

NUCLEAR QUADRUPOLE COUPLING INTERACTIONS IN THE ROTATIONAL SPECTRA OF THE LINEAR AND BENT ISOMERS OF HF-N₂O

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Two structural isomers of HF-N₂O, a bent NNO-HF isomer and a linear ONN-HF isomer, have been observed in previous rotational studies.^a The present work examines the hyperfine structure of the spectra, which reveals the more subtle effects of intermolecular interactions. Using a Fourier transform microwave spectrometer operating in the 7 – 18 GHz region, spectra of both isomers in several HF-N₂O and DF-N₂O isotopomers have been recorded. The nuclear spin-spin interaction of the HF subunit and nuclear quadrupole coupling interactions due to the deuterium and nitrogen nuclei are resolved and analyzed. These constants, along with the rotational constants, help to reveal the dependence of the electric field gradient perturbation in N₂O on the orientation of HF.

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