Electronic Supplementary Material (ESI) for Dalton Transactions.


# Supporting Information

## Two Luminescent Coordination Polymers as Highly Selective and Sensitive Chemosensors for $Cr^{VI}$-Anions in Aqueous Medium

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**Table S1** Crystal data and structure refinement results for compound **1** and **2**.

| | **1** | **2** |
|---|---|---|
| Empirical formula | $C_{20}H_{20}Cd_2N_6O_{13}$ | $C_{20}H_{20}Zn_2N_6O_{13}$ |
| Formula weight | 777.22 | 683.16 |
| Temperature/K | 298 | 298 |
| Crystal system | monoclinic | monoclinic |
| Space group | *I*2/*a* | *I*2/*a* |
| a/Å | 17.0062(5) | 16.3819(2) |
| b/Å | 10.9658(3) | 10.7728(2) |
| c/Å | 13.4337(4) | 13.4974(2) |
| α/° | 90 | 90 |
| β/° | 99.160(3) | 98.2860(10) |
| γ/° | 90 | 90 |
| Volume/Å$^3$ | 2473.26(13) | 2357.14(6) |
| Z | 4 | 4 |
| Goodness-of-fit on $F^2$ | 1.062 | 1.041 |
| Final R indexes [I>=2σ(I)] | $R_1$ = 0.0260, $wR_2$ = 0.0682 | $R_1$ = 0.0285, $wR_2$ = 0.0759 |
| Final R indexes [all data] | $R_1$ = 0.0281, $wR_2$ = 0.0694 | $R_1$ = 0.0301, $wR_2$ = 0.0770 |

**Table S2** Selected bond lengths (Å) of **1** and **2**

| **1** | | | **2** | | |
|---|---|---|---|---|---|
| Cd1 | O1$^{\#1}$ | 2.448(2) | Zn1 | O1$^{\#1}$ | 2.2998(18) |
| Cd1 | O2$^{\#1}$ | 2.287(2) | Zn1 | O2$^{\#1}$ | 2.1342(17) |
| Cd1 | O3 | 2.163(2) | Zn1 | O4 | 1.9823(16) |
| Cd1 | O5 | 2.373(3) | Zn1 | O5 | 2.163(2) |
| Cd1 | O6 | 2.364(3) | Zn1 | O6 | 2.1618(18) |
| Cd1 | N3$^{\#2}$ | 2.286(3) | Zn1 | N3$^{\#2}$ | 2.0950(19) |
| $^{\#1}$ 1/2+X,2-Y,+Z; $^{\#2}$ +X,1+Y,+Z | | | $^{\#1}$ -1/2+X,-Y,+Z; $^{\#2}$ +X,-1+Y,+Z | | |

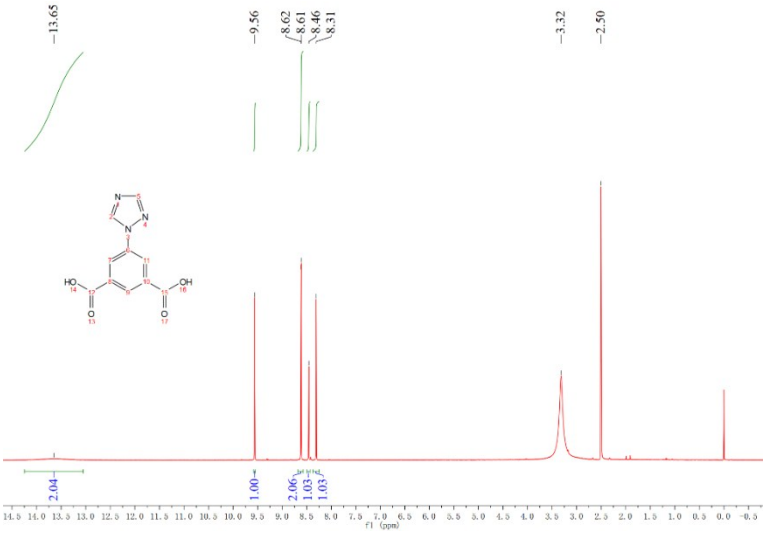



**Fig. S1** $^1$H-NMR spectrum of ligand $H_2L$ (DMSO-$d_6$).

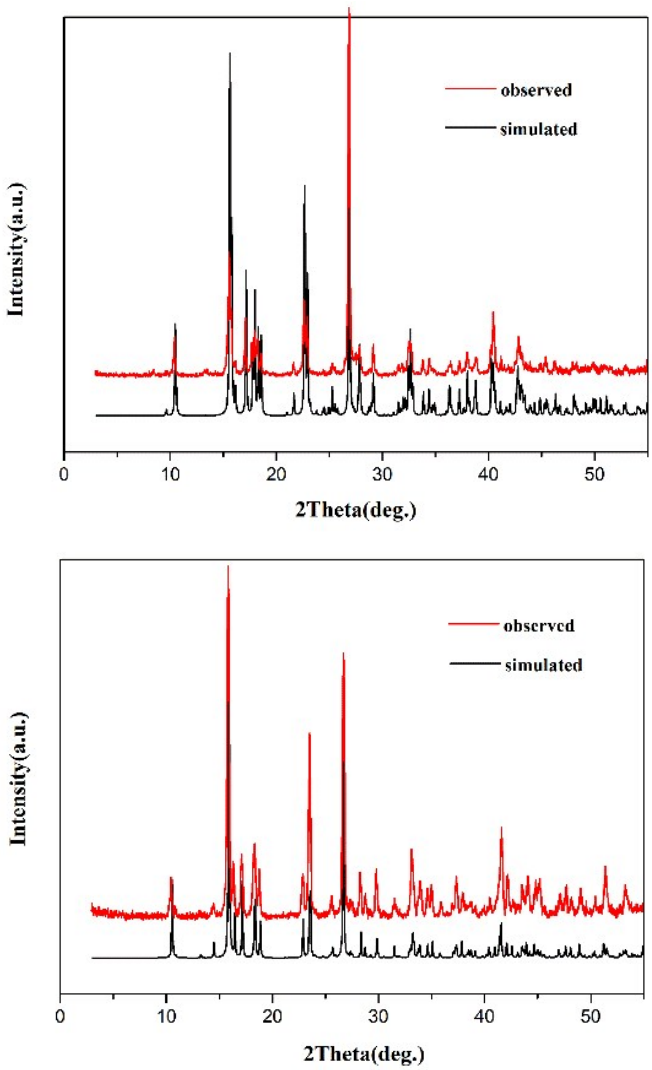



**Fig. S2** PXRD patterns of **1** and **2**.

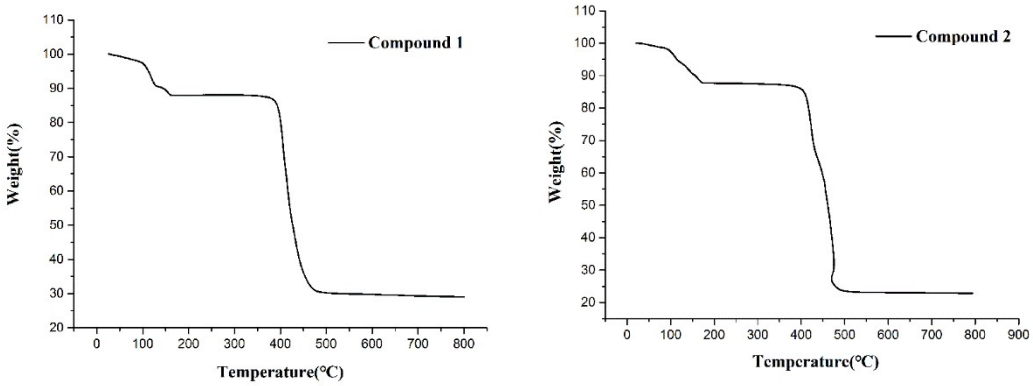



**Fig. S3** Thermogravimetric analyses (TGA) profiles of **1** and **2**.

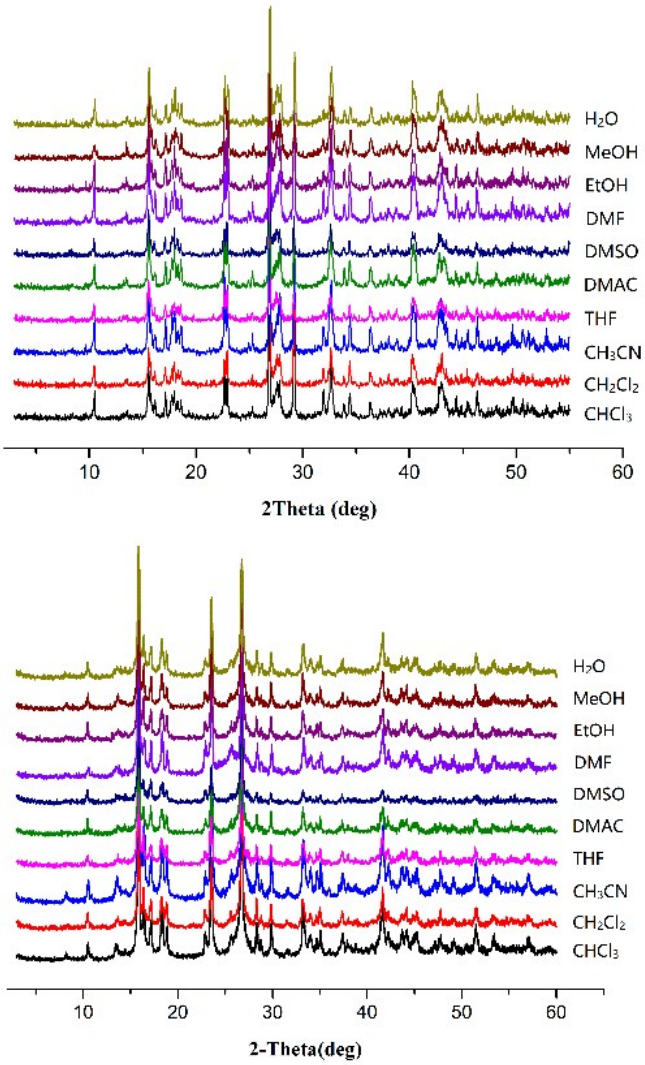



**Fig. S4** PXRD patterns of **1** and **2** immersed in various solvents after 60 h.

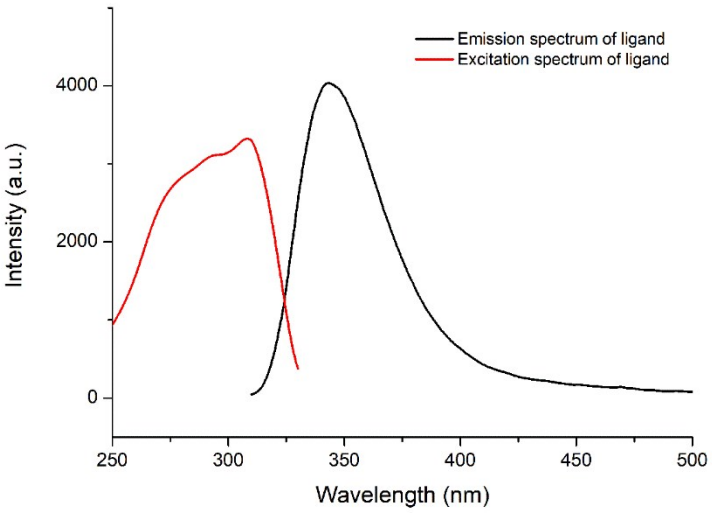
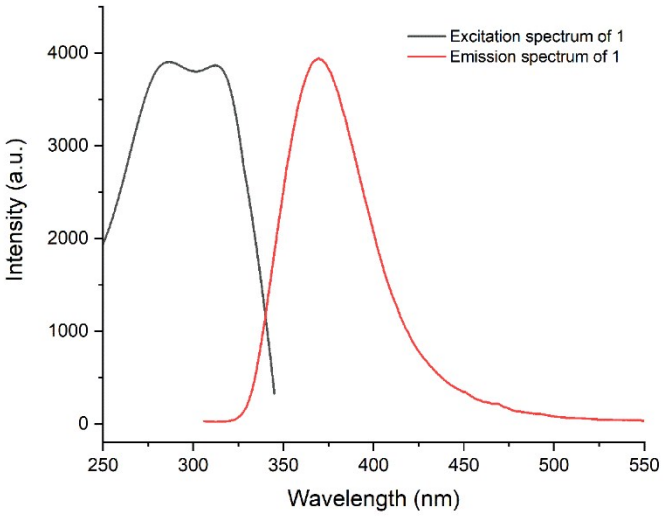



**Fig. S5** Excitation and emission spectra of $H_2L$ in solid state.



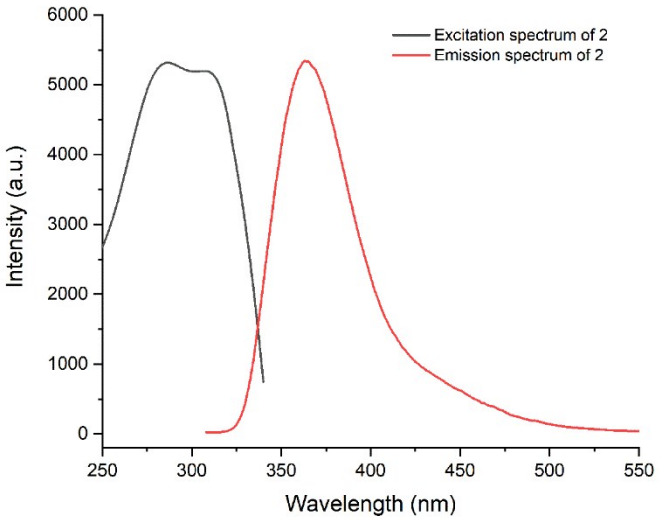




**Fig. S6** Excitation and emission spectra of **1** and **2** in solid-state.

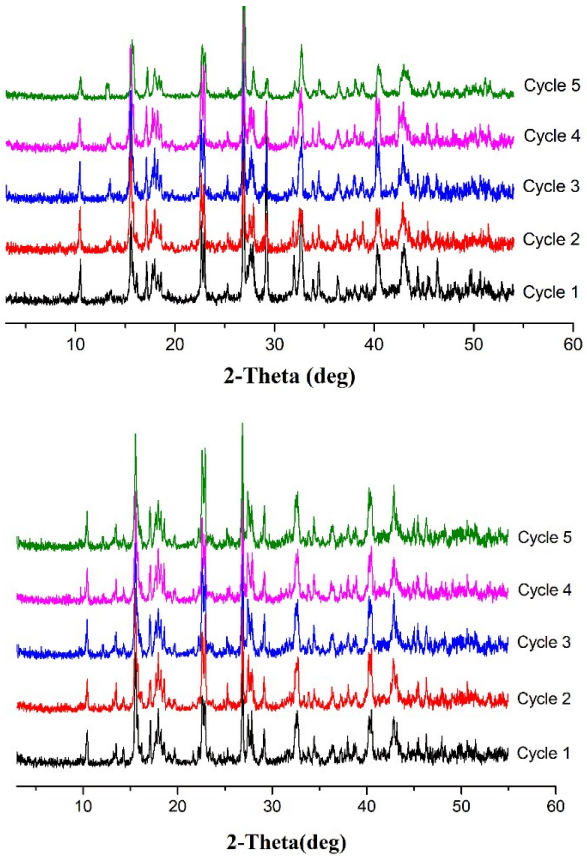



**Fig. S7** PXRD patterns of **1** toward $Cr_2O_7^{2-}$ and $CrO_4^{2-}$ after 5 cyclic experiments.

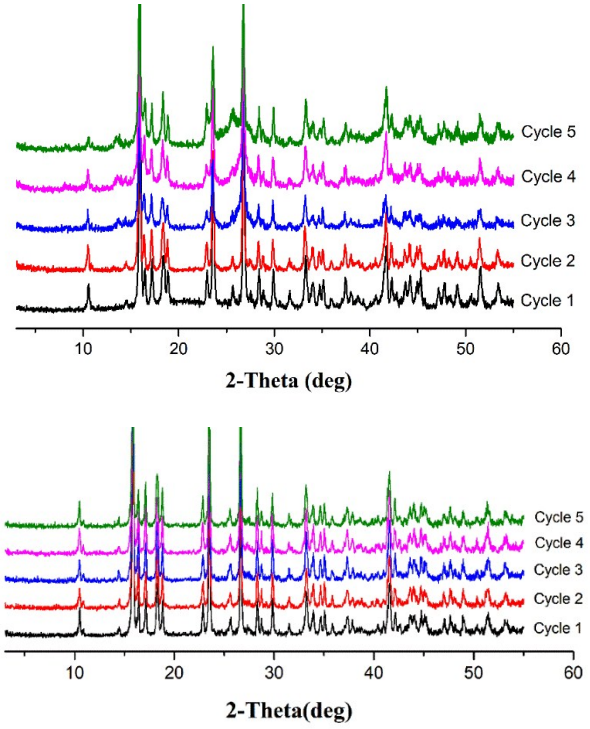



**Fig. S8** PXRD patterns of **2** toward $Cr_2O_7^{2-}$ and $CrO_4^{2-}$ after 5 cyclic experiments.

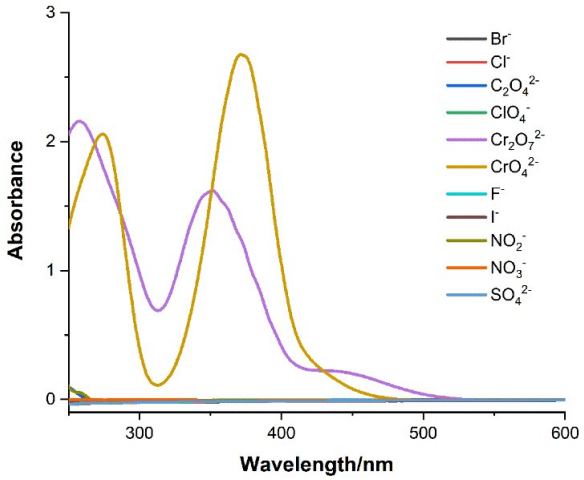



**Fig. S9** UV-Vis spectra of different salts in aqueous solution.

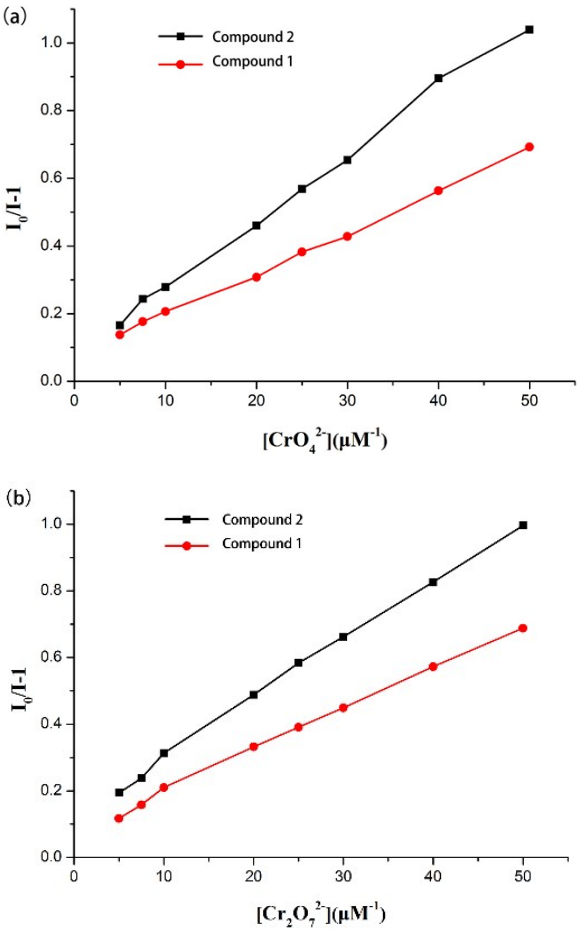



**Fig. S10** Luminescence quenching effect of **1** and **2** towards different concentrations of $CrO_4^{2-}$(a)/$Cr_2O_7^{2-}$(b).

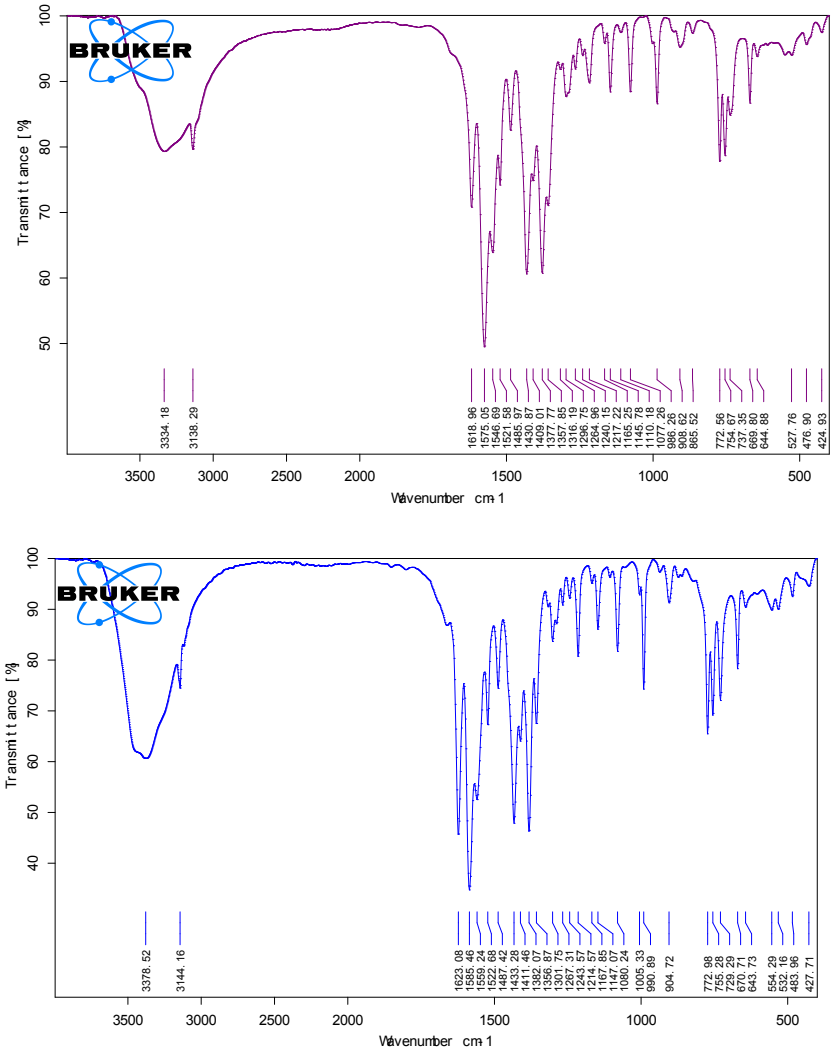






**Fig. S11** IR spectra of **1** and **2**.