

GROUND STATE \tilde{X}^2A' DYNAMICS OF THE VINYL AND d_2 -VINYL RADICALS UPON EXCITATION TO THE \tilde{A}^2A'' STATE.

AARON MANN, XIANGLING CHEN, VLADIMIR A. LOZOVSKY, C.BRADLEY MOORE, *The Ohio State University, Dept. of Chemistry, 120 W. 18th Avenue, Columbus, Ohio 43210, USA.*

Excitation of vinyl radical to the \tilde{A} state leads to the dissociation of vinyl radical via internal conversion into highly excited vibrational levels of the \tilde{X} state. This was used as a method of energy deposition above the dissociation barrier of the \tilde{X} state. Velocity maps of H and D atoms that are products of $CH_2=CH$ and $CD_2=CH$ dissociation accompanied by acetylene, were measured in the excitation energy range $E \approx 6750 - 9150 \text{ cm}^{-1}$ above the dissociation barrier of the \tilde{X} state. Rovibrational energy dependencies on the excitation energy, E , inferred for acetylene and d_1 -acetylene products are compared with theoretically predicted ones. An upper limit of $1.3 \cdot 10^{11} \text{ s}^{-1}$ is derived for the rate constant of H-atom scrambling between the α and β carbon atoms.