The EMAT research group at the Faculty of Science (university of Antwerp) is seeking to fill two full-time (100%) vacancies for a PhD scholarship in the area of three-dimensional atomic modelling of functional nanocrystalline structures under the supervision of Prof Sandra Van Aert and Prof Sara Bals.

The overarching goal of the project is to retrieve the 3D atomic structure of nanocrystals from transmission electron microscopy (TEM) images acquired along a single viewing direction. This goal is extremely challenging but can be considered as a major breakthrough to investigate materials that degrade or deform during the acquisition of images along different viewing directions, such as in electron tomography. We envisage the combination of aberration corrected TEM with advanced statistical techniques and theoretical modelling as a groundbreaking new approach to go beyond conventional electron tomography and to perform 3D characterization at the atomic scale in a dose and time efficient manner. Our novel methodology will enable us to characterize functional materials including organic perovskites, colloidal semiconductors or battery materials, but will also open up the possibility to investigate the dynamics of nanoparticles during in situ measurements.

Job description
- Depending on your interest, the focus of your project will be on the experimental acquisition and reconstruction of electron microscopy data using aberration corrected microscopes or the development of novel theoretical methods to retrieve the 3D atomic structure.
- You prepare a doctoral thesis in the field of sciences.
- You interpret the reconstructions to solve materials science problems in the field of nanophysics.
- You publish scientific articles related to the research project of the assignment.
- You present your work at national and international workshops and conferences.

Profile and requirements
- You hold a master degree with a background in e.g. physics, mathematics, materials science or scientific computing.
- You are enthusiastic and greatly interested in electron microscopy and materials science.
- You can submit outstanding academic results.
- You are motivated and accept the challenge to obtain a PhD in sciences.
- You are quality-oriented, conscientious, creative and cooperative.

We offer
- a doctoral scholarship for a period of 1 year, renewable for 3 years after positive evaluation;
- enrolment will start as soon as possible;
- a competitive salary;
- a world-class, dynamic and stimulating work environment with state-of-the-art instrumentation (see also http://www.emat.uantwerpen.be/).

Additional information about the vacancy can be obtained from: Sandra Van Aert, tel. +32 3 265 3252, sandra.vanaert@uantwerpen.be or Sara Bals, tel. +32 3 265 3284, sara.bals@uantwerpen.be

Please submit your application (motivation letter, CV, summary of Master thesis, and names of 2 professional referees) by email at lucian.covaci@uantwerpen.be. Please mention the keyword "AtomicModellingin3D" in the email subject.