

HIGH RESOLUTION INFRARED SPECTROSCOPY OF CO₂-Br₂

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The absorption spectrum of the weakly bound complex CO₂-Br₂ has been observed by probing the asymmetric stretch of the CO₂ moiety near 2349 cm⁻¹. Complex was formed by supersonic expansion of the mixture of CO₂ and bromine vapor with use He as a carrier gas. The CO₂-Br₂ was found to have a linear structure with a Br atom close to the center of mass of the system. The isotope substitution of the other Br provided the splitting of the observed peaks into two. The measured rotational and distortion constants for ⁷⁹Br and ⁸¹Br are $B' = 0.0148044(26)$, $D' = 6.43(17) \times 10^{-8}$, $B'' = 0.0146591(26)$, $D'' = 6.01(18) \times 10^{-8}$, and $B' = 0.0146765(27)$, $D' = 6.42(18) \times 10^{-8}$, $B'' = 0.0145322(28)$, $D'' = 6.03(19) \times 10^{-8}$, respectively (in cm⁻¹). The experimental values will be compared with ab initio calculation results and the floppiness of the molecule will be discussed.