CHAPTER V
CONCLUSIONS

The conclusions can be summarized as follows:

1. The aged asphaltenes had lower dissolution rates both for toluene as well as for DBSA/heptane when compared to the unaged asphaltenes. The dissolution rate constant of unaged asphaltenes with DBSA/heptane system was 0.3414 min^{-1}. After the asphaltenes were aged at 120°C for 5 days, the dissolution rate constant was dropped to 0.0408 min^{-1}. The dissolution rate constant of unaged asphaltenes with toluene system was 0.3897 min^{-1}. After the asphaltenes were aged at 120°C for 5 days, the dissolution rate constant was decreased to 0.0408 min^{-1}. It was observed that DBSA/heptane is more effective in dissolving the aged asphaltenes as compared to toluene.
2. The rates of dissolution of aged asphaltenes with DBSA/heptane system as well as toluene decreased with aging temperature and aging time.
3. There are two possible reactions taking place during aging process:
   3.1 Oxidation reaction which yields more polar asphaltenes.
   3.2 Polymerization reaction which forms larger asphaltene molecule.
   These two reactions also reduce the solubility of asphaltenes in both DBSA/heptane system and toluene.
4. The aged asphaltenes create more problems during asphaltenes remediation. In reality, we tend to face the aged asphaltenes. Asphaltenes deposits in oil reservoirs naturally age with time and their remediation is more challenging than the unaged one. Hence, the next goal of this study should be to investigate better way for the aged asphaltene remediation.