



## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusions

For vapor-liquid equilibrium study, the volatilization and solubilization of HVOCs in coacervate phase of the branched secondary AEs were observed and reported in terms of apparent Henry's law constant ( $H_{app}$ ) and solubilization constant ( $K_s$ ), respectively. The hydrophobicity of HVOCs is represented by the octanol-water partition coefficient ( $K_{ow}$ ). It was found that the  $K_s$  of HVOCs in coacervate solution increase substantially with the increasing of  $K_{ow}$ , whereas their apparent Henry's law constant ( $H_{app}$ ) tends to be decreased. This was due to the tendency of HVOCs to be solubilized in the micelles. The good linear logarithm correlation between the  $K_s$  or  $H_{app}$  and the  $K_{ow}$  also observed with the average of r-square around 0.93 for all batch experiments. In addition, the HVOCs in contaminated coacervate phase can be removed from 450 mM Tergitol TMN-6 by the co-current vacuum packed column at 40°C. The stripping column can be operated without significantly foaming and flooding. The maximum removal was 99.2% for 1,1-DEC and the minimum removal was 89.8 % for ETB within single stage operation. In addition, the value of  $K_{xa}$ , decreased as the hydrophobicity of HVOCs increases.

#### 5.2 Recommendations

Based on this research, the following recommendations for future work are given as following.

1. Study the performance of branched secondary AEs surfactant to extract HVOCs from contaminated wastewater by cloud point extraction process.
2. Change type of the hydrophobic volatile organic compound from aromatic and chlorinated hydrocarbon to other types such as polycyclic aromatic hydrocarbons.