CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

According to the rheological and optical measurements of this work, the following conclusions can be made

5.1 Conclusions

5.1.1 Effect of Fatty Alcohol Concentration

(1) The effect of fatty alcohol content is to increase emulsion elasticity as shown by the increase in G_N^o, and the emulsion viscosity as shown by the increase in η_o.

(2) Adding more fatty alcohol produces larger lamellar/vesicle structures.

5.1.2 Effect of Temperature

(1) At high fatty alcohol concentration, G_N^o, τ_B and η_o of CTAC/FA and BTAC/FA emulsions are independent of temperature.

(2) At low FA concentration, G_N^o and τ_B decrease with temperature due to the disruption of the water molecules and the polar group of surfactants.

5.1.3 Effect of Annealing Temperature

(1) G_N^o, τ_B and η_o of both CTAC/FA/HEC and BTAC/FA/HEC emulsions can recover their initial values within 1 day after annealing at 40 and 53 °C as can be seen from the recovery of the lamellar structures. At 80 °C, the rheological properties cannot recover their initial values.

(2) The lamellar structures do not change markedly with annealing temperature except at 80 °C where an optically isotropic oil in water emulsion forms leading to a decrease in viscosity and elasticity of the product.

5.1.4 Effecct of pH

pH has no influence on G_N^o, τ_B, η_o and optical properties at various fatty alcohol concentrations as can be seen from the unchanged liquid crystalline structures. This was because the cationic surfactants in the form of quaternary salts are unaffected by the pH changes.

5.2 Recommendations

(1) For effect of temperature, the rheological properties should be investigated with optical properties. This work can be done by the use of a polarizing microscope with a hot plate.

(2) For effect of annealing temperature, the rheological properties should be further studied in term of aging time within 1 day after samples were annealed and cooled down.