Enhanced catalytic activity by controlled CoO nanocrystal for Fischer-Tropsch synthesis

박선주, 박조용, 이윤조, 하경수, 곽근재, 전기원*
한국화학연구원
(kwjun@krict.re.kr*)

10Co/Al_2O_3 catalyst was prepared, by the controlled CoO nanocrystal deposition method using oleic acid as a capping agent, and tested in a fixed-bed reactor for its activity and selectivity in Fischer-Tropsch synthesis. The catalyst exhibited enhanced reducibility of the cobalt species. The CO conversion and C_{5+} selectivity obtained on this size-controlled catalyst were higher than those observed on the catalysts prepared by impregnation and precipitation techniques. Decrease in the mobility of the CoO nanoparticle towards alumina could be the reason for high reducibility, as the formation of cobalt aluminate was found to be considerably reduced during temperature programmed reduction.