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Synthesis of Nanoparticle Mordenite Zeolite for Dimethyl Ether Carbonylation

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Abstract : The different size of nanoparticle mordenite zeolites were prepared by adding different soft template during hydrothermal process for carbonylation of dimethyl ether (DME) to methyl acetate (MA). The catalysts were characterized by X-ray diffraction, Ar adsorption-desorption, high-resolution transmission electron microscopy, NH3-temperature programmed desorption, scanning electron microscopy and Thermogravimetric. The characterization results confirmed that mordenite zeolites with small nanoparticle showed more strong acid sites which was the active site for carbonylation thus promoting conversion of DME and MA selectivity. Furthermore, the nanoparticle mordenite had increased the mass transfer efficiency which could suppress the formation of coke.

Keywords : nanoparticle mordenite, carbonylation, dimethyl ether, methyl acetate
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