THE CAVITY RING–DOWN ABSORPTION SPECTRUM OF THE $S_0 \rightarrow T_1$ AND $S_0 \rightarrow S_1$ TRANSITION OF JET–COOLED AROMATIC THIONE COMPOUNDS

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The cavity ring–down method has been applied to the measurement of the absorption of 4–H–1–benzopyrane–4–thione (BPT)[b] and 4–H–pyrane–4–thione (PT) in a supersonic jet in the wavelength region of the weak $S_0 \rightarrow T_1$ and $S_0 \rightarrow S_1$ transition.
In the case of jet–cooled BPT the absorption energies of vibronic states between 15800 and 16650 cm^{-1} corroborate previous assignments in the $S_0 \rightarrow T_1$ phosphorescence excitation and resonance–enhanced multi–photon excitation spectra. The symmetry forbidden 0,0 transition, $S_{0,0} \rightarrow S_{1,0}$ at 16522 cm^{-1}, was found to be 7.5 times weaker than the absorption transition to the triplet origin, $S_{0,0} \rightarrow T_{1z,0}$. Relative phosphorescence quantum yields were estimated.
For the more volatile PT the CRD absorption spectrum of jet–cooled PT was compared to PT in a static cell. Through the hot band analysis ground state vibrations were assigned in comparison to ab initio force field calculations[c]

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[b] A.A. Ruth, T. Fernholz, R.P. Brint and M.W.D. Mansfield; *Chem. Phys. Lett.* (1998) in press.
[c] Á. Somogyi, G. Jalsovszky, C. Fülöp, J. Stark and J.E. Boggs; *Spectrochimica Acta* **45a** (1989) 679.