

Studies on Alkali Promoted Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> Catalyst for Higher Alcohol Synthesis

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As concerns over global climate crisis has been increased, many researcher have studied the alternative fuels. Higher alcohol, including C2-C4 alcohol, has been considered as gasoline additives for oxygenation of conventional fuels and for gasoline octane enhancer. In this work, the alkali metal promoted (Li, K, Sr, and Cs) Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalyst for Higher Alcohol Synthesis (HAS) were prepared by impregnation method and characterized by N<sub>2</sub> physisorption, XRD, XRF, H<sub>2</sub>-TPR/TPD. The HAS reaction was carried out under the pressure of 45 bar, feed molar ratios of H<sub>2</sub>/CO = 1-2, temperature ranges of 240-280 °C and GHSV = 4000 h<sup>-1</sup>. It was identified that the higher electronegativity of the promoter makes more adsorption of carbon monoxide on Cu and it could favor the CO insertion and the production of C<sub>2</sub>+ alcohols.