

Nickel-Supported Mesoporous Zeolites for Hydroisomerization of n-Dodecane

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Hydroisomerization of linear paraffins to branched isomers is an important petrochemical process, which is commonly conducted by bifunctional catalysts of Pt-supported on zeolites for high catalytic performance.¹ In this process, an inexpensive Ni has been tested to replace high-cost Pt component in the bifunctional catalysts for the hydroisomerization. In this work, we synthesized mesoporous MFI and *MRE zeolite by using structure-directing surfactant and mesoporous TON zeolite by a post desilication-dealumination treatment and loaded Ni nanoparticles to these mesoporous zeolites.² Such Ni-loaded mesoporous MFI, *MRE, and TON samples showed even better catalytic performance than those of 0.5 ~ 1.0 wt% Pt-loaded counterparts. These high catalytic performances on Ni-supported mesoporous zeolites was attributed to the tiny Ni nanoparticles that were stabilized by the confined mesoporous channels and facile diffusion property of mesoporous zeolites.

¹Deldari, H.; Appl. Catal. A: General, 2005, 293, 1-10.

²Kim, J; Han, S. W.; Kim, J.-C; Ryoo, R.; ACS. Catal., 2018, under revision.