

## The effect of pH on Alumina and Cobalt precursors for Catalytic Activity of FTS

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The cobalt based catalyst for Fischer-Tropsch Synthesis is a better catalyst for producing long chain hydrocarbons. And the reactivity of cobalt based catalyst depended on the particle size, reducibility, and dispersion all of which were largely affected by the types of cobalt precursors and support. Among the conventional support, the alumina was mostly used due to mechanical strength and thermal stability. But It has high SMSI and higher value of point of zero charge (PZC, 8-10), of which feature made negative effect on the cobalt reducibility. The Aim of this work is to a make correlation of pre-treatment methods and FTS reaction. The treatment methods included the variation of cobalt precursor (Co-EDTA complex and cobalt nitrate) and also examined that the  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> was treated with HNO<sub>3</sub> and NH<sub>4</sub>OH. The prepared catalyst was characterized by N<sub>2</sub> physisorption,TPR,TEM and XRD analysis. And evaluated in a fixed-bed reactor system under 20 bar, 230 oC and fixed molar ratio of H<sub>2</sub>/CO=2. It was found that alumina treated by HNO<sub>3</sub> supported cobalt oxide resulted in homogeneity of cobalt distribution.While the supported Co-EDTA showed low activity due to the presence of the smaller cobalt oxide.