

CHAPTER V

CONCLUSIONS

The conclusions can be summarized as follows:

1. The amount of asphaltene precipitated from asphaltic sludge was greater by a factor of approximately 2 than that from the crude oil.
2. SEM images and $^1\text{H-NMR}$ spectra of the asphaltenes from asphaltic sludge and crude oil show clearly different structures from each other resulting in their different polarities and dissolution rate constants. Asphaltene from asphaltic sludge had higher polarity than that from crude oil. The pseudo first order dissolution rate constants were found to be 0.1232 and 0.1501 min^{-1} for asphaltenes from asphaltic sludge and crude oil respectively.
3. Asphaltene dissolution rate constants decreased with increasing aging of asphaltic sludge as well as ferric chloride concentration.
4. Original asphaltene reprecipitated with FeCl_3/HCl showed significant structural differences such as aromaticity, naphthanic content, etc. leading to higher polarities and lower dissolution rate constants. Asphaltene dissolution rate constants decreased from 0.1501 min^{-1} (for original asphaltene) to 0.0641 and 0.0401 min^{-1} (for asphaltene from asphaltic sludge) precipitated by acidic solution in the presence and absence of ferric ion respectively.