CONFORMATIONAL SPECIFIC SPECTROSCOPY OF JET COOLED 3-(4-HYDROXYPHENYL)-N-BENZYL-PROPIONAMIDE.

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3-(4-hydroxyphenyl)-*N*-benzyl-propionamide (HNBPA) is a biologically relevant molecule that contains two spectroscopically distinguishable ultraviolet chromophores. The phenyl and phenol chromophores are connected by a chain 6 bonds long containing an amide group. By studying the conformation-specific spectroscopy of this molecule, we hope to learn about the effect of conformation on the efficiency of electronic energy transfer between the two chromophores. Preliminary studies on HNBPA will be discussed, including one color resonant two photon ionization (R2PI), UV-UV hole-burning, and resonant ion dip infrared (RIDIR) spectroscopies. R2PI along with UV-UV hole-burning show the presence of two major and one minor conformer. The $S_1$ origins, which arise from the phenol chromophore, are spread over 200 $\mathrm{cm}^{-1}$, with the dominant conformers exhibiting extensive low-frequency vibronic structure. Only one of these conformers shows transitions assignable to the benzene chromophore (the $S_2$ state). RIDIR spectra of these conformers in the N-H and O-H stretch region show unique, well-resolved N-H stretch and O-H stretch fundamentals shifted from one another by about 10 $\mathrm{cm}^{-1}$. Analysis of these spectra combined with computed structures and vibrational frequencies aid in the tentative assignments of the conformations observed. The connection between the conformational assignments and the detectability of transitions due to the $S_2$ state will be discussed.