ETHYLENE-OCS-OCS: IDENTIFICATION OF A POLAR OCS DIMER FRAGMENT AND COMPARISON WITH SIMILAR DIMERIC AND TRIMERIC SPECIES

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The microwave spectrum of the 1:2 complex between ethylene and OCS has been assigned and its structure determined. This is the second mixed trimer studied at Michigan containing one non-linear species. Its structure is similar to the barrel-shaped arrangement found for several other trimers containing three linear monomers. It closely resembles the acetylene-$(OCS)_2$ trimer, including the identification of a polar OCS dimer unit; a detailed structural comparison will be made between the two species. Tunneling splittings in the rotational spectrum appear to be due to the internal motion of the ethylene subunit, and comparison with a similar motion in the ethylene-OCS dimer will be discussed.