



CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

The objective of this investigation is to enhance the performance of platinum catalyst supported on alumina support and on washcoat monolith by substituting the calcination step with pretreatment in exhaust gas. The effect of various pretreatment conditions on the activity of the catalyst in removing CO, NO and propane can be summarized as follows:

1. The catalyst pretreatment in exhaust gas showed a higher activity and the pretreatment step could be used to substitute the catalyst calcination step.
2. The Pt/Al₂O₃ catalyst prepared from Platinum Tetrammine Dichloride (II) [Pt(NH₃)₄Cl₂] showed higher activity than catalyst prepared from Chloroplatinic acid (H₂PtCl₆).
3. The suitable condition for catalyst pretreatment was rich condition of air-to-fuel ratio.
4. The higher pretreatment temperature the higher catalytic activity.
5. The platinum supported on alumina and washcoat monolithic catalysts could be used as three-way catalyst on removing all CO, NO and propane simultaneously. They reached the maximum NO conversion about 80% conversion at high temperature between 500-700°C.
6. The window performance of platinum supported on alumina catalyst was wider in operating range than platinum supported on washcoat monolithic

catalyst. The catalysts were active in the vicinity of stoichiometric point (S=1.0).

7. It was believed that the improvement in activity of pretreated catalyst was due to the SMSI phenomena or decreasing in carbon dioxide adsorption on the surface of catalyst.

The recommendation for further study are as follows :

1. Cyclic operation between rich and lean conditions should be investigated with pretreated catalyst.
2. Catalyst poisoning by some components in exhaust gas such as sulfur, phosphorus, lead, and zinc etc. should be investigated.
3. The stability of pretreated catalyst should be investigated.
4. The mechanism of catalytic pretreatment should be studied.