

Studies on the effect of inert material in the fixed-bed reactor for Fischer-Tropsch synthesis

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Recently there has been a revival of interest in eco-friendly fuels and alternative route for oil production. The Gas to Liquid (GTL) process is one of the promising technologies for clean energy production. In the GTL process, Fischer-Tropsch synthesis(FTS) reaction is a catalytic process that converts synthesis gas ($\text{CO} + \text{H}_2$) to hydrocarbon products. In this study, Ru/Co/ Al_2O_3 catalyst for FTS was performed on fixed-bed reactor with inert material such as $\alpha\text{-Al}_2\text{O}_3$. The experiment was carried out at different weight fraction with FTS catalyst and inert material for 4 cases. The products were analyzed by online and offline GC and performed catalysts are characterized by N_2 physisorption, XRD, and TGA analysis. The catalyst efficiency was calculated with catalyst productivity on same feed gas flow rate.