

Methanol steam reforming and Water gas shift reaction over CuO-CeO₂ catalysts

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In this study the activity of steam reforming of methanol(SRM) and water gas shift reaction(WGSR) over CuO-CeO₂ catalysts were studied. The catalysts with different Cu loadings were prepared by the coprecipitation method. The catalysts were characterized by x-ray diffraction(XRD) and N₂O chemisorption.

The activity increased with Cu loading for both reactions, indicating Cu in the active species for the reactions. In methanol steam reforming, the methanol conversion increased with increasing temperature and the activity of the catalyst with 70at.%Cu was comparable to the activity of a commercial catalyst.

Whereas in water gas shift reaction, the conversion profile with respect to temperature exhibited an inflection for a feed with a high CO content, an indication that different reaction mechanisms may contribute to the reaction and the prevailing mechanism may change upon reaction conditions. At low CO partial pressure, the activity of the catalyst was superior to the activity of a commercial catalyst.