



Referent: **Prof. Dr. Khanh Chau Le**
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Datum: Donnerstag, 16.09.2010
Uhrzeit: 10:00 – 11:30 Uhr
Ort: Geb. 10.81 - HS 62 (R513)

Thema: **Continuum dislocation theory and challenges in crystal plasticity**

Abstract When crystals deform plastically, newly formed dislocations pile up near obstacles giving rise to the size-dependent material strengthening. Dislocations appear in the crystal lattice to reduce its energy. Motion of dislocations yields the dissipation of energy which, in turn, results in a resistance to the dislocation motion. Any plasticity theory aiming at predicting plastic yielding, work hardening, and hysteresis must therefore take the nucleation and motion of dislocations into account.

In this talk I first try to present the framework of continuum dislocation theory (CDT) and then demonstrate its possible applications in crystal plasticity. Among various phenomena which can be modeled within CDT, I will focus on size effects and sensitivity to the boundary condition in the problems of simple shear, extension and torsion of single crystals. Then I will discuss the formation of dislocation microstructure and the role of Read-Shockley surface energy of small angle tilt boundary in the problem of polygonization. Then, a detailed presentation of application of CDT to TWIP-alloys will be given. Finally, I will discuss open problems and challenges in crystal plasticity and the way how they could be solved.

Alle Interessenten sind herzlich eingeladen.
Prof. Dr.-Ing. Thomas Böhlke