CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Part I : Solketal production

The optimum condition for produced solketal is 1:6 glycerol to acetone molar ratio with surplus Molecular sieve 3A for 6 hours. Moreover this reaction is occurred in batch reaction system with total reflux.

The Dowex monosphere M-31 ion exchange resin has a potential to produce solketal. There are several advantages of using this heterogenous catalyst. The pH of the product mixture was 7 and it is easy to separate the Dowex M-31 ion exchange. Moreover the optimum amount of Dowex M-31 ion exchange is 0.5%wt.

Part II : Benzyl solketal ether production

The 1:1 solketal to benzyl alcohol molar ratio is selective on benzyl solketal ether at 12 hours only 15%selectivity. But this molar ratio is suitable to produce benzyl glycerol ether (48.6%selectivity at 12 hour).

The 1:2 solketal to benzyl alcohol molar ratio is selective on benzyl solketal ether at 12 hours only 12%selectivity. But this molar ratio is suitable to produce dibenzyl ether (52.5%selectivity at 12 hour).

The 2:1 solketal to benzyl alcohol molar ratio is selective on benzyl solketal ether at 12 hours only 27%selectivity. But this molar ratio is suitable to produce benzyl glycerol ether (49.7%selectivity at 12 hour).

The 4:1 solketal to benzyl alcohol molar ratio gives the highest efficiency to produce benzyl solketal ether (52.2%selectivity at 10 hours).

5.2 Recommendations

Part I : Solketal production

The effect of molar ratio with the dowex ion exchange resin should be investigated. Moreover the study of the kinetic from the beginning time to 6 hours should be investigated by collected sample every 15 minutes for 2 hours. After that, the sample will collect every 2 hours until 6 hour. The design of reactor which is suitable for using Dowex M-31 ion exchange resin and molecular sieve 3A or applies the Dowex M-31 ion exchange resin into the reactive distillation is interesting.

Part II : Benzyl solketal ether production

The Dowex ion exchange resin has a potential to use in this reaction. So the effect of using Dowex ion exchange resin should be investigated. In addition, the effect of reaction temperature is interesting.