

Hydrogenolysis of Glycerol to 1,2-Propanediol over Clay Based Catalysts

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Copper supported clay based catalysts were prepared by coprecipitation and applied in the selective hydrogenolysis of glycerol for the production of 1,2-PDO (1,2-propanediol) synthesis from glycerol. The physico-chemical properties of the catalysts were analysed by XRD, N₂ physisorption, TPR, CO₂-TPD, SEM and mercury porosimeter. Hydrogenolysis reaction was carried out in a fixed bed down flow reactor at 25 bar. In recent research, variations of pore volume and pore size could affect the diffusion of reagents within the catalyst due to the collision between reagents or pore wall and reagents. It change selectivities of each products in hydrogenolysis of glycerol reaction. In this research, different pore size catalysts were prepared by various ratio of kaolin, Mg and Al. It was found that basic strength and meso-macropore structure of the catalysts play an important role in glycerol conversion and 1,2-PDO selectivity. The catalyst showed 98 % 1,2-PDO selectivity with 65 % glycerol conversion under the optimized condition, 190 °C, 25 bar, 20 % glycerol aqueous solution.