Effect of Lanthanide promoter on Methanol Synthesis Catalysts for Hydrogenation of CO and CO2 Mixtures

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Globally, research on reducing greenhouse gases such as CO_2 is an important issue. Methanol is one of most traded chemicals in the world and is used for a variety of purposes such as raw material for chemical manufacturing or fuel for special vehicles. In this study, the methanol synthesis reaction using Cu-based catalyst was studied. The metal promoted Cu-based catalysts was prepared by the co-precipitation and the deposit precipitation methods. The prepared catalyst was characterized by N_2 adsorption, H_2-TPR, XRD, N_2O adsorption technology. The effect of promotion is investigated on the performance of methanol synthesis catalysts. The methanol synthesis reaction was performed in a fixed bed reactor at low pressure conditions with different $H_2/CO/CO_2$ ratio in the feed mixtures.

Keywords: Methanol synthesis, Cu based catalysts, Low pressure