

Sulfur Photochemistry in Planetary Atmospheres

Tarek Trabelsi and Joseph S. Francisco

*Department of Earth and Environmental Science and Department of Chemistry
University of Pennsylvania
Philadelphia, Pennsylvania 19104*

Abstract

Chlorine is an important element on Venus. The detection of chlorine bearing molecules in diatomic form, HCl and ClO, and simulation models suggesting the existence of other chlorine bearing molecules. Models predict reactions of the chlorine and sulfur containing species to form some of the molecules that have been detected in Venus's atmosphere. In the present talk, we present the structure and the spectroscopy of the ClSO_x intermediate complexes (x=1,2,3). We will discuss their thermodynamic stability and their photostability in near UltraViolet and visible region. These intermediates may play an important role in the atmosphere of Venus and allow us to make connection between the chemistry of sulfur and chlorine on Venus and Earth atmosphere.