

**FTS Studies over Spherical Co/  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Microstructure**

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Nowadays, the use of natural gas has been received lots of attention as alternative energy and gas to liquid(GTL) technology is one of the promising technology to produce liquid fuels from different natural resources. The Fischer-Tropsch(FT) synthesis is the major part of GTL process and mainly use cobalt or iron based catalysts. Cobalt based catalyst has the beneficial effect of long lifetime and higher hydrocarbon selectivity. In this work, Cobalt supported alumina catalysts were prepared by slurry impregnation method and the effect of calcination atmosphere was analyzed. The prepared catalysts were characterized by various analytical methods such as a N<sub>2</sub> physisorption, TPR, XRD, TEM, FT-IR and XPS techniques. The catalyst calcined under the H<sub>2</sub> atmosphere developed Co (hcp) structure and showed good Fischer-Tropsch synthesis activity. On the other hand the catalyst calcined under air atmosphere led to the formation of Co (fcc) phase which showed comparatively lower catalytic activity. The results showed that the calcination atmosphere and structure of catalyst have profound effect on the activity and selectivity for Fischer-Tropsch synthesis.