

Kinetic Studies over Co based Catalysts for Fisher-Tropsch Synthesis in gas to liquid Process

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Recently, Fischer-Tropsch Synthesis (FTS) for the conversion of natural gas to liquid fuels has received much of interest because the reserves of crude oil are depleted and/or the price of crude rises. A few mechanisms to convert synthesis gas to transportation liquid fuels have been reported to date. Though more kinetic data for the iron-based catalyst is available, there is less information and understanding about the mechanism for the cobalt-based catalyst.

In this study, the catalytic activity and reaction kinetics for a slurry bed FTS over cobalt-based catalysts at 210–250 °C, 1.5–2.5 MPa, H₂/CO feed ratios of 1.3–3.0 were investigated. The cobalt based catalysts were prepared by conventional incipient wetness impregnation method using cobalt nitrate. The catalysts were characterized by X-ray diffraction (XRD), Fourier transform infra red spectroscopy (FTIR), transmission electron microscopy (TEM), N₂-physisorption and by temperature programmed reduction (TPR) method.