



CHAPTER V

CONCLUSIONS AND RECOMMENDATION

5.1 Conclusions

It was found that the addition of Sn improved the catalytic activity and selectivity of *n*-octane aromatization on both Pt/COM and Pt/NCL catalysts. However, the PtSn/COM gave higher C8 aromatics than PtSn/NCL. This could be because PtSn/COM has higher fraction of PtSn alloy phase than PtSn/NCL. In addition, it was observed that the presence of PtSn alloy phase plays an important role in the catalytic activity for *n*-octane aromatization than the channel length zeolite.

In this study, the spent 1Pt1Sn/COM is deactivated by coke plugging inside the pores after 550 min on stream. Burning off coke with diluted air can be regained closely to the original of the fresh 1Pt1Sn/COM after the *in situ* regeneration even though most of the Pt-Sn alloy was destroyed during the catalyst regeneration. Therefore, the effects of regeneration temperature (300-500°C), time (15 min-2 h) and air flow rate (10-40 ml/min) on Pt-Sn alloy over COM were also studied. TPR and XPS clearly show that part of the Pt-Sn alloys has been disrupted after the regeneration. Among the conditions tested, the catalyst regenerated with an air flow rate of 20 ml/min at 400°C for 1 h exhibits the highest degree of PtSn alloy and low residual coke contents, leading to the highest catalytic activity and selectivity in the 2nd cycle which is close to the those observed on the fresh Pt-Sn/COM catalyst.

5.2 Recommendations

In this work, we observed that the less alloy phase was formed on NCL compared to COM. Consequently, the activity and the selectivity were not improved as much as that observed on Pt-Sn/COM having high amount of PtSn alloy phase. Therefore, trying to find the method to get alloy as much as possible on NCL is an interesting idea in the future. In addition, the alloy phase on 1Pt1Sn/COM segregated after regeneration. It is very important to maintain the Pt-Sn interaction that is also interesting idea.