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Einladung
zum
Festvortrag

Nanoscience and Nanotechnology in Low Temperature Fuel Cell Research

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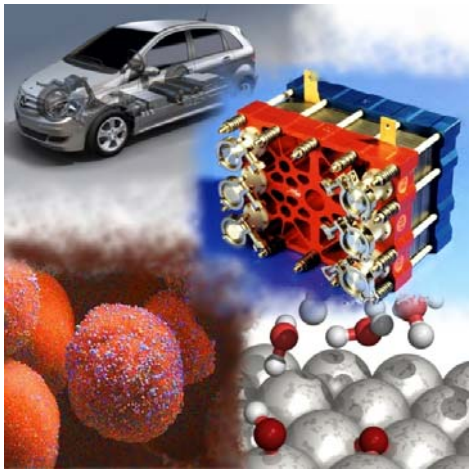
Zeit: **Montag, 26. November 2012, 16.00 Uhr**
Ort: Universität Wien, Universitätscampus
Aula am Campus, Hof 1.11, Spitalgasse 2-4, A-1090 Wien



Fuel cells have been discussed intensely in the last decade as efficient energy converter for various applications, including mobile, stationary and portable applications. Fuel cell technology, which includes not only the fuel cell itself, but also the generation, processing and storage of suitable fuels, relies heavily on catalytic, electrocatalytic and, because of its potential for H_2 production, photocatalytic processes. In all of these processes, nanoscience and nanotechnology may play an important role not only in the technical improvement, but also for the fundamental understanding of the ongoing processes.

Concentrating on the actual electrocatalytic processes, I will discuss the role of nanoscience and nanotechnology in basic research on this topic, using simple electrocatalytic reactions and processes as example. First, the catalytic function of highly active bimetallic catalysts in fuel cell relevant reactions such as H adsorption/oxidation, CO oxidation and O_2 reduction will be elucidated on a molecular scale using structurally well defined planar bimetallic model catalysts and model electrodes, where the structural properties are determined by atomic resolution scanning tunneling microscopy. This way, the chemical properties of individual adsorption ensembles become experimentally accessible and can be compared with theoretical results.

Second, the role of transport processes in fuel cell reactions will be examined, employing nanostructured electrodes with well defined arrays of ultramicroelectrodes (UMEs).

Finally, the potential of such model studies, in combination with theory, for the molecular scale understanding of fuel cell relevant reactions and later applications will be discussed.

Im Rahmen Verleihung des
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