

Supporting Information

A Hydrogen Bond Sensitive Probe 5-Methoxy-1-keto-1, 2, 3, 4 tetrahydro-carbazole in the Microheterogeneity of Binary Mixtures and Reverse Micelles

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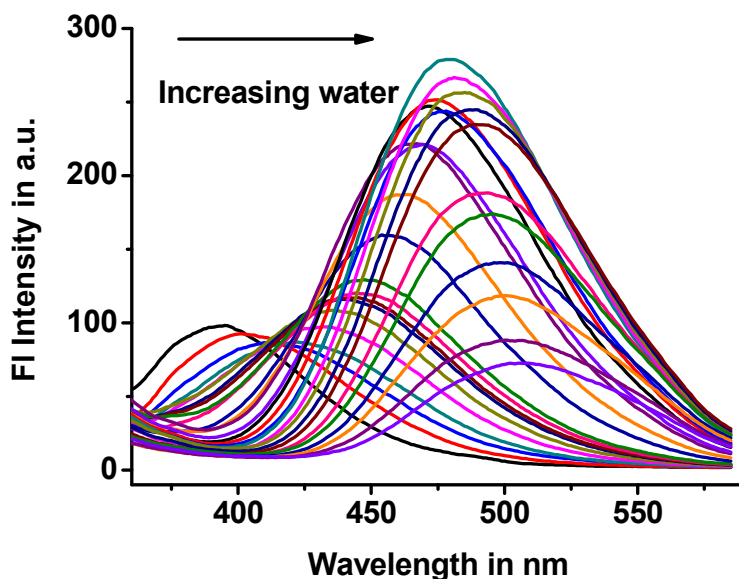
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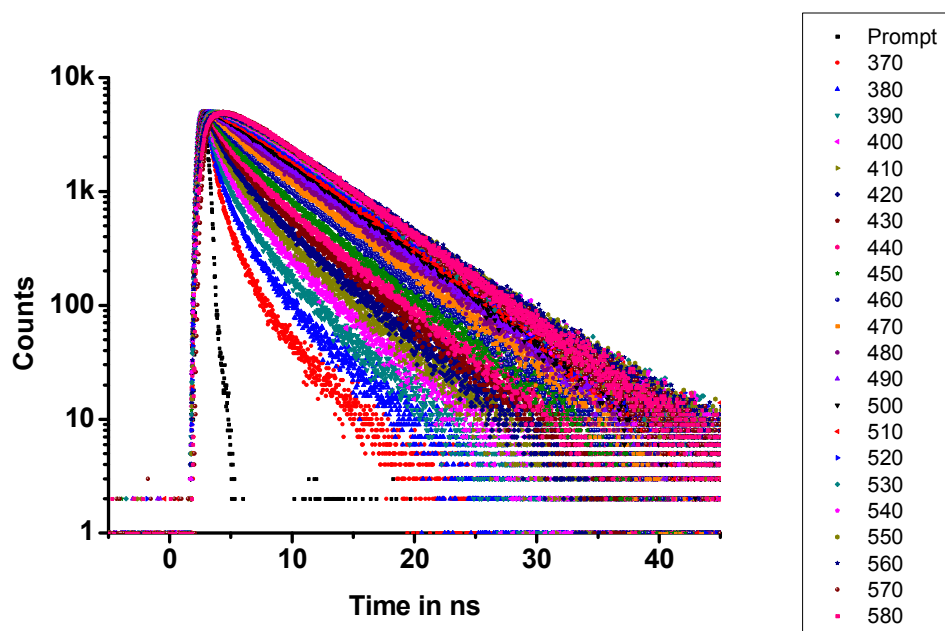
Figure S1: Fluorescence Intensity in water-dioxane mixture

While the absorption spectra show a very small shift in its absorption maxima, the fluorescence spectra undergo a very large Stokes's shift as we moved from very low water proportion to higher. We observe a very small decrease in the fluorescence intensity of MTC with increase in water, followed by an increase in the intensity with formation of h-MTC as the H-bonding of water is reestablished with higher mole fraction of water.



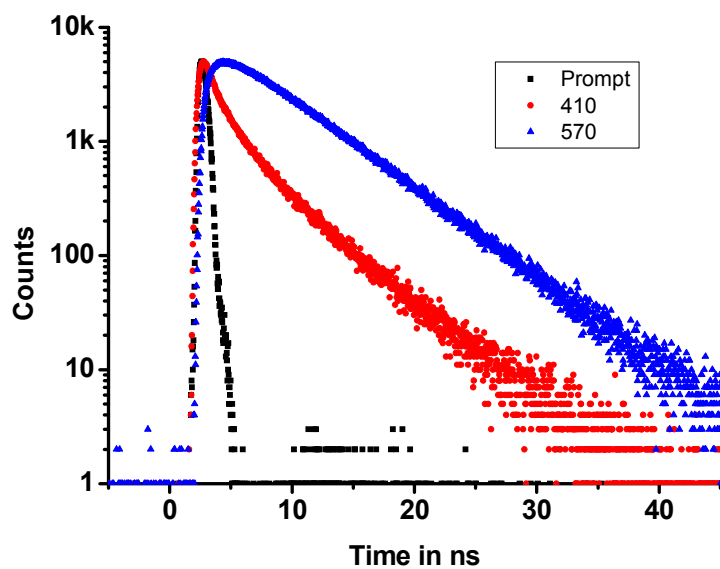
S1: Variation of fluorescence intensity of MTC ($10\ \mu\text{M}$, $\lambda_{\text{ex}} = 340\ \text{nm}$) in different proportion of water-dioxane mixture. The arrow indicates the variation with increase in amount of water.

Figure S2:



S2: Time-resolved fluorescence decay profiles of MTC (10 μ M, $\lambda_{\text{ex}} = 340$ nm) in $w_0 = 6$ for the entire emission range of 370-580nm with an increment in 10nm each.

Figure S3



S3: Time-resolved fluorescence decay profiles of MTC ($10 \mu\text{M}$, $\lambda_{\text{ex}} = 340 \text{ nm}$) in $w_0 = 6$ at emission wavelength of 410 and 570 nm respectively. The decay at the longer wavelength region is followed by a distinct growth of few orders of ns.

Table S4

Mole fraction of Water	λ_{em} /nm	τ_1^a / ns
0	416	1.41
0.03	422	0.595
0.07	427	0.472
0.12	432	0.466
0.15	438	0.473
0.18	443	0.596
0.2	447	0.534
0.22	452	0.780
0.25	452	0.901
0.3	456	0.964
0.35	458	1.090
0.4	465	1.960
0.45	473	3.210
0.5	479	3.900
0.6	483	4.320
0.7	486	4.320
0.8	493	4.600
0.9	500	4.700
1	505	4.870

S4: Fluorescence maxima (in nm) and lifetimes (in ns) of MTC (10 μ M, λ_{ex} = 340 nm) in different ratio of water-acetonitrile binary mixtures. a \pm 10%.

Figure S5: Ground state energy minimized structure of MTC, (Gaussian 09, B3LYP /6-311G(d,p))

