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Pharmaceuticals in nanopores - A strategy to manipulate the phase behavior M. BEINER, G.T. RENGARAJAN, S. PANKAJ, D. ENKE, Martin-Luther-University Halle-Wittenberg, Faculty of Natural Sciences II, D-06099 Halle, Germany — The manipulation of the crystalline state of substances existing in different polymorphic forms is an important issue in many fields of application. In case of pharmaceuticals the stabilization of unstable forms is interesting since solubility and bioavailability are improved. We will show in this presentation that it is possible to manipulate the crystallization behavior of pharmaceuticals and to stabilize unstable crystalline forms by confining the substance in pores with diameters in the range 20-400 nanometers. [1] The crystallization behavior of a pharmaceutical model system in two different types of nanostructured inorganic host systems is studied by DSC and x-ray scattering. The results clearly show that the most unstable crystalline form of this pharmaceutical melts and is stable for long times under confinement which was never observed for bulk samples. This allows to extract the thermodynamic parameters of this crystalline form which have not been reported so far and shows that this is an interesting field of application for nanostructured host-guest systems. The influences of pore geometry and surface interaction are studied and possible explanations for the differences between the crystallization behavior in the bulk and under confinement are discussed.

[1]G.T. Rengarajan et al. *J.Am.Chem.Soc.*, to be published.

M. Beiner
Martin-Luther-University Halle-Wittenberg, Faculty of Natural Sciences II
D-06099 Halle, Germany

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