ALGEBRAIC ANALYSIS OF BENT-FROM-LINEAR TRANSITION INTENSITIES: THE EMISSION SPECTRUM OF METHINOPHOSPHIDE (HCP)

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Emission spectra obtained from bulk-gas methinophosphide (HCP) have been interpreted through use of a novel algebraic scheme that explicitly takes into account inherent non-rigidity of the molecular framework.[a] Fluorescence accompanying selective excitation of individual $\tilde{A}\,^1\mathrm{A}'' - \tilde{X}\,^1\Sigma^+$ vibronic bands was dispersed under moderate resolution, with the appearance of substantial activity in the ν_2 bending mode reflecting the bent-from-linear nature of the $\tilde{A} \leftarrow \tilde{X}$ transition. Aside from providing an economical parameterization for observed patterns of vibrational term energies, the algebraic approach affords a robust and facile means for the quantitative evaluation of multidimensional Franck-Condon factors. These results, as well as subsequent extensions designed to account for non-Condon effects, will be discussed in order to further elucidate the unique structure and dynamics exhibited by participating electronic states.

[a] H. Ishikawa, H. Toyosaki, N. Mikami, F. Pérez-Bernal, P. H. Vaccaro, and F. Iachello, *Chem. Phys. Lett.* **365**, 57 (2002).