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Helmholtz – CSC – Fellowships 2010

Helmholtz Centre: Karlsruhe Instiutute of Technology (KIT)

Research Field: Key Technologies

Research Project: Nano- and Microsystems

Position: PhD Student **X** Sandwich PhD Student □ Postdoc □

Department/Supervising scientist: Mechanics of Materials I / Prof. Oliver Kraft, Dr. Reiner Mönig

Research Area:

PhD thesis in the field of Mechanical Properties and Reliability of Nanomaterials

In nanostructured materials, there is a significant size dependence of the mechanical and other properties, Furthermore, in many nanostructured functional materials, there is a strong coupling between the functional and chemical properties of the material on the one hand and the mechanical stresses on the other. Also, mechanical stresses are a key factor for the reliability of nanostructured materials.

The focus of this work will be on in situ experiments (REM, TEM, Synchrotron) on nanostructured materials. The types of materials considered can be metals, nanoporous materials or electrode materials for lithium ion batteries. The aim is to observe and understand changes of microstructure, deformation and damage evolution during operation. Another issue can be the interplay between mechanical stresses and functional properties.

Specific Requirements:

Master of Science in the area of Materials Science or Engineering: Preferentially with strong experimental background in microstructural (electron microscopy) and/or mechanical characterization of materials.

Work Place: Karlsruhe Institute of Technology (KIT)
Institute for Materials Research II

Earliest Start (between September 2010 and February 2011)**:** September 2010

Language Course: English

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