

BROMINE-CONTAINING RADICALS FORMED ON PHOTOLYSIS OF CHBr_3

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The photolysis of bromoform at 193 nm is thought to proceed via a primary HCBBr_2 radical product that undergoes spontaneous secondary decomposition leading to HCBBr and CBr in separate channels. Spectra of both these secondary radicals have been detected in the past. During the measurement of a vibrational hot band of HCBBr near $1\mu\text{m}$, several bands of yet another radical species were identified. Chemical tests showed that the new species contained no hydrogen and the observed isotope structure indicated that there was just one bromine atom. Rotational analysis of the bands resulted in estimated rotational constants close to 0.24cm^{-1} for a linear species, consistent with the CCBr radical. This must be produced by secondary radical reactions, possibly via dibromoacetylene formed on recombination of CBr . We have found no previous references to the spectrum of this species, which by analogy with CCH is expected to possess low-lying $^2\Pi$ and $^2\Sigma$ electronic states. This paper will describe the observed spectra and progress in their assignment.

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