THE WEAKLY–BOUND CO_2–ACETYLENE COMPLEX: FUNDAMENTAL AND TORSIONAL COMBINATION BAND IN THE CO_2 ν_3 REGION

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Infrared spectrum of the weakly-bound CO_2–C_2H_2 complex in the region of the CO_2 ν_3 fundamental band ($\sim$ 2349 cm^{-1}) is observed in a pulsed supersonic slit jet expansion using a tunable diode laser probe. Two bands are observed and analyzed: the fundamental (C–O asymmetric stretch) and a combination involving the intermolecular torsional (out-of-plane bend) vibration. The resulting torsional frequency is 44.385(10) cm^{-1}. This represents the first observation of an intermolecular frequency for carbon dioxide-acetylene complex. A comparison between the results obtained here and those previously reported for N_2O–C_2H_2 complex [a] is discussed.

[a] M. Dehghany, Mahin Afshari, J. Norooz Oliaee, N. Moazzen-Ahmadi, A. R. W. McKellar, Chem. Phys. Lett. 473 (2009), 26-29.