



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, 5.4.2011 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: **Fabian Natterer**
EPFL Lausanne

Thema: **Self-assembly of transition metal rings on single layer
h-BN/Rh(111)**

Kurzfassung

Upon deposition of per mill amounts of cobalt (iron) on hexagonal (*h*) boron nitride at low temperature, we observe the formation of nanostructures lying like a necklace around the circular part of the (12 x 12) *h*-BN/Rh(111) moiré unit cell. These atomic chains, bent to a closed ring of 2 nm diameter, contain at least four and up to 12 equidistant Co (Fe) atoms. Differences in work function between wire and hole region result in an electric field that is trapping adatoms [1]. Low temperature scanning tunnelling microscopy results indicate short range repulsion between the ring atoms. The rings are metastable as interactions with the electric field of the tunnelling tip or gentle annealing may transform the ring into a compact Co cluster. Surprisingly, this process is reversible for Co where we observe that compact clusters get converted into rings by annealing. At low Co (Fe) coverage, the rings are several tens of (12 x 12) unit cells apart, implying large Co (Fe) adatom diffusion rates down to the lowest studied deposition temperatures of 10 K.

[1] Dil *et al.* *Science* **319**, 1824 (2008)

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

*F. Mittendorfer e.h.
(Seminar-Chairperson)*

*H. Störi e.h.
(LVA-Leiter)*