Sonderforschungsbereich 631

Festkörperbasierte Quanteninformationsverarbeitung

TECHNISCHE UNIVERSITÄT MÜNCHEN

im Oktober 2004

SEMINARANKÜNDIGUNG

Donnerstag, 28. Oktober 2004

10.00 Uhr

Physik-Department E11, Seminarraum 127 (Physik II)

„The Art of Colloidal Zeolites"

Microporous molecular sieve materials are widely used in the chemical process industry as well as in almost all fields of human life where chemical, biochemical and physicochemical processes are taking place. Controlling structure and function at the nanometer scale often requires the use of novel strategies for preparation of periodic nanoporous materials such as zeolites and liquid-crystal-templated mesoporous materials.

This presentation will cover the preparation of stable colloidal suspensions of discrete nanosized zeolites, with emphasis on the complex crystallization mechanism by which they are assembled. Colloidal zeolites are used as building blocks for the preparation of thin films with controlled crystal orientation, thickness and porosity. On the other hand, the structural control on the nanometric scale is one of the most challenging tasks of modern solid-state chemistry and material science. Non-destructive identification of colloidal zeolites using X-ray diffraction, DLS, HRTEM, Raman, NMR, and UV-vis spectroscopes will be presented.

Finally, microporous hosts in the form of bulk materials and thin films are being employed as structural templates for the synthesis and stabilization of molecular guests such as dyes and nanometer scale conducting structures as well as for preparation of low-k dielectric layers and selective chemical sensors.

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