Geophysical Research Abstracts,
Vol. 10, EGU2008-A-07958, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-07958
EGU General Assembly 2008

Uptake and ozonation of polycyclic aromatic hydrocarbons on ice surfaces

Tara F . Kahan and D.J. Donaldson

Department of Chemistry, University of Toronto, Toronto, ON Canada M5S 3H6, (contact: jdonalds@chem.utoronto.ca)

The reactions of organic compounds on ice and snow surfaces have been little studied, in spite of their potential importance to Arctic and Antarctic boundary layer and urban chemistry. We have developed laser-induced fluorescence and Raman spectroscopic methods to probe chemical reactions and interactions of organic compounds in the quasi-liquid layer (QLL) at the air-surface boundary of ice and snow. We have determined that both the uptake to and the reactivity of organic species in the QLL differ from those measured at the liquid water surface. Chemical reactions of polycyclic aromatic hydrocarbons (PAHs) with ozone display faster kinetics than at the water surface. The temperature dependence of the kinetics in the QLL indicates an increase of rate at lower temperatures. Uptake to the QLL and self-association reactions of adsorbed PAHs display only weak temperature dependence. We will discuss these results and their implications for modeling reactions at the ice and snow interface with the atmosphere.