Nanostructured Materials in Heterogeneous Catalysis

R. Schlögl

Fritz-Haber-Institut der Max-Planck-Gesellschaft
Faradayweg 4-6, D-14195 Berlin, www:fhi-berlin.mpg.de

Catalysis is one of the areas where the modern nanosciences are working in practice since a long time. Supported catalysts, micro- and mesoporous materials are classical examples of functional nanomaterials.

The presentation looks into a different class of nanostructures that are constituents of bulk materials. Most solids are nanostructured by their mosaic array of crystallites. If measures are taken to geometrically or electronically isolate these building blocks from each other then new catalytic functions can be expected. The concept works well in superalloys such as Li_xAl and will be shown to be transferable in several strategies to classical catalytic materials.

Sulphated zirconia, molybdates and nanostructured carbon will be the examples to illustrate the strong effect of nanostructuring that can be seen as generalisation of the qualitative concept of “site isolation” known since long in catalysis.