
Vapour-Phase Hydrogenolysis of Glycerol over Nanostructured Ru/HAP Catalysts

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Abstract

A series of catalysts with different Ru contents supported on hydroxyapatite (HAP) were prepared by deposition-precipitation (DP) method. These catalysts were characterized by X-ray diffraction, H₂-temperature programmed reduction, CO₂-temperature programmed desorption, scanning electron microscopy, transmission electron microscopy, BET-Surface area and CO-chemisorption measurements. The catalytic properties of Ru/HAP catalysts were evaluated for vapor phase hydrogenolysis of glycerol on varying different parameters. The catalysts have shown an unprecedented activity for the complete hydrogenolysis of glycerol at low reaction temperature under normal atmospheric pressure. The nano structured ruthenium deposited on hydroxyapatite (HAP) support plays a significant role in improving the catalytic activity and its stability. The glycerol conversion and the selectivity of various products were mainly depend on the method of catalyst preparation and also on the Ru loading.

Keywords: Glycerol, Hydrogenolysis, Hydroxyapatite, Ruthenium, 1,2-Propylene Glycol