Glycerol Steam Reforming over spherical Ni/γ-Al_2O_3 Catalysts: Effect of Calcination Temperature

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Nowadays biodiesel has become one of the more promising carbon neutral biofuels. During the synthesis of biodiesel from biomass such as vegetable oil and palm oil, about 10% of glycerol will be formed as a main by-product. Increasing biomass-derived fuel production has resulted in over-production of glycerol. Therefore there is considerable research interest in converting glycerol to hydrogen or value added chemicals. Steam reforming is one of the common processes to produce synthesis gas or hydrogen from hydrocarbons, alcohols and liquid-phase carbohydrates. However one of the major challenges in nickel steam reforming catalysts is deactivation due to carbon formation. In this work, the effect of calcination temperature on the particle size and carbon formation on spherical γ-Al_2O_3 supported Ni-based catalysts was investigated in the production of hydrogen by steam reforming of glycerol.