

Jobbnorge-ID: 141074

Søknadsfrist: Avsluttet

Nettside:

Omfang:

Varighet:

Postdoc position for Modeling and Simulation of Carbon Nanomaterial-ionic liquid Hybrids

A Postdoc position is available at the Department of Chemical Engineering. The position is financed by the Norwegian Research Council and has a special responsibility within Carbon Nanomaterial-IL Hybrids for Ultrahigh Energy Supercapacitors SuperEnergy.

Information about the department

The current research fields at the Department includes biorefinery and fiber technology, catalysis, colloid and polymer chemistry, environmental engineering and reactor technology and process systems engineering. Information about the department is available on the Departments homepage: <http://www.ntnu.edu/chemeng>

Job description

This project involves ground-breaking research for developing ultrahigh energy supercapacitors (SCs) with high specific energy, but remarkable improvements on safety, power density, stability and operating temperature window compared to batteries. The project is based on our recent progress of the fundamental study of carbon-ionic liquid (IL) SCs, where ultrahigh capacitance (>600 F/g) at 4V is predicted theoretically. The new principle will be applied to achieve the ambitious goal by means of maximize the ion packing density in the nanopores. This project will be part of a new approach with highly integrated multiscale hierarchical modelling and experimental investigation to optimize carbon nanomaterials-IL hybrids.

Molecular dynamic simulation of ionic liquid-carbon system. As an electrolyte in supercapacitors, different ionic liquids are often used. In this project full atomistic molecular dynamics (MD) simulations will be used to provide molecular insight of the ionic distributions and packing inside nanoporous material. The MD simulations will be used for screening different types and mixtures of different ionic liquid in order to evaluate possible ionic liquid mixture combinations that could further increase the capacitance based on their spatial arrangement in the nanopores. The distributions inside the pores, the density and molecular sizes obtained from MD can be used to rationally design supercapacitors with better performance. The candidate will work closely with an experimental group working on developing supercapacitors.

Qualifications

The applicant must have a PhD in chemical engineering, chemistry, physics or related fields. Good knowledge of molecular dynamics simulations. Familiar with common MD software packages - GROMACS, LAMMPS etc. Previous experience with ionic liquid simulations are considered as an advantage. Programming skills and prior knowledge of UNIX based operating systems are required.

Terms of employment

The appointment of the Postdoc will be made according to Norwegian guidelines for universities and university colleges and to the general regulations regarding university employees.

NTNU's personnel policy objective is that the staff must reflect the composition of the population to the greatest possible extent.

The position as Postdoc is remunerated according to the Norwegian State salary scale. There is a 2% deduction for superannuation contribution.

Further information can be obtained from Associate Professor Brian Arthur Grimes, Department of Chemical Engineering, NTNU, E-mail: brian.a.grimes@ntnu.no

The application

Applications with CV, certificates from both Bachelor and Master, possible publications and other scientific works, certified copies of transcripts, (certified copies of documentation on English language proficiency (e.g. TOEFL, IELTS, etc.)) and reference letters should be submitted.

Applications should be submitted electronically through this page.
Applications submitted elsewhere will not be considered.

The reference number of the position is: **NV-100/17**

Application deadline: 8 October 2017

Tilleggsinformasjon

Arbeidssted: