

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Foam stability tests were performed to study the effect of surfactant structures, concentration, the influence of oil and brine to screen the appropriate surfactant systems in order to find appropriate surfactants that gave improvement to foam stability. The following conclusions can be listed:

1. Anionic surfactants, i.e. IOS and SDBS, gave a good foam stability compared to nonionic surfactant. SDBS exhibited more stable foam as compared to IOS.

2. The number of carbon chain length of IOS had an influence on foam stability. For IOS surfactant with shorter carbon chain length (i.e. C15-18 IOS), foam was more stable compared to IOS with longer chain length.

3. Foam stability increased with increasing surfactant concentration above CMC. After it reached an optimum point, increasing in concentration resulted in decreasing foam stability.

4. The presence of alkanes in the surfactant system tended to destabilize foam. Foam stability was affected by number of carbon chain lengths of alkane. Foam was more stable when it was in contact with longer chain alkane (i.e. C₁₆) compared to alkanes with shorter carbon chain lengths (i.e. C₆ and C₁₂).

5. The presence of brine caused foam to collapse rapidly for C15-18 IOS. In addition, it caused surfactant precipitation in SDBS system.

6. Adding dodecanol as co-solvent could enhance foam stability in the presence of n-hexadecane for C15-18 IOS. Moreover, the increasing concentration of dodecanol could improve the foam stability. Foam was more stable over a long period of time for both C15-18 IOS and SDBS in the presence of dodecanol.

7. Adding nonionic surfactant as a co-surfactant could increase the stability of foam in the presence of brine. The structure of nonionic surfactant also had different impacts on two main foam surfactants. It may cause by the similarity of structure.

5.2 Recommendations

The following recommendation is suggested:

1. Adding nano-particle and polymer to stabilize foam stability should be studied.
2. The foam stability test should be performed at high temperature to study the effect of high temperature on foam stability.
3. The mixture of different surfactants and the proper ratio of the mixture to find the solution that give the best foam stability.