

Effect of support texture of the periodic mesoporous silicas on FT catalytic performance

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Fischer-Tropsch Synthesis(FTS) has been considered as a key process of gas-to-liquids technology(GTL). The development of FTS catalyst is also required for Higher FTS activity and middle distillation selectivity. The function of catalyst support is not only to disperse active metal and produce stable metal particles, but also to control the size of active metal particles. The periodic mesoporous silicas(MCM-41,SBA-15,SHS) were prepared for applications in FTS reactions. The Co-based FT catalyst were prepared by an impregnation method.

To confirm the effect of support, the prepared catalysts were characterized by N₂ physisorption, CO chemisorption, XRD, TPR, SEM and TEM techniques. The prepared catalysts have ordered structure which can be observed by XRD, narrow pore size distribution, higher surface area and pore volume. The performance for FTS was carried out in a fixed bed reactor system with the H₂/ CO ratio of 2:1, reaction temperature of 230°C and reaction pressure of 20 bar. The results suggest that periodic mesoporous silicas are good candidates for FT catalysts.