OBSERVATION OF THE $\tilde{A} - \tilde{X}$ ELECTRONIC TRANSITION FOR VARIOUS PEROXY RADICALS

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Cavity ringdown spectra of the near IR $\tilde{A} - \tilde{X}$ electronic transition for acetyl, isopropyl and partially fluorinated methyl peroxy radicals are reported. Structured spectral signatures of the $\tilde{A} - \tilde{X}$ transition contain information sufficient to distinguish the detailed nature of the R group even when they are quite similar. Therefore cavity ringdown spectroscopy of peroxy (RO_2) radicals via the $\tilde{A}^2\mathrm{A}' - \tilde{X}^2\mathrm{A}''$ transition can be successfully used for monitioring various peroxy radicals in complex chemical systems. *Ab initio* calculations of the origin frequencies for the aforementioned transitions have been carried out at the G2/G2(MP2) level for various peroxy radicals. Remarkable agreement ($\sim$20 cm^{-1}) with observed experimental values of T_{00} for the $\tilde{A}^2\mathrm{A}' - \tilde{X}^2\mathrm{A}''$ transition is observed.