

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Alfoterra 145-5PO was used to form microemulsion and to obtain the ultralow interfacial tension with motor oil by varying surfactant concentration and NaCl concentration. The conditions, which minimum surfactant concentration can form the middle phase in microemulsion systems, were selected for the froth flotation experiments. For the froth flotation experiments, the system with 0.5 wt.% Alfoterra, 5 wt.% NaCl, oil content 500 ppm at air flow rate 0.30 L/min, foam height 26 cm, and HRT 30 min gave a maximum oil removal 61.49 %. The values of both the equilibrium IFT and the dynamic IFT at 30 min, which is hydraulic retention time for the froth flotation experiments, are in the same order of magnitude. Hence, it is insignificant on the froth flotation performance. In addition, the bubble size distributions were also investigated to understand the interfacial mechanisms of bubbles in the column. In order to obtain the distribution curves about 500 bubbles were analyzed by photographic method. They were taken at three axial positions for different operating conditions. The results showed that the bubble size increased with increasing surfactant concentration.

5.2 Recommendations

Based on the present results, the following recommendations are suggested for futures studies:

1. To improve the removal efficiency of motor oil from wastewater such as reducing HRT and increase the air flow rate.
2. To study more bubble mechanisms such as the bubble velocity.
3. To study the effect of air flow rate on the bubble size distribution.