Supporting Information for

A carbazole-fluorene molecular hybrid for quantitative detection of TNT with combined fluorescence and quartz crystal microbalance methods

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Supporting Information figures

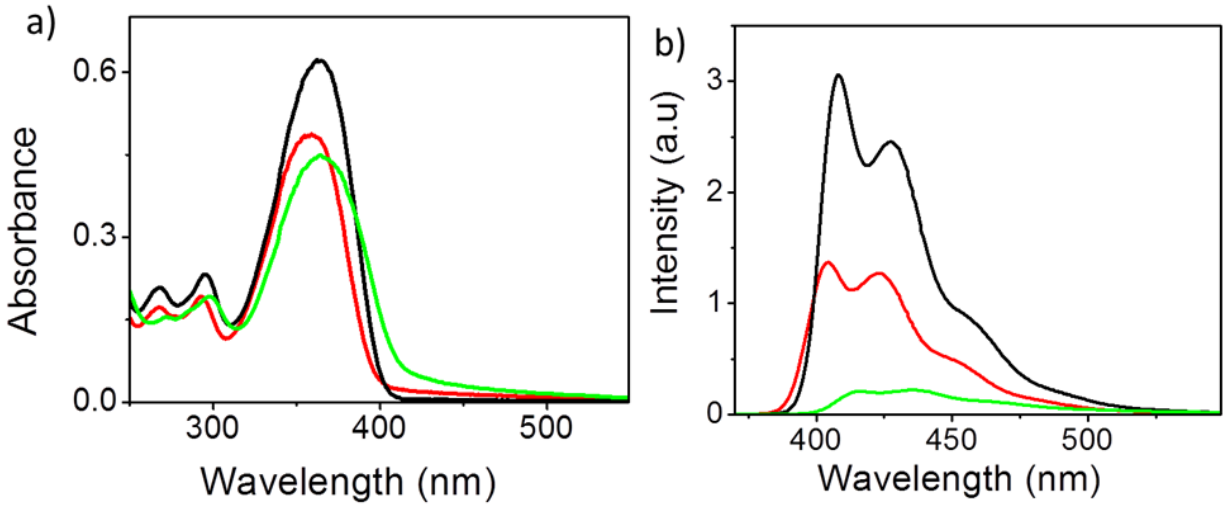

Fig. S1 (a) Absorption and (b) emission spectra of **CBF** in THF (—), water (—) and methylcyclohexane (—) with a conc. of 5×10^{-5} M (l = 1 cm, λ_{ex} = 350 nm).

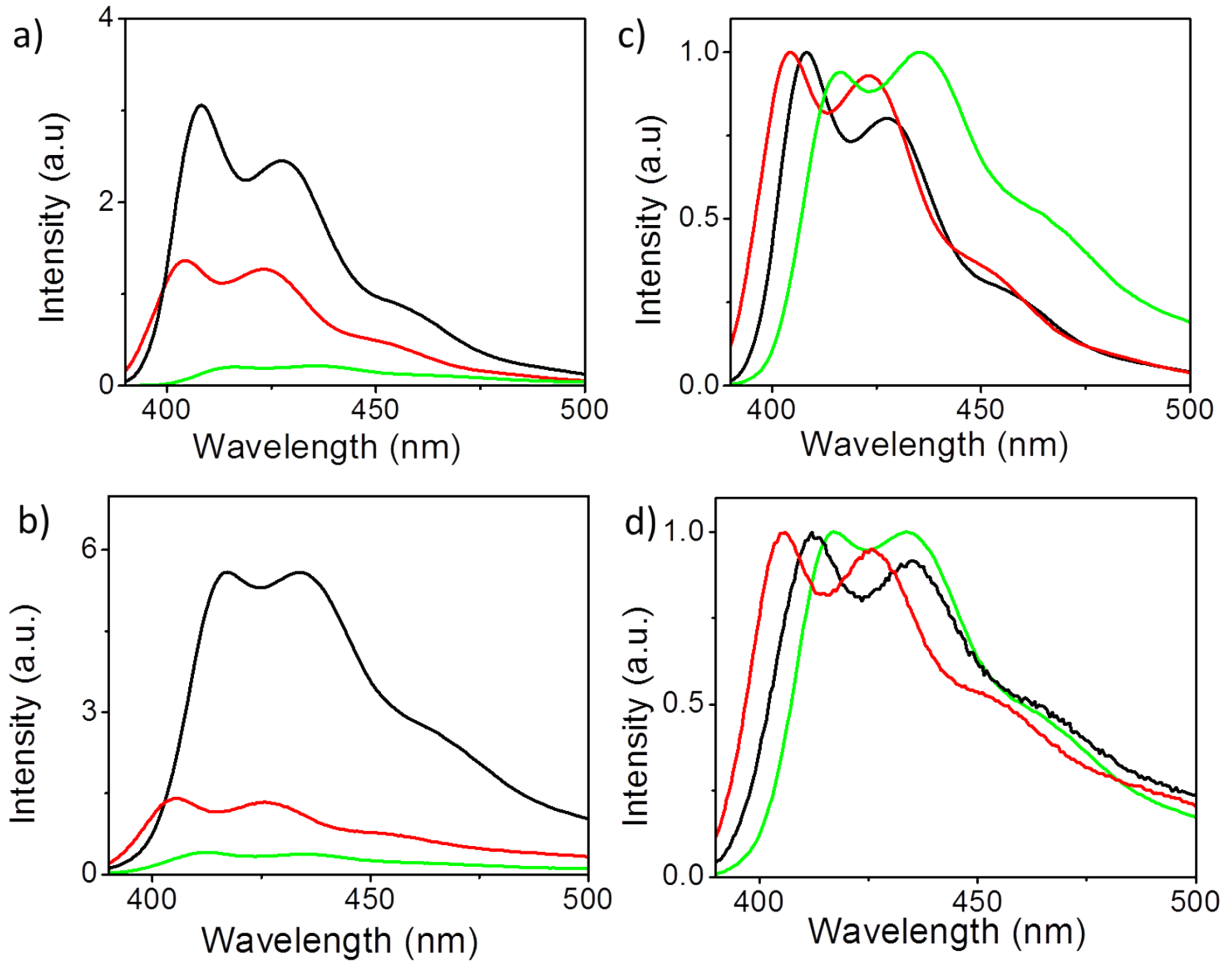

Fig. S2 Normalized emission spectra of **CBF** in (a) solution, (b) corresponding normalised spectra, (c) film state and (d) corresponding normalised spectra, from THF (—), water (—) and MCH (—) with a conc. of 5×10^{-5} M (l = 1 cm, λ_{ex} = 350 nm). Film prepared from 10 μL of each solution drop casted on a glass plate and dried under vacuum for 12 h.

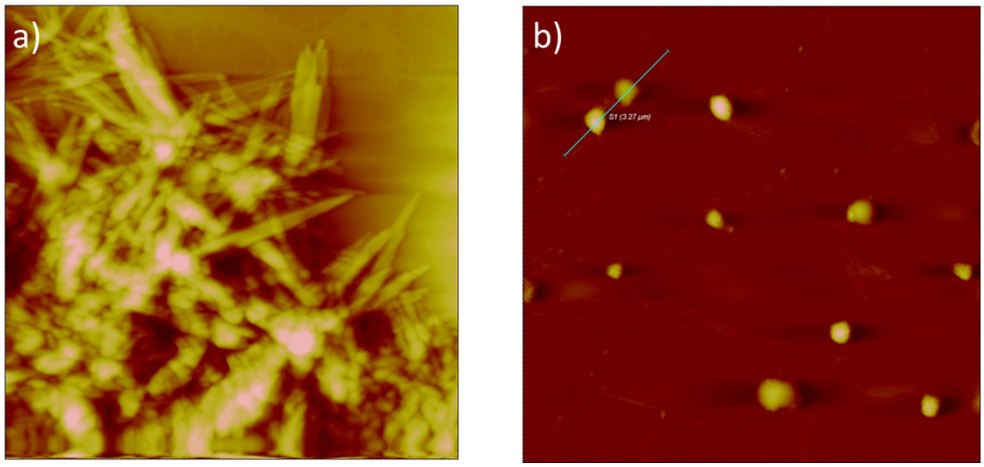

Fig. S3 AFM images of (a) **CBF** nanorods from MCH solution (5×10^{-5} M) and (b) **CBF** nanoparticles from water (1×10^{-5} M), respectively.

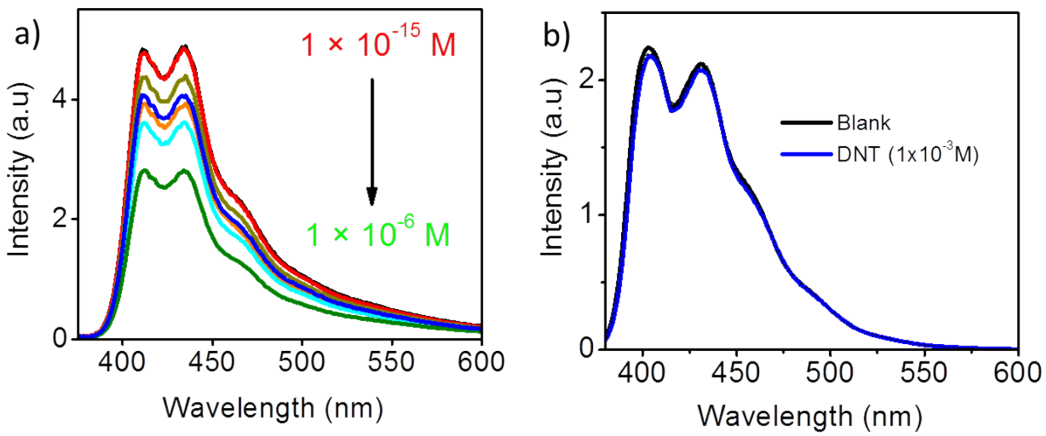

Fig. S4 Fluorescence changes of **CBF** nanoparticles upon addition of (a) DNT solution in water and (b) **CBF** (1 × 10^{-6} M) upon addition 10 equiv. DNT solution in THF (l = 1 cm, λ_{ex} = 370 nm).

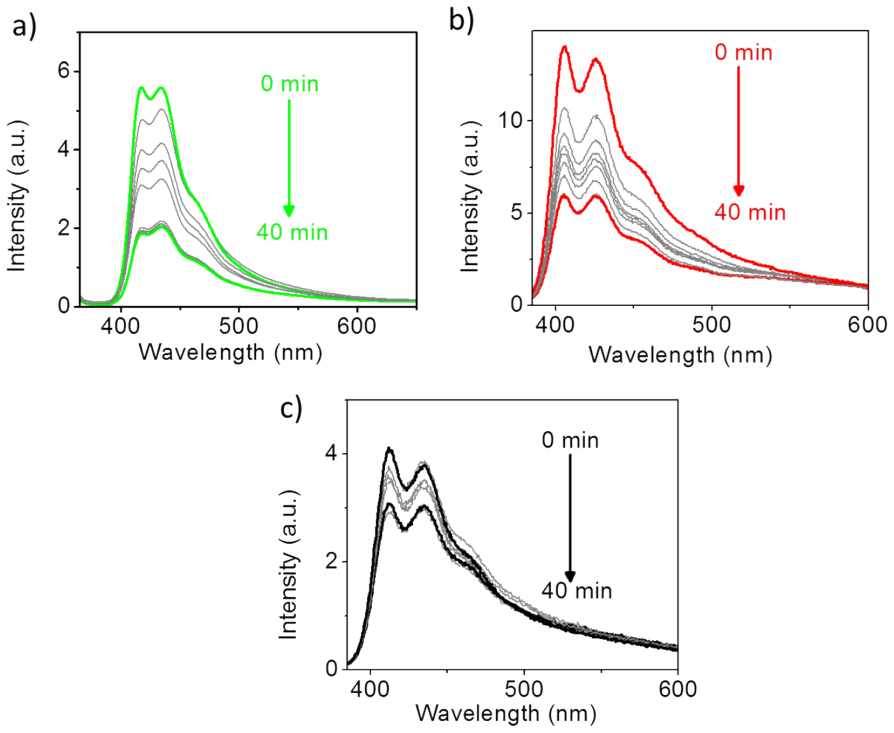

Fig. S5 Fluorescence quenching studies of **CBF** film prepared from (a) water, (b) MCH, and (c) THF upon exposure to TNT vapors (λ_{ex} = 370 nm).

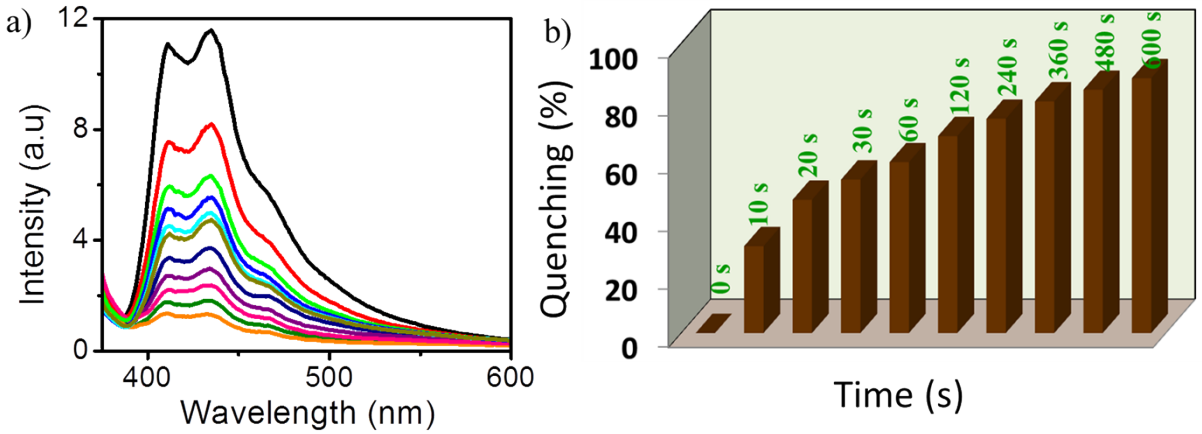

Fig. S6 (a) Fluorescence quenching studies of **CBF** film prepared from solution of MCH exposed to DNT vapors (b) A plot of quenching % vs time (λ_{ex} = 370 nm).

Table S1. A comparison of adsorption and fluorescence quenching by different **CBF** architectures with time.

Time (s)	% Quenching efficiency (QCM freq. shift Hz), approximate weight of adsorbed TNT (ng)		
	Nanorods from MCH	Nanoparticles from water	Ill-defined structure from THF
100	36.74 (-2.71), 2.58	34.75 (-2.23), 2.12	6.6 (-1.65), 1.57
200	40.22 (-4.06), 3.86	40.99 (-3.57), 3.39	12.11 (-2.51), 2.39
300	41.94 (-4.74), 4.50	46.20 (-4.55), 4.33	14.10 (-3.01), 2.86
500	45.4 (-5.49), 5.22	63.87 (-6.16), 5.85	23.6 (-3.06), 2.91