

Effect of Si/Al ratio of FER zeolite on Methanol-to-olefin reaction

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The FER zeolite has a 2-dimensional channel system consisting of 10MR (5.4×4.2 Å) and 8MR (4.8×3.5 Å) channels. FER zeolite is known as a catalyst having high performance in the isomerization of n-butene and can be applied to various industries. In the case of MTO reaction, It is necessary to control aluminum content because FER zeolite with high aluminum content has exhibited the rapidly deactivation by coke deposit. In this study, we prepared FER zeolite with high Si/Al ratio by hydrothermal synthesis method and compared with commercial FER zeolite (Si/Al=10, Zeolyst). Physicochemical properties of catalyst were investigated by XRD, SEM, N₂ adsorption and NH₃-TPD. Then, the catalytic performance of FER zeolite was confirmed by MTO reaction at 400 °C with 1.2 h⁻¹ WHSV.