

Proton transfer reaction of a new orthohydroxy Schiff base at room temperature and 77 K.

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One new orthohydroxy Schiff base, 2-(N-benzyl-alpha-iminoethyl)naphthol (BEIN) has been synthesized. The proton transfer reaction of BEIN has been investigated by means of absorption, steady state and time resolved fluorescence spectroscopy in different solvents at room temperature and 77K. The behavior of BEIN in ethanol and water, has been studied in neutral, acidic and basic conditions. Excited state intramolecular proton transfer (ESIPT) is evidenced by a large Stokes shifted (approximately 11,000 cm⁻¹) fluorescence in solid crystalline media at room temperature. We present the observation of phosphorescence both in non-polar and protic solvents at 77K. The observed decay dynamics of the phosphorescence and delayed fluorescence indicates that the triplet state can be attributed to the cis-keto form. The molecular structures are determined by B3LYP/6-31G** calculation. From theoretical study it is suggested that the strengthening of hydrogen bond result from the steric repulsion of the phenyl ring. The presence of benzene ring increases the proton transfer barrier in case of BEIN compared to previously studied 7-ethylsalicylidenebenzylamine (ESBA).

Adres publiczny

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