

## UV PHOTOLYSIS OF AMINO ACIDS IN A SOLID PARAHYDROGEN MATRIX

BRENDAN MOORE, SHIN YI TOH, *Department of Chemistry, University of British Columbia, Vancouver, BC, Canada*; TERMEH BASHIRI, *Chemistry, Caltech, Pasadena, CA, USA*; KYLE MAHONEY, ALEXANDRA McKINNON, MEI FEI ZENG, YING-TUNG ANGEL WONG, PAVLE DJURICANIN, TAKAMASA MOMOSE, *Department of Chemistry, University of British Columbia, Vancouver, BC, Canada*.

Matrix isolation has recently proven successful for the spectroscopic characterization of amino acids in their neutral form. Here, we utilize solid parahydrogen, a cage-free matrix host, to study the photochemistry of a number of amino acids. The photochemistry of alanine, glycine, leucine, proline, and serine will be presented. Irradiation by 213 nm light resulted in  $\alpha$ -carbonyl C-C bond cleavage and hydrocarboxyl (HOCO) radical production from all five amino acids. The temporal behavior of the Fourier-transform infrared spectra revealed that HOCO radicals rapidly reach a steady state, which occurs predominantly due to photodissociation of HOCO into CO + OH or CO<sub>2</sub> + H. In alanine, glycine, and leucine, the amine radicals generated by the  $\alpha$ -carbonyl C-C bond cleavage rapidly undergo hydrogen elimination to yield ethanimine, methanimine and 3-methylbutane-1-imine, respectively. As an analogue to gas phase photochemistry, the photodissociation pathways identified here provide new insights into the behavior of amino acids in interstellar space.