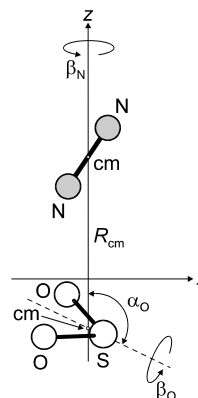


305
MW $\text{N}_2\text{O}_2\text{S}$ **Dinitrogen – sulfur dioxide (1/1)**
(weakly bound complex) **C_s**
(effective symmetry class)
(large-amplitude motion)
 $\text{N}_2 \cdot \text{SO}_2$

r_0	\AA^a	θ_0	deg
R_{cm}	3.875(2)	φ^b	27.810(6)
		β_{N}^c	0.180(30) ^a
		α_{O}^c	119.71(30) ^a or 60.29(30) ^a
		β_{O}^c	3.848(30) ^a

Two sets of rotational and hyperfine constants are required to fit the symmetric and antisymmetric nuclear spin states, indicating that the equivalence arises from tunneling rotation of the nitrogen molecule. Internal tunneling motions along three tunneling pathways have been identified, although no information on the N_2 tunneling frequency is available from the spectra. The SO_2 tunneling frequency is 11.5 kHz, and the frequency of the concerted tunneling motion of both moieties is 173.9 kHz. The complex is roughly T-shaped with the N_2 axis approximately perpendicular to the SO_2 plane. In the equilibrium structure, the ac plane is a plane of symmetry.



^a) Uncertainty was not estimated in the original paper.

^b) Average angle between the N_2 axis and the a inertial axis.

^c) See figure for the definition.

Connelly, J.P., Meuwly, M., Auty, A.R., Howard, B.J.: J. Mol. Spectrosc. **199** (2000) 205.

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