

# HETEROGENEOUS CHEMISTRY IMPORTANT IN STRATOSPHERIC OZONE DEPLETION

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## abstract

Heterogeneous chemistry has been proven beyond any reasonable doubt to be of importance in the global ozone depletion of the lower stratosphere. In this talk we will summarize the studies of several heterogeneous reactions potentially important after the eruption of El Chichon and Mt. Pinatubo. These reactions are recently carried out at the Jet Propulsion laboratory using a fast flow tube reactor. The reactor is coupled to either an electron-impact ionization mass spectrometer or a chemical ionization mass spectrometer for analysis of trace gas species. These heterogeneous processes include: (1) hydrolysis of  $\text{ClONO}_2$  and  $\text{N}_2\text{O}_5$  in the binary solution of  $\text{H}_2\text{SO}_4/\text{H}_2\text{O}$  and in the ternary solution of  $\text{HNO}_3/\text{H}_2\text{SO}_4/\text{H}_2\text{O}$ , (2) reactions of  $\text{HCl}$  with  $\text{HOCl}$  and  $\text{ClONO}_2$  in the same solutions, and (3) heterogeneous reactions of  $\text{NaCl}$  particles with  $\text{HNO}_3$ ,  $\text{N}_2\text{O}_5$ , and  $\text{ClONO}_2$ . The results will be summarized and the possible impact of these heterogeneous processes on stratospheric chemistry will be discussed.