

## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS

In summary, we have found that the addition of Ce (or Yb) greatly enhanced the stability of Pt/KL in the presence of sulfur for *n*-hexane aromatization. This enhanced stability is also observed after exposure to a water-containing feed. The added Ce (or Yb) improved the stability by inhibition of Pt agglomeration. In the aromatization of *n*-octane, Pt/KL exhibits low activity and C8-aromatic products. The low activity is due to pore plugging of zeolite channel by coke deposit. The coke deposits also influence to product distribution. The deactivation can be efficiently regenerated in the air flow at 400°C. The Pt/KL catalyst, still, exhibits unique property for the aromatization of *n*-octane among Pt/K-BEA, Pt/K-MAZ, Pt/K-FAU, and Pt/VPI-5 catalysts. The unique property is due to small platinum clusters stabilized inside the L-zeolite.

For further studies, since Pt/KL catalysts for *n*-octane aromatization resulted in undesired secondary reaction (hydrogenolysis of C8- aromatics). This might be because the pore of L-zeolite is long enough to proceed the secondary reaction. Therefore, the study of pore length of L-zeolite for *n*-octane aromatization is a challenging project. The parameters in the synthesis of L-zeolite must be controlled to obtain shorter pore length (Ko and Ahn, 1999). The activity and selectivity of Pt/KL after regeneration several cycles should also be investigated. Regarding the high selectivity to C8-aromatics over Pt/SiO<sub>2</sub>, it is interesting to study the aromatization of *n*-octane over silica-based extra-large pore zeolite e. g. UTD-1 (Lobo *et al.*, 1997). This could enhance the activity and aromatic selectivity of the catalyst. Moreover, an attempt to have Pt clusters stabilized inside zeolite channel is important aspect.