

ZSM-5 Coated Co/Alumina as hybrid catalyst for FTS

Janardhan L. Hodala¹, 정재선^{1,2}, 양은혁^{1,2}, 이재석^{1,2},

홍기훈^{1,2}, 임성수^{1,3}, 노영수^{1,3}, 문동주^{1,2,†}

¹한국과학기술연구원; ²UST; ³고려대

(djmoon@kist.re.kr[†])

The stranded gas fields have received much attention as attractive resources to produce the liquid fuels by alternative technology as like GTL-FPSO process in nowadays, because of the high crude oil prices and the necessity for obtaining clean alternative fuels. The Fischer-Tropsch Synthesis is a key process in Gas-To-Liquids Floating Production Storage Offloading. And the production of synthetic fuel by FTS has been taken considerable advantages as like higher cetane number and lower sulfur and aromatics used for diesel fuel. Wax formed in the FT process should be hydrocracked (or isomerised) to shorter chain hydrocarbons to be used as gasoline. It is carried out over a bi-functional catalyst for production of light hydrocarbons or branched hydrocarbons. ZSM-5 has drawn attention as a candidate material with its unique pore and channel shapes and also molecular sieving property, which affects the rate of molecular diffusion. Core shell type of hybrid catalyst with Co/Al₂O₃ and ZSM-5 as shell was successfully characterized by mechanical alloying technique. Prepared catalyst showed better selectivity iso-paraffin and olefin compared to Co/Al₂O₃.