

Fischer-Tropsch Synthesis Over Silica modified Co-based Catalyst

정재선^{1,2}, 박문주^{1,3}, 양은혁^{1,2}, 이수빈¹, 김현진^{1,4},
문동주^{1,2,*}

¹KIST, Clean Energy Center; ²UST, Clean Energy and Chemical Eng; ³Korea Univ., Dep. of
Chem. & Bio. Eng; ⁴DSME, Technical Institute
(djmoon@kist.re.kr*)

Fischer-Tropsch Synthesis (FTS) has been considered as a key process of gas-to-liquids technology (GTL). The development of FTS catalysts is important for the high activity and desired selectivity. Generally, Co/SiO₂ catalyst was not widely used. Because SiO₂ has less stabilized and weak acidic site that effect activity and product selectivity. Therefore, the development of modified silica-based support is required to enhance acidity and hydrothermal stability. Catalysts were prepared by an impregnation method, and that cobalt supported on mesoporous silica hollow sphere (Co/SHS) was prepared by sol-gel method. To confirm the effect of support, the prepared catalysts were characterized by N₂ physisorption, CO chemisorption, TPR, TPD, XRD and SEM techniques. The performance for FTS was carried out in a fixed bed reactor system with the H₂/CO ratio of 2:1, reaction temperature of 230°C and reaction pressure of 25bar. The results suggest that the Co/SHS catalyst can be used as FT catalyst.