

Preparation of Ru-based Catalysts for Hydrogenolysis of Glycerol to 1,2-Propanediol.

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Recently, the production of glycerol has been increased with the production of biodiesel as a clean fuel. One of the most attractive approaches of converting glycerol is to produce propanediol(PDO) by selective hydrogenolysis of glycerol. In this works, the Ru-based catalysts were prepared by co-precipitation and/or impregnation methods in order to improve 1,2-PDO selectivity. The prepared catalysts were characterized by N₂ physisorption, CO chemisorption, XRD, SEM, TPR and TPD techniques. The catalytic hydrogenation of glycerol to 1,2-PDO over the Ru-based catalysts was investigated at 453 K, 25 bar of initial H₂ pressure and 20 wt% glycerol aqueous solution for 18 h. It was found that the Ru base hydrotalcite catalyst showed high activity with glycerol conversion of 50 % and 1,2-PDO selectivity of 85 %. It was found that the selectivity of 1,2-PDO was increased with increasing the acidity of catalyst.