CHAPTER V
CONCLUSIONS

The reduction of NO or N_2O by carbon was studied in the thermogravimetric system. Micro 850 graphite as carbon material was used in this study. The reaction rate for the reduction of NO or N_2O by this graphite sample was determined over a range of temperature of 500-750 °C. The NO concentrations used in this study were 6%, 20%, and 40% while N_2O concentrations used in this study were 6%, 12%, and 20%. For the reduction of NO, it could be concluded that at constant NO concentration, TOF was increased when either reaction temperature or NO concentration increased. These results indicated that both the reaction temperature and the NO concentration have affected on the TOF. At 6% NO concentration there was a temperature break. The break temperature was observed in an Arrhenius plot at around 644 °C. However, the temperature break could not be observed on the plots of other NO concentrations. It was also found that the reaction rate equation was first order with respect to NO concentration. For the reduction of N_2O, it could be concluded that at constant N_2O concentration, TOF was increased when either temperature or N_2O concentration increased. These results imply that not only the reaction temperature but also N_2O concentration have affected on TOF. In this study, there was no appearance of a break temperature in this temperature range. Also, it can be concluded that the reduction of N_2O by graphite was a first order reaction with respect to N_2O pressure.

When compared the reaction rates for carbon-NO reaction with those for carbon-N_2O reaction, it is shown that above 670 °C the reaction rates for carbon-NO reaction were slower than those for carbon-N_2O reaction.