

The influence of modifiers (Ga and Zr) on the performance of CuZn catalysts for carbon dioxide hydrogenation to methanol

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1. Introduction

Global warming is the conundrum of the twenty-first century and strategies that can convert CO₂, the most prevalent greenhouse gas to valuable products such as methanol, a clean fuel are very attractive.^{1,2}

2. Experimental (or Theoretical)

In this work zirconium and gallium promoted Cu-Zn supported methanol synthesis catalysts were prepared by incipient wetness impregnation, characterized and evaluated in the conversion of CO₂ to methanol. The catalytic testing was performed in the fixed-bed reactor.

3. Results and discussion

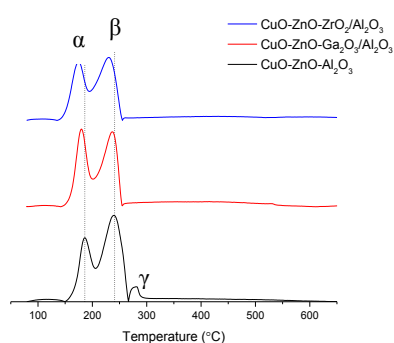


Figure 1. H₂-TPR profiles

of the prepared catalysts

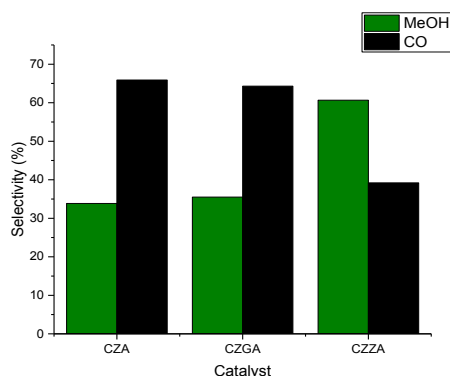


Table 1. The selectivities at isoconversion of 5.4 % for CuZnO-ZrO₂/Al₂O₃ (CZZA) catalyst (P= 20 bar, T= 240 °C)

4. Conclusions

The catalytic results demonstrated that the Zr incorporated (CZZA) catalyst had the highest methanol productivity relative to the other two evaluated catalysts due to its higher reducibility.

References

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