

Synthesis and Characterization of SBA-15 and CMK Support for Fischer-Tropsch Synthesis (FTS) Reaction

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Fischer-Tropsch Synthesis(FTS) is regarded as a key technology which produces liquid fuels from the synthesis gas in GTL-FPSO process. Mesoporous molecular sieves not only allow for higher active metal dispersion but also make uniform pore size distribution. However there are some reports about silanol groups which lead to retard the reduction of metallic cobalt. In this work, we synthesized Co-based catalyst supported on the modified SBA-15 to obtain the mild reduce condition and selective products with certain carbon number distribution. For the comparison of the acid site, modified SBA-15 was prepared with the molar ratio of Si/Al= 0, 5, 7 and 10 and CMK was also measured against SBA-15. Catalysts were prepared by impregnation method and prepared catalysts were characterized by N₂ physisorption, NH₃-TPD, TPR, XRD, TGA, SEM and TEM. It was found that by adding the alumina to SBA-15, the catalyst acid site was increased and it produced relatively middle range of hydrocarbons. It was also found that the interaction between cobalt metal and support was increased when alumina is added and it affects to catalyst activity for Fischer-Tropsch.