



CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The following conclusions are drawn from this study:

1. The addition of 10 ppm nitrogen as nitrogen compounds in the feedstock affects catalytic reforming of n-hexane on Pt-Re/alumina. Conversions of n-hexane and methylcyclopentane are decreased. Weight percent of cracking products and higher aromatics are also decreased. In contrast, weight percent of isomer products is increased whereas weight percent of benzene is initially increased and subsequently decreased.

2. The deactivation effects of nitrogen compounds on n-hexane reforming depend upon the nature and types of nitrogen compounds as follows:

2.1 Comparison of basicity of nitrogen compounds, basic nitrogen compound (pyridine) and non-basic nitrogen compound (pyrrole), shows that basic nitrogen compound reduces overall conversion of n-hexane more than non-basic nitrogen compound.

2.2 Comparison of ring saturation of nitrogen compounds, quinoline (unsaturation ring nitrogen compound) and 1,2,3,4-tetrahydroquinoline (saturation ring nitrogen compound), shows that 1,2,3,4-tetrahydroquinoline has stronger effect (as described in 1.) than quinoline.

2.3 Comparison of the number of ring of nitrogen compounds, pyridine (1 ring nitrogen compound) and quinoline (2 ring nitrogen compound), shows no difference on the catalytic reforming reactions of n-hexane.

2.4 Comparison of the stearic hindrance in structure of nitrogen compounds, pyridine (nonstearic hindrance nitrogen compound) and 2,6-dimethylpyridine (stearic hindrance in structure), shows that pyridine has stronger effect (as describes in 1.) than 2,6-dimethylpyridine

3. Nitrogen compounds in this study are reversible poisoning agent.

5.2 Recommendations

Recommendations for future studies and research are as follows.

1. A similar study should be performed using naphtha as a feedstock or a higher molecule of hydrocarbon such as heptane or octane.

2. The amount of nitrogen compounds should be varied in order to study the effects of the concentration of nitrogen compounds.

3. The effects of amount of catalyst should be studied and should vary liquid hourly space velocity.

4. Gas samples should be kept for analyses of their compositions.

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