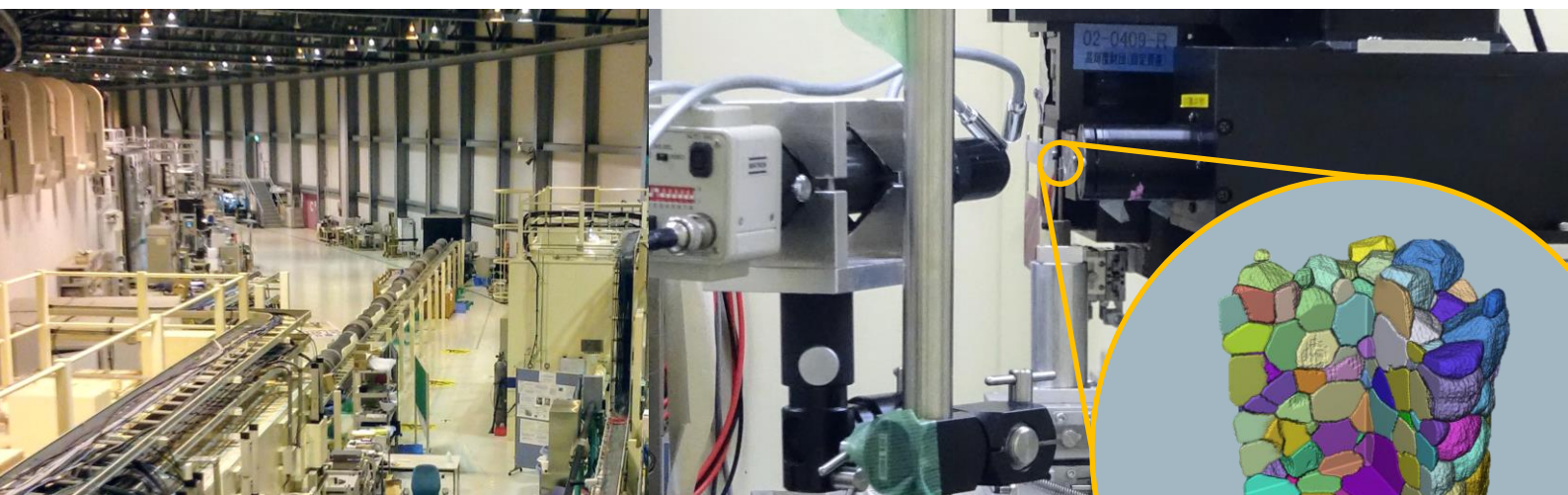




Open PhD position (m/f/d)

Reverse engineering the 3D microstructure of materials

The Institute of Functional Nanosystems at Ulm University is currently looking to hire a PhD student to join our multinational and interdisciplinary research team! The position and related research expenditures will be funded through DFG project KR 1658/9-1, a joint effort by materials physicists and applied mathematicians to reverse engineer the kinetics of microstructural evolution in polycrystalline materials.

The microstructure of a metal or ceramic is crucial to a multitude of properties. For this reason, attempts to manipulate and optimize microstructural parameters have been a hot topic of research for more than a century. The exponential increase in computing power of the last several decades has made predictive computer simulations of microstructural evolution a realistic possibility; however, the lack of robust 3D data limits our ability to validate the underlying algorithms. The goal of this thesis project is to obtain large, time-resolved 3D microstructural maps (like the one shown in the inset) and then to use this "4D" data (3D + time) as the basis for testing, validating and training simulation models.

Your profile:

- Master's degree in Physics, Materials Science, Engineering, Math, Computer Science or a related discipline earned at an accredited university (with an above-average GPA)
- Basic knowledge of x-ray diffraction and/or image processing
- Experience with programming or scripting
- Knack for solving problems creatively with a can-do attitude
- Desire to acquire practical skills in data analysis, 3D visualization and machine learning

Your responsibilities:

- Design and conduct scientific experiments as part of DFG project KR 1658/9-1
- Plan and execute experiments at synchrotron beamlines
- Collaborate with international research partners
- Perform statistical analyses of large 3D datasets and simulations of microstructural evolution
- Publish your research results in scientific journals and present them at international conferences



Interested in applying? Please email a short letter describing your research interests and explaining why you would be a suitable candidate for this position to Dr. Jules Dake (jules.dake@uni-ulm.de). Be sure to include a detailed CV as well as a copy of your academic transcripts.