

Catalytic performance of metal pillared layered silicate iles for direct dimethylether (DME) synthesis from synthesis gas

안성환, 함현식*
명지대학교 화학공학과
(hahm@mju.ac.kr*)

Direct dimethylether (DME) synthesis from synthesis gas ($\text{CO} + \text{H}_2$) has been studied using various metal pillared layered silicate iles (M-ilerite) as catalyst. The metal pillared layered silicate ilerite catalysts were synthesized with good crystalline structures and characterized by XRD, BET, SEM and FT-IR. The reaction was carried out in a fixed bed reactor with the prepared catalysts at different temperatures (200–300°C), different pressures (10–30bar) and with reactant gas ratio $[\text{H}_2/\text{CO}]$ of 2:1. Cu/Zn- and Zn/Cu-ilerite exhibited high catalytic activities for the direct DME synthesis from synthesis gas. The CO conversion over Cu/Zn-ilerite reached up to about 60–62% with the DME selectivity of 85–87% at 250°C, 20bar. There was no activity decrease for the Cu/Zn-ilerite catalyst during 100h of reaction.