RECENT OBSERVATIONS OF THE $\widetilde{A}$ - $\widetilde{X}$ TRANSITIONS OF ORGANIC PEROXY RADICALS VIA CAVITY RING-DOWN SPECTROSCOPY

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Organic peroxy radicals are important intermediates in combustion chemistry. These molecules, formed from the addition of oxygen to alkyl radicals, are pivotal species in many atmospheric processes. Previous spectroscopic studies have focused on the intense $\widetilde{B}$ - $\widetilde{X}$ transitions; however, the broad profile of the $\widetilde{B}$ - $\widetilde{X}$ system has motivated investigation of the partially forbidden $\widetilde{A}$ - $\widetilde{X}$ manifold, from which detailed structural information can be extracted. Recent reports from our group have targeted the $\widetilde{A}$ - $\widetilde{X}$ transitions of straight and branched aliphatic peroxy radicals. This research has now been extended towards unsaturated systems, beginning with vinyl peroxy, and towards cyclic saturated and unsaturated systems starting with cyclohexyl peroxy. Details of calculations on these radicals as well as experimental observations will be discussed.