

Abstract of Presentation

Name:

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Presentation Title:

Highly-controlled syntheses of ordered porous materials and their application to catalysis

Abstract :

We have recently developed the preparation of novel titanosilicate denoted by Ti-YNU-1, which has an expanded pore window between the crystalline MWW sheets and shows a higher intrinsic catalytic activity than Ti-MWW in the epoxidation of bulky alkenes with H_2O_2 as an oxidant. It was supposed that a part of silica “debris” originating from the framework by acid treatment constructs monomeric silica puncheons between the MWW sheets. Thus we have developed the preparation of interlayer-expanded microporous crystals through one-step interlayer-silylation of layered zeolitic precursors such as MWW(P) and PLS-1 using monosilane with various alkoxy and alkyl groups. We have demonstrated a novel templating route for preparing mesoporous silicas based on the self-assembly of anionic surfactants and inorganic precursors in the presence of aminosilane or quaternized aminosilane as a co-structure-directing agent. The use of a chiral anionic surfactant derived from the amino acid, *N*-myristoyl-L-alanine sodium salt, provides chiral mesoporous silica. We have also succeeded in forming the silica nanospheres with a size of 8-250 nm and with a well-ordered arrangement through the hydrolysis and condensation reactions of tetraethyl orthosilicate in the presence basic amino acids.