

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In this study, we study the adsorption of cationic surfactant, CTAB and anionic surfactants SDS on carbon black and polyester and cotton fibers. From the adsorption studies, the results indicate that the adsorption of CTAB on carbon black is much higher than SDS.

From this study, two kinds of surfactants were used to remove the carbon black for two types of fabric for any given types of both fabric and surfactant, % particulate soil removal increased with increasing solution pH and the maximum was found around pH 11. For any given type of fabric and solution pH, SDS was found to exhibit a better particulate soil removal than CTAB. Carbon black was found to remove from polyester better than cotton since the zeta potential on polyester surface is more negative than that on cotton and because of the nature of fiber.

From this experiment we found in case of anionic surfactant that surfactant concentration 1.1 (%w/v) of SDS at pH 11 for the highest remove of carbon black around 70%. In the case of cationic surfactant that surfactant concentration 1.5 % (%w/v) of CTAB at pH 11 for the highest remove of carbon black around 40%.

From the experiment we found that the surface tension of SDS is lower than surface tension of CTAB, and surface tension in aqueous SDS and CTAB solution varies very little according to changes in pH.

In addition, the % detergency in the wash step was found to be higher than in the rinse step. In the wash step the % detergency was found to be as high as expected because of the lowest of surface tension. From the experiment the amount of rinsing water of rinsing water effect the % detergency of each step but does not has effect with the total % detergency.

In this study, the maximum detergency relate with highest of zeta potential, that means the pH that has higher zeta potential can improve detergency performance.

5.2 Recommendations

Due to the single of ionic surfactant, further study of particulate soil detergency should be done for the use of mixture of both the surfactant solution and different other type of fabric. Various of particulate soil should also be tested and other variables; temperature and salt added should be investigated.

To investigate the other pH ranges beside pH 5,7,9 and 11 that this work had already studied. Other pH levels are suggested to study further because the change in pH obviously affects the % detergency and % soil removal.

To investigate several types of surfactant. It would also very interesting to investigate the other type of surfactant except CTAB and SDS for know the deeply information of adsorption isotherm, Zeta Potential, Contact Angle, Surface Tension for choose the best of surfactant that can remove particulate soil.