FOURIER TRANSFORM MICROWAVE SPECTROSCOPY OF ALKALI METAL HYDROSULFIDES: DETECTION OF KSH

P. M. SHERIDAN, M. K. L. BINNS, J. P. YOUNG, *Department of Chemistry and Biochemistry, Canisius College, Buffalo, NY 14208*; M. P. BUCCHINO, and L. M. ZIURYS, *Department of Chemistry, Department of Astronomy, and Steward Observatory, University of Arizona, Tucson, AZ 85721*.

Fourier transform microwave (FTMW) techniques have been used to record pure rotational spectra of potassium hydrosulfide and its deuterium isotopologue in their ground electronic states. This study represents the first gas phase spectroscopic observation of KSH. FTMW spectra of NaSH were also recorded. The metal hydrosulfides were produced by discharge assisted laser ablation of the solid alkali metal in the presence of hydrogen sulfide or deuterated hydrogen sulfide. Rotational transitions in the 5 20 GHz range were measured and hyperfine splittings due to the alkali metals and deuterium were resolved. Rotational as well as metal and deuterium quadrupole coupling constants have been determined from the data. The hyperfine parameters will be interpreted in terms of metal-ligand bonding character. Geometric parameters of the alkali metal hydrosulfides will be compared.