

Studies on MEOH Synthesis over Cu-Zn based Supported Catalyst at Low Pressure

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Methanol synthesis is one of the promising processes in the chemical engineering field as utilization of gas to liquid technologies particularly from syngas. Methanol is a chemical compound that can be potentially converted into many other chemicals and that can be used as an alternative energy source suitable for the oil-based fuels.

In the present work, we reported a series of Cu-ZnO-Al₂O₃ catalysts prepared by coprecipitation from metal nitrates precursors at different pH, and evaluated for methanol synthesis from syngas (CO and H₂) at lower temperature and pressure. Catalysts have been characterized before and after the reaction by BET surface area, Porosity measurements, XRD, TPR, TEM and TPO analysis. The best performance of methanol synthesis was observed on the catalyst prepared at pH 7 and the order of the activity follows as pH 6 < 7 > 8. It was considered that the pH and aging conditions might be attributed for interactions between Cu-ZnO-Al₂O₃ leads the formation of active phase during the course of reaction.