

PHYSICAL COLLOQUIUM
INVITATION

Monday, 12.06.2017, 4.15 p.m., W2-1-148

speaks

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about

**Ultrathin oxide films on metals - Synthesis, charge transfer processes,
and reactivity**

Oxides are ubiquitous on earth and play a prominent role in modern science and technology as they appear in a large variety of chemical composition and structure and, hence, physical and chemical properties. In the last decades, ultrathin oxide layers at the two-dimensional limit, i.e. with a thickness of only one or a few atomic layers that are usually supported by a metal substrate, have been actively investigated. While these layers were originally synthesized with the intention to electronically decouple adsorbates from a metal substrate, it was recently found that potentially interesting phenomena can arise from the reduced thickness and the variability of composition and structure in the ultrathin regime. In this talk, I will present some examples of our recent research on ultrathin oxide films dealing with the synthesis of the films, charge transfer processes through ultrathin insulating layers, and the enhanced chemical reactivity triggered, e.g., by charge transfer. I will discuss the synthesis of a single-layer ternary Fe-tungstate from the solid-state reaction of FeO(111) with WO₃, the permeability of a SiO₂ bilayer for metal atoms, and charge transfer onto gold atoms and organic molecules (pentacene, 5A) on MgO(001)/Ag(001) induced by the large work function reduction of Ag(001) by the ultrathin MgO(001) film and how this affects the catalytic activity (for Au/MgO(001)/Ag(001)) and the orbital energy level alignment (for 5A/MgO(001)/Ag(001)), respectively.

All interested persons are cordially invited.

Sgd. Prof. Niklas Nilius