

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In this work, the investigation on the influence of fluorine and catalyst preparation by performing sequences of TPR and hydrogen chemisorption showed that the activity depended on the degree of metal dispersion and the addition of fluorine. The activity of tetralin hydrogenation decreased in the order of Pt > Pd > PtPd. The addition of F increased the activity for Pd/Al₂O₃ and PtPd/Al₂O₃ but decreased the activity for Pt/Al₂O₃ because the part of metal had been reduced during calcination in the presence of F precursor. For the order of impregnation, the catalyst prepared by adding metal before F gave a better catalytic activity than the ones prepared by adding F before metal. The suitable calcination temperature for unpromoted catalysts, F-promoted Pd, and F-promoted PtPd catalysts was 350°C while the suitable calcination temperature for F-promoted Pt catalyst was 300°C due to the agglomeration during calcination of the F precursor. Moreover, TPR and TEM results indicated the possibility of alloy formation over bimetallic Pt-Pd catalyst. From the results of this study, it was shown that the catalyst preparation is an important role for the product distribution.

5.2 Recommendations for the Future Work

- To characterize catalyst by using TPD to determine the acidity of catalyst.
- To characterize catalyst by using XPS to determine the binding energy in the metal catalyst in order to confirm the TPR results.
- To test the catalytic activity under sulfur in order to determine the effect of mono- and bi-metallic catalysts and F-promoter in sulfur tolerance.