

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

A.A. RUTH^a, *Institut für Atomare und Analytische Physik, TU-Berlin, Hardenbergstr. 36, 10623 Berlin, Germany*; T. FERNHOLZ, *Physikalisch Chemisches Institut, Universität Heidelberg, Im Neuenheimer Feld 253, 69120 Heidelberg, Germany*.

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-pyrene-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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