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IAP-SEMINAR

ANNOUNCEMENT

Date: **Tuesday, 15.3.2016**
Time: **16:00 p.m.**
Location: **Technische Universität Wien, Institut für Angewandte Physik, E134**
yellow tower „B“, 5th floor, Sem.R. DB gelb 05 B (room number
DB05L03), 1040 Wien, Wiedner Hauptstraße 8-10

Lecturer: **Choi Joong Il MSc**
TU Wien, IAP

Subject: **Ultrathin ZrO₂: surface structure is decisive for oxide properties**

Abstract: Although zirconia (ZrO₂) finds a wide range of applications in engineering, catalysis, microelectronics and solid oxide fuel cells (SOFCs), atomic-level studies of its surface structure are difficult due to its insulating nature, related to its high band gap ($E_g \approx 5$ eV). In order to overcome this limitation, ultrathin zirconia films were grown by oxidation of Zr-based alloys (Pt₃Zr [1] and Pd₃Zr [2]), and the structure of these films was studied by STM. In this talk, I will present atomically resolved STM measurements of the films and the adsorption of H₂O and atomic H as well as deposition of metals (Ag, Au, Pd, Ni, Fe) at these surfaces. Combined studies by STM and DFT reveals that the surface structure of the ultrathin oxide is a decisive factor that determines the interaction of the oxide with the molecules and the metals.

[1] Antlanger et al., Phys. Rev. B 86, 035451 (2012).

[2] Choi et al., J. Phys.: Condens. Matter 26, 225003 (2014).

*All interested colleagues are welcome to this seminar lecture
(45 minutes presentation followed by discussion).*

M. Schmid e.h.
(Seminar-Chairperson)

H. Störi e.h.
(LVA-Leiter)