

## OPTICAL STARK SPECTROSCOPY OF THE $B^1 A''-X^1 A'$ of CuOH

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Copper hydroxide, CuOH, is one of the most thoroughly studied<sup>a</sup> transition metal containing polyatomic molecules with the most recent investigation being the dispersed fluorescence and radiative lifetime study.<sup>b</sup> The pure rotational spectrum was recorded and analyzed by Saito's group some time ago.<sup>c</sup> Recently a high level *ab initio* calculation predicted ground state permanent electric dipole moments,  $\mu_{el}$ , ranging in value from 5.52D to 3.98D depending upon methodology used to treat electron correlation. Here we report on the first molecular beam study of the  $B^1 A''-X^1 A'$  band. The spectrum was recorded field-free and in the presence of a static electric field of up to 4000 V/cm. The hyperfine splitting is observed and analyzed for the first time. The determined  $\mu_{el}$  values are used to evaluate the computational methodologies and are compared with those of other copper containing molecules.

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<sup>a</sup>C.N.Jarman, W.T.M.L.Fernando, and P.F. Bernath *J.Mol.Spectrosc.* **144** 286, 1990.

<sup>b</sup>C.Tao, C. Mukarakate, and S. A. Reid *Chem.Phys.Lett.* **449** 282, 2007.

<sup>c</sup>C.J. Whitham, H. Ozeki, and S. Saito *J.Chem.Phys.* **112** 641, 2000.