University of Antwerp

The EMAT research group at the Faculty of Science (University of Antwerp) is seeking to fill a fulltime (100%)

Postdoctoral position in the area of the study of the crystallization of organic molecules using transmission electron microscopy under the supervision of Prof Sandra Van Aert and Prof Sara Bals.

The main goal of the project is to develop and apply transmission electron microscopy techniques to investigate the crystallization of organic molecules. The occurrence of two or more crystal structures for a given molecule, a phenomenon which is called polymorphism, is ubiquitous to various classes of synthetic and natural compounds. Examples of polymorphism are known in numerous application fields, such as food, explosives, pigments, semiconductors, fertilizers, and pharmaceutical drugs. Different crystal structures, so-called polymorphs, of the same compound exhibit sometimes very different physical properties, chemical reactivity, and biological functions. For instance, the polymorphs might differ in solubility ruining the pharmaceutical effect of one or more of the polymorphs. Understanding and controlling polymorphism is therefore very important. Simple questions, such as "How many polymorphs has a given compound?" or "What drives polymorph selection?", remain unanswered yet. In this scientific context, scientists have started to explore the occurrence of substrate-induced polymorphism, i.e. the formation of polymorphs that exist only in the vicinity of solid substrates. In particular, this project has the ambition to elucidate how positional and orientational order of molecules propagate from the substrate to the upper crystal layers. In this manner, the project will gain a fundamental understanding of polymorphism at the interface with solid substrates.

Job description

- You will develop and apply transmission electron microscopy techniques to investigate electron beam-sensitive materials including scanning electron diffraction and exit wave reconstruction;
- You have the opportunity to supervise student projects;
- You are enthusiastic and greatly interested in transmission electron microscopy and materials science;
- You publish scientific articles related to the research project of the assignment;
- You present your work at national and international workshops and conferences;
- You will be employed at the University of Antwerp and closely interact with other partners involved in this project, including Katholieke Universiteit Leuven, Université de Mons (UMONS), Université Libre de Bruxelles, Technische Universität Graz, and Max-Planck-Gesellschaft zur Förderung der Wisenschaften.

Profile and requirements

- You hold a PhD degree with a background in e.g. physics, materials science or transmission electron microscopy;
- You are enthusiastic and greatly interested in the quantitative analysis of electron microscopy data;
- 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 one year which can be prolonged depending on performance;
- an exciting project in which we will aim to go significantly beyond the state-of-the-art;
- a competitive salary;
- enrolment will start as soon as possible;
- a world-class, dynamic and stimulating work environment with state-of-the-art instrumentation and computing facilities (see also <u>http://www.emat.uantwerpen.be/</u>).

How to apply

You can 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 Application Submission page by selecting "Postdoc EOS" at http://nano.uantwerpen.be/jobs/submission/

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