Studies on the Effect of Inert Pellet Type in the Fixed-Bed Reactor for Fischer-Tropsch Synthesis

홍기훈[1,2], 노영수[1], 신설아[1], 송현태[1], 문동주[1,†]
[1]KIST; [2]UST
(djmoon@kist.re.kr†)

The Gas to Liquid (GTL) process is spotlighted in energy industry and one of the promising alternative technologies for the clean energy production. In the GTL process, Fischer-Tropsch synthesis (FTS) reaction is a catalytic process that converts synthesis gas ($CO + H_2$) to hydrocarbon products.

In this study, $Ru/Co/Al_2O_3$ catalysts for FTS reaction were prepared by an impregnation method, and evauated in the fixed-bed reactor to investigate the effect of inert pellet. The experiment was carried out at different type of inert materials such as γ-Al_2O_3, SiC ball and Glass bid.

The catalytic performance was evaluated by conversion of CO, selectivity of CH_4 and C_5+ under the same GHSV (Gas Hourly Space Velocity) and discussed the effect of different type of inert material pellet in FTS fixed bed reactor. It was found that the different type of inert material has different heat transfer coefficient and it influence on releasing of the reaction heat from exothermic reaction at the catalyst.