Studies on the Fischer Tropsch Synthesis over Co/SA (Sillica-Alumina) Catalysts

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Gas to liquid (GTL) process is one of the most promising ways to utilize natural gas to make clean fuels at economically feasible cost. Fischer–Tropsch synthesis (FTS) is a key technology of GTL process known as a catalytic process which converts synthesis gas to high value hydrocarbon products.

In this study, the Sillica-Alumina (SA) supports with various ratio of Si/Al were synthesized by Sol gel method, and Co/SA catalyst was prepared by sequential impregnation method. The acidity and pore size of SA support has been controlled by adjusting Si/Al ratio, consequently proper selectivity in C5+ products has been achieved by the optimized FTS. All synthesized catalysts have been characterized by XRD, BET, NH3-TPD, TEM and SEM analysis techniques. Furthermore the catalytic performance test of Co/SA in the FTS process has been carried out in a fixed bed FTS reactor. The products were analyzed by on-line and off-line GC and the catalytic performance over Co/SA catalysts were compared with Co/alumina catalyst.