

Direct synthesis of dimethylether(DME) from syngas using copper -dispersed ordered mesoporous alumina

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Dimethyl ether (DME), which has similar physical properties with LPG, is one of the attractive alternative fuels because of a lower emission of air-pollutants than that of the traditional diesel fuel. The direct synthesis of DME from syngas was investigated using the Cu dispersed in mesoporous alumina pores. The mesoporous alumina was synthesized by EISA(Evaporation Induced Self Assembly), which was annealed at different temperatures for changing the physicochemical and acidic properties. The copper was loaded 10wt% based on the weight of Al_2O_3 through incipient wetness impregnation. The acidic properties of ordered mesoporous alumina were significantly altered by treating it at different annealing temperatures, and the activity for DME synthesis was increased with the increase of acid site density. The H_2 -TPR, NH_3 -TPD, powder XRD, BET, TEM, and N_2O titration were used to characterize the catalytic properties.