

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The adsorption of sodium octanoate (C8) onto both the carbon black and paper fiber surfaces displayed interaction between hydrophilic tail groups of the surfactants and surfaces, presumably with a tail-down and/or lying down orientation. The plateau or maximum adsorption of C8 on carbon black without calcium addition was approximately $7.1 \mu\text{mole}/\text{m}^2$ that corresponded to 87.7% of close-packed monolayer coverage of C8 on carbon surfaces. The plateau adsorption of C8 on paper fiber was approximately $7.8 \mu\text{mole}/\text{m}^2$ corresponding to 96% of close-packed monolayer of C8 on paper fiber surfaces.

In the traditionally collector chemistry system, cooperative adsorption of surfactant and calcium ions occurred. The adsorption of C8 increased with increasing calcium concentration, because the addition of calcium salt led to decrease the repulsive force between head groups of C8 and diminish the zeta potential of carbon black as a function only of calcium concentration. The specific interactions between the C8, the calcium ion and the fiber resulted in decreased calcium adsorption with increasing C8 adsorption that might be due to calcium expulsion effect. However, the magnitude of zeta potential of paper fiber decreased as a function of C8 and calcium concentration. The adsorption of calcium was purely electrostatic and non-associative.

5.2 Recommendations

In the flotation deinking processes, there are many factors that affect on the adsorption of surfactant on ink and paper fiber. It is recommended that the further studies should be carried out to studied the types of counterions and the surfactant mixture. Moreover the system containing mixture of model ink and fibers should be studied.