

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In the present study, the catalytic dehydroxylation of glycerol to propylene glycol over CuZnO/MgO catalysts with different preparation methods has been investigated. From the experiments, the co-precipitated catalyst exhibited higher catalytic activity than the impregnated catalyst. This could be due to the higher amount of Cu active sites and the uniform grain of CuO in the co-precipitated catalyst. The NaOH containing glycerol feedstock did not affect the stability of catalysts and also increase the catalytic activity due to the enhance of catalysts basicity in the presence of MgO. The effect of MgO containing in the co-precipitated catalyst was also investigated. The small amount of MgO could be stabilized the Cu species by preventing alloy formation. The glycerol conversion of the regenerated CuZnO/MgO (COP) catalyst was as high as that of the fresh catalyst. However, the propylene glycol selectivity becomes lower than that of fresh catalyst due to the sintering of Cu active site during regeneration process.

5.2 Recommendations

- In this work, it cannot completely compare between the co-precipitated and impregnated catalysts, because the large difference from the amount of each elements (Cu, Zn, and Mg) in the catalyst. To compare the effect of catalyst preparation in further study, it is possible that constant the same amount of each element in each type of preparation method.
- To find the optimum content of MgO consisted in co-precipitated catalyst by varying pH during preparation process should be also focused.