Postdoc position in the area of “High Definition Electron Microscopy: Greater clarity via multidimensionality” (HDEM)

The EMAT research group at the Faculty of Science (University of Antwerp) is seeking to fill a **postdoc position** in the area of “High Definition Electron Microscopy: Greater clarity via multidimensionality” under the supervision of Prof. Timothy Pennycook.

This vacancy is situated in the **H2020 ERC Starting grant** High Definition Electron Microscopy: Greater clarity via multidimensionality (HDEM). The overarching goal of the HDEM project is to maximize the amount of information retrieved per unit dose via multidimensional data acquisition and analysis techniques such as 4D STEM and optical sectioning.

We have recently shown via image simulations that electron ptychography can significantly outperform the dose efficiency of HRTEM, offering the prospect of significantly extending the capabilities low does imaging and of cryo-EM. To realize the potential of ptychography for low dose imaging experimentally we will utilize the latest in high speed cameras to record the required 4D STEM datasets. We will combine our enhanced imaging capabilities with single particle analysis for imaging biomolecules at ultra low doses. Similar techniques will be used for fragile materials science samples, for instance metal organic framework, Li ion battery, 2D, catalyst and perovskite solar cell materials. In addition to ultralow dose work, we aim to investigate extending our capabilities for high precision applications including imaging local electromagnetic fields, determining the location of light atoms within a heavy lattice and testing the limits of imaging directly in 3D.

Job description

- The successful candidate will work on the development and optimization of the acquisition and processing of data for ptychography and related 4D STEM methods.
- You will work on both ultra low dose imaging and high precision imaging applications in materials science and biology.
- You will have the opportunity to supervise students.
- You will publish scientific articles related to the research project of the assignment.
- You will present your work at national and international workshops and conferences.

Profile and requirements

- You hold a PhD degree in e.g. physics, materials science, computing, transmission electron microscopy or ptychography.
- The ideal candidate would have significant expertise and understanding in both high end experimental scanning transmission electron microscopy and computer coding and processing.
- You are enthusiastic and greatly interested in the development and application of electron microscopy.
- You can submit outstanding academic results.

- You are highly motivated, quality-oriented, conscientious, creative and cooperative.

We offer

- An appointment for an initial period of 1 year, renewable depending on performance
- An exciting project in which we will aim to go significantly beyond the state-of-the-art
- A competitive salary
- The position will start as soon as possible, but starting date can be adapted to the selected candidate's availability
- A world-class, dynamic and stimulating work environment with state-of-the-art instrumentation and computing facilities (see also http://www.emat.uantwerpen.be/).

Additional information about the vacancy can be obtained from: Timothy Pennycook, tel. +32 3 265 36 65, timothy.pennycook@uantwerpen.be

Please submit your motivation letter, CV, summary of your Master and/or PhD thesis, a list and grades of the courses that you took during your studies, and names of 2 professional referees as one single PDF file uploaded on the following **Application Submission** (http://nano.uantwerpen.be/jobs/submission) page and select "Postdoc HDEM".