Studies on the Aqueous Reforming of Glycerol over Ni-based catalyst

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Biomass has been considered as one of the most efficient sources to meet future energy needs. Recently, increased the production of biodiesel resulted in overproduction of glycerol . Glycerol is produced in about 10% as a main byproduct and an important industrial feedstock for applications in food, cosmetics, pharmaceutical and other industries.

In this work, Aqueous phase reforming of glycerol was conducted in a fixed-bed reactor system at 225℃, 23-40 bar and LHSV=4 h-1. Ni-based catalyst, supported on r-Al2O3 were prepared by impregnation method. Catalysts were characterized by N2 physisorption and XRD. It was found that Ni-Co/ɣ-Al2O3 catalyst showed higher glycerol conversion than the other catalyst under the tested conditions.

Proper Co/Ni ration strengthen SMSI effect through catalyst, which is also beneficial for the stability of the catalyst. Therefore, the better coke resistance is presented.