

### Studies on the Hydrogenolysis of Glycerol to 1,2-Propanediol over Bimetallic Ni-Cu Based Catalyst

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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(1,2- or 1,3-PDO) by selective hydrogenolysis of glycerol.

The Ni-Cu based catalysts were prepared by impregnation method, and characterized by N<sub>2</sub> physisorption, CO chemisorption, XRD, SEM, TPR and TPD. The catalytic hydrogenation of glycerol to 1,2-PDO was investigated at 463 K, 25 bar of initial H<sub>2</sub> pressure and 10 wt% glycerol aqueous solution for 6 h. It was found that the Ni-Cu/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalyst with glycerol conversion of 70 % and 1,2-PDO selectivity of 95 % showed the best activity than any other catalysts.

The results show that Ni provides comparatively high hydrogenolysis activity of C-C and C-O bonds and the formation of Ni-Cu alloy limits C-C hydrogenolysis and promotes C-O hydrogenolysis.