Supporting Information for

Photoelectric properties and potential nitro derivatives sensing by a highly luminescent of Zn (II) and Cd (II) metal-organic frameworks assembled by the flexible hexapodal ligand,1,3,5-triazine-2,4,6-triamine hexaacetic acid

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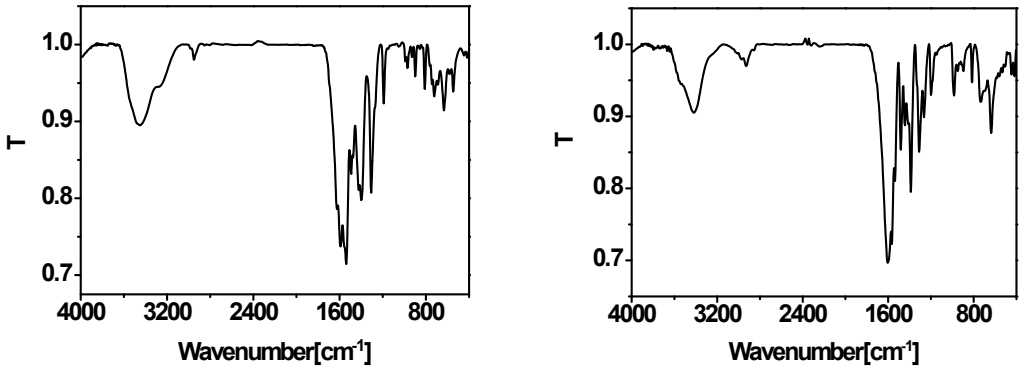
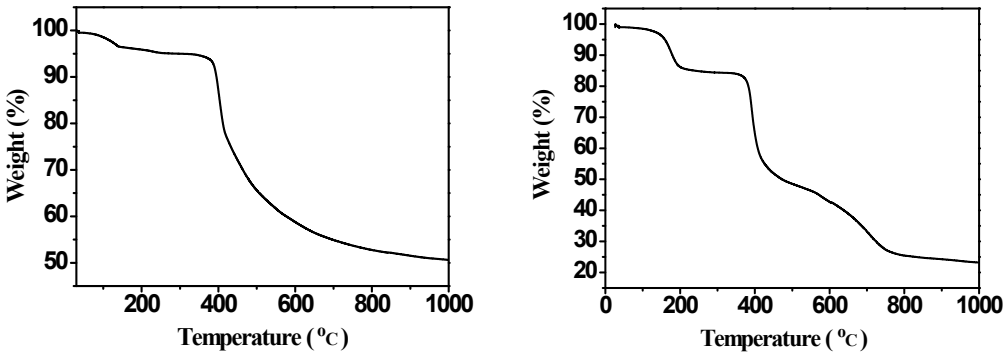
1. Infrared spectra



(a) (b)

Figure S1. IR spectra of coordination polymers: (a) for **1**, (b) for **2**

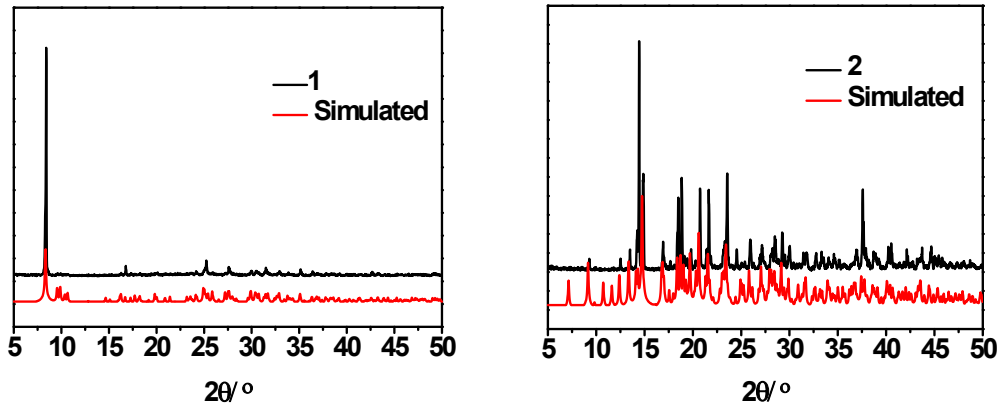
2. TG analyses



(a) (b)

Figure S2. TG curves of coordination polymers: (a) for **1**, (b) for **2**

3. PXRD



(a) (b)

Figure S3. Powder X-ray diffraction patterns for coordination polymers**:** (a) for **1**, (b) for **2**.

4. UV-vis Spectroscopy

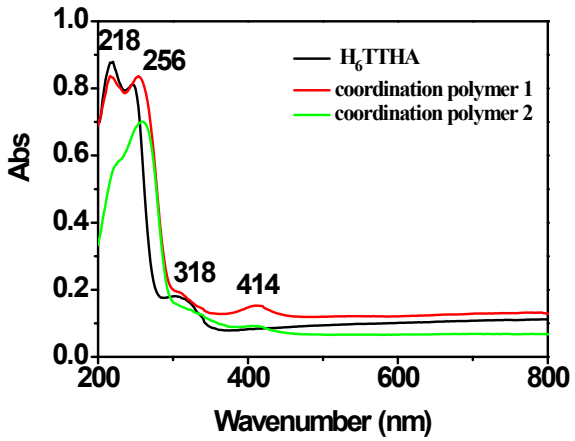
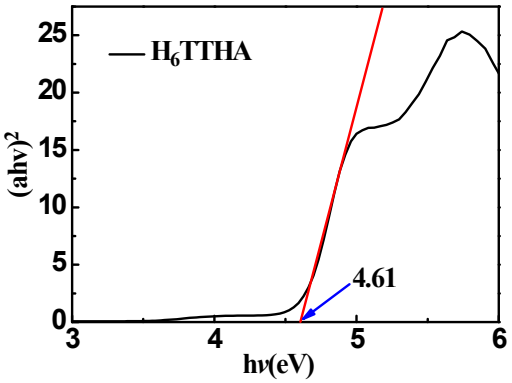
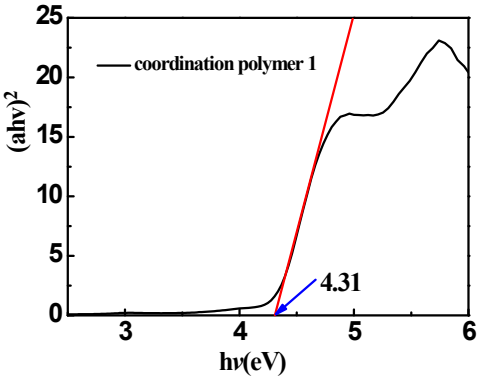


Figure S4. Solid-state UV-vis absorption spectra of the ligand H_6TTHA and coordination polymers **1** and **2**.

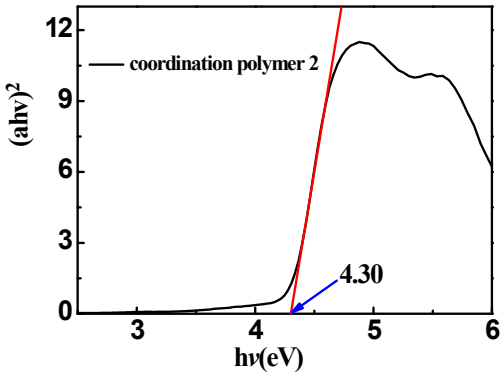
5. Band gap



(a)



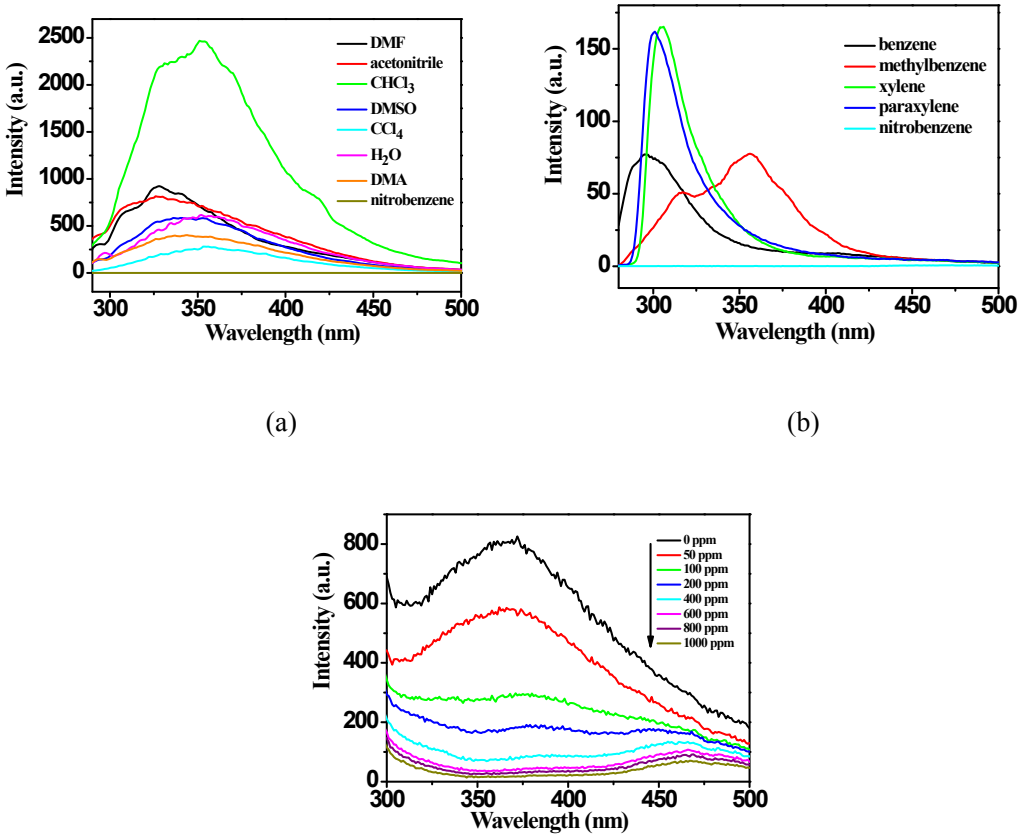
(b)



(c)

Figure S5. The band gap of the H_6TTHA ligand and the two coordination polymers:(a) for the H_6TTHA ligand, (b) for **1**, (c) for **2**.

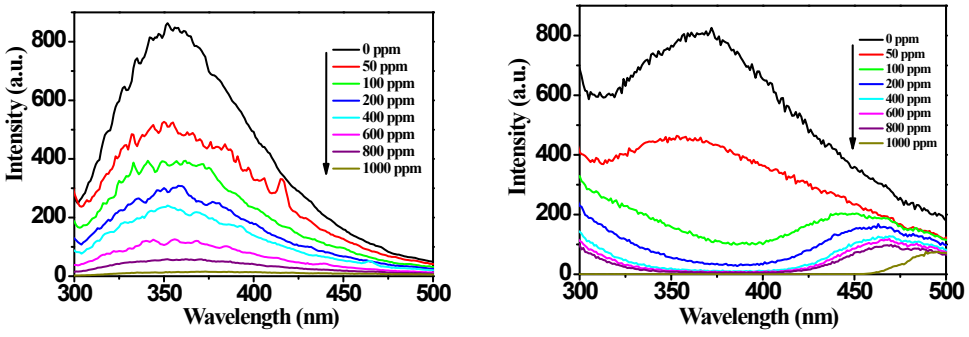
6. Fluorescence Spectroscopy



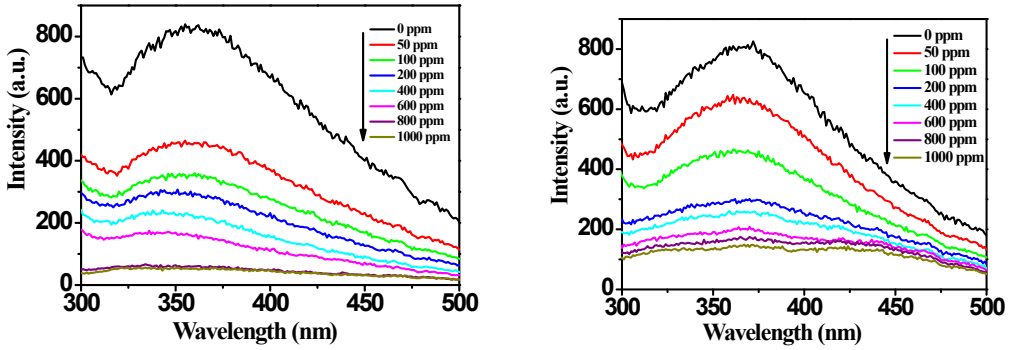
(a) (b)

(c)

Figure S6. (a) Emission spectra of coordination polymer **1** in different solvents. (b) Emission spectra of **1** in benzene, methylbenzene, xylene, and paraxylene. (c) Luminescence quenching of **1** dispersed in H_2O by gradually increasing TNP concentration.

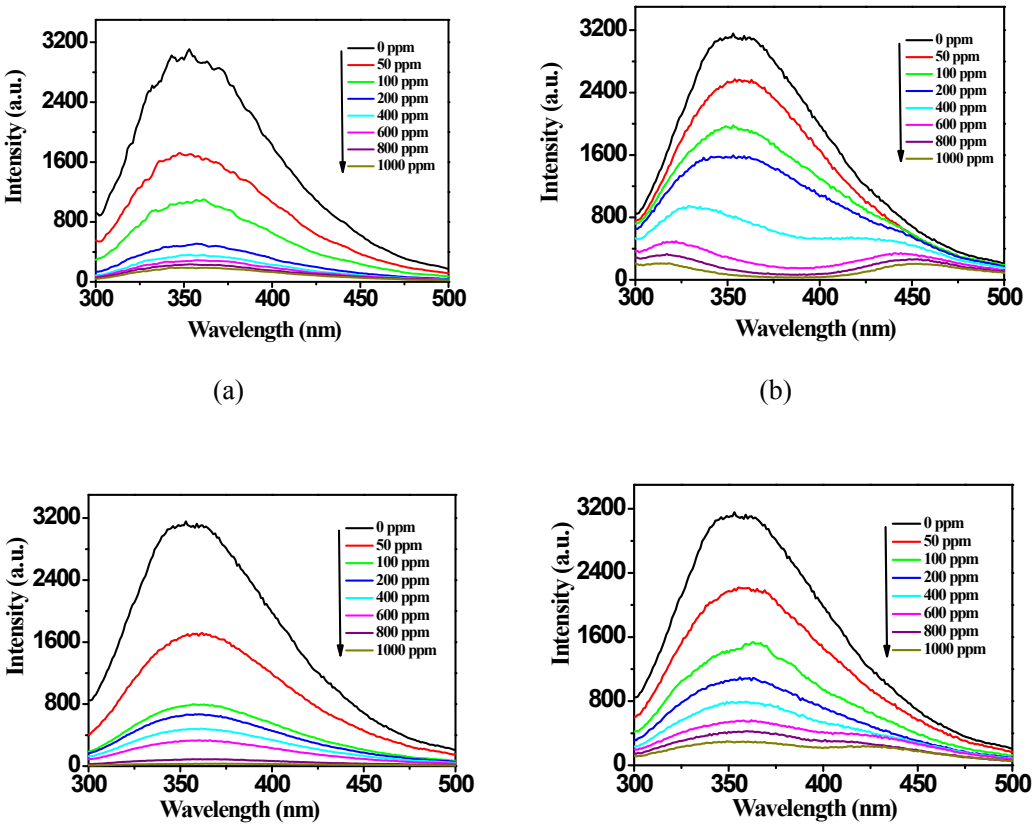


(a) (b)



(c) (d)

Figure S7. Luminescence quenching of coordination polymer **1** dispersed in H_2O by gradually increasing different quenchers' concentration: (a) NB, (b) p-Nitroaniline, (c) m-Dinitrobezene, (d) sodium nitrobenzene sulfonate.



(a) (b)

(c) (d)

Figure S8. Luminescence quenching of coordination polymer **2** dispersed in H_2O by gradually increasing different quenchers' concentration: (a) NB, (b) p-Nitroaniline, (c) m-Dinitrobezene, (d) sodium nitrobenzene sulfonate.

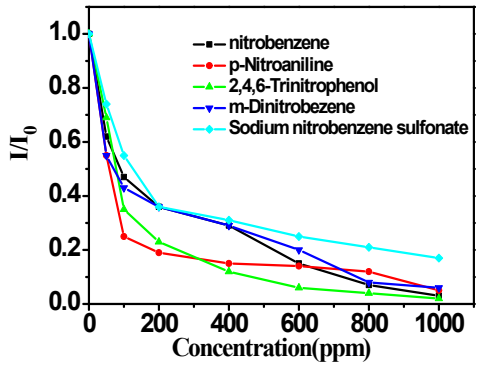
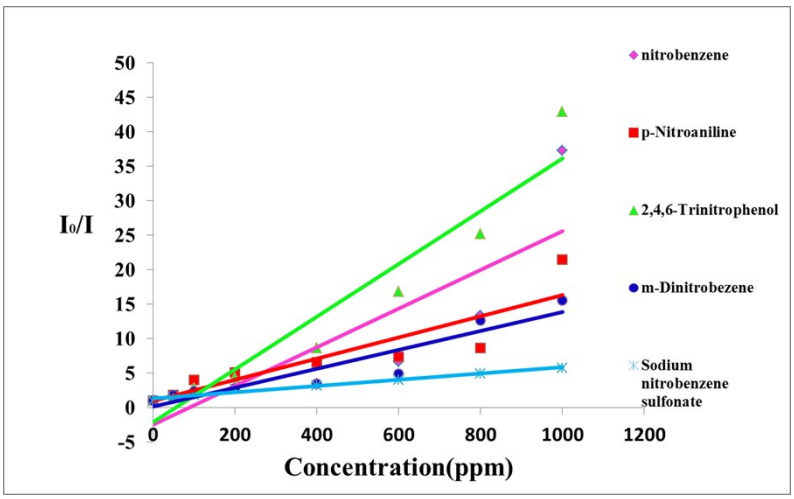
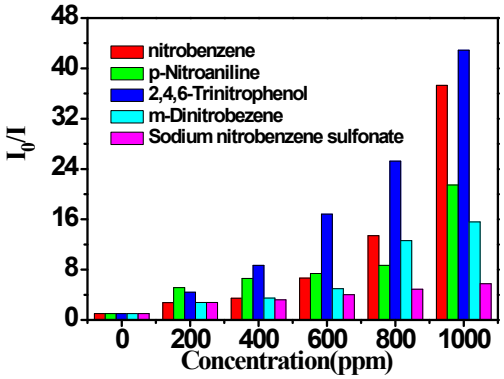


Figure S9. Plot of fraction of luminescence intensity of **1** vs. concentration of analytes. I_0 and I are the luminescence intensities in the absence and presence of analyte, respectively.



(a)



(b)

Figure S10. For **1**, (a) linear relationships of the quenching are fluorescence intensity ratio and quencher concentration; (b) at different concentrations, the value of the fluorescence intensities and the quencher ratios.

7. Table for bond angles

Table S1. Bond angles (deg) for coordination polymers **1** and **2***

Coordination polymer 1					
$O12^{C}$-Cd1-O1	92.9(2)	O1-Cd1-$O1^{A}$	84.25(17)	$O12^{C}$-Cd1-O8	91.4(2)
O1-Cd1-O8	171.6(2)	$O1^{A}$-Cd1-O8	99.7(2)	$O12^{C}$-Cd1-O2	83.1(2)
O1-Cd1-O2	84.71(2)	$O1^{A}$-Cd1-O2	153.16(18)	O8-Cd1-O2	88.6(2)
$O12^{C}$-Cd1-$O13^{B}$	154.4(2)	O1-Cd1-$O13^{B}$	90.42(19)	$O1^{A}$Cd1-$O13^{B}$	83.78(18)
O8-Cd1-$O13^{B}$	82.6(2)	O2-Cd1-$O13^{B}$	71.91(18)	O5-Cd2-O4	154.82(19)
O5-Cd2-O3	94.2(2)	O4-Cd2-O3	94.5(2)	O5-Cd2-$O10^{D}$	107.9(2)
O4-Cd2-$O10^{D}$	96.7(2)	O3-Cd2-$O10^{D}$	81.1(2)	O5-Cd2-$O6^{D}$	85.0(2)
O4-Cd2-$O6^{D}$	106.0(2)	O3-Cd2-$O6^{D}$	132.29(19)	$O10^{D}$-Cd2-$O6^{D}$	54.5(2)
O5-Cd2-O6	89.50(19)	O4-Cd2-O6	74.1(2)	O3-Cd2-O6	158.34(19)
$O10^{D}$-Cd2-O6	118.0(2)	$O6^{D}$-Cd2-O6	69.3(2)	$O13^{B}$-Cd3-$O7^{B}$	129.2(2)
$O7^{B}$-Cd3-$O5^{B}$	117.1(2)	$O13^{B}$-Cd3-O2	77.6(2)	O7-Cd3-O2	124.71(19)
O5-Cd3-$O2^{B}$	106.6(2)	O13-Cd3-$O7^{B}$	152.4(2)	O7-Cd3-$O7^{B}$	77.1(2)
O5-Cd3-O^{B}	79.19(18)	$O2^{B}$ -Cd3-$O7^{B}$	79.67(19)	$O1^{B}$-Cd4-O5	107.92(2)
$O1^{B}$-Cd4-$O15^{B}$	118.2(2)	O5-Cd4-$O15^{B}$	91.2(2)	$O1^{B}$-Cd4-$O9^{D}$	92.9(2)
O5-Cd4-$O9^{D}$	158.8(2)	$O15^{B}$-Cd4-$O9^{D}$	82.3(2)	$O1^{B}$-Cd4-$O4^{D}$	96.74(2)
O5-Cd4-$O4^{D}$	117.30(19)	$O15^{B}$-Cd4-$O4^{D}$	125.8(2)	$O9^{D}$-Cd4-$O4^{B}$	54.11(19)
Coordination polymer 2					
$O6^{A}$-Zn1-$O7^{A}$	122.64(13)	$O6^{A}$-Zn1-O1	98.53(13)	$O7^{A}$-Zn1-O1	121.58(14)
$O6^{A}$-Zn1-$O3^{B}$	121.50(12)	$O7^{A}$-Zn1-$O3^{B}$	90.17(13)	O1-Zn1-$O3^{B}$	102.31(12)
O11-Zn2-O9	150.94(12	O11-Zn2-O15	97.86(12)	O9-Zn2-O15	111.17(13)
O11-Zn2-$O4^{D}$	88.95(11)	O9-Zn2-$O4^{D}$	90.70(13)	O15-Zn2-$O4^{D}$	92.78(13)
O11-Zn2-O16	95.77(12)	O9-Zn2-O16	85.20(12)	O15-Zn2-O16	86.53(13)
$O4^{D}$-Zn2-O16	175.28(12)	O11-Zn2-N6	75.51(11)	O9-Zn2-N6	75.46(12)
O15-Zn2-N6	173.37(12	$O4^{D}$-Zn2-N6	86.99(11)	O16-Zn2-N6	94.24(12)
$O13^{C}$-Zn3-O13	140.52(12)	$O13^{C}$-Zn3-$O14^{C}$	94.84(19)	O13-Zn3-$O14^{C}$	85.53(18)
$O13^{C}$-Zn3-O10	96.1(2)	O13-Zn3-O10	123.3(2)	$O14^{C}$-Zn3-O10	95.17(18)
$O13^{C}$-Zn3-O14	78.72(16)	O13-Zn3-O14	80.82(15)	$O14^{C}$-Zn3-O14	148.66(8)
O10-Zn3-O14	115.91(15)	O12-Na1-O8	80.81(12)	O12-Na1-$O5^{E}$	80.53(12)
O8-Na1-$O5^{E}$	161.34(14)	O12-Na1-$O11^{F}$	95.84(12)	O8-Na1-$O11^{F}$	86.63(11)
$O5^{E}$-Na1-$O11^{F}$	95.34(11)	O12-Na1-$O16^{G}$	165.72(13)	O8-Na1-$O16^{G}$	109.47(12)
$O5^{E}$-Na1-$O16^{G}$	88.90(11)	$O11^{F}$-Na1-$O16^{G}$	94.67(11)		

* Symmetry codes: for **1**: A = -x, -y+1, -z; B = -x, -y+1, -z+1; C = x, y, z-1; D = -x+1, -y+1, -z+1; for **2**: A = x+1/2, -y+1/2, -z+1; B = x-1/2, -y+1/2, -z+1; C = -x+2, -y+1, -z-1; D = -x+3/2, y+1/2, z; E = -x+1/2, y+1/2, z; F = x-1/2, y, -z+3/2; G = x-1, y, z.