

IAP-SEMINAR

ANNOUNCEMENT

- Date: **Tuesday, 31.5.2016**
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: **Dipl.-Ing. Stefan Gerhold**
TU Wien, IAP

Subject: **Surface Reactivity and Homoepitaxial Growth of SrTiO₃(110)**
Abstract: Strontium titanate (SrTiO₃ or STO) has evolved as a prototype for the class of perovskite oxides. It shows a high photocatalytic efficiency for water-splitting, and it is commonly used as a substrate for the growth of complex oxides. The STO (110) surface has been investigated with surface sensitive experimental techniques. The surface forms a variety of reconstructions, which are related to the near-surface stoichiometry. We have investigated the adsorption of water on the (4x1) reconstructed surface and have modified its reactivity by adsorption of NiO clusters. Recently we have extended our surface science chamber with a pulsed laser deposition (PLD) setup with in-situ transfer of as-grown samples. By utilizing reflection high-energy electron reflection (RHEED) during growth, we obtain exquisite control over the film thickness. Our approach of combining the high-pressure PLD growth with ultra-high vacuum surface science will be presented.
By combining highly-resolved scanning tunneling microscopy (STM) with PLD, we have investigated the early stages of growth by stopping the deposition at sub-monolayer amounts. The dependence of the island size, shape, and density on the growth parameters will be discussed.
In addition, we have investigated the effect of non-stoichiometric deposition on the film morphology. The pristine surface structure and the composition of the PLD flux are important ingredients for the growth of high-quality films.

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

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

*H. Störi e.h.
(LVA-Leiter)*