

Photophysical Studies on 5-Phenylhydrazino Substituted N-Phenylpyrazole Derivative in Non-aqueous Solvents and Compartmentalised Medium of Aqueous α -Cyclodextrin

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Abstract — Absorption studies of 3-Methyl-5-Phenylhydrazino-1-Phenyl-1*H*-Pyrazole-4-Carbonitrile (ppc) in different solvents show that the lowest wavelength absorption band arises due to π - π^* transition of the phenyl chromophore, the second absorption band appears due to the absorption transition to the locally excited (LE) state and the third absorption band at longer wavelength is tentatively assigned to the charge transfer (CT) transition. The emission spectra of the compound consist of two fluorescence bands; the lower wavelength band appears due to the emission from the LE state and the higher wavelength band arises due to the emission from the CT state. Phenylhydrazine substitution at the 5-position of N-phenylpyrazole undoubtedly forms a sterically hindered pretwisted compound and hence absorption and emission occur from both the LE state and the CT state. An attempt has been made to enhance fluorescence intensity of ppc by imposing steric restriction when captured (i.e., trapped) in the nanoconfinement of aqueous α -cyclodextrin (α -CD) cavity.

Keywords : *N-Phenylpyrazole Derivative, photophysical properties, locally excited state, charge transfer transition, absorption and emission spectra, compartmentalised medium.*