HIGH-RESOLUTION JET-COOLED AND ROOM TEMPERATURE INFRARED SPECTRA OF THE CH STRECH OF VINOXY RADICAL

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Rotationally-resolved jet-cooled and room temperature spectra of the previously unobserved ν_3 CH stretch of vinoxy radical (CH_2CHO) have been obtained near 2800 cm^{-1} by means of tunable infrared laser spectroscopy (difference frequency generation technique). About 480 transitions corresponding to b-type selection rules have been assigned in the jet-cooled spectrum recorded in the region 2809-2860 cm^{-1}. The band origin has been determined to be 2827.9125 cm^{-1}. A number of lines are split into doublets by the electron spin-rotation interaction. The more congested room temperature spectrum has been recorded over the spectral region 2754-2894 cm^{-1}. With the aid of the analysis of the jet-cooled spectrum, more than 440 room temperature lines mostly corresponding to transitions with high K or high N values have been assigned. Both local and extensive global perturbations have been found in the upper state energy levels. Least squares fitting of the apparently unperturbed levels yielded molecular constants as well as centrifugal distortion and spin-rotational constants for the upper state.