Post-Doctoral Research Associate / Assistant in '*Multi-Dimensional Scanning Electron Diffraction (4D-STEM) and Analysis*'

University of Cambridge, Department of Materials Science and Metallurgy.

Job Ref: LJ26236

Salary: £26,715 - £40,322

A Post-Doctoral Research Associate / Assistant position is available immediately in the development of 'multi-dimensional' electron diffraction using a combination of scanning electron diffraction (SED) (also known as 4D-STEM), electron tomography and data analysis. Experimental work will be conducted primarily on a recently-installed Thermo Fisher Spectra 300 (S)TEM, the first of its kind in the UK.

The successful candidate will be involved in two inter-related projects, running concurrently throughout the term of the post-doc. The first project is focussed on using a combination of SED, precession diffraction and electron tomography to enable crystal strain to be mapped quantitatively in three dimensions at the nanoscale. This project is an EPSRC-funded collaboration with the Universities of Manchester and Oxford in which strain tomography techniques are being developed across different lengthscales using electrons (in Cambridge), x-rays and neutrons, together with novel approaches to tomographic reconstructions.

The second project, which dovetails readily with the first, will focus on broader aspects of the SED technique, considering the acquisition and data analysis pipeline. Multi-dimensional techniques such as in the first project inevitably lead to 'big data' sets and this project will focus on further developing python-based data analysis software (e.g. pyXem) incorporating machine learning algorithms, in-painting etc. Moreover the project will consider 'smarter' ways to acquire data, reducing acquisition times (and dose), implementing novel scan geometries.

This post-doc position provide a great opportunity for networking and collaboration, the first project within the UK and the second as part of ESTEEM3 (www.esteem3.eu), a well-established and successful pan-European microscopy network. Applicants must have a strong background in (S)TEM and electron diffraction. Applicants should also have experience with analysing multi-dimensional data (using e.g. machine learning) and proficiency in Python programming would be highly beneficial. A working knowledge of tomography would also be desirable. The successful candidate must have (or be about to obtain) a relevant PhD and will have good communication skills.

Fixed-term: The funds for this post are available immediately for up to 3 years.

Closing date: 14 May 2021

To apply online for this vacancy and to view further information about the role, please visit: http://www.jobs.cam.ac.uk/job/29309.

Informal enquiries may be sent to Professor Paul Midgley, email: pam33@cam.ac.uk

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