

PHYSIKALISCHES KOLLOQUIUM

Mittwoch, den 20.10.2010, um **15:30 Uhr**

Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013



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Electronically tuneable nanostructures

The properties of materials are typically tailored by their micro- and nanostructure. This implies control of the grain size, defect concentration, structure and metastability. As long as the microstructure does not change during the use of the material, the properties of the material are fixed, or irreversible. In contrast, in semiconducting materials, properties can be tuned by the application of an external field due to the space charge regions which extend far from the interfaces. In conducting systems, this effect cannot be observed unless the dimensions of the structures are in the nanometer regime. The reason for this different behaviour is the small spatial dimension of the space charge regions due to the effective screening of the induced charges by the conduction electrons.

Several examples of tuneable property changes for metal and oxide nanostructures in the form of thin films and nanoporous, nanoparticulate structures will be presented. A focus will be on the tuneable electrical conductivity of Au, ITO and Indium Oxide nanostructures. The potential for applications in printable electronics based on the observation of a field effect behavior using electrochemical gating of ITO and Indium Oxide will be demonstrated.

Alle Zuhörer sind ab 15:15 Uhr zum Kaffee vor dem Hörsaal eingeladen.