

Catalytic Oxidative Desulfurization of Transport Fuel by Titanium Incorporated SBA-15 Catalysts Prepared by Post-grafting Titanium Chelate Route

김민지, 김태완, 정광은, 김철웅, 채호정, 정순용*, 유재욱¹,

김도완¹, 김용운¹

한국화학연구원; ¹SK에너지

(syjeong@kRICT.re.kr*)

Oxidative Desulfurization (ODS) is an alternative approach that can meet the new sulfur specification below 156ppm in diesel fuel. In this process, the refractory organosulfur compounds are oxidized into their corresponding sulfones under mild conditions. In this study, a series of titanium containing SBA-15 mesoporous silica catalysts were prepared by the post-grafting titanium chelates route. The pore diameter and titanium content of the catalyst were controlled. The Ti-SBA-15 catalysts, thus obtained, were investigated the influences of pore size and titanium content of the catalysts for the ODS reactivity of model sulfur-containing compounds with tert-butyl hydroperoxide (TBHP) as an organic oxidant. The Ti-SBA-15 catalysts studied by a combination of elemental analysis, Fourier transform infrared spectroscopy (FT-IR), thermogravimetric analysis (TGA), X-ray diffraction (XRD), diffuse reflectance UV-vis (DR-UV-vis), and N₂ physisorption. The present catalytic results may offer for the future design of ODS catalysts with optimum pore size and Ti content for increase in catalyst activity and lifetime.