

## PhD position in Materials Mechanics/Numerics/Statistical Physics Continuum dislocation dynamic simulation

- Job description: Development of advanced materials for high-end applications is driven by the increasing understanding of the dynamics and properties of defect microstructures, leading to the ability to synthesize and control materials microstructures to meet specific application demands. Dislocation motion is the fundamental physical mechanism of the plastic deformation process in crystalline materials. Whereas macroscopic plasticity models introduce different simplifications and approximations, small scale simulation techniques incorporates the underlying physical effect but are restricted by their high numerical effort and computation time. The goal is to further develop a physically based continuum method, which preserves important physical phenomena and yields a continuum representation of dislocation motion based on statistical physics. With the incorporation of a meaningful homogenization of dislocation ensembles, an advanced numerical formulation shall be established which bridge the modelling of plastic material behavior from the micro to the macro scale.
- Qualification: Candidates should hold an MSc degree (or equivalent) in physics, material science, numerical mathematics or mechanical engineering with a solid theoretical background and interest in statistical physics and numerics. Additional knowledge of materials mechanics, finite elements, C/C++, modern data analysis, or experience with other simulation methods is an asset.
- **Salary:** The remuneration occurs on the basis of the wage agreement of the civil service in Germany in TV-L, E13.
- Institute: Institute for Applied Materials Computational Materials Science (IAM-CMS), Karlsruhe Institute of Technology, Karlsruhe, Germany.
- Starting date: As soon as possible
- Application up to: July, 5<sup>th,</sup> 2015
- **Contact person:** For more information please contact Dr.-Ing. Katrin Schulz, E-mail: <u>katrin.schulz@kit.edu</u>

Application: Interested candidates are asked to send a motivation letter, curriculum vitae, transcripts of grades, and contact information for at least one academic reference to the IAM-CMS front office reachable at <u>office-CMS@iam.kit.edu</u> (subject: Application\_Continuum)

Incomplete applications will not be considered.



KIT is an equal opportunity employer. Women are particularly encouraged to apply. Applicants with disabilities will be preferentially considered if equally qualified.