

## **Promotional effect of transition metals (Cu, Ni, Co, Fe, Zn)–supported on dolomite for hydrogenolysis of glycerol into 1,2-propanediol**

### **Abstract**

Hydrogenolysis of biomass-derived glycerol is an alternative route to produce 1,2-propanediol. A series of transition metals supported on dolomite catalysts (Cu/Dol, Ni/Dol, Co/Dol, Fe/Dol, Zn/Dol) were prepared via impregnation, calcined at 500 C and reduced at 600 C. The synthesized catalysts were then characterized by BET, BJH, XRD, H<sub>2</sub>-TPR, NH<sub>3</sub>-TPD, and SEM, and subsequently evaluated in glycerol hydrogenolysis reaction to produce 1,2-propanediol (1,2-PDO). The nature of transition metals was found to influence the activation of the catalysts. Among the tested catalysts, copper supported on dolomite (Cu/Dol) exhibited appreciable hydrogenolysis performance due to the mutual interaction between the copper species and the dolomite. The findings from the various characterization results showed the addition of copper to dolomite ameliorates the chemical and reduction of the catalyst. It appears that the copper species were essentially enriched on the grain surfaces of the dolomite, the reduction properties, and the acidity of the catalyst enhanced. All the features of Cu/Dol catalyst contributed to the high glycerol conversion (78.5%) and high 1,2-PDO selectivity (79%) with low methanol production as the by-