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

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Copper hydroxide, CuOH, is one of the most thoroughly studied [a] transition metal containing polyatomic molecules with the most recent investigation being the dispersed fluorescence and radiative lifetime study. [b] The pure rotational spectrum was recorded and analyzed by Saito′s group some time ago.[c] Recently a high level *ab initio* calculation predicted ground state permanent electric dipole moments, μ_{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^1A''-X^1A' 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 μ_{el} values are used to evaluate the computational methodologies and are compared with those of other copper containing molecules.

[a] C.N.Jarman, W.T.M.L Fernando, and P.F. Bernath *J.Mol.Spectrosc.*. **144** 286, 1990.
[b] C.Tao, C. Mukarakate, and S. A. Reid *Chem.Phys.Lett.*. **449** 282, 2007.
[c] C.J. Whitham, H. Ozeki, and S. Saito *J.Chem.Phys.*. **112** 641, 2000.