

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Photochemical Processing of Carbon Dioxide Ices and Simple Ice Mixtures¹ T. RANDY DILLINGHAM, DAVID CORNELISON, Northern Arizona University — The investigation of the photochemical processes that can occur in carbon dioxide ices and ice mixtures have important applications in astrophysics, planetary astronomy, and atmospheric chemistry. In this investigation, carbon dioxide ices and ice mixtures are grown at various temperatures using a closed-cycle helium cryostat. The ices are irradiated with x-rays for periods of up to six hours. The chemical changes that occur during the processing are monitored using x-ray photoelectron spectroscopy and Fourier transform infrared spectroscopy. A quadrupole mass spectrometer is also used to study the gas phase species evolving from the ice surface during photoprocessing. The XPS, FTIR and mass spectrometer results are presented and correlated. It is noted that significant differences are observed, particularly for the time dependence of the evolution of the gas phase molecules, between ices grown at 77 K as compared to those grown at 20 K and at intermediate temperatures.

¹Supported by the Nasa Space Grant Program

T. Randy Dillingham
Northern Arizona University

Date submitted: 21 Nov 2007

Electronic form version 1.4