PURE ROTATIONAL SPECTROSCOPY OF PANHs II: ACRIDINE. POSSIBLE APPLICATIONS IN THz COHERENT CONTROL SPECTROSCOPY

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Recent developments in THz pulse generation have allowed for the synthesis of short (sub-ps), high power (>10 MV/cm) pulses capable of controlling low energy vibrations, such as large amplitude torsions or bending modes. Clusters of polycyclic aromatic nitrogen heterocycles (PANHs) with water are good candidates for this research since a significant amount of theoretical and experimental work has already been undertaken on these species. A thorough understanding of the rotational spectra of these molecules is essential for assessing their suitability in far-IR/THz coherent control studies and is also of astrochemical interest. A promising target in this regard is the PANH acridine. Here we present the pure-rotational spectrum of the acridine monomer recorded with a direct absorption mm/sub-mm wave spectrometer and discuss the results in the context of future applications to coherent control of large amplitude motions of small aromatic water clusters.