Low Temperature Fischer-Tropsch Synthesis Using Supported Iron Based Catalysts

김학주[1,*], 천동현[1], 허영걸[1], 현순택[1,2], 양정훈[1], 양정일[1],
이호태[1], 정 헌[1]
[1]한국에너지기술연구원; [2]고려대학교 화공생명공학과
(hakjukim@kier.re.kr*)

Fischer-Tropsch synthesis (FTS) was carried out using iron based catalyts supported on SiO2 and Al2O3 by incipient wetness method. Supported iron based catalysts activity were compared with that of the catalyst prepared by conventional co-precipitation method. The reaction was carried out in a continuous stirred tank reactor (CSTR) with volume of 500cc at 250oC and 25atm using synthesis gas of H2/CO ratio 1 as a simulated feedstock produced from the coal gasifier. Simulated distillation (SIMDIS) analysis method was used to determine the products distribution. The catalysts physical and chemical properties were analyzed by BET, SEM, PSA, XRD and H2-TPR. Supported iron based catalysts had spherical morphology with particle size of 10~70um. Supported iron based catalysts showed comparable activity in contrast to that of prepared from conventional co-precipitated method. Supported catalysts were expected to have better attrition strength when used in commercial reactor such as slurry bubble column reactor.