

CHAPTER VII

CONCLUSIONS AND RECOMMENDATION

This chapter will be focused on the conclusions of the research experimental data. The recommendations for future works will be also emerged.

7.1 Conclusions

The conclusions of the present research are the following:

1. The effective calcination temperature for the preparation of 0.3%Pt/Al₂O₃ and 0.3%Pt/TiO₂ catalysts is observed as 550°C.
2. Under the reaction conditions examined in this study, the catalytic performance of the Pt-based catalysts for removing exhaust gas is affected by the catalyst form. The maximum performance is speculated when the catalyst surface is in the SMSI form.
3. The catalytic activity order for C₃H₈ and CO oxidation and NO reduction operated under lean-burn condition is found to be the same as that performed under stoichiometric condition. Thus, the concentration of O₂ has no effect on the catalytic performance whether it is operated in lean-burn or stoichiometric conditions except the NO conversion over Pt/TiO₂ operated in lean-burn condition.
4. CO produced from C₃H₈ combustion has an insignificant influence on NO conversion to N₂ because the complete combustion is observed the temperature range in which NO reduction is undertaken.
5. At low reaction temperature, the SMSI form catalysts give the highest performance on removing of exhaust gas. On the other hand, there is no effect of the catalyst form on NO reduction, the predominant parameter is 40% O₂ surface coverage instead.
6. The O₂ surface coverage is reversible and proportional to the temperature.

7.2 Recommendation

From the previous conclusions, the following recommendation for future studies can be proposed as follows:

1. Attempts to study the reaction mechanism and effect of O_2 on Pt/TiO_2 are recommended.
2. Study of the amount of adsorbed O_2 on the catalyst surface via SO_2 observation should be performed.