

## CHAPTER V

### CONCLUSIONS AND RECOMENDATIONS

#### 5.1 Conclusions

Oil-in-water emulsion was well-prepared using 5 wt% of Triton X-100 to stabilize mineral oil in water, and characterized using promising softwares. The prepared oil-in-water emulsion underwent phase separation owing to gravitational settling without flocculation and coalescence observed. Emulsion characterization revealed insignificant change of the VMD and DSD over 48 hours; therefore, this confirmed that the prepared emulsion was micro-stable. Wax deposition experiments were then performed indicating the possibility of wax deposit from O/W emulsion. The deposit could not firmly attach to clean stainless steel surface but firmly attached to the waxy surface pre-coated with n-C28. Reproducible wax deposit growth was observed, and it grew continuously for oil fraction of 50 vol%. On the other hand, wax deposit from oil fraction of 5 vol% grew rapidly and reached plateau within short period and also remained constant over 24 hours. Wax content of the deposit was insignificantly changed over oil fractions and operating times.

#### 5.2 Recommendations

- 1) Surfactant loading should be decreased related to the price in practical situation.
- 2) Ionic surfactant might hold better stability of mineral oil according to repulsive force on identical charge. However, the potential of charge is going to be involved in surface characteristics and more variables need to be adjusted.
- 3) Surface characterization should be performed in order to investigate the mechanism of wax deposition from oil-in-water emulsion such as contact angle and surface energy.