PhD Studentship in Nanotechnology/Nanoelectronics
The School of Electronic and Electrical Engineering, University of Leeds

Applications are invited from UK/EU candidates for a three-year PhD studentship in the Bioelectronics research group at the University of Leeds (http://www.bioelectronics.leeds.ac.uk) in the area of nanotechnology with a focus on the development of novel nanoelectronic sensor arrays.

Research Project
Single electron transistors (SETs) are reminiscent of conventional field-effect transistors - the basis of all modern electronics - but SET conductivity can be modulated by several orders of magnitude upon the addition of just a single electron. This single electron behavior can be exploited to create highly sensitive SET electrometers that are capable of detecting charge with single electron charge sensitivity. To date, SET electrometers have been used to monitor charge movement in nanoelectronic devices and to measure mechanical displacement with nanometer scale resolution.

In this project, we will exploit the high-sensitivity of SET electrometers to create sensors capable of detecting biological molecules with single molecule resolution. The potential of this work to underpin a wide range of nanoassembly and sensing applications is immense; a particular output of this project is a novel miniaturized and label-free electronic sensor array platform for the detection of low concentrations of proteins.

The PhD studentship is an industrial CASE award and the student will work in collaboration with the Hitachi Cambridge Laboratory (HCL), who have pioneered the design and characterisation of SETs that can be fabricated using conventional CMOS compatible processing. The student will gain comprehensive experience in the fabrication, characterization and design of novel nanoelectronic devices and represents an outstanding opportunity for motivated and enthusiastic students. Full-time training for postgraduate students, tailored to their particular degree background, is provided within an active research group.

Academic Requirements
It is preferred that candidates hold a 1st class honours degree in a discipline relevant to the PhD research project (Physics or Electronic Engineering), however, the required minimum academic qualification for the above studentships is a 2:1 honours degree or equivalent. Applications will be considered on a competitive basis with regard to the candidate’s qualifications, skills, experience and interests. Candidates must have official, final results of all qualifications to be used to meet the academic requirements before the start of the studentship.

EU applicants will only be eligible where residency in the UK has been established for more than 3 years prior to the start of the course.

How to apply
Further details and application forms can be obtained from http://www.leeds.ac.uk/rds/assets/word/prospective_students/Appfmweb.doc

Completed application forms should be sent to:

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University of Leeds
Leeds, LS2 9JT
Tel: +44 (0)113 343 2070
Fax: +44 (0)113 343 7265
imp@leeds.ac.uk

Prior to submitting an application, you are encouraged to discuss your suitability. Informal enquiries can be made via:

Prof. Christoph Wälti: c.walti@leeds.ac.uk, 0113 3432023 or Dr Steven Johnson: steven.johnson@york.ac.uk 01904 322693

The School
The School of Electronic and Electrical Engineering has a well-established track record in both research and teaching. In the 2008 Research Assessment Exercise (RAE) the School was ranked the top electronic and electrical engineering school in the UK, with a grade-point average (GPA) of 3.05, and an overwhelming 80% of staff rated internationally excellent or world leading (3* or 4*). A particular strength of the School is in its cross-disciplinary activities and has considerable infrastructure and expertise in collaborative research programmes with researchers in the Schools of Chemistry, Molecular Biology, Molecular Medicine, etc. The School also runs the EPSRC Centre for Doctoral Training in molecular-scale engineering, which is closely aligned with this CASE studentship.

All staff are committed to research excellence through the securing of large scale funding support for research; and a commitment to dissemination through publication and knowledge transfer outreach. The school enjoys substantial support from industry and funding bodies such as EPSRC and has an annual turnover approaching £7 million with over £2 million of research external grant and contract expenditure. The School has very strong links with UK and international industry, which benefits both its research and taught courses.