Supporting Information

Figure captions:

Fig. S1 The four neighboring [$Eu_2(COO)_4$] units linked by BDC ligand form the rhombus motif.

Fig. S2 The TGA curves of Sm-CP, Gd-CP, Tb-CP and Dy-CP.

Fig. S3 Emission spectra of the free BDC and IP ligands, the excitation spectrum of free BDC ligand.

Fig. S4 Fluorescence lifetime decay curve of complex **4**.

Fig. S5 Fluorescence lifetime decay curve of complex **2**.

Fig. S6 The luminescence intensity of Eu-CP at 615 nm before (a) and after (b) immersed in water for 7 days.

Fig. S7 PXRD patterns of Eu-CP in solutions with pH= 3, 10 and after immersed in emodin.

Fig. S8 The recycling experiments of Eu-CP after luminescent sensing for emodin.

Fig. S9 The SV plot for the quenching effect of Ag^+ on Eu-CP under 375 and 400 nm(a); the SV plot for the quenching effect of Fe^{3+} on Eu-CP under 375 and 400 nm(b); the SV plot for the quenching effect of MnO_4^- on Eu-CP under 375 and 400 nm (c); the SV plot for the quenching effect of $Cr_2O_7^{2-}$ on Eu-CP under 375 and 400 nm(d); the SV plot for the quenching effect of CrO_4^{2-} on (d) under 375 and 400 nm(e).

Fig. S10 The UV-Vis absorption spectra for Fe^{3+}, MnO_4^-, CrO_4^{2-}, $Cr_2O_7^{2-}$ and the excitation spectrum of Eu-CP.

Table S1 Selected bond lengths [Å] and angles [°] for complexes **1**-**5**.

Table S2 A comparison of the K_{sv} values and the detection limits of Ag^+, Fe^{3+}, MnO_4^-, $Cr_2O_7^{2-}$, CrO_4^{2-} with other reported.

Fig. S1

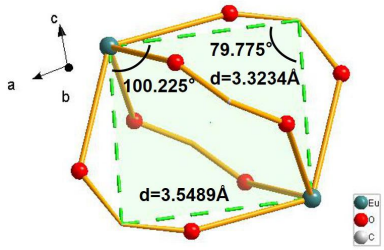


Fig. S2

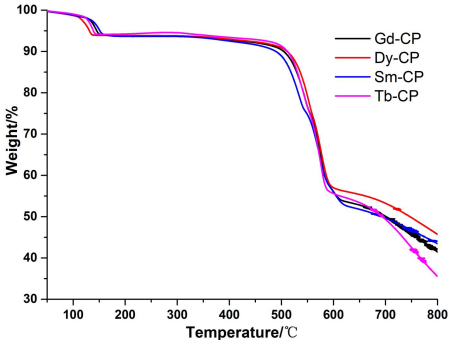


Fig. S3

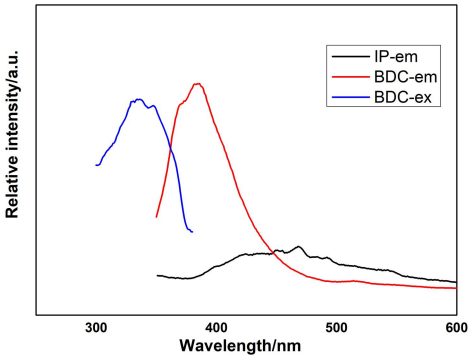


Fig. S4

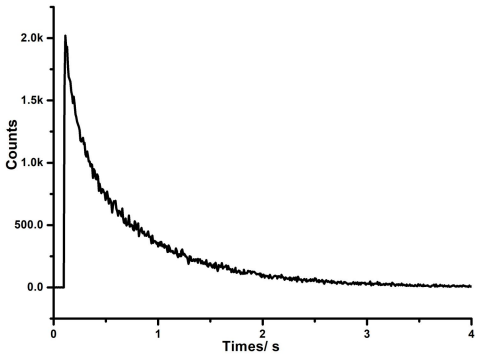


Fig. S5

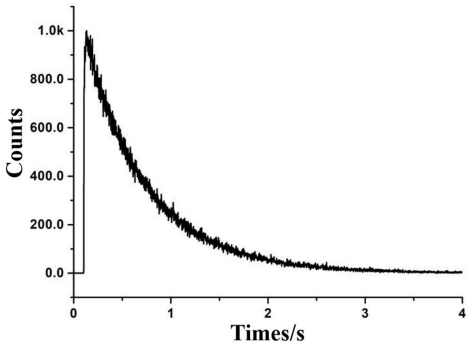


Fig. S6

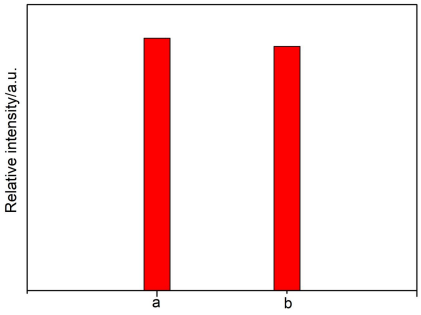


Fig. S7

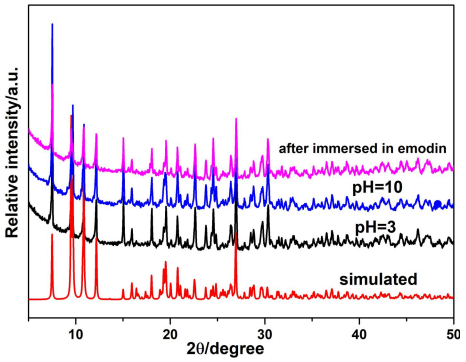


Fig. S8

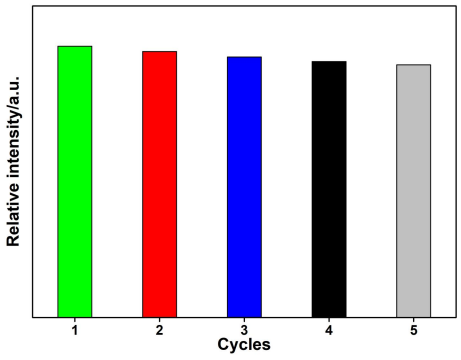
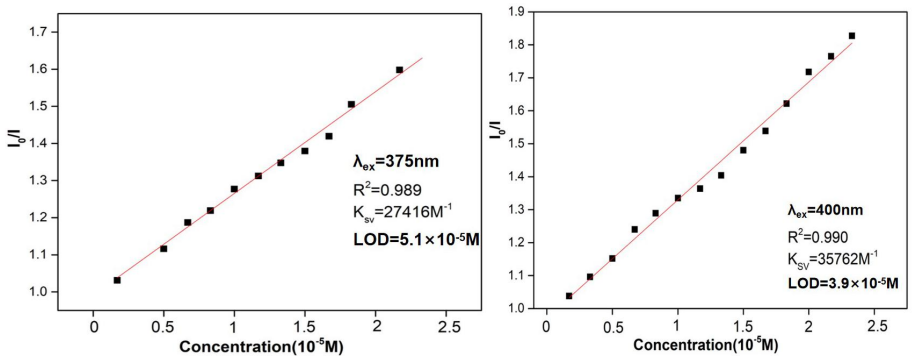


Fig. S9

（a）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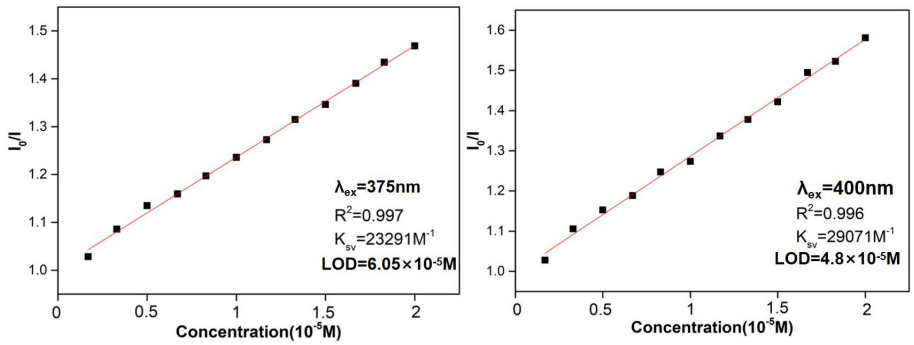
R2=0.989
Ksv=27416M-1
LOD=5.1×10-5M
λex=400nm
R2=0.990
KSV=35762M-1
LOD=3.9×10-5M

（b）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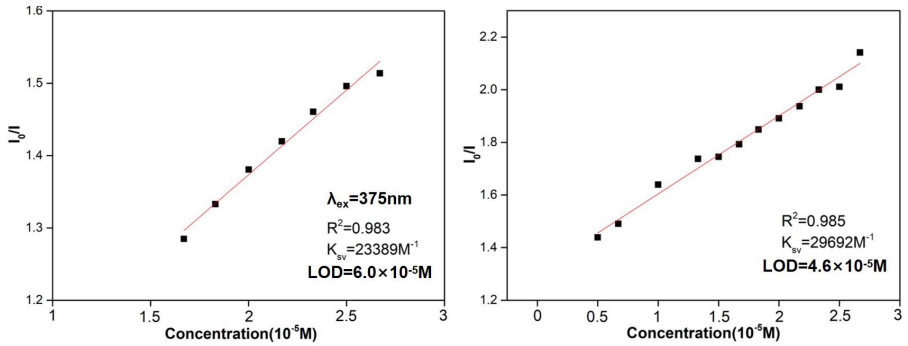
R2=0.997
Ksv=23291M-1
LOD=6.05×10-5M
λex=400nm
R2=0.996
Ksv=29071M-1
LOD=4.8×10-5M

（c）


I0/I
Concentration(10-5M)
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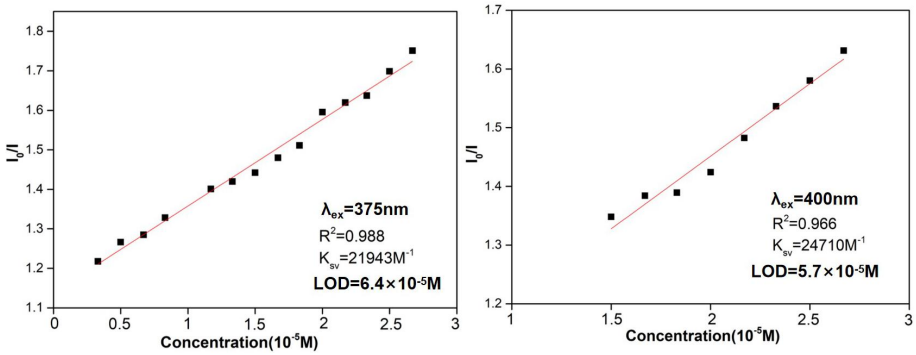
R2=0.983
Ksv=23389M-1
LOD=6.0×10-5M
R2=0.985
Ksv=29692M-1
LOD=4.6×10-5M

（d）


I0/I
Concentration(10-5M)
λex=375nm
R2=0.988
Ksv=21943M-1
LOD=6.4×10-5M
λex=400nm
R2=0.966
Ksv=24710M-1
LOD=5.7×10-5M

（e）

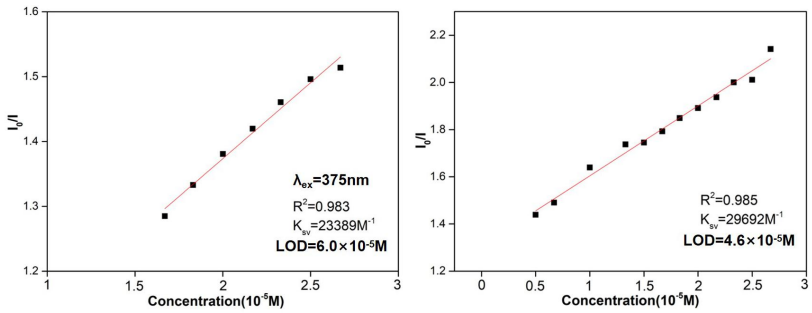


Fig. S10

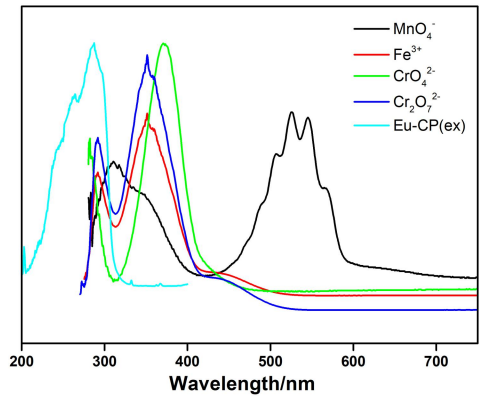


Table S1

			1		
Sm(1)	O(3)[1]	2.353(3)	Sm(1)	O(1)	2.354(3)
Sm(1)	O(4)[2]	2.391(3)	Sm(1)	O(6)	2.363(3)
Sm(1)	O(7)[3]	2.407(3)	Sm(1)	O(5)	2.512(3)
Sm(1)	N(1)	2.615(3)	Sm(1)	N(2)	2.651(3)
O(3)	Sm(1)[4]	2.353(3)	O(4)	Sm(1)[2]	2.391(3)
O(7)	Sm(1)[3]	2.407(3)			
O(3)[1]	Sm(1)	O(1)	141.93(10)	O(3)[1]	Sm(1)	O(4)[2]	123.24(11)
O(3)[1]	Sm(1)	O(6)	70.14(10)	O(3)[1]	Sm(1)	O(7)[3]	85.71(11)
O(3)[1]	Sm(1)	O(5)	69.05(11)	O(3)[1]	Sm(1)	N(1)	85.40(10)
O(3)[1]	Sm(1)	N(2)	132.49(10)	O(1)	Sm(1)	O(4)[2]	87.63(10)
O(1)	Sm(1)	O(6)	143.72(11)	O(1)	Sm(1)	O(7)[3]	83.19(11)
O(1)	Sm(1)	O(5)	72.89(11)	O(1)	Sm(1)	N(1)	86.28(10)
O(1)	Sm(1)	N(2)	73.41(11)	O(4)[2]	Sm(1)	O(7)[3]	72.61(11)
O(4)[2]	Sm(1)	O(5)	142.89(11)	O(4)[2]	Sm(1)	N(1)	135.10(10)
O(4)[2]	Sm(1)	N(2)	73.49(10)	O(6)	Sm(1)	O(4)[2]	79.85(10)
O(6)	Sm(1)	O(7)[3]	123.96(12)	O(6)	Sm(1)	O(5)	133.43(11)
O(6)	Sm(1)	N(1)	79.31(11)	O(6)	Sm(1)	N(2)	70.40(11)
O(7)[3]	Sm(1)	O(5)	73.92(11)	O(7)[3]	Sm(1)	N(1)	149.89(11)
O(7)[3]	Sm(1)	N(2)	139.22(10)	O(5)	Sm(1)	N(1)	76.03(11)
O(5)	Sm(1)	N(2)	127.05(11)	N(1)	Sm(1)	N(2)	62.15(10)

[1] 1+X,1+Y,+Z; [2] 1-X,-Y,1-Z; [3] 2-X,1-Y,1-Z; [4] -1+X,-1+Y,+Z

2

Eu(1)	Eu(1)[1]	4.4105(6)	Eu(1)	O(1)	2.340(3)		
Eu(1)	O(3)[2]	2.349(3)	Eu(1)	O(4)[3]	2.376(3)		
Eu(1)	O(5)	2.354(3)	Eu(1)	O(7)	2.512(3)		
Eu(1)	O(6)[1]	2.397(3)	Eu(1)	N(1)	2.642(4)		
Eu(1)	N(2)	2.608(4)	O(3)	Eu(1)[4]	2.349(3)		
O(4)	Eu(1)[3]	2.376(3)	O(6)	Eu(1)[1]	2.397(3)		
O(1)	Eu(1)	O(3)[2]	142.09(11)	O(1)	Eu(1)	O(4)[3]	87.52(11)
O(1)	Eu(1)	O(5)	143.64(12)	O(1)	Eu(1)	O(7)	72.72(11)
O(1)	Eu(1)	O(6)[1]	83.42(12)	O(1)	Eu(1)	N(1)	73.07(12)
O(1)	Eu(1)	N(2)	86.29(12)	O(3)[2]	Eu(1)	O(4)[3]	123.25(12)
O(3)[2]	Eu(1)	O(5)	70.14(12)	O(3)[2]	Eu(1)	O(7)	69.38(12)
O(3)[2]	Eu(1)	O(6)[1]	85.73(12)	O(3)[2]	Eu(1)	N(1)	132.59(12)
O(3)[2]	Eu(1)	N(2)	85.36(12)	O(4)[3]	Eu(1)	O(7)	142.34(11)
O(4)[3]	Eu(1)	O(6)[1]	72.41(12)	O(4)[3]	Eu(1)	N(1)	73.58(11)
O(4)[3]	Eu(1)	N(2)	135.13(11)	O(5)	Eu(1)	O(4)[3]	79.68(12)
O(5)	Eu(1)	O(7)	134.06(11)	O(5)	Eu(1)	O(6)[1]	123.54(13)
O(5)	Eu(1)	N(1)	70.69(12)	O(5)	Eu(1)	N(2)	79.53(12)
O(7)	Eu(1)	N(1)	127.02(12)	O(7)	Eu(1)	N(2)	76.47(11)
O(6)[1]	Eu(1)	O(7)	73.68(12)	O(6)[1]	Eu(1)	N(1)	139.12(12)
O(6)[1]	Eu(1)	N(2)	150.11(12)	N(2)	Eu(1)	N(1)	62.10(11)

[1] 2-X,1-Y,1-Z; [2] 1+X,1+Y,+Z; [3] 1-X,-Y,1-Z; [4] -1+X,-1+Y,+Z

3

Gd(1)	O(1)	2.330(3)		Gd(1)	O(3)[1]	2.335(3)	
Gd(1)	O(6)	2.343(3)		Gd(1)	O(7)	2.495(3)	
Gd(1)	O(4)[2]	2.360(2)		Gd(1)	O(5)[3]	2.388(2)	
Gd(1)	N(1)	2.588(3)		Gd(1)	N(2)	2.627(3)	
O(3)	Gd(1)[4]	2.335(3)		O(4)	Gd(1)[2]	2.360(2)	
O(5)	Gd(1)[3]	2.389(2)					
O(1)	Gd(1)	O(3)[1]	141.67(9)	O(1)	Gd(1)	O(6)	143.58(10)
O(1)	Gd(1)	O(7)	72.65(10)	O(1)	Gd(1)	O(4)[2]	87.61(9)
O(1)	Gd(1)	O(5)[3]	83.50(10)	O(1)	Gd(1)	N(1)	86.62(9)
O(1)	Gd(1)	N(2)	73.35(10)	O(3)[1]	Gd(1)	O(6)	70.56(10)
O(3)[1]	Gd(1)	O(7)	69.02(10)	O(3)[1]	Gd(1)	O(4)[2]	123.41(9)
O(3)[1]	Gd(1)	O(5)[3]	85.40(10)	O(3)[1]	Gd(1)	N(1)	84.92(10)
O(3)[1]	Gd(1)	N(2)	132.80(9)	O(6)	Gd(1)	O(7)	133.84(10)
O(6)	Gd(1)	O(4)[2]	79.81(9)	O(6)	Gd(1)	O(5)[3]	123.69(10)
O(6)	Gd(1)	N(1)	79.21(9)	O(6)	Gd(1)	N(2)	70.32(10)
O(7)	Gd(1)	N(1)	75.94(9)	O(7)	Gd(1)	N(2)	127.08(9)
O(4)[2]	Gd(1)	O(7)	142.60(9)	O(4)[2]	Gd(1)	O(5)[3]	72.44(9)

O(4)[2]	Gd(1)	N(1)	135.54(9)	O(4)[2]	Gd(1)	N(2)	73.40(9)
O(5)[3]	Gd(1)	O(7)	73.97(9)	O(5)[3]	Gd(1)	N(1)	149.89(10)
O(5)[3]	Gd(1)	N(2)	139.16(10)	N(1)	Gd(1)	N(2)	62.72(9)

[1] -1+X,-1+Y,+Z; [2] 1-X,2-Y,1-Z; [3] -X,1-Y,1-Z; [4] 1+X,1+Y,+Z

4

Tb(1)	O(4)[1]	2.324(2)	Tb(1)	O(5)	2.325(2)		
Tb(1)	O(1)	2.312(2)	Tb(1)	O(3)[2]	2.348(2)		
Tb(1)	O(6)[3]	2.369(2)	Tb(1)	O(7)	2.480(3)		
Tb(1)	N(1)	2.574(3)	Tb(1)	N(2)	2.610(3)		
O(4)	Tb(1)[4]	2.324(2)	O(3)	Tb(1)[2]	2.348(2)		
O(6)	Tb(1)[3]	2.369(2)					
O(4)[1]	Tb(1)	O(5)	70.62(9)	O(4)[1]	Tb(1)	O(3)[2]	123.43(9)
O(4)[1]	Tb(1)	O(6)[3]	85.23(9)	O(4)[1]	Tb(1)	O(7)	68.80(9)
O(4)[1]	Tb(1)	N(1)	84.56(9)	O(4)[1]	Tb(1)	N(2)	132.72(9)
O(5)	Tb(1)	O(3)[2]	80.01(9)	O(5)	Tb(1)	O(6)[3]	123.70(9)
O(5)	Tb(1)	O(7)	133.65(9)	O(5)	Tb(1)	N(1)	79.02(9)
O(5)	Tb(1)	N(2)	70.18(9)	O(1)	Tb(1)	O(4)[1]	141.57(9)
O(1)	Tb(1)	O(5)	143.55(9)	O(1)	Tb(1)	O(3)[2]	87.60(8)
O(1)	Tb(1)	O(6)[3]	83.65(9)	O(1)	Tb(1)	O(7)	72.78(9)
O(1)	Tb(1)	N(1)	86.85(9)	O(1)	Tb(1)	N(2)	73.46(9)
O(3)[2]	Tb(1)	O(6)[3]	72.35(9)	O(3)[2]	Tb(1)	O(7)	142.51(9)
O(3)[2]	Tb(1)	N(1)	135.95(9)	O(3)[2]	Tb(1)	N(2)	73.61(9)
O(6)[3]	Tb(1)	O(7)	73.94(9)	O(6)[3]	Tb(1)	N(1)	149.73(9)
O(6)[3]	Tb(1)	N(2)	139.41(9)	O(7)	Tb(1)	N(1)	75.80(9)
O(7)	Tb(1)	N(2)	127.18(9)	N(1)	Tb(1)	N(2)	62.93(9)

[1] 1+X,1+Y,+Z; [2] 1-X,-Y,1-Z; [3] 2-X,1-Y,1-Z; [4] -1+X,-1+Y,+Z

5

Dy(1)	O(5)	2.359(3)	Dy(1)	O(4)	2.305(3)		
Dy(1)	O(7)	2.480(3)	Dy(1)	O(6)[1]	2.323(3)		
Dy(1)	O(1)	2.341(3)	Dy(1)	O(2)[1]	2.314(3)		
Dy(1)	N(1)	2.562(4)	Dy(1)	N(2)	2.606(4)		
Dy(1)[1]	O6	2.323(3)	Dy(1)[1]	O2	2.314(3)		
O(5)	Dy(1)	O(7)	73.73(12)	O(5)	Dy(1)	N(1)	149.46(13)
O(5)	Dy(1)	N(2)	139.47(12)	O(4)	Dy(1)	O(5)	83.85(12)
O(4)	Dy(1)	O(7)	72.41(11)	O(4)	Dy(1)	O(6)[1]	143.64(12)
O(4)	Dy(1)	O(1)	87.88(11)	O(4)	Dy(1)	O(2)[1]	141.58(11)
O(4)	Dy(1)	N(1)	86.73(12)	O(4)	Dy(1)	N(2)	73.41(12)
O(7)	Dy(1)	N(1)	75.74(12)	O(7)	Dy(1)	N(2)	127.16(11)

O(6)[1]	Dy(1)	O(5)	123.46(13)	O(6)[1]	Dy(1)	O(7)	134.02(12)
O(6)[1]	Dy(1)	O(1)	79.70(12)	O(6)[1]	Dy(1)	N(1)	79.31(12)
O(6)[1]	Dy(1)	N(2)	70.32(12)	O(1)	Dy(1)	O(5)	72.59(12)
O(1)	Dy(1)	O(7)	142.45(12)	O(1）	Dy(1)	N(1)	136.06(12)
O(1)	Dy(1)	N(2)	73.45(12)	O(2)[1]	Dy(1)	O(5)	84.98(12)
O(2)[1]	Dy(1)	O(7)	69.17(12)	O(2)[1]	Dy(1)	O(6)[1]	70.56(12)
O(2)[1]	Dy(1)	O(1)	123.19(11)	O(2)[1]	Dy(1)	N(1)	84.56(12)
O(2)[1]	Dy(1)	N(2)	132.86(12)	N(1)	Dy(1)	N(2)	63.23(12)

[1] 1-X,-Y,1-Z; [2] 2-X,1-Y,1-Z; [3] 1-X,1-Y,1-Z

Table S2

Complexes	K_{sv}**(M^{-1})**	**LOD for Ag^{+}(mol/L)**	**Reference**
complex **2**(λ ex=375nm)	2.74×10^{4}	5.1×10^{-5}	This article
complex **2**(λ ex=400nm)	3.58×10^{4}	3.9×10^{-5}	This article
Eu-MOF	8.61×10^{4}	4.2×10^{-7}	11
Eu-MOF	/	2.3×10^{-7}	63

Complexes	K_{sv}**(M^{-1})**	**LOD for Fe^{3+}(mol/L)**	**Reference**
complex **2**(λ ex=375nm)	2.33×10^{4}	6.0×10^{-5}	This article
complex **2**(λ ex=400nm)	2.91×10^{4}	4.8×10^{-5}	This article
Eu-MOF	1.25×10^{4}	2.3×10^{-5}	64
Eu-MOF	/	2.6×10^{-5}	65
Tb-MOF	/	1.8×10^{-4}	66

Complexes	K_{sv}**(M^{-1})**	**LOD for MnO_4^-(mol/L)**	**Reference**
complex **2**(λ ex=375nm)	1.51×10^{4}	9.3×10^{-5}	This article
complex **2**(λ ex=400nm)	1.61×10^{4}	8.7×10^{-5}	This article
Eu-MOF	8.47×10^{3}	1.4×10^{-6}	67
Eu-MOF	3.18×10^{3}	1.1×10^{-5}	68

Complexes	K_{sv}**(M^{-1})**	**LOD for $Cr_2O_7^{2-}$(mol/L)**	**Reference**
complex **2**(λ ex=375nm)	2.19×10^4	6.4×10^{-5}	This article
complex **2**(λ ex=400nm)	2.47×10^4	5.7×10^{-5}	This article
Eu-MOF	2.17×10^4	3.8×10^{-6}	46
Eu-MOF	/	2.2×10^{-5}	65
Eu-MOF	5.65×10^3	6.1×10^{-6}	68
Zn-MOF	2.33×10^3	4.6×10^{-4}	69

Complexes	K_{sv}**(M^{-1})**	**LOD for CrO_4^{2-}(mol/L)**	**Reference**
complex **2**(λ ex=375nm)	2.34×10^4	6.0×10^{-5}	This article
complex **2**(λ ex=400nm)	2.97×10^4	4.6×10^{-5}	This article
Eu-MOF	1.59×10^4	2.4×10^{-6}	46
Cu-MOF	2.10×10^4	1.6×10^{-5}	70
Eu-MOF	3.56×10^3	1.1×10^{-4}	71