



HELMHOLTZ RESEARCH FOR
GRAND CHALLENGES

Position Profile for Chinese Applicants running for 2019 Helmholtz – OCPC – Program

PART A (Info about the Position)

Title of the project:

Large-scale image processing for *in situ* transmission electron microscopy with high-speed high-resolution electron detectors

Helmholtz Centre and institute:

Forschungszentrum Jülich
Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons

Project leader:

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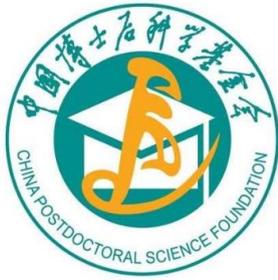
Web-address:

www.er-c.org, <http://www.fz-juelich.de/er-c/EN/>

Description of the project (max. half page):

Modern high-speed electron detectors allow events in *in situ* transmission electron microscopy to be captured with high temporal and spatial resolution. However, vast amounts of image data can be generated with millions of individual detector frames that cannot each be reviewed by a human. For this reason, the development of software and algorithms to handle such datasets, perform processing steps and find relevant features or events is of critical importance. This project combines approaches from machine learning, machine vision and high-performance computing with established knowledge and techniques from electron microscopy and materials science. The aim of the project will be to identify suitable pilot projects, implement solutions, test them, publish results and make the new developments available in the form of publications and open source code. The successful post-doc will support development efforts to build suitable software infrastructure and control interfaces to handle interactive live data acquisition and instrument control for high-throughput *in situ* electron microscopy observations.

Required qualification of the post-doc:



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- PhD in materials science, physics, computer science or a related discipline
- Experience with advanced transmission electron microscopy
- Additional skills in computer science or software engineering