

Fischer-Tropsch synthesis of the ZSM5-mixed Co-promoter/SiO₂ catalysts for the production of middle distillates

류재홍, 강석환*, 김진호, 하경수¹, 전기원¹
고등기술연구원; ¹한국화학연구원
(shkang@iae.re.kr*)

Fischer-Tropsch synthesis (FTS) reaction for direct production of gasoline and middle distillate range hydrocarbons (C₅-C₂₂) from synthesis gas was studied on ZSM5-mixed cobalt-based with addition promoter on SiO₂ FTS catalysts. FTS catalysts were prepared by conventional impregnation method using cobalt nitrate precursor and various promoter addition in a slurry of SiO₂ and then the final catalysts with the incorporation of ZSM5 (Si/Al ratio = 40) was subsequently prepared by in-situ hydrothermal synthesis with the presence of Co/SiO₂ catalyst. The catalytic performance was altered with the variation of physicochemical properties such as surface area, average pore diameter and acidity with a facile reducibility of cobalt oxides on ZSM5-mixed Co-promoter/SiO₂ catalyst.