

## Synthesis and catalytic performance of metal pillared ilerites and metal oxide/metal pillared ilerites for direct synthesis of DME from syngas

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Direct dimethyl ether (DME) synthesis from synthesis gas has been studied using various metal pillared ilerites (M-ilerite and M/M-ilerite) as catalyst. The metal pillared ilerite catalysts were synthesized with good crystalline structures and characterized by XRD, BET, SEM, NH<sub>3</sub>-TPD, ICP-AES and FT-IR. The reaction was carried out in a fixed bed reactor with the prepared catalysts at various temperatures (200~300°C), various pressures (10~30 bar) and various reactant gas [H<sub>2</sub>/CO] ratios of 1~3. Cu/Zn-ilerite catalyst exhibited high catalytic activity for the direct DME synthesis from synthesis gas. The CO conversion over Cu/Zn-ilerite reached up to about 62% with the DME selectivity of about 90% at 250°C, 20bar, H<sub>2</sub>/CO=2. This catalyst could be used several times without any change in its catalytic activity.