CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In the present study, the catalytic dehydroxylation of glycerol to propylene glycol over Cu–ZnO/Al_2O_3 catalyst with different feedstocks has been investigated. The main products of all feedstocks were propylene glycol, acetol, and propanol. The catalytic activity of refined glycerol is higher than yellow grade glycerol, technical grade glycerol and crude glycerol, respectively. The ICP-EOS and TPO results indicated that metal contaminated in feedstocks (especially, Na and K from the catalyst using in transesterification reaction in biodiesel production) poisoned the active site of the catalysts, thus conversion of glycerol decreased. In addition, basicity of Na and K can alter dehydration of propylene glycol to propanol or acetone. Therefore, conversion and selectivity to propylene glycerol decreased and the selectivity of acetol and propanol increased. Na seemed to have more influence to selectivity than K. Since molar of Na is higher that it of K even amount of Na and K are equal as 0.1 wt. %. Moreover, Na has stronger basicity than K.

5.2 Recommendations

Among glycerol feedstocks, refined glycerol and yellow grade glycerol showed high conversion and selectivity to propylene glycol. The stability should be study in the further work for purpose of optimization and improvement of dehydroxylation from yellow grade glycerol.

To compare the effect of Na and K, molar basis should be use instead of mass basis for stimulated feedstock.