

Cooperative Effects of Secondary Mesoporosity and Spatial Distribution of Acid Site in Pt/SAPO -11 on *n*-Dodecane Hydroisomerization Selectivity

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KAIST
(mkchoi@kaist.ac.kr*)

The importance of hydroisomerization of long-chain *n*-paraffins to their branched isomers is increasing in the petroleum industry, since it is a means of improving the cold-flow properties of middle distillate fuels and lube base oils. In this work, we investigated the effects of secondary mesoporosity and spatial distributions of acid sites in SAPO-11 on the hydroisomerization yields. Mesoporous SAPO-11 was generated by using organosilane-templating and carbon-templating. The former method produced mesoporous SAPO-11 samples with a large amount of external acid sites, while the latter produced mesoporous samples containing predominantly internal acid sites. Pt/SAPO-11 samples can exhibit ranging maximum iso-dodecane yield from 13 to 84%. The results showed that hydroisomerization selectivity of the catalysts can be enhanced by facilitating the hydrocarbon diffusion *via* the formation of mesopores while suppressing the formation of external acid sites that can non-selectively catalyze cracking reactions.