TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

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IAP-SEMINAR

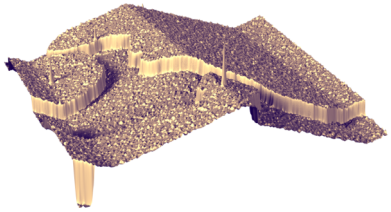
EINLADUNG

Termin: **Dienstag, 4.6.2013 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: **PhD Gareth Parkinson**
TU Wien, IAP
Thema: **There's Life in the Old Dog Yet: New Insights from the Earth's Oldest Known Magnetic Material (Fe_3O_4)**

Kurzfassung

Magnetite (Fe_3O_4), the material through which mankind first encountered magnetism, continues to fascinate scientists with its remarkable properties. In this seminar I will present two very different recent highlights from our magnetite project. Firstly, a combination of scanning tunneling microscopy (STM) and spin polarized low-energy electron microscopy (SP-LEEM) sheds new light on how the (bulk) Verwey metal-insulator transition affects the Fe_3O_4(001) surface. In the insulating low temperature phase a roof-like structure with a periodicity of ~0.5 µm emerges as a consequence of micro-twinning within ferroelastic domains. The "Verwey roof", as we call it, is visible as dark-light stripes in SP-LEEM images, allowing the structural and magnetic domains to be studied in real-time.
In the second part of the talk I will show how gas molecules can induce atom mobility at surfaces. Specifically, I will demonstrate that the adsorption of CO causes initially stable Pd adatoms to rapidly diffuse on the Fe_3O_4(001) surface. Using atomically resolved STM movies we follow individual Pd-CO species across the surface and directly observe the atomic-scale details of cluster nucleation and growth for the first time.



The Verwey "Roof", as observed by STM

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

U. Diebold e.h.
(Seminar-Chairperson)

H. Störi e.h.
(LVA-Leiter)