FURTHER STUDIES OF POTASSIUM-BEARING MOLECULES : THE MILLIMETER-WAVE SPECTRUM OF KSH (X^1A')

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The pure rotational spectrum of KSH (X^1A') has been measured using millimeter-wave direct-absorption techniques for the first time. KSH was synthesized by the reaction of potassium vapor and H_2S in the presence of a direct current discharge. Five rotational transitions in the frequency range of 260−300 GHz were recorded for both KSH and KSD in their ground electronic states. The K-ladder structure indicates C_s symmetry, and therefore a bent molecule. Accurate rotational and hyperfine constants have been determined from a global fit including previously measured microwave spectra. A comparison of KSH to other alkali metal hydrosulfides will be presented.