

# **Nanostructural catalysts derived from clay minerals**

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The unique structural and compositional properties of cationic (layered silicates) and anionic (hydrotalcites) clays are discussed in light of the versatility and potential of these materials in manufacturing of catalytically active nanostructures. Here, the concept of atom-by-atom or molecule-by-molecule strategy in the catalyst design is extended to the use of individual silicate lamellae as prefabricated building blocks, ready to be fitted into the desired nano-construction. Alternatively, the hydrotalcite layer compositional flexibility may be used for design of catalysts with unique properties. The use of clay minerals for design and synthesis of catalytic materials is illustrated by examples from author's own works. Presentation focuses on manufacturing of catalytic materials relevant for environmental catalysis, with particular attention to the novel preparative strategies. The main interest lies in finding relation between the physico-chemical properties of the catalysts and their performance in the catalytic reaction.

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