Novel nano-sheet FER application for a gas-phase DME carbonylation

정현승, 배종욱†
성균관대학교
(finejw@skku.edu†)

Zeolites are highly important in chemical industries and research fields due to its unique acidic and structural properties. However, lots of coke depositions accelerate the catalyst deactivation by blocking the active sites. Therefore, newly synthesized nano-sheet ferrierite (FER) zeolite was applied to suppress the coke depositions by enhancing the mass transfer rates. The nano-sheet FER was applied for a gas-phase DME carbonylation reaction which is a promising reaction for eco-friendly ethanol synthesis from syngas through multi-step cascade reactions. The synthesis was carried out by using a structure directing agent (SDA) and surfactant, which applied for the nano-sheet structures of the FER. The amount of the surfactant was optimized to have appropriate thickness and acidic sites, which finally enhanced the catalytic stability and activity compared to the conventional FER zeolite.