



TECHNISCHE  
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# IAP-SEMINAR

## EINLADUNG

Termin: **Dienstag, 21.1.2014 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: **Prof. Taro Hitosugi**  
Advanced Institute for Materials Research (AIMR),  
Tohoku University/Japan

Thema: **Scanning tunneling microscopy/spectroscopy of  
LaAlO<sub>3</sub>/SrTiO<sub>3</sub> heterostructures**

### Kurzfassung

We report on the initial growth nature of sub-unit cell (UC) SrTiO<sub>3</sub> (STO) and LaAlO<sub>3</sub> (LAO) films formed on top of STO(001)-(root13×root13)-R33.7° substrate surfaces, using a scanning tunneling microscopy/spectroscopy (STM/STS) combined with pulsed laser deposition (PLD). The STM/STS imaging of sub-UC LAO islands reveals that a TiOx layer of the SrTiO<sub>3</sub> substrate has transferred to the topmost surface of the LaAlO<sub>3</sub> layer, indicating that the TiOx layer can be viewed as a graphene-like one unit-cell TiOx sheet. This structure can be regarded as a new oxide nano material. Further, we found that the surface structures affects electron transport properties at LAO/STO interfaces. These findings on the atomic-scale nature of perovskite growth lead to preparation of higher-quality thin films and surfaces/interfaces exhibiting novel electronic and magnetic properties.

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*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)*