**PhD position in the area of adaptive optics in transmission electron microscopy**

The **Faculty of Science** and the **Faculty of Applied Engineering** are seeking to fill a **full-time (100%)** vacancies for **doctoral scholarship holders in the areas coincidence detection of electrons and X-rays in electron microscopy**

The vacancy is situated within a national FWO fundamental research project entitled "Exploring adaptive optics in transmission electron microscopy".

Adaptive optics, the technology to adapt the shape of lenses and mirrors to optimise the imaging capabilities, has sparked an avalanche of scientific discoveries in diverse areas of science that rely on light optics. Nowadays, optical waves can be dynamically programmed in terms of their phase profile, providing experimental research on exotic beam types and unprecedented control over the performance of optical instruments. Accelerated electron beams, on the other hand, as used extensively in e.g. electron microscopy, carry many similarities with light including the wave nature and the existence of (electron optical) lenses as well as a very similar mathematical description. The one part missing so far, is a generic programmable phase plate for electron waves allowing for similar flexibility as in state of the art light optics. The goal of this project is to explore the potential that a prototype generic phase plate, recently developed in our group and unique in the world, would bring to electron microscopy. Such a phase plate can dramatically increase the information obtained at a given electron dose, limiting the detrimental effect of beam damage that hinders the use of electron microscopy in e.g. life sciences or soft matter research. Specifically, it would enable the study of the structure and chirality of single molecules for e.g. drug discovery, insights in nanoplasmonic antennas for solar harvesting, improved precision in e-beam lithography and many more.

More information on the project can be obtained upon request. This PhD opportunity is provided in the group for **Electron Microscopy for Material Science (EMAT)** (<https://www.emat.uantwerpen.be>) at the University of Antwerp, Belgium.

**Job description**

* You prepare a doctoral thesis in the field of Physics.
* You publish scientific articles related to the research project of the assignment.
* You work at the interplay of optics, engineering and material sciences.
* You actively communicate the results of your work with the scientific community.

**Profile and requirements**

* You hold a master degree in a relevant field (physics, engineering, …)
* You can submit outstanding academic results.
* Students in the final year of their degree can also apply.
* You are motivated and accept the challenge to obtain a PhD in sciences and/or engineering.
* Your academic qualities comply with the requirements stipulated in the [university’s policy](https://www.uantwerp.be/en/about-uantwerp/mission-vision/three-core-tasks/research/).
* You are quality-oriented, conscientious, creative and cooperative.
* You have a healthy mix of theoretical insights with a hands-on attitude towards instrument development.
* Experience/affinity with software development, electronics, vacuum, fine mechanics can be very useful in this project.

**We offer**

* a doctoral scholarship for a period of **1 year,** renewable for a total of maximum 4 years after positive evaluation;
* the scholarship can start immediately;
* a gross monthly grant ranging from € 2.189,88 – € 2.513,13;
* a dynamic and stimulating work environment in a group of international standing in the field of electron microscopy.

**How to apply?**

* Applications may only be submitted online (please select “PhD Phase Plate” at *<http://nano.uantwerpen.be/jobs/submission>*). You should upload a copy of your **CV**, a **motivation letter**, summary of your **Master 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**, until the closing date, **1 March 2019.**
* A pre-selection will be made from the submitted applications.
* The remainder of the selection procedure is specific to the position and will be determined by the selection panel.
* For questions about the profile and the description of duties, please contact Prof. Jo Verbeeck; jo.verbeeck@uantwerpen.be.

*The University of Antwerp is a family-friendly organization, with a focus on equal opportunities and diversity. Our HR-policy for researchers was awarded by the European Commission with the quality label ‘HR Excellence in research’.*