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

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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 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 $1.3 \cdot 10^{11}$ s^{-1} is derived for the rate constant of H-atom scrambling between the α and β carbon atoms.