OBSERVATION OF THE $\tilde{A} - \tilde{X}$ ELECTRONIC TRANSITION OF NEOPENTYL PEROXY RADICAL USING CAVITY RINGDOWN SPECTROSCOPY

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Alkyl peroxy radicals ($C_nH_{2n+1}O_2$) are important reactive intermediates in both combustion and atmospheric chemistry. As *n* increases, these radicals grow in importance due to the fact that the combustion of fuels (i.e. petrol and diesel fuel) must pass via these larger sized radicals. However, as *n* increases, these species also grow in complexity due to the fact that the number of isomeric and conformeric forms of the radical increases dramatically.

We have previously studied the $\tilde{A} - \tilde{X}$ electronic transition of methyl, ethyl, propyl and butyl (*n*=1-4) peroxy radicals using Cavity Ringdown Spectroscopy. From these studies, we have been able to gain some insight into not only the reactivity of the alkyl radicals with oxygen, but also into their rates of self-reaction. More importantly, in the case of propyl and butyl peroxy radicals, we have also been able to observe both isomer- and conformer-specific bands in their electronic spectra. In this talk, we report the extension of this technique to the next larger alkyl peroxy radical (*n*=5), pentyl peroxy radical. While pentyl has three constitutional isomers, we have focused our studies on neopentyl peroxy radical, as it should have the least amount of stable conformers of the set, making its spectrum the simplest and perhaps most informative.