PROBING VIBRATIONALLY EXCITED STATES OF CH_3OOH THROUGH ACTION SPECTROSCOPY

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State selected photodissociation is used to probe the OH-stretching overtone states and corresponding torsional combination bands of CH_3OOH at room temperature and in a jet. The action spectra are analyzed with the aid of *ab initio* calculations and provide information about changes in rotational constant, torsional barrier height and equilibrium torsional angle with OH-stretching excitation. We also find that the OH fragment vibrational state distribution depends on the parent CH_3OOH vibrational level that is selected, with the OH stretch-HOO bend combination band producing substantially less OH(v=1) fragments compared to OH-stretching overtone states. These differences in OH(v=1) yield likely reflect enhanced vibrational state mixing associated with HOO bending mode excitation in CH_3OOH compared to excitation of zeroth order pure OH stretching states.