

Synthesis and characterization of aluminosilicate MFI Zeolites by different silica source and its catalytic performance on NMTO reaction

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Recently, many studies have been conducted to minimize energy costs while maintaining high yields of olefin in the petrochemical industry. NMTO(Naphtha-Methanol to Olefin) reaction is a process that the low energy costs while increasing the production efficiency of olefin by thermal neutralization when naphtha and methanol are decomposed each other. In particular, the NMTO reaction should ensure the hydrothermal stability of the zeolite to produce olefin without producing other by-products at high temperature. In this work, aluminosilicate MFI zeolites were synthesized with different silica source to obtain different morphology and the synthesized zeolites were conducted the hydrothermal stability test at 760 °C with air condition for 12 h. The physicochemical properties of the catalysts were investigated by XRD, N₂ adsorption, SEM, EDX and NH₃-TPD analysis. The catalytic activity of NMTO reaction was also measured at 650 °C with 4.12 h⁻¹ WHSV.