



Karlsruher Institut für Technologie

**Institut für Technische Mechanik**

Prof. Dr.-Ing. habil. Thomas Böhlke

Prof. Dr.-Ing. Carsten Proppe

Prof. Dr.-Ing. Wolfgang Seemann

**Institut für Mechanik**

Prof. Dr.-Ing. Karl Schweizerhof

Prof. Dr.-Ing. Thomas Seelig



**Mechanik-Seminar**

Hochbeanspruchte **sfb** 483  
Gleit- und Friktionssysteme  
auf Basis ingenieurkeramischer Werkstoffe

---

Referent: **Prof. Dr. Frank Mücklich**  
Department Materials Science and Engineering Saarland University,  
Saarbrücken

Datum: Donnerstag, 26.11.2009  
Uhrzeit: 15:45-17:15 Uhr  
Ort: Hertz-Hörsaal, Geb. 10.11, Raum 126

Thema: **"Stereology or Microstructure tomography? About essential tools to measure and to understand 3D microstructures"**

---

**Abstract:** The 2D planar section sampling is a powerful tool to measure data for the estimation of the 3D population of grains or particles. This is beneficial in case of well defined and convex particle shape. In cases of complex shaped microstructures it often supplies insufficient information. Therefore, an adequate imaging and quantification of the 3D microstructure without general shape assumptions may be necessary. Representative characterization can be done by the help of high resolution serial sectioning and microstructure tomography [1]. This method combines the excellent target preparation possibilities of a focused ion beam (FIB) with all types of SEM contrast. It enables extensive serial sectioning of representative sample volumes and the imaging of chemical and structural phenomena with a resolution of about 2-10nm. Once the 3D data set is available, their exploitation in 3D image analysis provides quantitative insights into the relation between processing, structure and properties. So far the complex formation of multiphase 3D microstructures, the related interface as well as seeding phenomena and also very local degradation effects were investigated. The talk will provide a general overview of the potential and the limits of this techniques supported by examples of some technical relevance in different materials.

Referenzen: [1] F. Lasagni, A. Lasagni, E. Marks, C. Holzapfel, H.P. Degischer and F. Mücklich: Acta Materialia 55, 3875-3882 (2007)

---

Alle Interessenten sind herzlich eingeladen.

Prof. Dr.-Ing. Thomas Böhlke