PhD Research Fellow in semiconductor physics

Job description

Position as PhD Research Fellow in semiconductor physics available at Department of Physics/Centre for Materials Science and Nanotechnology, as part of the project GO2DEVICE (Novel (M,Ga)2O3 thin films for two-dimensional electron gas devices).

No one can be appointed for more than one PhD Research Fellowship period at the University of Oslo. The starting date is no later than 31.08.2020.

The fellowship period is 3 years with reservations for external founding.

More about the position

The fellowship is based at the Semiconductor Physics Group and associated with the Centre for Materials Science and Nanotechnology (SMN). It is part of the GO2DEVICE project, lead by SINTEF, which aims to develop new devices for use in power electronics (PE) based on novel (M,Ga)2O3 thin film heterostructures.

PE play an important role in the collection, delivery and storage of energy, and is a key enabler for energy efficiency, renewable energy and smart grids. Wide bandgap semiconductors can provide components that are faster, smaller and more energy efficient than Si-based technology, permitting devices capable of operating at higher voltages, frequencies and temperatures and/or in harsh environments. At present, SiC and GaN are the most mature candidates, while the even wider bandgap semiconductor gallium oxide (Ga2O3) attracts R&D interest due to its ultra-high breakdown field (~twice that of gallium nitride).

The GO2DEVICE project will focus on the less explored kappa-phase of Ga2O3. The kappa-phase has been predicted to exhibit large spontaneous polarization, suggesting that interface-localized two-dimensional electron gas (2DEG) can be achieved in substantial concentrations. By partially replacing gallium with indium and aluminium, precise tailoring of the materials properties will be pursued, towards fabrication of a so-called high-electron-mobility transistor (HEMT). To accomplish a working prototype, close control of structural and electronic properties is of paramount importance. In the GO2DEVICE project, advanced materials characterization and modeling will provide feedback to the materials synthesis in a close international collaboration. The project will encompass both fundamental material and defect properties, as well as device fabrication and characterization. The PhD position will have a specific emphasis on electrical properties.

Qualification requirements

The Faculty of Mathematics and Natural Sciences has a strategic ambition to be among Europe’s leading communities for research, education and innovation. Candidates for these fellowships will be selected in accordance with this, and expected to be in the upper segment of their class with respect to academic credentials.

- Master’s degree or equivalent in semiconductor physics, with a solid background in semiconductor materials, processing and characterization, and materials physics in general. Foreign completed degree (M.Sc.-level) corresponding to a minimum of four years in the Norwegian educational system.
- Experience with electrical characterization of semiconductors, from conventional CV, IV and Hall effect measurements to spectroscopic techniques like DLTS will be positively evaluated.
- Fluent oral and written communication skills in English are a prerequisite.

Grade requirements:

The norm is as follows:

- the average grade point for courses included in the Bachelor’s degree must be C or better in the Norwegian educational system
- the average grade point for courses included in the Master’s degree must be B or better in the Norwegian educational system
- the Master’s thesis must have the grade B or better in the Norwegian educational system

http://www.mn.uio.no/english/research/phd/application/application.html

The purpose of the fellowship is research training leading to the successful completion of a PhD degree.

The fellowship requires admission to the PhD programme at the Faculty of Mathematics and Natural Sciences. The application to the PhD programme must be submitted to the department no later than two months after taking up the position. For more information see:

http://www.uio.no/english/research/phd/
http://www.mn.uio.no/english/research/phd/

We offer

- salary NOK 479 600 - 532 200 per annum depending on qualifications in a position as PhD Research fellow, (position code 1017)
• attractive welfare benefits and a generous pension agreement, in addition to Oslo’s family-friendly environment with its rich opportunities for culture and outdoor activities
• Career development programmes

How to apply

The application must include:

• Cover letter - statement of motivation and research interests
• CV (summarizing education, positions and academic work - scientific publications)
• Copies of the original Master’s degree diploma, transcripts of records and letters of recommendation
• Documentation of English proficiency
• List of publications and academic work that the applicant wishes to be considered by the evaluation committee
• Names and contact details of 2-3 references (name, relation to candidate, e-mail and telephone number)

The application with attachments must be delivered in our electronic recruiting system (please follow the link “Apply for this job”). Foreign applicants are advised to attach an explanation of their University's grading system. Please note that all documents should be in English or a Scandinavian language.

Applicants will normally be called in for an interview.

Formal regulations

Please see the guidelines and regulations for appointments to Research Fellowships at the University of Oslo.

No one can be appointed for more than one PhD Research Fellowship period at the University of Oslo.

According to the Norwegian Freedom of Information Act (Offentleglova) information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure.

The appointment may be shortened/given a more limited scope within the framework of the applicable guidelines on account of any previous employment in academic positions.

The University of Oslo has an agreement for all employees, aiming to secure rights to research results etc.

Contact information

For further information please contact: Lasse Vines, e-mail: lasse.vines@fys.uio.no.

For questions regarding the recruitment system, contact HR Adviser Ørjan Pretorius, e-mail: orjan.pretorius@mn.uio.no

About the University of Oslo

The University of Oslo is Norway’s oldest and highest rated institution of research and education with 28 000 students and 7000 employees. Its broad range of academic disciplines and internationally esteemed research communities make UiO an important contributor to society.

Centre for Materials Science and Nanotechnology (SMN) is an interdisciplinary focus field for material and energy research at the University of Oslo. SMN has focused on basic research in renewable energy and environmentally friendly use of fossil energy sources. The center consists of research groups from the Department of Physics (Fi) and Chemistry (Ki), has about 100 employees from around the world and manages more than 80 projects funded by the EU, the RCN and others.

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