Applications are invited for a PhD studentship for the following project:

Aberration-corrected electron microscopy and electron-beam lithography for plasmonic devices with dimensions approaching the atomic scale

The position will be based within Prof. Richard Hobbs' research group at the School of Chemistry and the Advanced Microscopy Laboratory at Trinity College Dublin. The project will form part of the Materials for ICT platform within the Advanced Materials and Bioengineering Research Centre (AMBER) centre.

Summary of project

Antennas with dimensions on the nanometre length scale are ubiquitous in solar-energy harvesting. In nature, photosynthetic organisms contain molecular antennas with such dimensions that have evolved to capture and concentrate solar energy to produce sugar that results in biomass and ultimately, fossil fuels. These molecular antennas transfer energy with near-perfect quantum efficiencies across nanometre distances. Developing analogous processes to selectively and sustainably produce industrially useful chemicals from solar radiation, represents a holy grail for photochemistry.

Metal nanoparticles can be engineered to act as antennas for solar radiation while being more robust to damage than molecular antennas. In this project, the PhD student will develop lithographic methods to fabricate plasmonic nanoantennas with control approaching the atomic scale to target specific chemical transformations such as CO_2 reduction and N_2 fixation in novel photocatalysts, as well as to develop next-generation nanoelectronics. The student will receive training in the use of state-of-the-art electron microscopy equipment as well as learning nanoscale fabrication techniques. The student will also have the opportunity to attend international conferences to present their research results as well as visiting collaborators in Ireland and abroad.

The ideal applicants will have a 1st Class Honours Bachelor's degree in Chemistry, Physics, Materials Science or similar.

The researcher will work closely with other members of a multidisciplinary project team. Excellent written and oral communication skills are essential.

How to apply:

CVs with the names and addresses of three referees should be submitted to:

Prof. Richard Hobbs via email at hobbsr@tcd.ie

Positions will remain opened until filled but preferred start date is September 2 2019. Only short-listed applications will be acknowledged. Interested candidates are encouraged to contact Prof. Hobbs directly to discuss the project and their suitability for this PhD studentship prior to submission of their application.

This position is funded by the SFI-research centre AMBER.

The AMBER research centre, as a community of researchers, welcomes its responsibility to provide equal opportunities for all. We are actively seeking diversity in our research teams and particularly encourage applications from underrepresented groups.