OBSERVATION OF THE $\widetilde{A} - \widetilde{X}$ ELECTRONIC TRANSITION OF C_6-C_{10} PEROXY RADICALS

NEAL D. KLINE And TERRY A. MILLER, *Laser Spectroscopy Facility, Department of Chemistry, The Ohio State University, 120 W. 18th Avenue, Columbus, Ohio 43210.*.

The $\widetilde{A} - \widetilde{X}$ electronic transition of straight chain C_6-C_{10} peroxy radicals and of the isooctyl peroxy radical have been observed and analyzed. These larger hydrocarbons are significant constituents of gasoline with heptane (octane rating of 0) and isooctane (2,2,4 trimethylpentane; octane rating of 100) being the two standards on which the octane rating scale is based. Spectra were obtained by abstraction of hydrogen atoms from the hydrocarbons using chlorine atoms. The origin and -OO stretch regions of the straight chain peroxy radicals are easily identifiable. It is relatively easy to uniquely identify hexyl peroxy, but differentiation among the spectra of the larger straight chain peroxy radicals has proven difficult. However, isooctyl peroxy is easily distinguished and the observation of the tertiary peroxy radical along with the primary and/or secondary peroxy radical(s) is discussed.