

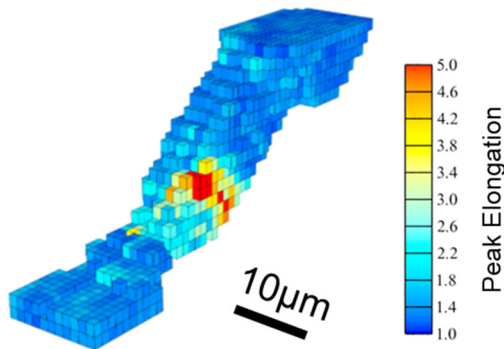
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**PhD Candidate (f/m/d) at the Institute for Applied Materials in**

## **Exploring dislocation-grain-boundary-interactions during cyclic loading by advanced synchrotron based diffraction techniques**

The Institute for Applied Materials – Mechanics of Materials and Interfaces (IAM-MMI) at the Karlsruhe Institute of Technology (KIT) strives for a fundamental understanding, prediction, and optimization of mechanisms responsible for the degradation of advanced structural and functional material systems. Our materials research portfolio comprises, among others, materials required for the energy transition, i.e. for energy conversion and storage, as well as advanced structural materials.

The IAM-MMI is looking for a PhD candidate (f/m/d) with a strong background in physics, materials science or mechanical engineering. As a PhD candidate you will be part of an international research group undertaking fundamental research on the mechanisms of plasticity, fracture and fatigue applying advanced synchrotron based characterization techniques. In this DFG-funded project we are using synchrotron based Laue micro-diffraction ( $\mu$ Laue) to shine light on the accumulation of dislocations near grain boundaries during fatigue loading. For this purpose, we prepare micro bending samples comprising of two grains with an interface in the center of the micro sample. Subsequently, the sample is deformed using a custom-built micro deformation stage. It's defect structure at the microstructure level is finally imaged in 3D by the tomographic variant of  $\mu$ Laue, called Differential Aperture X-Ray Microscopy (DAXM), with 300 nm resolution.

As a successful candidate, you will be tasked with:

- Preparation of micron sized fatigue samples using electron and ion microscopy.
- Investigation of the fatigue behavior using  $\mu$ Laue at the European Synchrotron Radiation Facility (ESRF).
- Data analysis using the scientific software package LaueTools and interpretation.
- Publication of results in peer reviewed journals and presentation at international conferences.

You should hold a Master's degree in physics, materials science or mechanical engineering at the time of your start at IAM-MMI.

Besides a state-of-the-art laboratory at the IAM and an inclusive, caring, and supportive atmosphere, we can offer a three-year PhD contract (75% TVL-E13). We strongly encourage applications from women and candidates from underrepresented backgrounds in STEM research to apply for this position, as a diverse workplace is vital to our success and life at the institute.

For more information, do not hesitate to contact

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