

UniCat Colloquium

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Lecturer: **Dr.-Ing. Ralph Krähnert, Junior research group leader, Department of Chemistry, Chemical Engineering, TU Berlin**

Title: **Concepts for a rational design of solid catalysts**

Abstract: Reactions in heterogeneous catalysis occur via a sequence of coupled processes. Those involve beside the catalytic surface reaction itself also diffusion processes that govern the mass transport to the active sites, such as diffusion through a fluidic boundary layer and diffusion within the pores of the solid catalyst. To achieve optimal catalytic performance those processes must be balanced and controlled.

In order to perform the catalytic step in a selective way suitable active sites are required. In case of noble metals, intrinsic catalytic properties can be adjusted by the size and composition of noble-metal nano particles. The provision of a large number of active sites requires usually also a large surface area introduced by the porosity of the solid. However, since large surface areas result from small pores, diffusion through the pore network can be hindered by collision of reactant molecules with pore walls. A suitable pore system must facilitate both, sufficiently high surface area and fast diffusion. Moreover, optimal performance of a catalyst benefits also from homogeneous material properties, such as a narrow distribution of pore sizes or the size of noble-metal particles employed as active sites. The preparation of such model-type catalysts requires adequate synthesis strategies.

The talk will discuss concepts for the design of supported catalysts, present synthesis approaches for improved control over pore morphology and active sites, and illustrate the implications of controlled variation of synthesis parameters on catalyst performance.

Date: **Wednesday, 20 Oktober 2010**

Time: **5:15 pm - around 6:45 pm**

Location: **TU Berlin, Institute of Chemistry,
Building C, Straße des 17. Juni 115,
10623 Berlin, room C 243**

Organiser: Prof. Dr. Matthias Driess (TUB)

Coffee and tea will be served thirty minutes prior to the lecture start.
Guests are cordially invited to attend!

Prof. Dr. Matthias Driess, Chair of the Cluster of Excellence UniCat