EXCITED STATE DYNAMICS OF 7-AZAINDOLE HOMODIMER IN FROZEN NITROGEN MATRIX

MOITRAYEE MUKHERJEE, BIMAN BANDYOPADHYAY, SHREETAMA KARMAKAR and TAPAS CHAKRABORTY, *Physical Chemistry Department, Indian Association for the Cultivation of Science, Jadavpur, Kolkata 700032, India*.

In a fluid medium (liquid or gas), the doubly hydrogen bonded dimer of 7-azaindole (7AI) undergoes tautomerization via simultaneous exchange of two H-atoms/protons between the two moieties upon UV excitation to lowest excited singlet state. The excited dimer emits exclusively visible fluorescence from tautomeric configuration, and no UV fluorescence is detected from the locally excited state. We show here for the first time that this generic excited state dynamics of 7AI dimer is totally altered if the species is synthesized and confined in frozen nitrogen at 8 K. The dimer has been found to emit only from the locally excited state, and the photophysical channel leading to excited state tautomerization is completely blocked. The formation of the centrosymmetric dimer in nitrogen matrix is ensured by recording the FTIR spectrum of the dimer before initiating the photophysical measurements. The details of our findings and interpretation of the measured data will be presented in the talk.