The Case Study of the Catalyst Packing Method 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 routes 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 key catalytic process that converts synthesis gas ($CO + H_2$) to hydrocarbon products. In this study, $Ru/Co/Al_2O_3$ catalysts were prepared by impregnation method and characterized by N_2 physisorption, XRD, and TGA analysis, and evaluated in the fixed-bed reactor with inert material such as α-Al_2O_3. The experiment was carried out at different weight fraction and packing methods with FTS catalyst and inert material. The catalytic performance was evaluated by liquid fuel productivity under the same linear velocity of reactant gas in reactor and discussed the effect of inert material in catalyst packing method.