

Synthesis of Higher Alcohol over Cu based Catalysts in Low Pressure

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Higher alcohols (HA) have been directly used as fuels and fuel additives, or intermediates to produce high octane or high cetane ethers. The higher alcohol technology is expected to be an attractive possibility for future fuel and alternative fuel additive of MTBE (Methyl tert-butyl ether)

Our study focused on the development of modified Cu-based methanol catalysts (Cu-Zn-Al) and modified FT catalysts (Cu-Co) under mild conditions. Higher alcohol synthesis reaction was carried out under a fixed-bed reaction system of 45 bar, reaction temperature at 240 °C and 340 °C, and two different H₂/CO ratios of 1:1 and 2:1 with GHSV of 4000 h⁻¹. It was found that higher alcohols were more produced in H₂/CO ratio of 1:1 than in H₂/CO ratio of 2:1 under the tested reaction conditions. This result was in accordance with literature data where the H₂/CO ratio of 2:1 favors methanol synthesis over synthesis of higher alcohols.