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Photochemical Processing of Solid Carbon Dioxide DAVID CORNELISON, THOMAS DILLINGHAM, Northern Arizona University — The investigation of the photochemical processes that can occur in solids like carbon dioxide have important applications in atmospheric physics, astrophysics, and planetary astronomy. In this study, carbon dioxide ices are grown at various temperatures using a closed-cycle helium cryostat. The ices are characterized using XPS and FTIR, and the chemical changes are monitored while the solids are irradiated with x-rays for up to six hours. A quadrupole mass spectrometer was also used to monitor the gas phase species evolving from the ice surface during photoprocessing. The XPS and FTIR results are presented and correlated. It is noted that significant differences are observed for the time dependence of gas phase molecule evolution between low temperature (20 K) and high temperature (77 K) ices.

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