CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The thesis observed the catalytic activity and selectivity of Pt/MCM-41 prepared by different two methods; incipient wetness impregnation (IWI) and vapor phase impregnation (VPI) for *n*-octane aromatization. These results compared to Pt/KL and Pt/SiO_2. The different pore sizes of MCM-41 were also investigated.

As expected the Pt/MCM-41-C14 and Pt/MCM-41-C16 exhibited higher C_8-aromatic than Pt/KL however their activities are much less than those of Pt/KL. This is because MCM-41 could not stabilize high dispersed Pt on the support. In addition, the TEM images for both 1%Pt/MCM-41-C14 and 1%Pt/MCM-41-C16 and DRIFTS of adsorbed CO, these techniques confirmed that most of the Pt-cluster located on the external surface of MCM-41.

When compared the results with Pt/SiO_2, it was found that Pt/SiO_2 gave higher C_8 aromatic selectivity and larger total aromatics selectivity. Whereas Pt/MCM-41 showed slightly higher conversion than Pt/SiO_2.

In addition, this work has been demonstrated that the effect of different pore sizes have an influent on catalytic performance of these catalysts. It was found that Pt/MCM-41-C14 presented in higher conversion than on Pt/MCM-41-C16 at the same selectivity. Moreover, the results show that the VPI catalysts gave higher catalytic performance than on the IWI catalysts. These results are consistent with Jongpatiwut *et al.* (2003).

5.2 Recommendations

The catalytic activity of *n*-octane aromatization over Pt/MCM-41 should be improved by novel methods that can enhance the stability of Pt over MCM-41. Moreover, addition of the novel metal for modifying the properties of MCM-41 should be studied, for example Ga, Sn.