CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The selective catalytic reduction of nitric oxide with propylene in the presence of oxygen was investigated over Ag/Al_2O_3, Pt/Al_2O_3, Ag/TiO_2, and Pt/TiO_2 catalysts. These catalysts were prepared by the sol-gel method.

From the study of metal loading, among the sol-gel Ag/Al_2O_3, Pt/Al_2O_3, Ag/TiO_2, and Pt/TiO_2 catalysts, it was found that the most active catalysts were 6.0% Ag/Al_2O_3, 1.5% Pt/Al_2O_3, 2.0% Ag/TiO_2, and 1.5% Pt/TiO_2 at reaction temperature of 450°C, 300°C, 400°C, and 250°C respectively.

The catalysts were tested in mixtures in which the proportion at water vapor in the gases was 3%. It was found that water vapor decreased the activity of Pt/Al_2O_3 and Ag/TiO_2 catalysts, because under this conditions water is very likely to be adsorbed on active sites. However water vapor promoted the activity of Ag/Al_2O_3 and Pt/TiO_2 catalysts because the inclustion of water vapor in the feed and oxygen suppress NO_2 formation over the catalysts.

In this study, using the two-stage catalyst consisting of a silver catalyst followed by a platinum catalyst was applied. The experiment results confirmed the effectiveness of broadening the effective temperature window for NO reduction.

For future work, it is recommend that the performance on resistance to SO_2 should be carried out because most NO_x exhaust streams usually contain some sulfur compound. These components in the exhaust stream have a significant negative effect on the activity of NO_x catalysts.