

Thermal decomposition of emission gases with low concentration of nitrous oxide using high frequency induction heating

이상구<sup>†</sup>, 강홍석, 손은호, 박인준, 이수복  
한국화학연구원  
(sgoo@kriect.re.kr<sup>†</sup>)

Nitrous oxide ( $N_2O$ ) has been extensively used in an oxidizing agent of semiconductor, LCD manufacturing processes, and inhalation anesthetics. Unfortunately,  $N_2O$  has long atmospheric lifetimes and efficiently absorb infrared radiation, which contributes to greenhouse effect (GWP 310). Therefore, various means to reduce the emissions of  $N_2O$  to minimize their environmental impact is currently explored in the related industries. In this study, we report on Thermal decomposition of nitrous oxide ( $N_2O$ ) in a tube type reactor using high frequency induction heating. Influence of parameters such as reaction temperature, contact time, concentration of  $N_2O$  was determined. For the  $N_2O$  decomposition, the reaction temperature and contact time had the strong effect on the decomposition rate. Thermal decomposition of  $N_2O$  was observed at temperature above 700 °C . Thermal decomposition of  $N_2O$  was promoted by increasing the reaction temperature. Furthermore, the contact time played important roles for the complete decomposition of  $N_2O$ .