CHAPTER V

CONCLUSION

The soybean oil fatty acids, that have no market value, were recieved from the oil factory. If they were modified with appropriate reactions, they could be changed to the surfactants which can be used in fatliquoring process.

In the first step, the fatty acids were changed to fatty methyl esters by excess methanol at 50° C, 2 hours (95.5 % yield). Consequently, the fatty methyl esters were epoxidized by peracetic acid solution. It was found that the appropriate conditions were mole ratio of $AcOH:H_2O_2$ = 5:1, peracetic acid generating temperature = 60° C, and amount of peracetic acid solution per 20 g of SOME = 75 ml (87.2 % yield). Eventually, the epoxide was undergone sulfonation by saturated sodium bisulfite solution at 90° C about 24 hours, yielded 91.3 %. The product could be emulsified with water. Thus, they was used in fatliquoring process of the leather industry to introduce the oil into the fibers in order to improve softness, stretch, and pliability of the leather. From the results, it was concluded that the leather which was fatliquored with SSME had the greatest strength characteristic, the leather which was fatliquored with CSO and SSME+5 % NP-9 were soft and flexible better than the SSME and SSME*.

The results suggested that sulfonated soybean oil methyl ester which was produced by epoxide pathway (SSME) had some advantages which were described below ;

1. Reduce the over abundant of soybean oil fatty acids which had no market value and made the pollution problem.
2. Make the leather that was softer and better strength characteristic than unfatliquored leather.

3. Compare to the other oils formulation, SSME produced the good strength characteristic leather.

4. When it was combined with 5% NP-9, the leather would be as soft as the commercial leather.

From this investigation it should be studied furthur in the following aspect :

Improve the stability of emulsion of SSME by esterified the fatty acids with hydrophilic moieties such as sorbitol, polyethylene oxide, etc.