

## GAS PHASE DETECTION OF HOSH: AN ELUSIVE SPECIES WITH MANY DIFFERENT TRAITS

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Hydrogenthioperoxide or oxadisulfane, H-O-S-H, is a nonplanar molecule analogous to the well known simple skew chain molecules H-O-O-H and H-S-S-H, hydrogenperoxide and hydrogendisulfane, respectively. We have recently succeeded in seizing this fleetingly short lived and thus extremely elusive molecular species. By a concerted theoretical and experimental approach, the width of the frequency search could be narrowed down to a frequency range which would allow changing the production parameters towards optimisation of the abundance of HOSH.

We have unequivocally detected and assigned the pure rotational spectrum in the frequency range between about 100 GHz and 2 THz. HOSH displays a clear cut perpendicular spectrum, with strong b-type and weaker c-type transitions, indicating that HOSH possesses a nonplanar skew chain structure compatible to its two "parent" molecules, HSSH and HOOH. Each transition carries a distinct signature of the internal motion of the two bars, i.e. OH and SH bar relative to each other. About 700 transitions have been assigned. The paper will present an overview of the spectra of skew chain molecules, it will try to highlight the similarities, peculiarities, and intrinsic beauty the spectra of this class of molecules are bestowed with. But the presentation will also emphasize the importance of broad-band and high-resolution scanning spectroscopy into the terahertz region for detecting the general pattern of the spectrum and assigning the individual lines. In passing I like to note that the first assignment of HSSH was presented here at the Symposium in 1966 and we began to hunt HOSH down only for the last fifteen years.