**Supporting Information**

A fluorescent Cd(II) based 2D coordination polymer for highly selective detection of nitroaromatics and Hg2+

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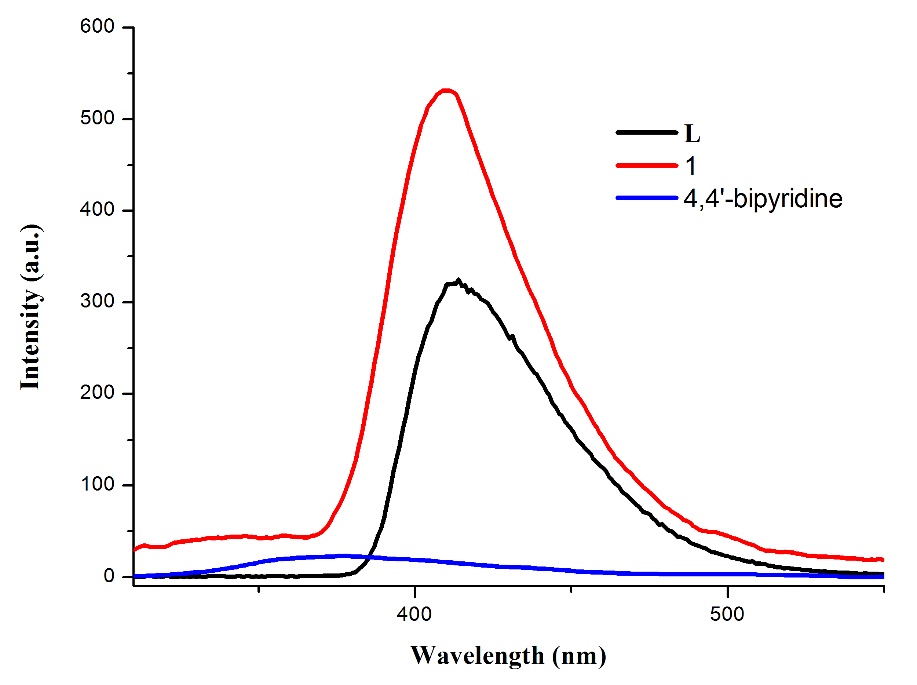


Figure S1. View of luminescent spectra for H2L, 4,4’-bipy and **1** at room temperature.

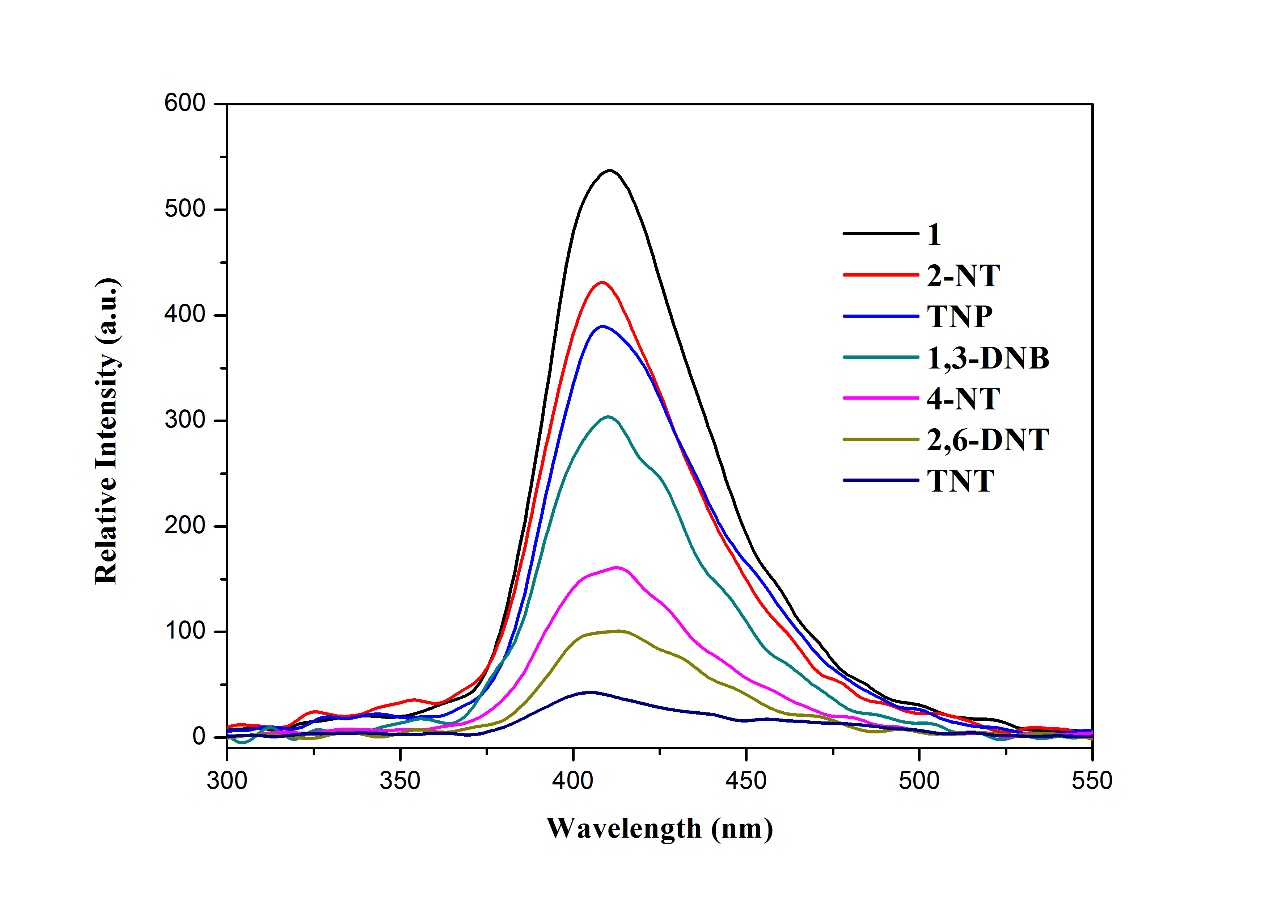


Figure S2. View of luminescent spectra for different NACs in **1** (λex = 290 nm).

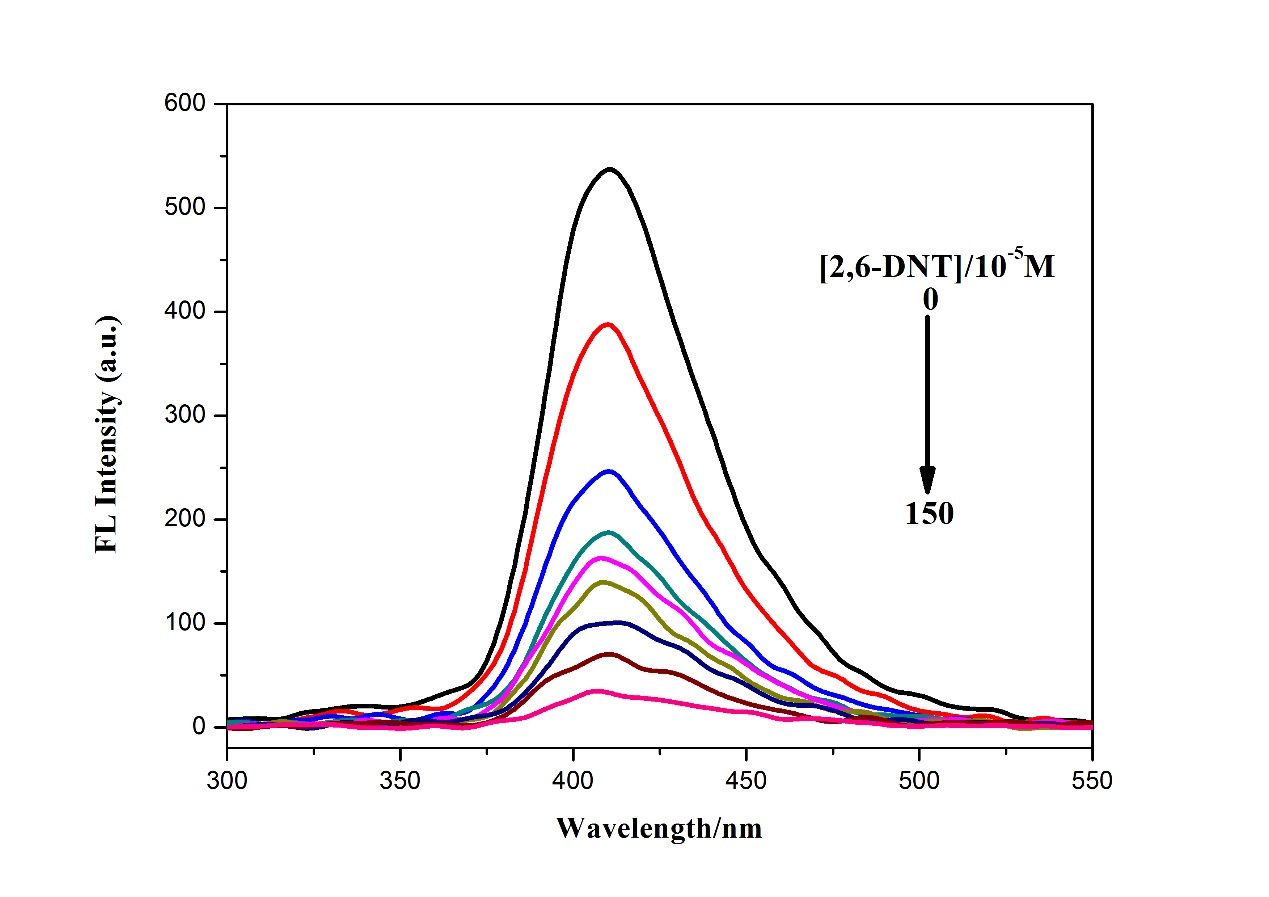


Figure S3. Fluorescence response of **1** to 2,6-DNT in DMF (λex = 290 nm).

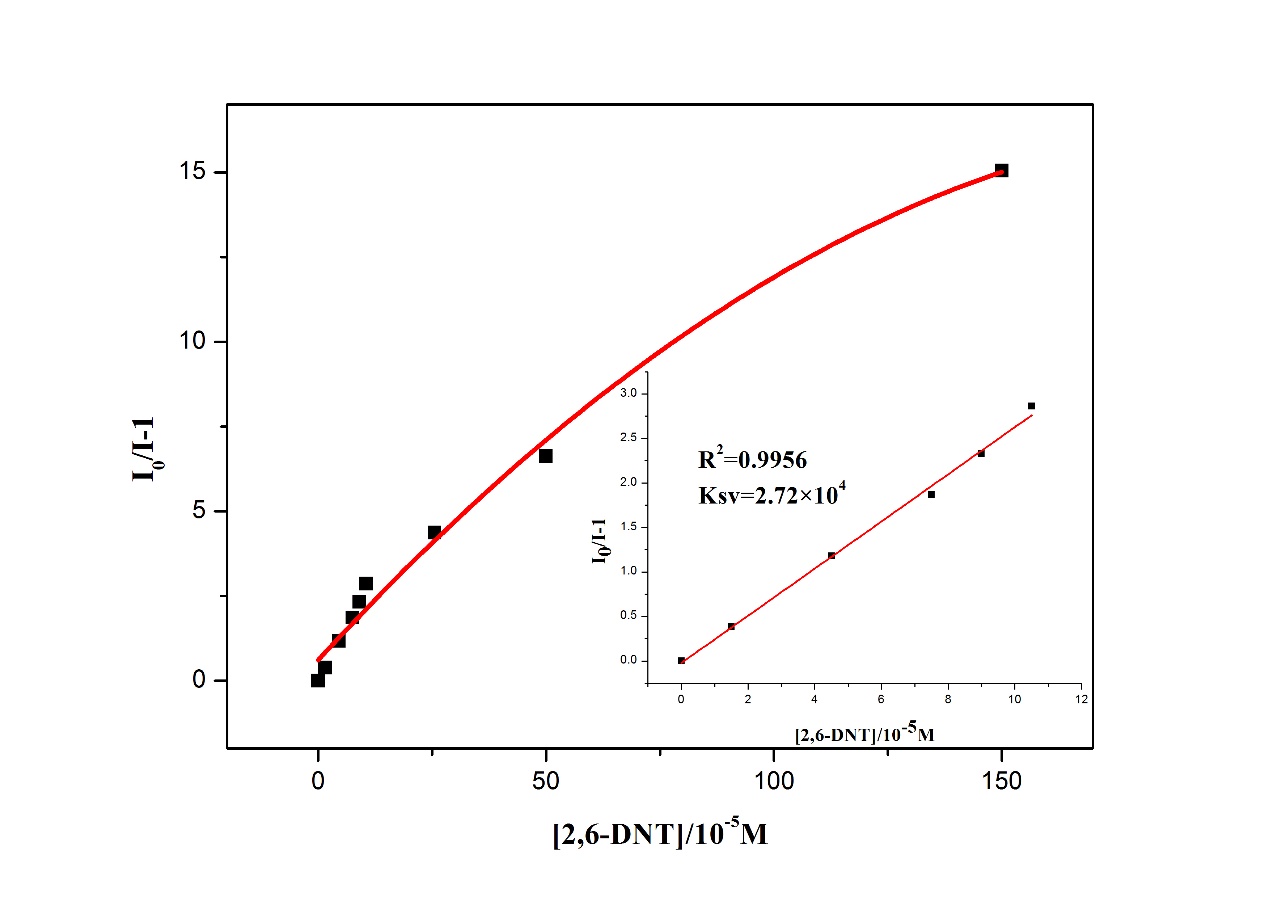
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Figure S4. Views of Stern–Volmer plots for 2,6-DNT.

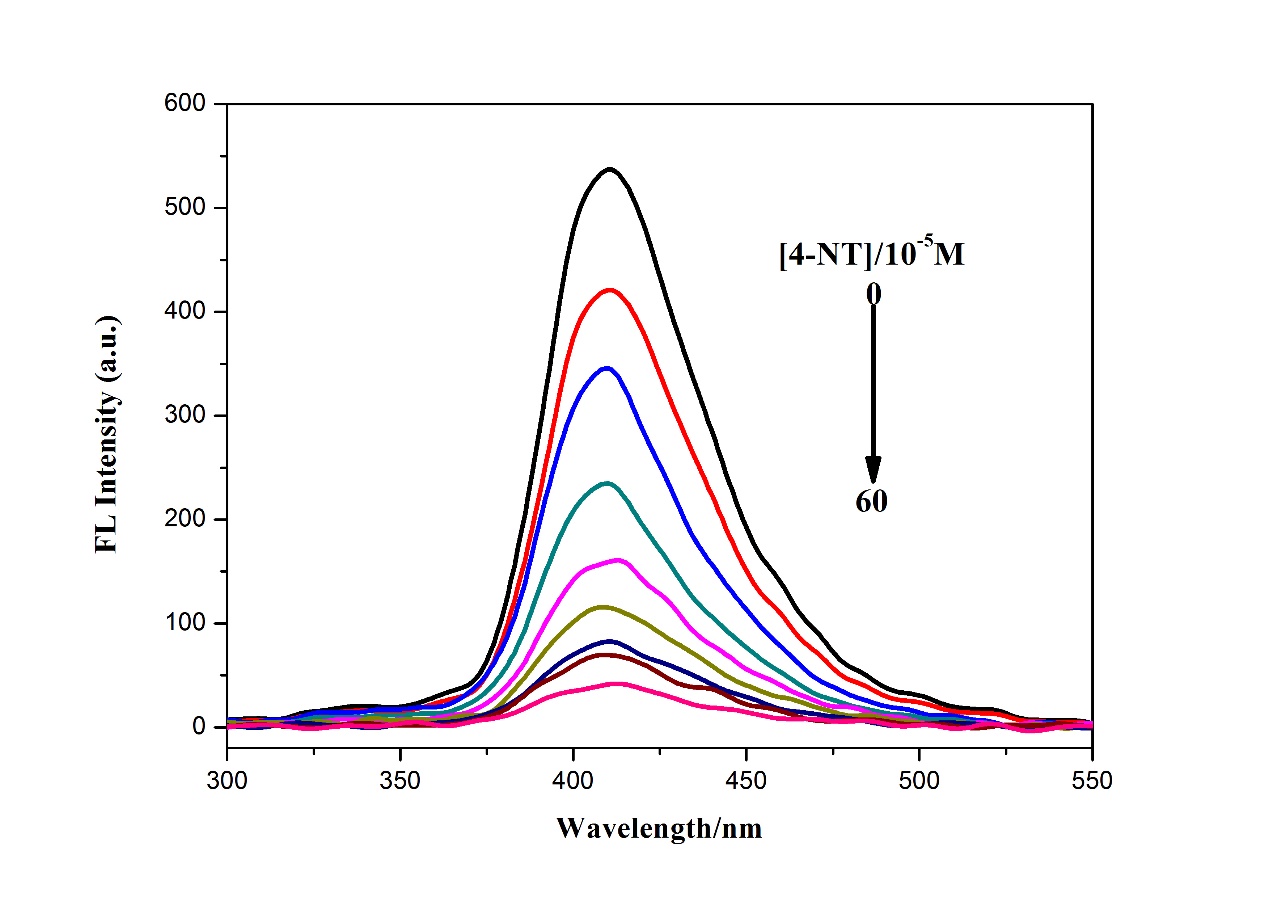


Figure S5. Fluorescence response of **1** to 4-NT in DMF (λex = 290 nm).

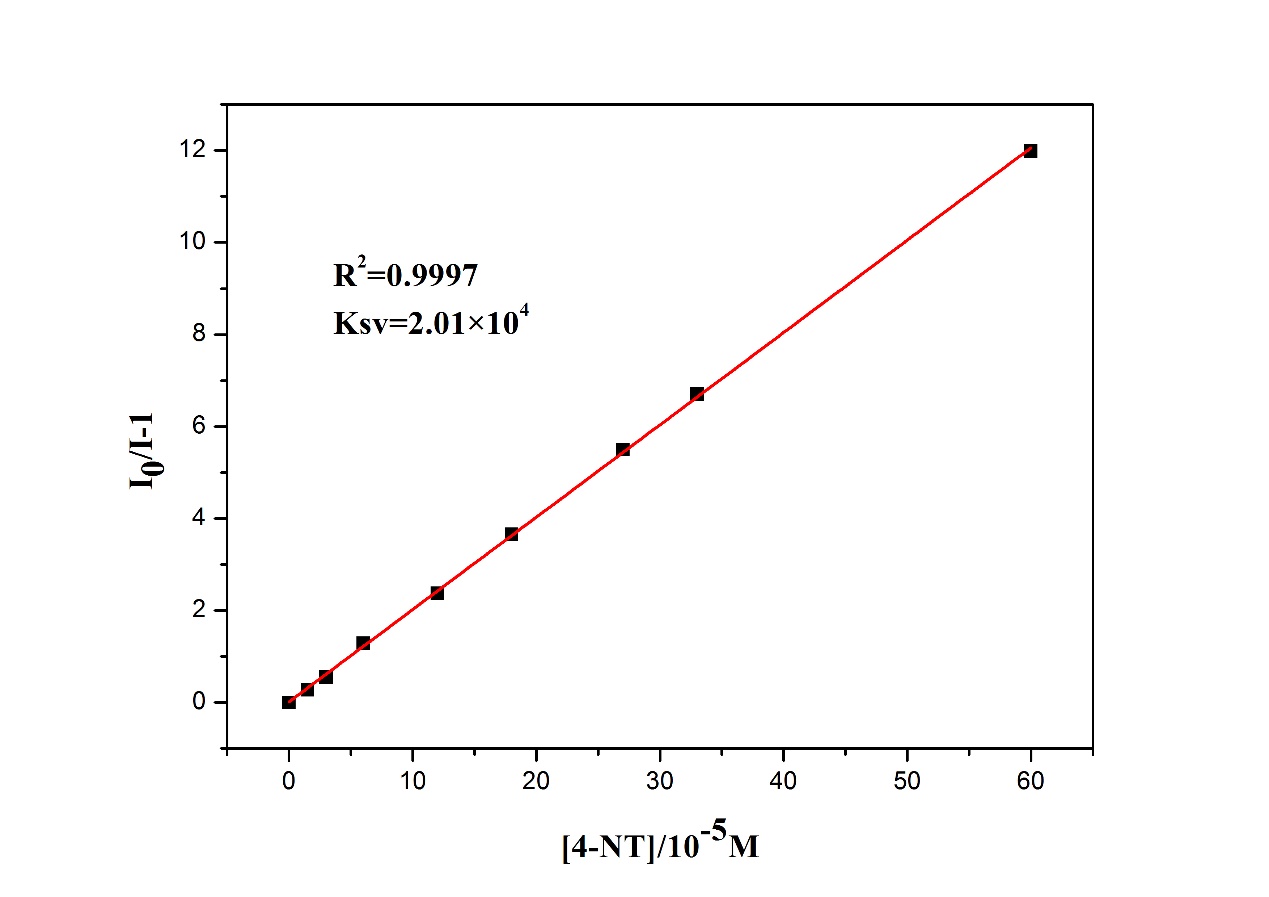


Figure S6. Views of Stern–Volmer plots for 4-NT.

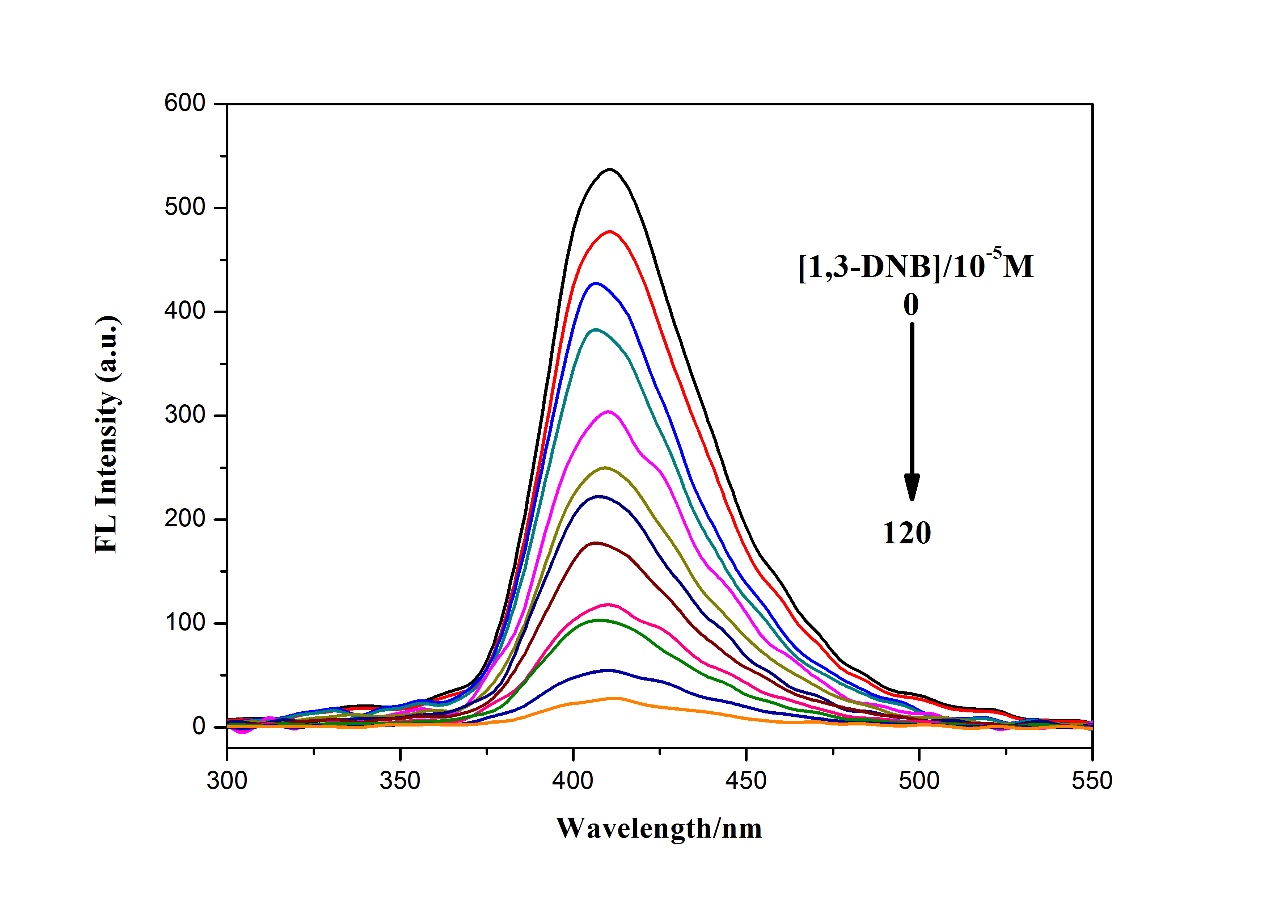


Figure S7. Fluorescence response of **1** to 1,3-DNB in DMF (λex = 290 nm).

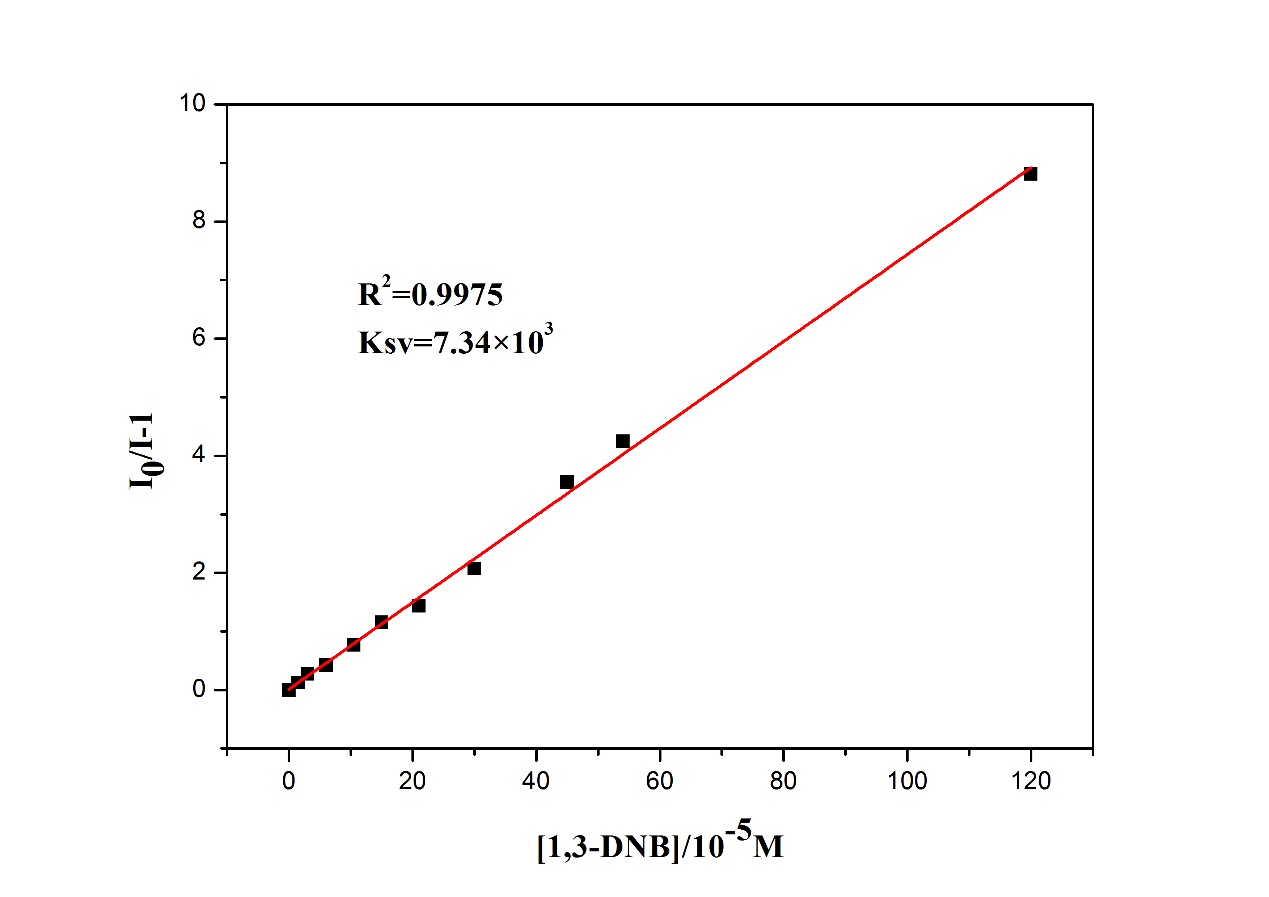


Figure S8. Views of Stern–Volmer plots for 1,3-DNB.

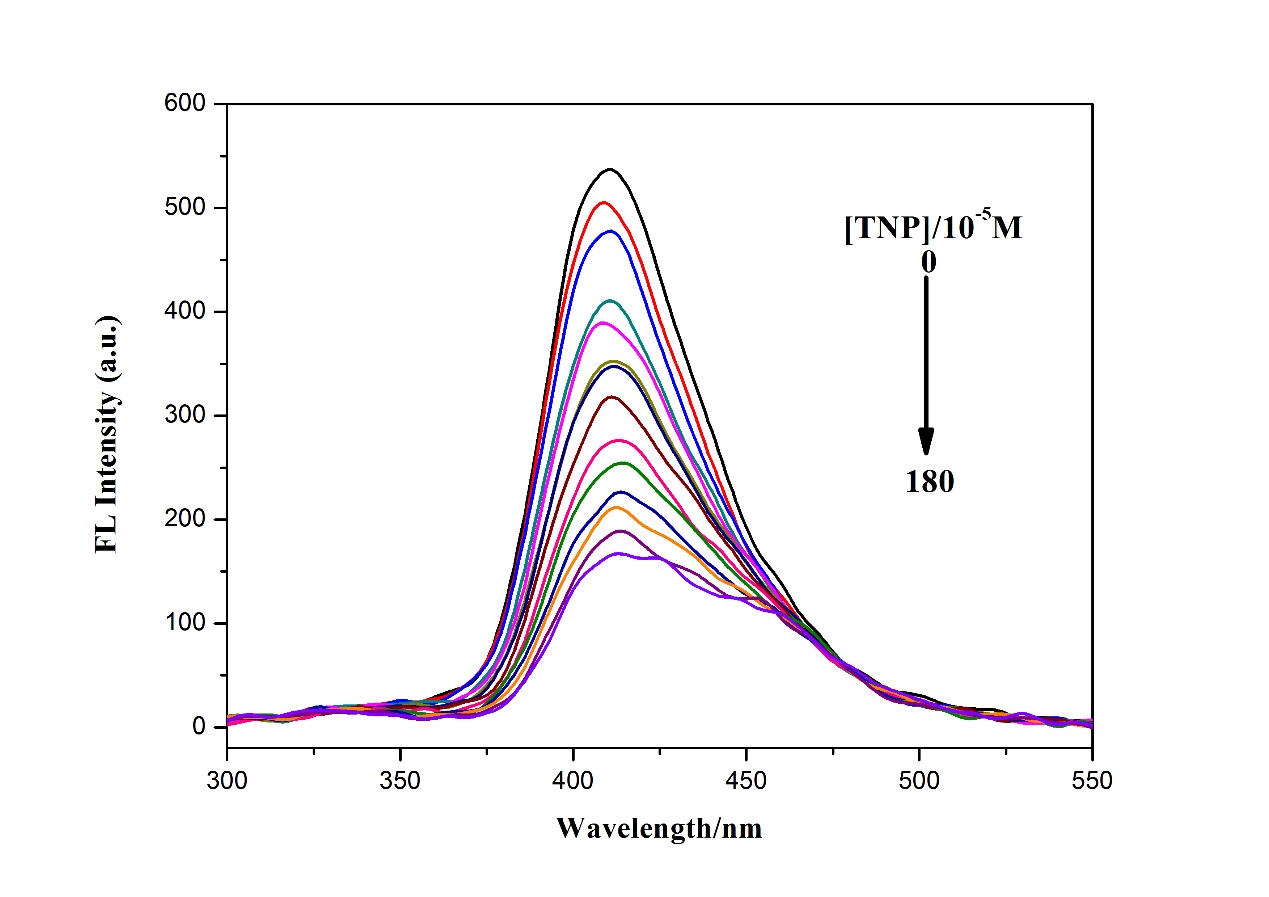


Figure S9. Fluorescence response of **1** to TNP in DMF (λex = 290 nm).

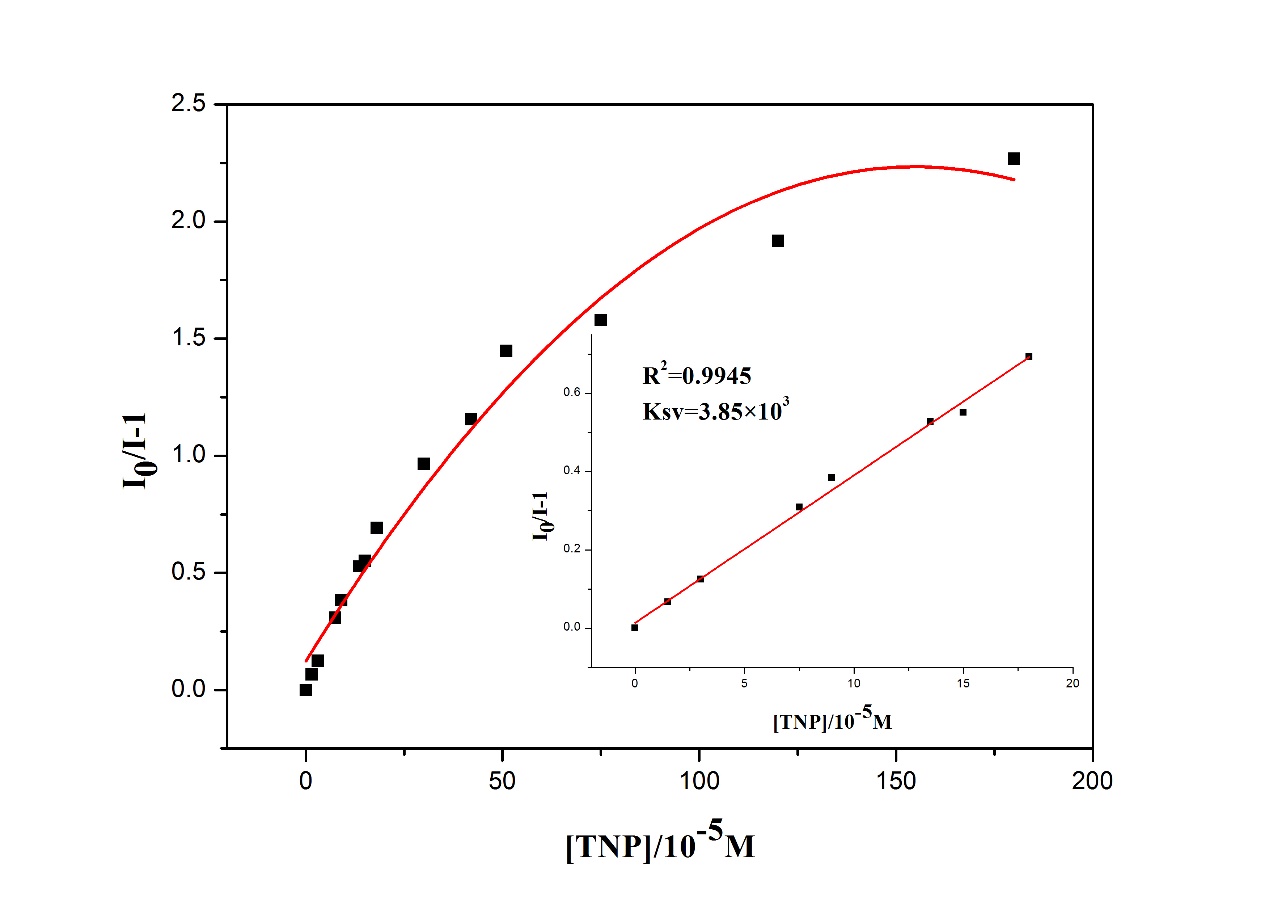


Figure S10. Views of Stern–Volmer plots for TNP.

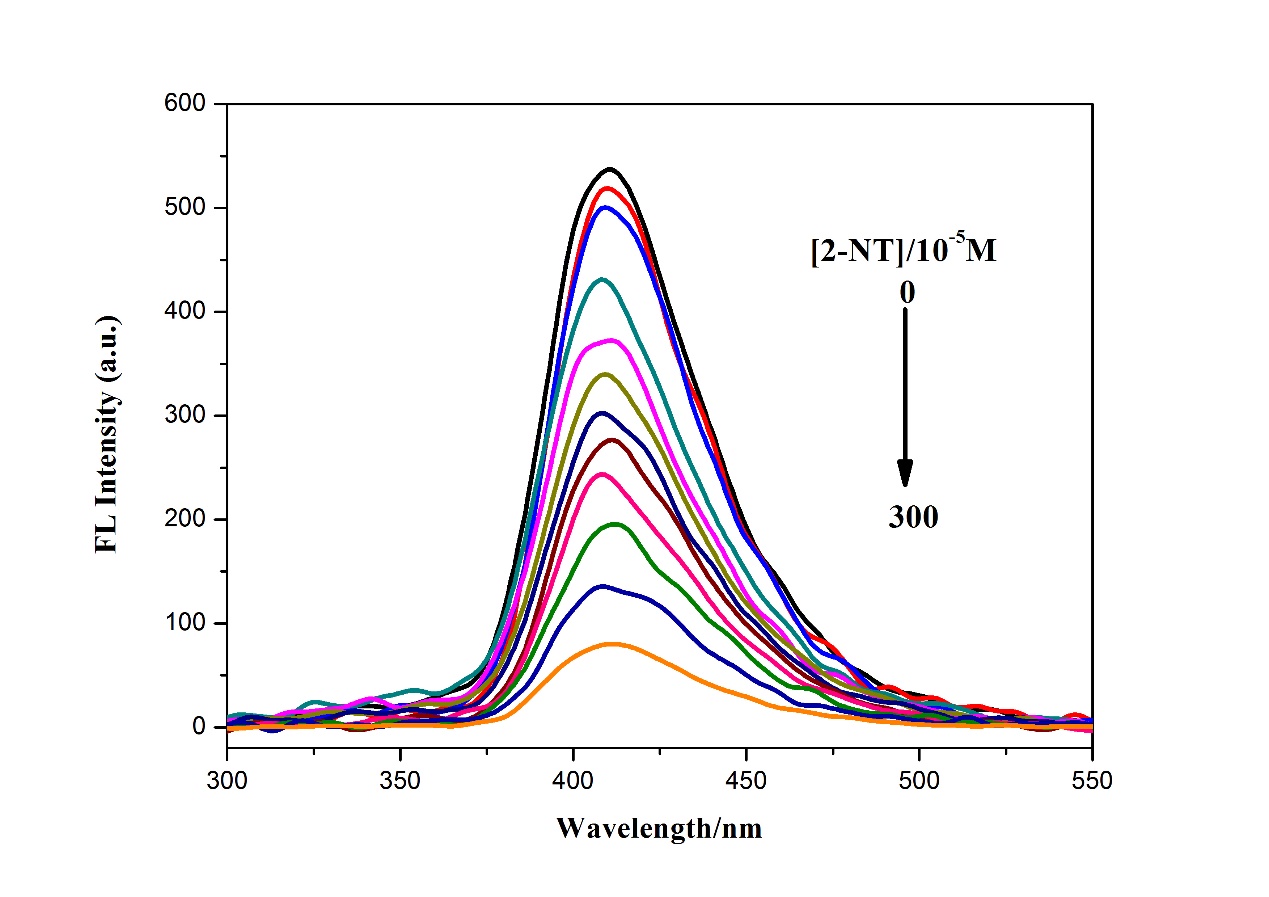


Figure S11. Fluorescence response of **1** to 2-NT in DMF (λex = 290 nm).

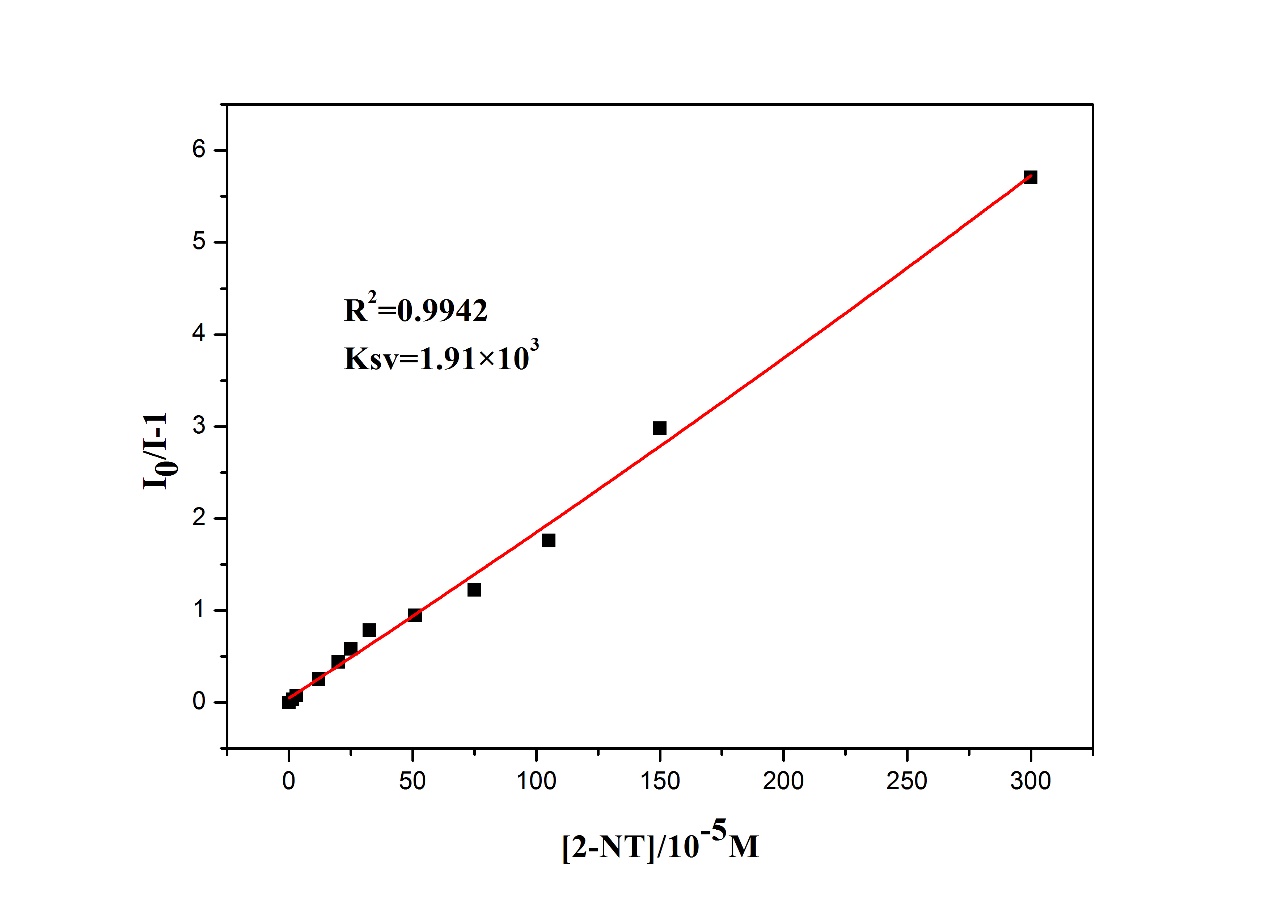


Figure S12. Views of Stern–Volmer plots for 2-NT.

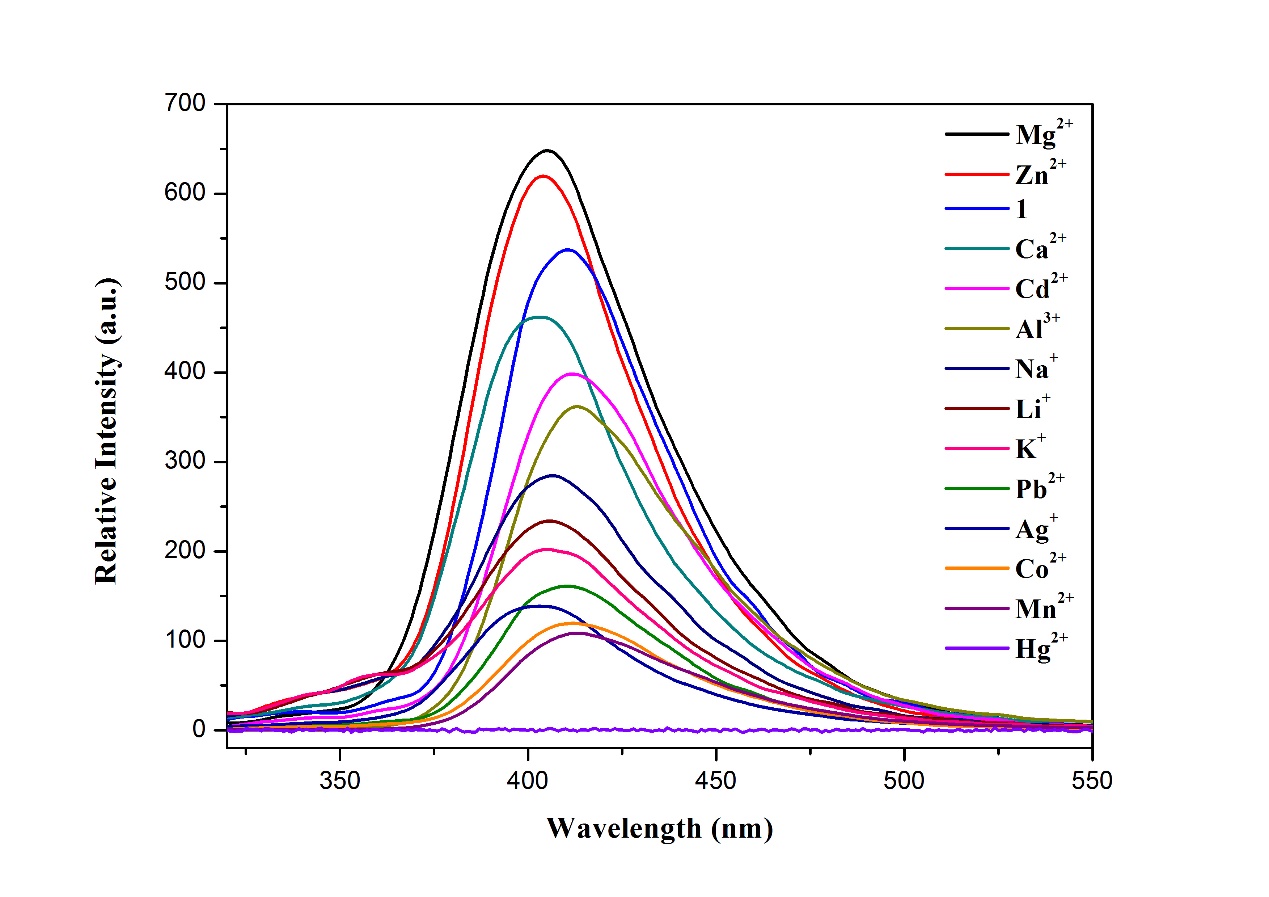


Figure S13. View of luminescent spectra for different metal ions in **1** (λex = 290 nm).

**Thermal analysis**

The thermal stabilities of crystalline samples of **1** were measured under a nitrogen atmosphere. **1** has a two-step weight-loss process. The weight loss of 14.1% (calcd 13.7%) in the first step from 35 to 255 °C corresponds to the removal of one coordinated water and seven free water molecules. The second weight loss occurred in a temperature range from 305 to 575 °C, respectively, corresponding to the decomposition of the organic ligands (obsd: 64.8%; calcd: 65.1%). The remaining residue is attributed to the generation of CdO (obsd 22.8%, calcd 24.3%).

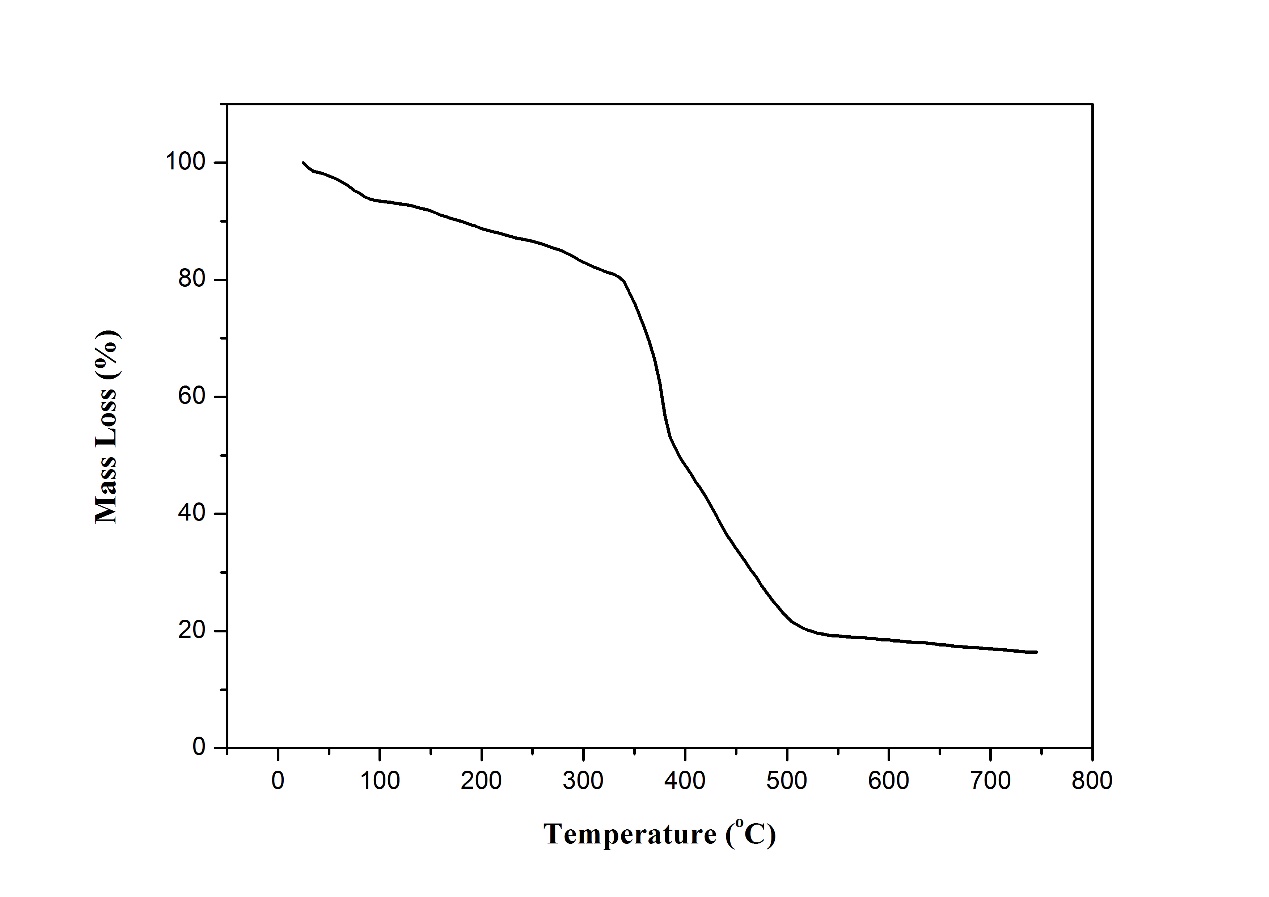


Figure S14. View of TGA in **1**.

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| F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\mDNB HOMO.tif  HOMO 1,3-DNB | F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\mDNB LUMO.tif  LUMO 1,3-DNB |
| F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\NB HOMO.tif  HOMO NB | F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\NB LUMO.tif  LUMO NB |
| F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\oDNT HOMO.tif  HOMO 2,6-DNT | F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\oDNT LUMO.tif  LUMO 2,6-DNT |
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| F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\pDNT HOMO.tif  HOMO 2,4-DNT | F:\E Drive\Lee\Lee Jan 2017\MS Lee Nov 2016\Nitroaromatics\pDNT LUMO.tif  LUMO 2,4-DNT |
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Figure S15. HOMO–LUMO energies of the NACs along with **1**.

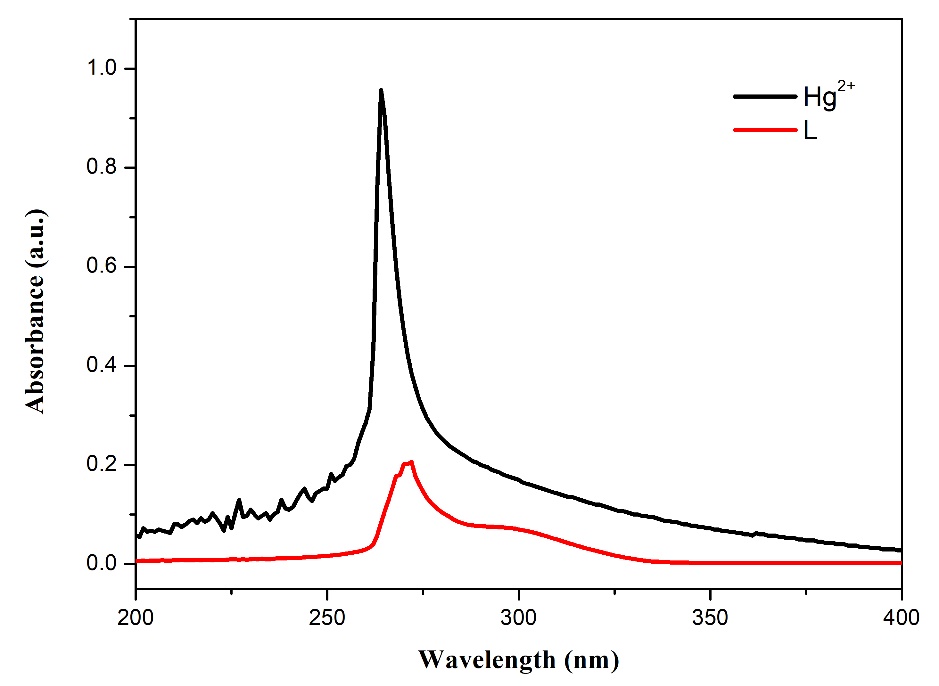


Figure S16. View of UV-vis spectra of H2L and Hg2+.

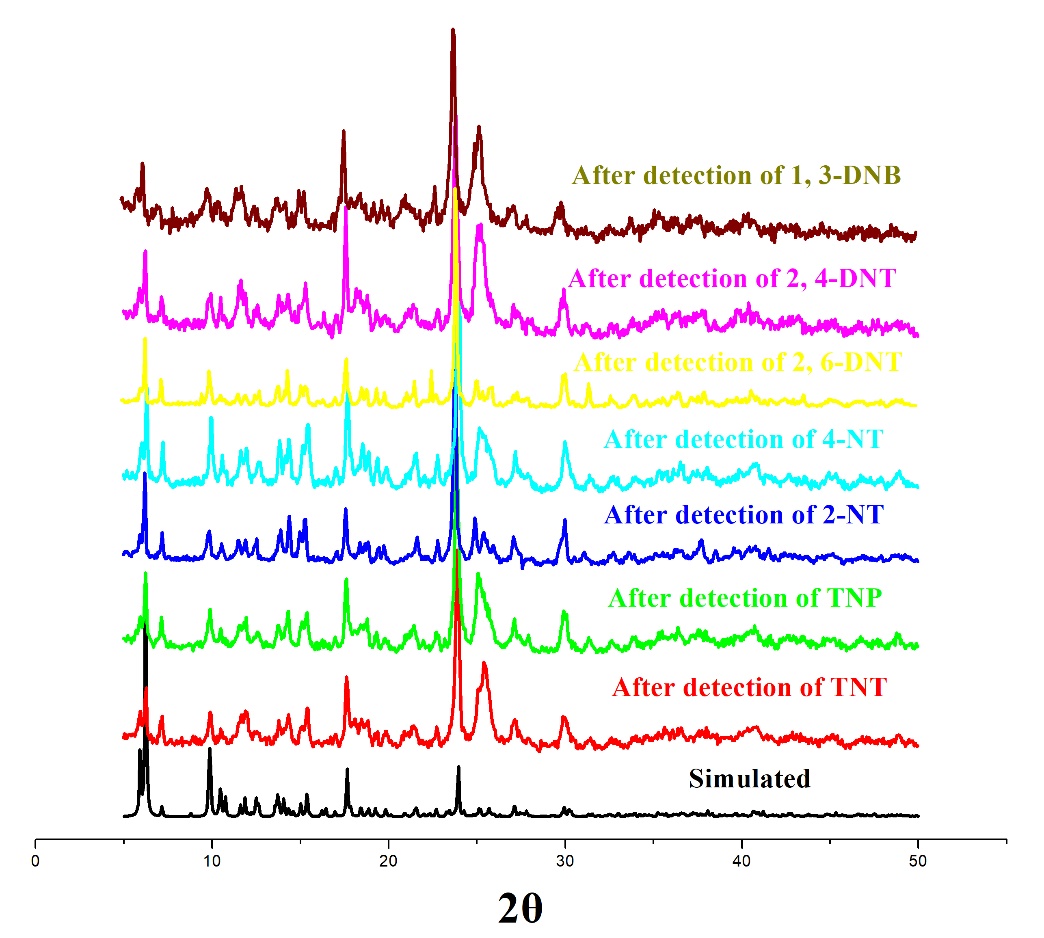


Figure S17. View of the PXRD pattern of **1** after detection of different explosives.

Table S1. LOD and Ksv values of **1** for analytes.

|  |  |  |
| --- | --- | --- |
| **Analytes** | **LOD** | **Ksv(M-1)** |
| Hg2+ | 6.16×10-8 mol/L | 8.19×105 |
| TNT | 5.68×10-7 mol/L | 8.89×104 |
| TNP | 1.31×10-5 mol/L | 3.85×103 |
| 4-NT | 2.40×10-6 mol/L | 2.01×104 |
| 2-NT | 2.64×10-5 mol/L | 1.91×103 |
| 2,6-DNT | 1.86×10-6 mol/L | 2.72×104 |
| 1,3-DNB | 6.88×10-6 mol/L | 7.34×103 |

Table S2. Comparison of the detective sensitivity in various Hg2+ sensors.

|  |  |  |
| --- | --- | --- |
| **Material** | **Sensitivity** | **Reference** |
| Et4N[Co(L)2] | 1×10-5 M | 1 |
| Zn2(dbtdcO2)2(tppe) | 3.33×10-9 M | 2 |
| PCN-224 | 6×10-9 M | 3 |
| {[Cd1.5(C18H10O10)]·(H3O)(H2O)3}n | 2×10-9 M | 4 |
| COF-LZU8 | 25×10-9 M | 5 |
| [Cd(2NH2bdc)(tib)·4H2O·0.5DMA]*n* | 4×10-8 M | 6 |
| ZIF-60 | 3×10-9 M | 7 |
| 2,9-DMP | 40×10-9 M | 8 |
| **1** | 6.16×10-8 M | This work |

**References**

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