

Catalytic Study of Methanol-to-Propylene Conversion over Nano-Sized HZSM-5

Authors : Jianwen Li, Hongfang Ma, Weixin Qian, Haitao Zhang, Weiyong Ying

Abstract : Methanol-to-propylene conversion was carried out in a continuous-flow fixed-bed reactor over nano-sized HZSM-5 zeolites. The HZSM-5 catalysts were synthesized with different Si/Al ratio and silicon sources, and treated with NaOH. The structural property, morphology, and acidity of catalysts were measured by XRD, N₂ adsorption, FE-SEM, TEM, and NH₃-TPD. The results indicate that the increment of Si/Al ratio decreased the acidity of catalysts and then improved propylene selectivity, while silicon sources had slight impact on the acidity but affected the product distribution. The desilication after alkali treatment could increase intracrystalline mesopores and enhance propylene selectivity.

Keywords : alkali treatment, HZSM-5, methanol-to-propylene, synthesis condition

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