MID-INFRARED SPECTRUM OF THE CO_2-SO_2 VAN DER WAALS COMPLEX

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We have recorded the mid-infrared spectrum of the CO_2-SO_2 van der Waals complex near the asymmetric stretching frequency of the R(0) transition of the CO_2 monomer at 2349.917 cm^{-1}. The spectra were recorded on our new molecular beam tunable diode laser spectrometer, in which the sample is injected axially to the main optical axis of the Herriott multipass cell, resulting in an increased residence time of the molecules in the path of the laser beam. The assigned transitions in the mid-infrared spectrum of CO_2-SO_2 are c-type transitions in agreement with spin statistical analysis. Transitions originating from levels with odd K_a in the vibrational ground state are absent from the spectrum. The assignments of several transitions was directly confirmed by microwave-infrared (MW-IR) double resonance experiments, using several known[a] a-type microwave transitions of the complex. The main spectroscopic constants are ν_0=2349.6160(11) cm^{-1}, A"=5544.81(40) MHz, B"=1510.034(37) MHz, C"=1489.402(36) MHz, D_J"=4.578(16) kHz, A'=5524.34(63) MHz, B'=1507.988(164) MHz, C'=1488.404(214) MHz, and D_J'=4.63(80) kHz. The assignment of additional observed transitions is in progress.

[a]L. Sun, I. I. Ioannou and R. L. Kuczkowski *Mol. Phys.* **88**, 255-268 (1996).