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**Nanoporous Materials – Their Types, Properties and Applications**

Nanoporous materials are of scientific and technological importance due to the presence of voids of controllable dimensions at the atomic, molecular, and nanometer scales, enabling them to discriminate and interact with molecules and clusters. Nanoporous materials are classified into three subtypes: microporous materials, mesoporous materials and macroporous materials, and important examples of the materials include zeolites, mesoporous metal oxides, metal-organic-frameworks, porous carbon, and inorganic-organic hybrid materials. Research efforts in this field have been driven by the rapid growing emerging applications such as biosensor, drug delivery, gas separation, energy storage and fuel cell technology, nanocatalysis and photonics. With increasing environmental concerns worldwide, nanoporous materials have become more important and useful for the separation of polluting species and the recovery of useful ones. These applications offer exciting new opportunities for scientists to develop new strategies and techniques for the synthesis and applications of these materials. The main challenges in research include the fundamental understanding of structure-property relations and tailor-design of nanostructures for specific properties and applications. This presentation reviews fundamentals and advances being made in the field of nanoporous materials, focusing on their types, properties and applications.