design and measurement (essential).
- Ability to analyse and write up data in the form of journal papers and reports (essential).
- Ability to organise and plan work effectively to meet deadlines (essential).
- Proven capability in 3D printing technology and fabrication (desirable).

### **Personal**

- Excellent interpersonal and communication skills (essential).
- Ability to present technical information effectively to a range of audiences (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, just 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 equipments 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) and search for reference 1559227

You will need to upload the following documents with your application:

- CV (including the names and contact details of at least two referees who may be contacted prior to interview.)
- An up to date list of publications.

If you experience any problem please contact Vicky Coombes at [v.coombes@ucl.ac.uk](mailto:v.coombes@ucl.ac.uk) quoting reference 1559227

Interested applicants are encouraged to make informal enquiries to Dr. Lai Bun Lok, [l.lok@ucl.ac.uk](mailto:l.lok@ucl.ac.uk), 020 3108 1113, or Prof. Paul Brennan, 020 7679 3191.

Thank you for your interest in this position.

UCL Taking Action for Equality