

An investigation of the effect of preparation parameters for synthesis of scale-up Cu-Zn-Al catalysts in the low temperature water-gas shift reaction

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The low temperature water-gas shift reaction (LT-WGSR) has been carried out at gas hourly space velocity (GHSV) of 8,000 mL/g·h over scale-up Cu-Zn-Al catalysts. The scale-up Cu-Zn-Al catalysts were synthesized by co-precipitation method and the synthesis parameters such as precipitant injection rate and aging temperature were structuredly varied in scale-up synthesis process. To investigate the effects of synthesis parameters on physico-chemical properties and catalytic performance of Cu-Zn-Al catalysts were systemically changed for the low temperature water-gas shift reaction. The effects of synthesis parameters in scale-up synthesis of Cu-Zn-Al catalysts have been interpreted through various characterization techniques such as BET, TPR, XRD, and N₂O-titration. The characterization results for each of the catalysts were correlated with catalytic activity results in the LT-WGSR.