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BOOK REVIEW

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The Chemistry of Nanostructured Materials. Peidong Yang (editor).

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This book provides the reader with 13 authoritative accounts written by experts in field of nanostructured materials. Topics covered are micro- and macroporous materials, carbon nanotubes, colloidal nanocrystals, semiconductor nanowires, inorganic Fullerenes, interfacial design, block copolymers, catalysis and nanocomposites. For chemists, physicists and engineers this book is interesting in terms of preparative methodologies of nanostructured materials and their characterization.

The book concentrates at the beginning on introducing microporous materials including compositions such as synthetic alumino silicate zeolites, phosphates, chalcogenides and metal-organic frameworks. Synthesis mechanisms and the characterization of periodic mesoporous materials especially silicates are described in detail. In the next section the synthesis of macroporous materials containing three- and two dimensional periodic structures are described. Special emphasis is given to the various parameters controlling the nanocrystal size, shape and other physical properties.

The overview of semiconductor nanowires is organized in three parts: the first part discusses various methods that have been developed for generating nanowires with tightly controlled dimension, orientation, interfaces and well-defined properties. The second part highlights a number of strategies and the third part surveys some of the novel physical properties.

The further chapters are devoted to the recent advances in the field of solid-state supermolecular chemistry and the systematic interfacial design of surface functionalization for the fabrication and tailoring of nanostructured materials to a host of high-performance devices; therein several examples of hydrosilylation are presented. It is shown that molecular networks of diverse topologies and functionalities can be designed via a modular approach.

The book is completed with an exhibition of the expanding world of nanoporous catalysts and the preparation, characterization and application in nanotechnology of nanocomposites, block copolymers as well as molecular cluster magnets. We recommend the book for people who want to get a quick precise grasp of the status of the chemistry of nanostructured materials.