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Einladung zur Defensio der Dissertation

**Deformation Induced Disordered Nanocrystalline FeAl  
Studied by Advanced Transmission Electron Microscopy Methods**

von Herrn

**Dipl.-Ing. Mag. Christoph Gammer**

Zeit: Montag, 07. November 2011, 10:30 Uhr

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Bulk nanocrystalline intermetallic materials receive increasing scientific interest since they often show novel properties. In the present work FeAl was made nanocrystalline by high pressure torsion deformation. For a detailed characterization of the resulting nanostructures transmission electron microscopy studies combining imaging and diffraction are used. A new method yielding local profile analysis from electron diffraction is worked out and applied successfully to small nanocrystalline regions that are formed in FeAl during deformation. In a second step the method is applied to a tilt series, allowing to determine the substructures of the nanocrystallites in 3D. Deformation of intermetallic compounds is frequently accompanied by the loss of the long-range order. In the present work the physical processes occurring during thermal annealing, such as reordering by coarsening of ordered domains and the reduction of the grain size are analysed.

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