Hydrogenolysis of Glycerol to 1,2-Propandiol over Ru-based Catalysts

권송이[1], 문동주[1,2,*], 이승환[3], 김방희[3], 조수현[1]
[1]KIST; [2]과학기술연합대학원대학교;
[3]JNK Heaters Co., LTd.
(djmoon@kist.re.kr[*])

Glycerol about 10wt% is produced as a by-product in the process of biodiesel production. One of the most attractive approaches of converting glycerol is to produce propanediol by the selective hydrogenolysis of glycerol. In this work, the hydrogenolysis of glycerol was investigated over Ru-supported catalysts. To investigate the effect of the support (hydrotalcite-like material, γ-Al_2O_3, SiO_2 and ZrO_2) on the structure and physico-chemical characteristics of the catalysts, as well as the performance in the glycerol hydrogenolysis, the Ru-supported catalysts were prepared by the solid phase crystallization with hydrothermal treatment and impregnation methods, and characterized by XRD, N_2 physisorption, CO chemisorption, NH_3-TPD and TEM techniques. It was found that Ru-Mg/Al catalyst showed higher glycerol conversion and 1,2-PDO selectivity than the other catalysts. The selectivity of 1,2-PDO was increased with the acidity of the catalyst.