

## INFRARED SPECTRA OF C<sub>2</sub>H<sub>4</sub> UNDER JET-COOLED AND PARA-H<sub>2</sub> MATRIX CONDITIONS

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Spectra of C<sub>2</sub>H<sub>4</sub> isolated in para-H<sub>2</sub> are compared with those of jet-cooled C<sub>2</sub>H<sub>4</sub> recorded with an FTIR spectrometer. The  $\nu_7$ ,  $\nu_9$ , and  $\nu_{11}$  bands of jet-cooled C<sub>2</sub>H<sub>4</sub> all exhibit an intensity distribution corresponding to about 10 K for rotation, with no evidence of nuclear spin conversion. Spectra of the  $\nu_{11}$  band of C<sub>2</sub>H<sub>4</sub> isolated in solid para-H<sub>2</sub> clearly show a rotational structure similar to that observed for C<sub>2</sub>H<sub>4</sub> in helium droplets. Other bands of C<sub>2</sub>H<sub>4</sub> exhibit only partially resolved rotational structures. Rotational constants B and C for  $\nu_{11}$  of C<sub>2</sub>H<sub>4</sub> in para-H<sub>2</sub> are about 50 % those of the gaseous C<sub>2</sub>H<sub>4</sub>. The out-of-plane deformation mode  $\nu_7$  shows a small ( $< 1 \text{ cm}^{-1}$ ) blue matrix shift, whereas other modes are red-shifted by 2.2 to  $3.9 \text{ cm}^{-1}$ .

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