

Aromatization of Alcohols over Metal-loaded Mesoporous H-ZSM-5

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Mesoporous ZSM-5 was prepared by the desilication-reassembly method using microwave at 100 °C with 0.5N NaOH and CTAB. Fast re-crystallized ZSM-5 structure with surfactant has unique advantage on distribution of mesoporosity. It supposed to overcome disadvantage of high coke formation rates and diffusional limitation as well, which attributes to get the enhanced activity and stability.

Bio-Alcohols from fermented derivatives are required to be further converted into high value-added chemicals such as olefins and aromatics. In this presentation, the alcohol aromatization was investigated by using desilicated mesoporous ZSM-5 after loading metallic components such as In, Zn and Ga species. Moreover, due to the hydrogen-evolving reactions during aromatization of alcohols followed by dehydration, CO₂ was co-fed for the hydrogen scavenging via reverse water-gas shift reaction. The enhancement in aromatics yields was found under CO₂ flow during the aromatization with bifunctional metal-loaded mesoporous H-ZSM-5 as bifunctional catalysts.

Keywords: BTX, ZSM-5, CO₂, Aromatics, Metal (In, Ga and Zn), Bifunctional Catalyst