

Vanadium Oxide Nanostructures

Dr. S. Surnev

Institut für Experimentalphysik
Karl-Franzens Universität Graz

Oxide structures with nanometric dimensions exhibit novel physical and chemical properties, with respect to bulk oxide materials, due to the spatial confinement and the proximity of the substrate. We have investigated the growth mechanism and the structure of ultrathin vanadium oxide layers on single crystal metal surfaces, such as Pd(111) and Rh(111), by scanning tunnelling microscopy (STM), low energy electron diffraction (LEED), high-resolution x-ray photoelectron spectroscopy (HR-XPS), high-resolution electron energy loss spectroscopy (HREELS) and *ab-initio* density functional theory (DFT) calculations. The following topics will be discussed:

- Novel oxide nanostructures
- Diffusion of oxide nanoclusters
- Novel adsorption sites at the metal-oxide interface
- Reduction-oxidation behaviour of oxide nanostructures