

Postdoc in In-situ Transmission Electron Microscopy on Energy Materials

DTU Energy Conversion and Storage is a new DTU institute holding world leading competences within the research and development of technologies for sustainable energy conversion and storage. Among these are fuel and electrolysis cells (for instance SOFC, SOEC, PEMs, solar cells and batteries. In addition we have world-class activities on a number of related topics exploiting functional ceramics: oxygen and hydrogen separation membranes, electrochemical flue gas purification and magnetic refrigeration. Key competencies include ceramic processing, solid state electrochemistry and advanced materials characterization.

To strengthen our activities in the Imaging and Structural Analysis Program we are seeking an outstanding Postdoc to initiate activities within in-situ transmission electron microscopy analysis of a variety of new energy materials. In combination with structural, crystallographic and electrochemical investigations, electron microscopy analysis is a crucial technique for understanding and modeling the behavior of new multiphase energy materials.

We have several SEMs and TEMs including a FEG-SEM, a dual-beam FIB FEG-SEM and a FEG-TEM with GIF and STEM units, all equipped with EDS spectrometers. The EM-lab is supported by a variety of sample preparation facilities run by development engineers and laboratory technicians. Furthermore, there will be access to the Centre for Electron Nanoscopy at the DTU Lyngby campus holding both state-of-the-art sample preparation facilities and seven new FEI SEMs and TEMs, including two world-class Cs-corrected and monochromated Titans.

Job description

- Initiating in-situ TEM investigations of functional ceramic materials

- Micro- and nano-scale structural and chemical analysis of materials for new energy technologies, e.g. ceramics for SOFCs. Main analysis will be by STEM EELS and EDS
- Advanced bulk sample preparation for TEM analysis including FIB techniques in collaboration with development engineers and laboratory technicians
- Strong interaction with colleagues responsible for ceramic processing and electrochemical testing of components
- Responsibility for keeping our microscopy techniques up-to-date and adding new scientific value to the division by developing or acquiring new relevant microscopy techniques and analysis methods
- Supervision of students and training of new users

Qualifications

- PhD degree in materials science, physics, chemistry or similar
- Knowledge of energy materials and their structure-property relationships
- Some years of experience within advanced electron microscopy documented by high-quality publications and/or patents
- Experience with in-situ TEM techniques
- Experience with TEM analysis of multi material systems or heterostructures
- Experience with several analytical FEG-TEM techniques (e.g. HREM, SAD, EFTEM), emphasis will be on EELS and EDS in combination with STEM is preferred
- Experience with FIB TEM sample preparation technique is preferred
- Experience with supervising students and training users
- Ability to work independently, to plan and carry out and document complicated tasks and to network independently in a large, dynamic and multidisciplinary research environment
- Clear communication and presentation skills in English, both written and spoken

We offer

We offer an interesting and challenging job in an international environment focusing on education, research, public-sector consultancy and innovation, which contribute to enhancing the economy and improving social welfare. We strive for academic excellence, collegial respect and freedom tempered by responsibility. The Technical University of Denmark (DTU) is a leading technical university in northern Europe and benchmarks with the best universities in the world.

Terms of employment

The appointment will be based on the collective agreement with the Confederation of Professional Associations. The allowance will be agreed with the relevant union. The place of work is the DTU Risø Campus in Roskilde. The period of employment is at least two years with the possibility of three years, starting preferably 1 June 2012.

Application

We must have your online application by 25 January 2012. Please apply online on www.dtu.dk/career and open the link "apply online" and fill in the application form and attach your letter of application, CV and list of publications.

Applications and enclosures received after the deadline will not be considered.

All interested candidates irrespective of age, gender, race, religion or ethnic background are encouraged to apply.

Further information

Please contact Head of Program Luise Theil Kuhn (luku@risoe.dtu.dk) , +45 4677 4712 for further information.