HYDROGEN BONDING EFFECTS ON NONRADIATIVE CHANNELS OF INDOLE BY APROTIC POLAR SOLVENTS

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We report here the fluorescence properties of 1:1 hydrogen bonded complexes of indole with a series of aprotic polar solvents in cold inert gas inert gas matrices below 10K. Measurements of the dispersed fluorescence spectra following selective excitations to various vibronic levels in S_1 of the monomer as well as complexes display the hydrogen bonding effects on Franck-Condon active modes in the emission spectra. To estimate the matrix effect on the observed results, measurements have been performed also in a hydrocarbon solvent at room temperature, and it is noted that complexation causes significant enhancement of the quantum yield of fluorescence. The observed spectral behaviour contrasts the predictions of some of the recent theoretical studies of solvent effects on the non-radiative decay channels of indole, and we propose here alternative mechanisms.