

Synthesis and Application of Ordered Mesoporous Aluminosilicates from Various Zeolites for Pyrolysis of Biomass

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Highly porous oxides abstracted great deal of interest due to their inherent pore structure and surface properties. Zeolite and Periodic mesoporous silica are the representative examples of the microporous and mesoporous materials respectively. Both of the materials have many advantageous properties but also limitations. For example, zeolites have great advantages based on their regular microporosity and acid sites in the crystalline framework, but the micro sized pores lead limitations sometimes in the diffusional point of view. Mesoporous silica material has quite accessible meso-scale pores but the lack of strong functionality and hydrothermal stability can be a problem that should be solved. In the present work, very novel synthetic strategy involving bottom up and top down approach is suggested for the mesoporous aluminosilicates.

The materials, denoted as MMZ (mesoporous materials from zeolites) are applied for pyrolysis of bio-mass and the MMZ materials showed excellent catalytic activity and stability as well in comparison to Al-MCM-41 and zeolites.