

The Hydrogen Production via Steam Reforming of LPG over Nickel based Catalysts

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Among various chemical processes, the steam reforming of natural gas is a promising technology for the hydrogen production with the highest yields. Nowadays LPG seems to be a practical candidate owning wide distribution networks in the world. Zeolites have been shown to be beneficial in numerous reactions. The specific physiochemical properties of zeolites such as superior surface area, uniform porosity, great adsorption capacity and shape selectivity with interconnected pores and channel system has postulated these materials as a potential catalysts and catalytic support.

In this study we investigated the use of nickel based catalysts supported on zeolite Beta and ZSM-5 with BEA and MFI frameworks in the steam reforming of LPG. The catalysts were synthesized by the impregnation method containing 10 wt% Ni loading. Furthermore Ni-Alumina catalyst was prepared with same method for the comparative study. All synthesized catalysts were characterized by XRD, H₂-TPR, FTIR, SEM, TEM and N₂-physisorption techniques. The catalytic performance for steam reforming of LPG was carried out on a fixed bed reactor at 600~800 °C, 1 bar and GHSV of 30,000 h⁻¹.