TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

INSTITUT FÜR ANGEWANDTE PHYSIK
Institute of Applied Physics
vormals/formerly
Institut für Allgemeine Physik

Wiedner Hauptstraße 8-10/E134, 1040 Wien/Vienna, Austria – Tel: +43 1 58801 13401 / Fax: +43 1 58801 13499 – E-mail: office@iap.tuwien.ac.at / http://www.iap.tuwien.ac.at

IAP-SEMINAR

EINLADUNG

Termin: **Dienstag, 27.4.2010 um 16:00 Uhr**
Ort: **Technische Universität Wien,**
Institut für Angewandte Physik,
Seminarraum 134A, Turm B (gelbe Leitfarbe), 5. OG
1040 Wien, Wiedner Hauptstraße 8-10

Vortragender: **Dipl.-Ing. Andreas Buchsbaum**
TU Wien, IAP

Thema: **Structural and magnetic properties of Fe and Co clusters on Alumina on $Ni_3Al(111)$**

Kurzfassung

Growing nanoparticles with well-defined size, shape and structure is an essential prerequisite to understand their magnetic properties. Templates are not only a means to grow regularly arranged clusters but also provide the opportunity to grow well-defined clusters with a narrow size distribution by simple evaporation, taking advantage of the fact that the capture zones of equidistant clusters have equal area.
In particular, I will demonstrate the applicability of an ultrathin alumina film on $Ni_3Al(111)$ as a template for growing Pd, Fe and Co clusters with a 4.1-nm lattice and a tuneable size between 1 and ≈1000 atoms. The structure of the ≈5 Å thick oxide film exhibits holes at the corner of the $(\sqrt{67} \times \sqrt{67})R12.2°$ unit cell reaching down to the metal substrate. Pd atoms trapped in these corner holes create metallic nucleation sites where the clusters can nucleate and form a well-ordered hexagonal arrangement on the oxide nanomesh. We have applied different methods like scanning tunneling microscopy (STM), surface x-ray diffraction (SXRD), grazing-incidence small-angle x-ray scattering (GISAXS) and x-ray magnetic circular dichroism (XMCD) to determine the morphology, crystallographic and magnetic properties of the clusters.

Alle interessierten Kolleginnen und Kollegen sind zu diesem Seminar
(45 min mit anschließender gemeinsamer Diskussion) herzlich eingeladen.

P. Varga e.h.
(Seminar-Chairperson)

H. Störi e.h.
(LVA-Leiter)