INFRARED SPECTRA OF C_2H_4 DIMER AND TRIMER

A. J. BARCLAY, KOOROSH ESTEKI, *Department of Physics and Astronomy, University of Calgary, Calgary, AB, Canada*; BOB McKELLAR, *Steacie Laboratory, National Research Council of Canada, Ottawa, ON, Canada*; NASSER MOAZZEN-AHMADI, *Physics and Astronomy/Institute for Quantum Science and Technology, University of Calgary, Calgary, AB, Canada*.

Spectra of ethylene dimers and trimers are studied in the ν_{11} and (for the dimer) ν_9 fundamental band regions of C_2H_4 ($\sim$2990 and 3100 cm^{-1}) using a tunable optical parametric oscillator source to probe a pulsed supersonic slit jet expansion. The deuterated trimer has been observed previously, but this represents the first rotationally resolved spectrum of $(C_2H_4)_3$. The results support the previously determined cross-shaped (D_{2d}) dimer and barrel-shaped (C_{3h} or C_3) trimer structures. However, the dimer spectrum in the ν_9 fundamental region of C_2H_4 is apparently very perturbed and a previous rotational analysis is not well verified.