

## Studies on Fischer-Tropsch synthesis over cobalt based supported catalysts

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Recently, gas to liquid (GTL) process has been received much attentions because of high oil prices and global warming. Cobalt based catalysts are receiving widespread attention as the preferred Fischer-Tropsch synthesis (FTS) catalysts for GTL process. The cobalt-based catalysts supported on  $\text{Al}_2\text{O}_3$  and modified  $\text{Al}_2\text{O}_3$  were prepared by impregnation method and characterized by  $\text{N}_2$ -adsorption, XRD, SEM, TEM, and TPR techniques. The broadening of XRD peak revealed nanosized  $\text{Co}_3\text{O}_4$  crystallites less than 7nm. TEM data showed the nanosized particles (<5nm) of  $\text{Co}_3\text{O}_4$  crystallites. The performance of these catalysts for FTS were tested in a fixed bed reactor under the conditions 240°C, 2.5MPa,  $\text{H}_2/\text{CO}$  feed molar ratio of 2.0 for 40h. The dependence of crysrallite size and reducibility of  $\text{Co}_3\text{O}_4$  on the supports were investigated with FTS activity, CO conversion and product distribution in a fixed bed reactor system.