

EINLADUNG

zum Vortrag
von

Univ. Prof. Dr. Dr.h.c. Jürgen Eckert

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Design of Metastable Metallic Alloys

am

Dienstag, 3. Mai 2016, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmannngasse 5, 1. Stock

Barrierefreier Zugang: Boltzmannngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:

Metallic materials are important in a variety of high performance applications. However, a drawback of nearly all current high strength alloys is that they lack ductility or, on the opposite side, they may be highly ductile but lack strength. Hence, it is mandatory to develop new routes for creation of tailored materials enabling property as well as function optimization. One possibility along these lines is the design of monolithic amorphous materials or bulk micro-, ultrafine- or nano-structured composite structures with intrinsic length-scale modulation and phase transformation under highly non-equilibrium conditions.

This talk will present recent results obtained for metallic glass-based hybrid structures with transformation effects at different length-scales and microcrystalline-grained structures based on elastic instabilities and modulated length-scale. The deformation behaviour and possible phase transitions during deformation will be related to the intrinsic properties of the phases and their microstructure including heterogeneities and length-scale modulation in order to derive guidelines for the design of macroscopically ductile high-strength materials. Finally, the results will be critically assessed from the viewpoint of possible scaling-up for technological applications and the use of simple and cost effective processing technologies.

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