

FUNDAMENTAL AND TORSIONAL COMBINATION BANDS OF N₂O-C₂H₂ AND N₂O-C₂D₂ IN THE N₂O ν_1 REGION

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Spectra of the weakly-bound N₂O-C₂H₂ and N₂O-C₂D₂ complexes in the region of the N₂O ν_1 fundamental band (2224 cm⁻¹) are observed in a pulsed supersonic slit jet expansion probed with a tunable diode laser. Two bands are analyzed for each complex: the fundamental (N-N stretch), and a combination involving the intermolecular torsional (out-of-plane bend) vibration. The resulting torsional frequencies are 44.37 and 40.01 cm⁻¹ for the C₂H₂ and C₂D₂ complexes, respectively. This represents the first observation of the N₂O-C₂D₂ isotopomer, and the first direct determination of an intermolecular frequency for nitrous oxide - acetylene.