Ph.D. position:
Optimization of interfaces in all-solid-state Li-batteries

Advertising institute: ER-C – Ernst Ruska Centre

Reference number: D035-1/2017, Physics, chemistry, materials science, crystallography

Start: March 1st, 2018 or as soon as possible thereafter

The project:
This position is at Forschungszentrum Jülich, one of the largest interdisciplinary research centers in Europe, focusing its expertise in research with neutrons and electrons at the Jülich Centre for Neutron Science (JCNS) and the Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons (ER-C).

The JCNS develops and operates neutron scattering instruments for an international user community at its outstations at the world's leading neutron sources. The Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons is a national user facility open to universities, research institutions and research laboratories in industry and operates some of the most powerful transmission electron microscopes.

The combined use of neutrons and electrons as complimentary probes is a key aspect of this thesis project. The Ph.D. candidate will make use of both techniques and will be jointly supervised by scientists from the JCNS and the ER-C.

This project aims to tackle one of the biggest challenges for all-solid-state batteries: the limited electrochemical and mechanical stability of the employed materials systems. A particular challenge is a reduction in interface resistance for ionic conductivity between the active material and the solid state electrolyte, as well as between the active material and the current collector. A systematic improvement in the materials systems and their interfaces requires the establishment of novel *in situ* and *operando* methods in electron microscopy and the further development of neutron depth profiling to study Li migration.

The successful candidate will be based at the Jülich Centre for Neutron Science and the Ernst Ruska Centre, Forschungszentrum Jülich GmbH, Germany and will receive their Ph.D. from RWTH Aachen University.

Requirements
- M. Sc. or Diploma in physics, chemistry, materials science, crystallography or a related field.
- Experience in (neutron) scattering techniques is of advantage.
- Skills in electron microscopy and /or electron spectroscopy are welcome.
- A scientific background in the proposed research area is advantageous, but not mandatory.
- Good oral and written command of the English language.

Our Offer
- The opportunity to carry out research in an international and multidisciplinary environment at leading research facilities.
- Strong interaction with other researchers in Forschungszentrum Jülich, the surrounding universities and the respective user communities.
- Possibilities to attend national and international conferences.
- Salary and social benefits in conformity with the provisions of the Collective Agreement for the Civil Service (TVöD).

Applications and Further Information:

Forschungszentrum Jülich aims to employ more women in this area and therefore particularly welcomes applications from women.

How to apply:
We invite interested candidates to send applications including a letter of motivation, CV, copies of exams, degrees and grades.

Please submit your application to m.goecking@fz-juelich.de quoting the reference number by **1st of January, 2018**. You will receive a confirmation after this date.