



## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusions

The main conclusion of this work can be summarized as follows:

- The selectivity to RC isomers is highly dependent on the acid strength but not the density of acid. The dibranching molecules (DMCPs) require stronger acid sites than monobranching molecule (ECP).
- The acid strength can be relative compared by the DMCPs/ECP ratio as follow  $WZ \gg BEA > MFI > FAU$
- Over bare high acid strength zeolite (BEA, MFI), the product distribution is dominated by *cis*-1,3-DMCP
- HY and WZ having less pore constraint give rise to the higher selectivity to the bulky *trans*-1,2-DMCP than that over BEA and MFI. Moreover, the possibilities to form *cis*- and *trans*-1,3-DMCP are close together.
- The presence of Pt enhances the formation of 1,1-DMCP, which is the most sterically hindered carbenium ion intermediate, due to providing surface hydrogen atoms that are readily used for the hydride transfer reaction. In addition, the *cis/trans*-1,3-DMCP are close to unity for all kinds of Pt supported catalysts.
- At low conversion, the selectivity to ECP is high over all kinds of the Pt supported zeolites since ECP is easily formed and desorbs right away from the surface, resulting from the higher hydride transfer rate.
- The selectivity patterns over bare and Pt promoted WZ are similar. Therefore, it can be suggested that the hydride transfer ability does not play an important role for MCH hydroisomerization over WZ based catalysts.

## 5.2 Recommendations for the Future Work

- To study further in the role of hydride transfer effect.
- After selectivity of ring-contraction isomers had been well-understood, ring-opening of them is the next task in order to achieve the ultimate goal.