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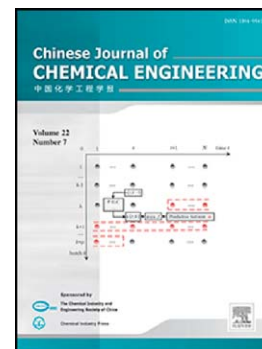
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Catalytic behavior in propane aromatization using GA-MFI catalyst

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ABSTRACT

Ga-Al-MFI samples were synthesized in hydrothermal conditions from gels of composition $1.08\text{CH}_3\text{NH}_2 \cdot 0.134\text{TPABr} \cdot 1\text{SiO}_2 \cdot x\text{Al}_2\text{O}_3 \cdot y\text{Ga}_2\text{O}_3 \cdot 40\text{H}_2\text{O}$ at 175°C for 7 days, with $x=0.005$ and 0.0025 , $y=0.005$, 0.010 and 0.020 . The samples were characterized by XRD, BET measurements, thermal analysis (TGA-DTA) atomic absorption and high resolution solid state MAS ^{27}Al and ^{71}Ga NMR measurements. The aromatization of propane was studied as catalytic test. The activity and selectivity of the catalysts were determined for benzene, toluene and xylenes on one hand and for methane and ethane on the other hand. The most active sample was obtained with the highest Ga/Al ratio. For this sample, the BTX selectivity obtained by aromatization was always higher than the hydrocracking selectivity leading to methane and ethane. The relative amount of toluene was higher than that of benzene and of xylenes. The samples were deactivated by coke formation that was revealed more severe for the most active sample.

Keywords: Propane aromatization; Gallium; ZSM-5; Coke formation; Catalyst deactivation.

1. INTRODUCTION

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