Electronic Supplementary Information for

Fabrication of magnetically separable fluorescent terbium-based MOF nanospheres for highly selective trace-level detection of nitroaromatic explosives

Jing-Jing Qian, Ling-Guang Qiu*, Yi-Min Wang, Yu-Peng Yuan, An-Jian Xie, Yu-Hua Shen

Laboratory of Advanced Porous Materials, School of Chemistry and Chemical Engineering, Anhui University, Hefei 230039, China

* Corresponding author. Tel: +86 551 65108212; Fax: +86 551 65108212

* E-mail address: lgqiu@ahu.edu.cn

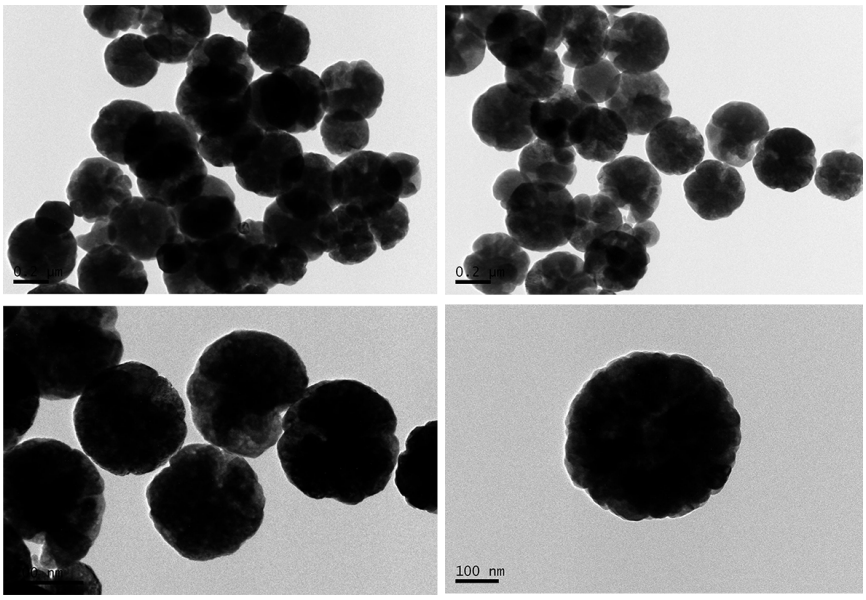


Fig. S1 TEM images of bare Fe_3O_4 nanopheres.

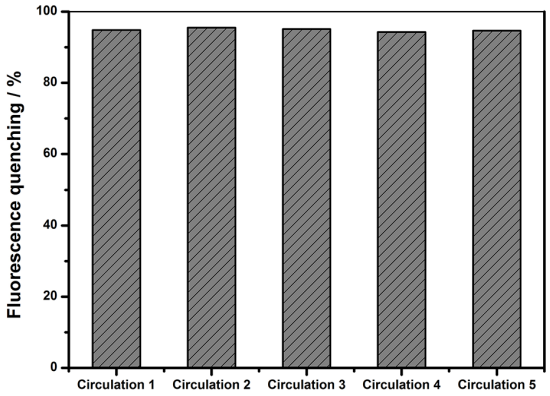


Fig. S2 Comparison of the fluorescence quenching of Fe_3O_4@Tb-BTC core-shell nanospheres in five consecutive quench/regeneration cycles after the concentration 2,4-DNT reaching to 1mM.

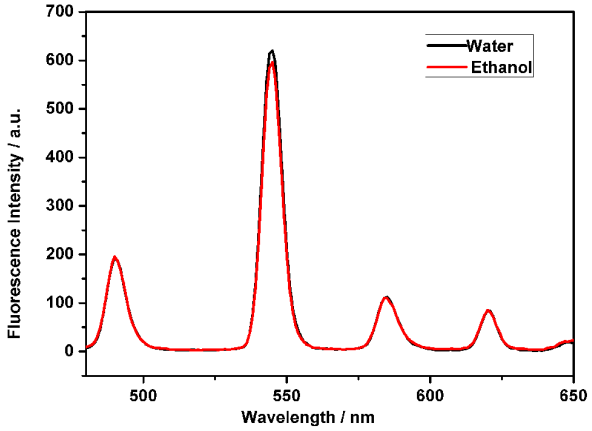


Fig. S3 Comparison of the fluorescence intensity of Fe_3O_4@Tb-BTC nanospheres of same concentration (200ppm) in water and ethanol system.

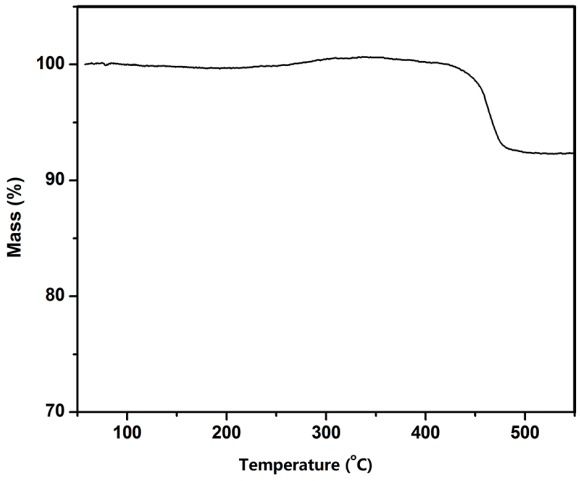
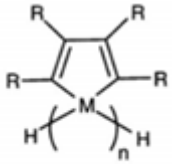
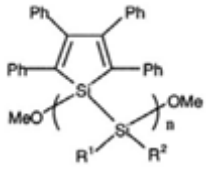
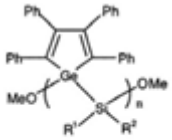
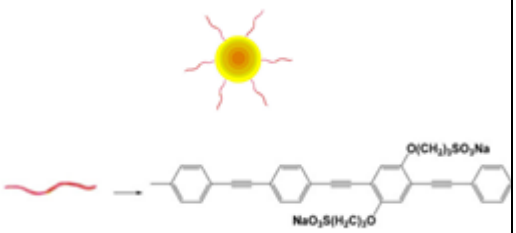
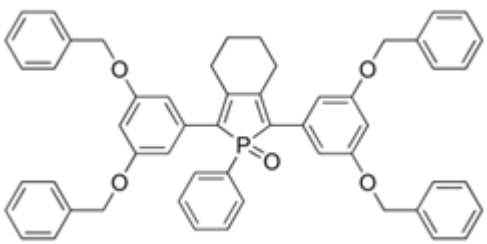
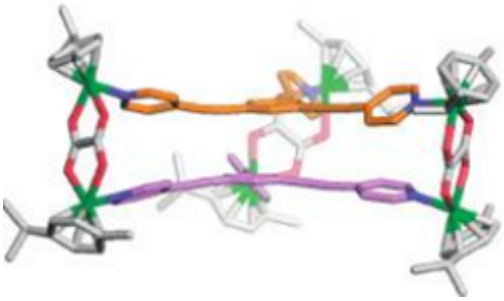


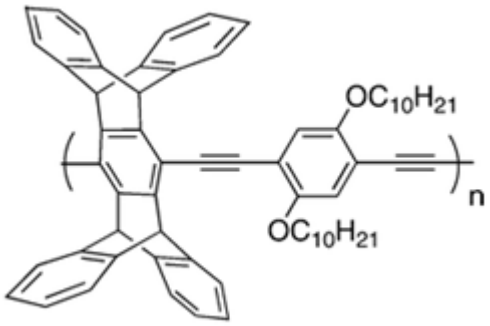
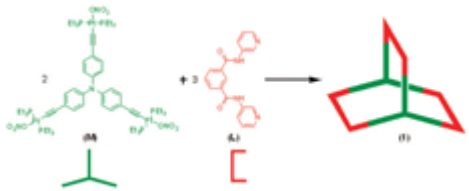
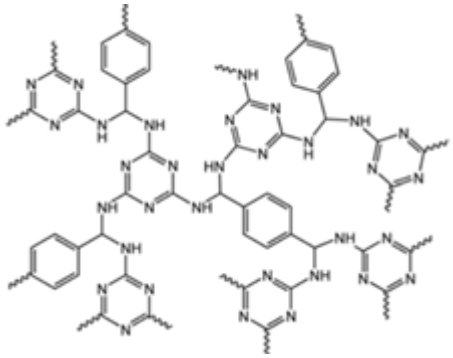
Fig. S4 TGA plot of the Fe_3O_4@Tb-BTC nanopheres under air atmosphere.

Table S1

Summary of Stern-Volmer Constants (K_{sv}) of different sensor systems with TNT reported previously and investigated in the present work.

Fluorophores	K_{sv} (M^{-1})	Sensors	Reference
A1	4340	 **1**; M = Si **2**; M = Ge	[S1]
A2	2050		
A3	3050	 **4**; R^1 = H, R^2 = Me **5**; R^1 = H, R^2 = Ph **6**; R^1 = H, R^2 = Me or Ph **7**; R^1 = Ph, R^2 = Ph **8**; R^1 = H, R^2 = H	
A4	3520		
A5	3940		
A6	3030		
A7	3430		
A8	3680		
A9	3990	 **9**; R^1 = H, R^2 = Me **10**; R^1 = H, R^2 = Ph **11**; R^1 = H, R^2 = Me or Ph **12**; R^1 = Ph, R^2 = Ph	
A10	3330		
A11	3430		
A12	3340		
B	3110		[S2]
C	1400	dendrimer G4	[S3]
D	3900		[S4]
E1	5515	amine-capped ZnS-Mn^{2+}	[S5]

E2	2258	bare ZnS -Mn^{2+}	
F1	9038	FITC-(NH2)-silica	[S6]
F2	1991	FITC-silica	
F3	813	FITC	
F4	4195	ROX-(NH2)-silica	
F5	1666	ROX-silica	
F6	727	ROX	
G1	21000	 Color code: green, Ru; red, O; blue, N. H atoms, counteranions, and solvent molecules are omitted for clarity.	[S7]
G2	49100		

H	7300		[S8]
I1	48100		[S9]
I2	19600		
J	3800		[S10]
Fe_3O_4@TbBTC	94800		This work

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