Electronic Supplementary Information

Two luminescent lanthanide(III) metal-organic frameworks as chemosensors for high-efficiency recognition of Cr(VI) anions in aqueous solution

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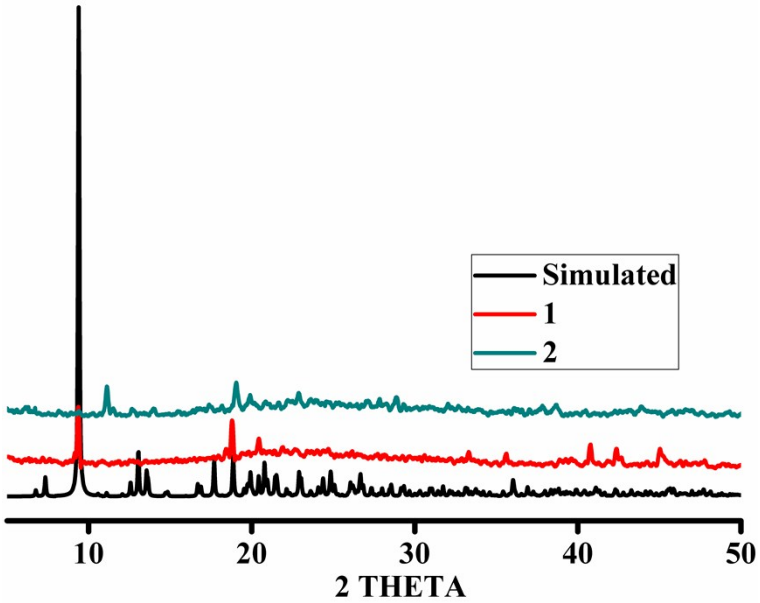

Fig. S1 Comparison of the experimental PXRD patterns of as-synthesized **1** and **2** with that simulated from its single crystal data.

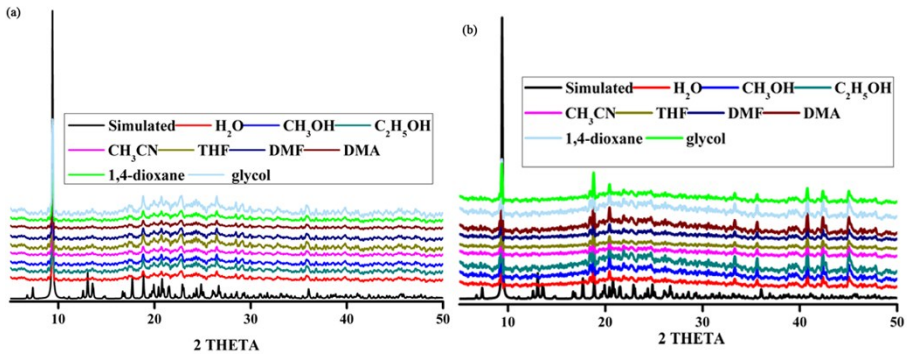

Fig. S2 Comparison of the PXRD patterns of **1** (a) and **2** (b) after soaking in different solvents with that simulated from its single crystal data.

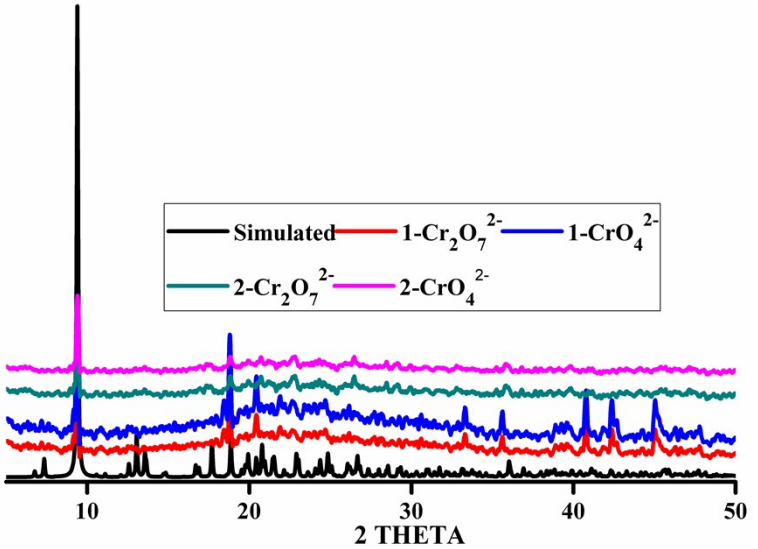

Fig. S3 Comparison of the PXRD patterns of **1** and **2** after soaking in K_2CrO_4 and $K_2Cr_2O_7$ aqueous solutions with that simulated from its single crystal data.

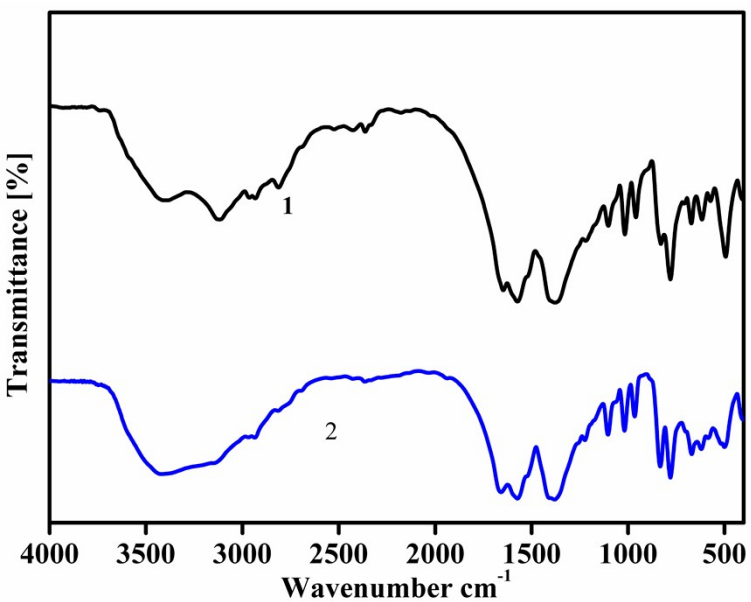

Fig. S4 Infrared spectra of **1** and **2**.

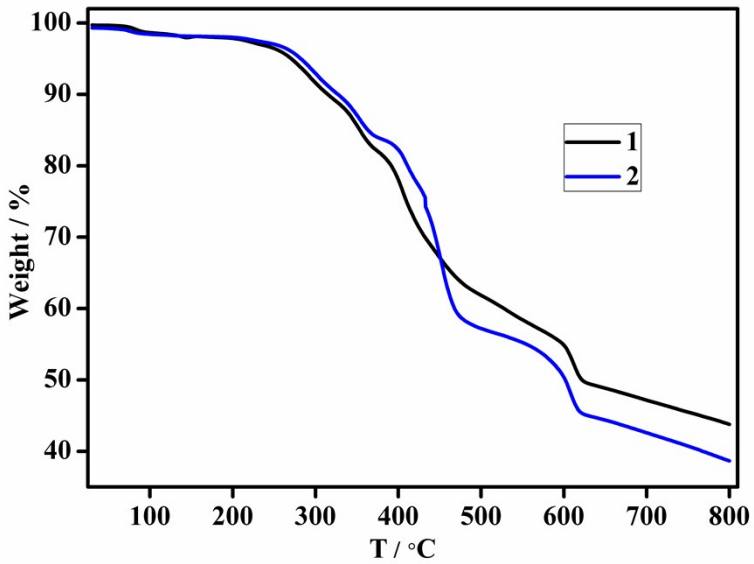

Fig. S5 The thermal gravimetric curves (TGA) of **1** and **2**.

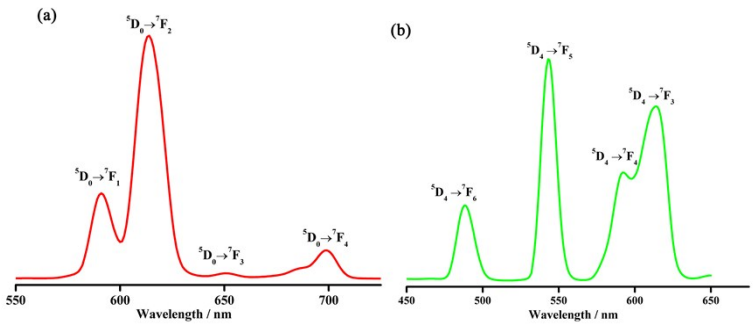

Fig. S6 The solid state emission spectra of **1** and **2.**

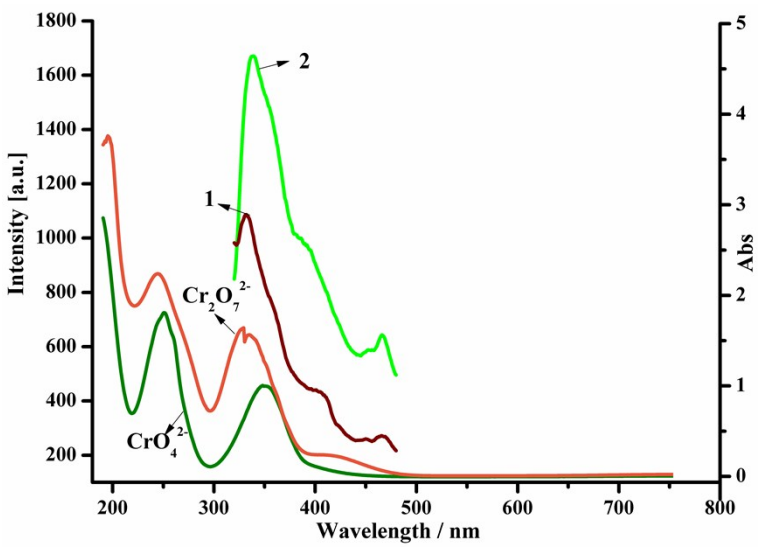

Fig. S7 The UV-vis spectra of the K_2CrO_4 and $K_2Cr_2O_7$ solutions and the excitation spectrum of **1** and **2.**

Table S1. Comparison of luminescent MOFs for sensing $Cr_2O_7^{2-}$ and CrO_4^{2-} in aqueous solution

Name/formula of MOF	K_{sv} (M^{-1}) of $Cr_2O_7^{2-}$/CrO_4^{2-}	LOD (M) of $Cr_2O_7^{2-}$/CrO_4^{2-}	*Ref.*
$\{[(CH_3)_2NH_2]_2[Zn_5(TDA)_4(TZ)_4]\cdot 4DMF\}_n$	6.77×10^3 / 5.84×10^3	7.48×10^{-6} / 1.45×10^{-5}	9
$Eu^{3+}@\{[(CH_3)_2NH_2]_2[Zn_5(TDA)_4(TZ)_4]\cdot 4DMF\}_n$	9.98×10^3 / 1.13×10^4	2.67×10^{-5} / 1.13×10^{-5}	
$Tb^{3+}@\{[(CH_3)_2NH_2]_2[Zn_5(TDA)_4(TZ)_4]\cdot 4DMF\}_n$	2.90×10^3 / 1.01×10^4	8.4×10^{-6} / 1.60×10^{-5}	
$[Y(BTC)(H_2O)_6]_n$:0.1Eu	4.52×10^3 / 1.18×10^3	3.0×10^{-8} / 4.0×10^{-8}	20a
$\{[Zn(DCTP)]\cdot 4.2H_2O\}_n$	-/-	1.5×10^{-6} / 1×10^{-6}	20b
$\{[Zn_3(bpanth)(oba)_3]\cdot 2DMF\}_n$	9.4×10^4 / 1.24×10^5	1.58×10^{-6} / 7.56×10^{-5}	20c
$\{[Zn(IPA)(L)]\}_n$	1.37×10^3 / 1.00×10^3	1.2×10^{-5} / 1.83×10^{-5}	20d
$\{[Cd(IPA)(L)]\}_n$	2.91×10^3 / 1.30×10^3	2.26×10^{-6} / 2.52×10^{-6}	
$\{[Zn_3(tza)_2(\mu_2\text{-}OH)_2(H_2O)_2]\cdot H_2O\}_n$	5.02×10^3 / 3.02×10^3	1.0×10^{-6} / 4×10^{-6}	20e
$[Zn(btz)]_n$	4.23×10^3 / 3.19×10^3	2.0×10^{-6} / 1.0×10^{-5}	20f
$\{[Zn_2(ttz)H_2O]\}_n$	2.19×10^3 / 2.35×10^3	2.0×10^{-5} / 2.0×10^{-5}	
$[Eu(L1)(HCOO)(H_2O)]_n$	2.76×10^3 / 1.54×10^3	1.0×10^{-5} / 1.2×10^{-5}	20g
$[Tb(L1)(HCOO)(H_2O)]_n$	2.13×10^3 / 1.31×10^3	2.1×10^{-5} / 1.8×10^{-5}	
$\{[(CH_3)_2NH_2][Eu_4(FDA)_7(DMF)_2\cdot 0.5DMF]\}_n$	1.25×10^4 / 3.56×10^3	1.14×10^{-4}/1.12×10^{-4}	This
$\{[(CH_3)_2NH_2][Tb_4(FDA)_7(DMF)_2\cdot 0.5DMF]\}_n$	1.46×10^4 / 4.35×10^3	7.42×10^{-5}/1.27×10^{-4}	Work

H_2TDA = thiophene-2,5-dicarboxylic acid; HTZ = 1H-1,2,4-Triazole; H_3BTC =1,3,5-benzenetricarboxylic acid; H_2DCTP = 4'-(3,5-dicarboxyphenyl)-4,2':6',4"-terpyridine; bpanth = 9,10-bis(4-pyridyl)anthracene; H_2oba= 4,4'-oxybis(benzoic acid; H_2IPA = isophthalic acid; L = 3-pyridylcarboxaldehyde nicotinoylhydrazone; H_2tza = 1H-tetrazolate-5-acetic acid; H_2btz = 1,5-bis(5-tetrazolo)-3-oxapentane; H_3ttz = 1,2,3-Tris-[2-(5-tetrazolo)-ethoxy)] propane; H_2L1 = 5-((2'-cyano-[1,1'-biphenyl]-4-yl)methoxy)isophthalic acid; H_2FDA = furan-2,5-dicarboxylic acid