CHAPTER V
CONCLUSION

5.1 Conclusions

The multistage foam fractionation for surfactant recovery from water was investigated in a continuous flow operation. The effects of several important parameters such as tail length of surfactant, head group of surfactant and salinity were investigated for surfactant of hexadecylpyridinium bromide (CPB), hexadecyltrimethylammonium bromide (CTAB), tetradecyltrimethylammonium bromide (TTAB), and dodecyltrimethylammonium bromide (DTAB) were used as a model of cationic surfactant. The separation efficiencies are presented in terms of the %surfactant recovery and the enrichment ratio. From the results of this study, it can be concluded that:

1. For all surfactant system, in both %surfactant recovery and enrichment ratio were strongly effect on surfactant feed flowrate and air flowrate.

2. In both % surfactant recovery and enrichment ratio were strongly effect on tail length of surfactant.

3. Effect of tail length of surfactant on %surfactant recovery of CTAB, TTAB and DTAB obtained in this column were in the rang of 90-97, 70-85, and 10-70 respectively. Also, the enrichment ratio of CTAB was in the rang of 6-14 while the enrichment ratio of TTAB and DTAB were in the rang of 1-4 and 0.8-2.

4. The effect of the pyridine group at the head group of surfactant was not significant on the %surfactant recovery but strongly effect on the enrichment ratio. For enrichment ratio of CPB in the rang of 35 – 82 while the CTAB (non- pyridine group at the head group) in the rang of 6-14.

5. In %surfactant recovery was a little bit effect on salinity in contrast to the effect on enrichment ratio. The surfactant recovery and enrichment ratio increased with increasing salt concentration. Beyond the optimum salinity, the surfactant recovery decreased with increasing NaCl concentration. At the optimum point, % surfactant recovery increase from 94 to 96 while enrichment ratio increase from 7 to 50.