
S E M I N A R
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Halbleiterphysik und Nanotechnologie

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**Nanocast Mixed Metal Oxides:
Templated Synthesis, Characterization and Uses**

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Since the initial discovery of ordered mesoporous materials in early 90's, considerable innovations were achieved regarding their synthesis, characterization and applications. One of the interesting outcomes of these intense research efforts is the development of a solid templating method called "nanocasting", which is based on using mesoporous silica (or carbon) as a rigid template. This solid-to-solid replication method opened the way for synthesizing high surface area non-silica mesostructured materials which are challenging to obtain through conventional self-assembly processes that are usually based on using soft organic structure-directing agents. In particular, the replicated metal oxide mesostructures obtained by this method were found to be highly versatile for a wide range of applications, especially in catalysis, owing to their large specific surface area. Furthermore, the nanocasting method is particularly suited for the synthesis of mixed metal compositions (e.g., spinels, perovskites), favored by the possible confinement of mixed precursors in the nanopores of the silica template. In this presentation, we will discuss some of the developments regarding the synthesis of such nanocast mixed metal oxides, how they are characterized and perspectives of applications, with emphasis on catalysis and energy storage.