THE OPTICAL STARK SPECTRA OF CoF AND CoH

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Comparing the predicted and observed permanent electric dipole moments, μ_{el}, for simple diatomic cobalt containing molecules is a means of testing computational methodologies used for modeling cobalt-catalyzed reactions. Here we report on the experimental determination of μ_{el} for CoH and CoF from the analysis of the Stark shifts in the (0,0) bands of the $A'^3\Phi_4 - X^3\Phi_4$ system of cobalt monohydride, CoH, and the $[18.8]^3\Phi_4 - X^3\Phi_4$ system of cobalt monofluoride, CoF. In addition, the proton magnetic hyperfine interaction in CoH is analyzed. The relative values for μ_{el} are rationalized using a molecular orbital correlation diagram and with high-level *ab initio* predictions[a].

[a]Tomonari,M.; Okuda, R.; Nagashima, U.; Tanaka, K.; Hirano, T.;*J. Chem. Phys.* **126** 144307, 2007.