

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The presence of DDAO and chelant (Na_2EDTA or Na_4GLDA) caused the equilibrium solubility of mixed calcium and magnesium soap scum increased with increasing pH solution. The system of DDAO/ Na_4GLDA provided the highest equilibrium solubility, whereas the DDAO/ Na_2EDTA system provided the highest dissolution rate any mixed soap scum at pH 11. For 1:1 ratio, the equilibrium solubility of both calcium and magnesium ions was insignificant different except in a solution containing Na_2EDTA which magnesium had much lower equilibrium solubility than calcium. But for 4:1 ratio, the equilibrium solubility of calcium is higher than that of magnesium in mixed soap scum.

5.2 Recommendations

According to the requirement of consume customer, the high solubility and dissolution rate were the main characteristic of cleaner products. The highest equilibrium solubility of mixed calcium and magnesium soap scum in both 1:1 and 4:1 ratios were found in the solution containing DDAO amphoteric surfactant and Na_4GLDA biodegradable chelating agent. However, the DDAO/ Na_2EDTA conventional chelating agent provided the higher dissolution rate than DDAO/ Na_4GLDA for calcium and magnesium soap scum in both ratios. Therefore, another type of chelant, which provides both high solubility and dissolution rate, should be selected. In addition, the cost of DDAO is quite expensive because of its purity as a consequence the commercial grade of DDAO or the other surfactant should be investigated.