Production of Hydrogen by Aqueous Phase Reforming of Glycerol over Ni-based perovskite Catalysts

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Recently, the production of glycerol has increased tremendausly with the production of biodiesel as a clean alternative petroleum fuel. One of the most attractive approaches of converting glycerol to valve added products is to produce hydrogen by steam reforming(SR) and aqueous phase reforming(APR).
In this work, APR of glycerol over modified oxide catalyst was investigated. Perovskite support was prepared by sol-gel method in presence of citrate and oxalate acids. Ni-modified perovskite catalyst was prepared by an impregnation method using the prepared LaAlO3. The catalysts before and after the APR were characterized by N2 physisorption, CO chemisorption, X-ray diffraction(XRD), temperature-programmed reduction(TPR) and scanning electron microscope(SEM). It was found that Ni-based perovskite catalyst showed higher glycerol conversion of 70 % and hydrogen yield of 55% compared to other catalysts without coke formation.