INFRARED SPECTRA OF CARBONYL SULFIDE-ACETYLENE TRIMERS: OCS-$(C_2H_2)_2$ AND TWO ISOMERS OF $(OCS)_2$-C_2H_2

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Spectra of acetylene-carbonyl sulphide trimers in the region of the OCS ν_1 fundamental ($\sim$2062 cm^{-1}) are observed using a tunable diode laser to probe a pulsed supersonic slit jet expansion. A previous microwave study of $(OCS)_2$- C_2H_2 by Peebles and Kuczkowski[a] gave a nonplanar triangular twisted structure, which could be thought of as a polar OCS dimer plus a C_2H_2 monomer lying above the dimer plane. In the present work, three infrared bands are analyzed. The first band clearly belongs to this previously known $(OCS)_2$-C_2H_2 complex. The second band can be assigned as an isomer of $(OCS)_2$-C_2H_2 having a similar structure, but with a nonpolar OCS dimer plus a C_2H_2 monomer above the dimer plane. The third band is assigned to OCS-$(C_2H_2)_2$. The rotational constants and dipole moment components of all three bands are consistent with barrel shape structures having C_1, C_2 and C_s symmetries, respectively.

[a] S.A. Peebles and R.L. Kuczkowski, *J. Chem. Phys.* **111**, 10511 (1999).