

Microwave synthesis of Mesoporous ZSM-5 having Mulberry Morphology with Tartaric acid as a capping agent

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There have been many approaches and trials to get mesoporous zeolites, which are supposed to overcome diffusional limitation of microporous zeolite as well as coke problem. Most of mesoporous zeolites have prepared by using soft and hard templates for creating mesoporosity or adopting post-treatment by using acid or base, which gave a cost and environmental issues. In this study, the hierarchical ZSM-5 having mulberry type morphology, which looks the assembled nanozeolites into big crystals, was synthesized just with TPAOH and TEOS and L-tartaric acid as a capping agent by microwave at 165 oC for 2hr without using any porogen and templates. L-tartaric acid as capping agent seemed to play capturing ZSM-5 nano-particles to form assembled ZSM-5 clusters having intercrystalline mesoporosity between the nanoparticles controlling to form mulberry shape. In addition, their catalytic activity of mesoporous ZSM-5 might be applied for the catalytic anisole-acylation or aromatization at the liquid-phase reaction.

Keyword : Tartaric acid, microwave synthesis, hierarchical ZSM-5, mesoporosity