

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The conclusion of the experimental results can be drawn in the following order:

1. The optimum temperature in this study is 300°C temperature at 450 psig H-pressure.
2. Coke content on the catalyst covers the outer catalyst surface and blocks catalyst pores.
3. The addition of organometallic compound to feedstock affect both reaction products of quinoline HDN and coke formation. The effects depend on the types of organometallic.
4. The addition of ferrocene results in the reduction of HDN activity and coke formation on the catalyst. The pores of catalyst are plugged by iron deposition.
5. Titanocene dichloride slightly affects the HDN activity of the catalyst. However, it also reduces the formation of coke on the catalyst.
6. The HDN activity of the catalyst does not change when diphenylmercury was added in the feedstock solution. Eventhough, coke formation on the catalyst is decreased.
7. The HDN activity is decreased by the

deposition of Fe, Ti, and Hg in the following order:
Fe > Ti > Hg.

8. The deposition of these organometallic resulted in the reduction of coke formation on the catalyst in the following order: Hg > Fe > Ti.

5.2 Recommendation

In order to study the performance of other HDN catalysts and effects of other organometallic compounds, following studies should be carried out, as follows :

1. The study of other organonitrogen compounds should be performed to find the reaction network at the same experimental operating conditions.
2. Other types of organometallic should be studied at the same conditions.
3. Another HDN catalyst should be used at the same conditions.
4. The effects of organometallic compounds on the other reactions, such as reforming or cracking reactions, should be studied.
5. The impregnated catalyst with organometallic should be studied at the same conditions.