ACTION SPECTROSCOPY OF HOONO

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The photochemistry of HOONO, a weakly-bound structural isomer of nitric acid, is studied in a flow cell using the technique of action spectroscopy. In this method, the molecules are excited above or close to their dissociation threshold via direct overtone pumping. Subsequent unimolecular decomposition results in products that are sensitively detected by laser induced fluorescence. Our current aim is to characterize HOONO - an elusive product of the OH + NO_2 + M three-body reaction (D_0(HOONO) = 18 kcal/mol, $D_0(HNO_3)$ = 48 kcal/mol). Tunable resonant infrared excitation of the first overtone ($2\nu_1$) and combination bands of the OH stretching vibration of the HOONO molecule and detection of the OH photofragment provides us with a sensitive and selective way of detecting HOONO and studying its spectroscopy and kinetics.