

Synthesis and catalytic performance of high silica FER zeolite

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FER zeolite has exhibited good performance in skeletal isomerization of n-butene to iso-butene and also for the selective catalytic reduction of NO_x using ammonia. However, FER zeolite containing large amount of aluminum has a disadvantage due to rapid deactivation by coke formation. Therefore, the synthesis of high silica FER zeolite has been investigated for prolong catalyst life time and hydrothermal stability. In this work, FER zeolite with different SiO₂/Al₂O₃ ratios of 50–200 was synthesized using pyridine as a structure directing agent. The effect of NaAlO₂ concentration and synthesis time on the catalytic properties of the resulting FER zeolite was investigated with XRD, SEM, N₂ adsorption, NH₃-TPD, and also the methanol to olefin catalytic reaction at 400 °C with 1.2 h⁻¹ WHSV.