

## Activation study of Ru promoted Co/SiO<sub>2</sub> and Co/Al<sub>2</sub>O<sub>3</sub> for GTL technology

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This paper reports on an investigation of the influence of Ru promotion of 20Co/SiO<sub>2</sub> and 20Co/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> on FTS having different loadings of Ru (up to 2.0wt%). The catalysts were investigated using FTS(H<sub>2</sub>/CO=2), BET, XRD, TPR, H<sub>2</sub>-chemisorption and O<sub>2</sub>-titration to provide insight into how Ru modifies the Co properties. Ru promotion shift reduction temperature to low temperature. Ru-Promoted catalysts exhibited higher overall rates of FTS compared to unpromoted Co/SiO<sub>2</sub>, but Ru-Promoted Co/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> exhibited highest rate of FTS on 0.5wt%Ru/Co/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub>. Ru also possibly created an active interface with Co that increased catalyst activity by facilitating CO dissociation. Although high levels of promotion tended to increase the selectivity for higher hydrocarbons, Ru appears to be primarily an excellent rate promoter for Cobalt.