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

Machine learning methods for ultra-high fidelity microscopy

The position will be based with the *Computational Spintronics group (http://www.spincomp.com)* and the *Ultramicroscopy Group (https://www.tcd.ie/Physics/research/groups/ultramicroscopy/)* at the School of Physics & CRANN and be part of the Materials for Information and Communication Technology (ICT) within the Advanced Materials and Bioengineering Research Centre (AMBER) centre.

Summary of project

Ultramicroscopy defines a range of techniques to resolve the structure of materials at the atomic level. These can include electron-, ion- and light-optical methods. The CRANN Institute operates a state-of-the-art microscopy facility, in particular in the area of transmission electron microscopy (TEM), and it is seeking to continuously improving the methods and accuracy with which we characterise materials. The aim of this project is to develop new methods, rooted in machine learning, image processing and artificial intelligence, for enhancing and expanding today's measurement capabilities. In particular our goal is to be able to process and display information in real-time (live). This will allow us to then tailor the measurement approach in the optimal way for extracting the desired information. For instance we are aiming to resolve the atomic structure of small nanoparticles, defective 2D materials, metalorganic frameworks and organic matter while using a lower electron-beam radiation dose. The project we be supervised jointly by Prof. Stefano Sanvito and Prof. Lewys Jones, both in the School of Physics and CRANN.

For more informaiton please contact Prof. Sanvito (sanvitos@tcd.ie) and/or Prof. Lewys Jones (lewys.jones@tcd.ie).

The ideal applicants will have a 1st Class Honours Bachelor's degree in *Physics, Chemistry, Materials Science or related disciplines.* Previous experience with electron microscopy and/or electronic structure theory would be advantageous but not essential.

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. Stefano Sanvito, School of Physics, Trinity College, Dublin 2, Ireland. Email: sanvitos@tcd.ie

Positions will remain opened until filled but preferred start date is *September 2 2019*. Only short-listed applications will be acknowledged.

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.