

Synthesis of Organic-Inorganic Hybrid Mesoporous Materials with Large-Pore P6mm, Ia3d, and Im3m Structures

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Highly ordered organic-inorganic hybrid mesoporous materials with large pore of P6mm, Ia3d, and Im3m structures have been successfully synthesized. The organic functionality was introduced into the inorganic mesoporous surface through the co-condensation reaction of the direct synthesis method. It was obvious that the amounts of the functional group added into the initial reaction mixtures controlled the pore channel lengths and pore structures of the obtained material. Precise controlled experiment steps were the key for obtaining the highly ordered with morphological and structural controlled organo-functionalized mesoporous materials. The prepared materials were tested for the dispersion of the functional groups as well as its hydrothermal stability. The chemical transformations on the surfaces also have been done with catalytically active sites and tested the catalytic activity for liquid-phase heterogeneous catalysis.