Supporting information

A micrometer-sized europium(III)-organic framework for selective sensing of $Cr_2O_7^{2-}$ anion and picric acid in water system

Hongming He,[a] Si-Hang Chen,[a] De-Yu Zhang,[a] Rui Hao,[a] Chao Zhang,[a] En-Cui Yang,*[, a] and Xiao-Jun Zhao*[, a, b]

[a] *Key Laboratory of Inorganic-Organic Hybrid Functional Material Chemistry*, *Ministry of Education*, *Tianjin Key Laboratory of Structure and Performance for Functional Molecules*, *College of Chemistry*, *Tianjin Normal University*, *Tianjin 300387*, *P. R. China. E-mail*: encui_yang@163.com, xiaojun_zhao15@163.com; *Fax: +86-22-23766556*

[b] *Synergetic Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin 300071, P. R. China*

Table S1 Selected bond lengths (Å) and angles (deg) for **1**.

Eu(1)–O(10)$^{\#1}$	2.305(2)	Eu(1)–O(3)	2.319(2)
Eu(1)–O(8)$^{\#2}$	2.337(2)	Eu(1)–O(9)	2.369(2)
Eu(1)–O(11)	2.402(2)	Eu(1)–O(13W)	2.423(2)
Eu(1)–O(2)	2.476(2)	Eu(1)–O(6)	2.496(2)
Eu(2)–O(2)	2.613(2)	Eu(2)–O(4)$^{\#3}$	2.246(2)
Eu(2)–O(7)$^{\#4}$	2.407(2)	Eu(2)–O(5)$^{\#4}$	2.449(2)
Eu(2)–O(1)	2.461(2)	Eu(2)–O(9)	2.467(2)
Eu(2)–O(6)	2.476(2)	Eu(2)–O(12)$^{\#4}$	2.484(2)
Eu(2)–O(11)$^{\#4}$	2.554(2)		
O(10)$^{\#}$1–Eu(1)–O(3)	75.58(8)	O(10)$^{\#1}$–Eu(1)–O(11)	82.43(8)
O(3)–Eu(1)–O(8)$^{\#2}$	95.70(8)	O(10)$^{\#1}$–Eu(1)–O(9)	129.02(8)
O(3)–Eu(1)–O(9)	137.92(8)	O(8)$^{\#2}$–Eu(1)–O(9)	74.59(8)
O(8)$^{\#2}$–Eu(1)–O(11)	95.66(8)	O(9)–Eu(1)–O(11)	70.31(8)
O(10)$^{\#1}$–Eu(1)–O(13W)	79.04(8)	O(3)–Eu(1)–O(13W)	86.14(9)
O(8)$^{\#2}$–Eu(1)–O(13W)	74.33(8)	O(9)–Eu(1)–O(13W)	127.67(8)
O(11)–Eu(1)–O(13W)	72.11(8)	O(10)$^{\#1}$–Eu(1)–O(2)	116.86(8)
O(3)–Eu(1)–O(2)	68.85(8)	O(8)$^{\#2}$–Eu(1)–O(2)	82.50(8)
O(9)–Eu(1)–O(2)	69.31(7)	O(11)–Eu(1)–O(2)	138.54(8)
O(13W)–Eu(1)–O(2)	143.94(8)	O(10)$^{\#}$1–Eu(1)–O(6)	70.12(8)
O(3)–Eu(1)–O(6)	100.54(8)	O(8)$^{\#2}$–Eu(1)–O(6)	137.37(8)

O(9)–Eu(1)–O(6)	66.94(7)	O(11)–Eu(1)–O(6)	88.33(7)
O(13W)–Eu(1)–O(6)	145.42(7)	O(2)–Eu(1)–O(6)	67.53(7)
O(10)$^{\#1}$–Eu(1)–Eu(2)$^{\#1}$	50.32(6)	O(3)–Eu(1)–Eu(2)$^{\#1}$	125.09(5)
O(8)$^{\#2}$–Eu(1)–Eu(2)$^{\#1}$	126.97(6)	O(9)–Eu(1)–Eu(2)$^{\#1}$	90.56(5)
O(11)–Eu(1)–Eu(2)$^{\#1}$	32.89(5)	O(13W)–Eu(1)–Eu(2)$^{\#1}$	76.22(6)
O(2)–Eu(1)–Eu(2)$^{\#1}$	139.42(5)	O(6)–Eu(1)–Eu(2)$^{\#1}$	72.23(5)
O(4)$^{\#3}$–Eu(2)–O(7)$^{\#4}$	77.49(8)	O(4)$^{\#3}$–Eu(2)–O(5)$^{\#4}$	102.17(8)
O(7)$^{\#4}$–Eu(2)–O(5)$^{\#4}$	68.23(7)	O(4)$^{\#3}$–Eu(2)–O(1)	77.64(8)
O(7)$^{\#4}$–Eu(2)–O(1)	146.94(7)	O(5)$^{\#4}$–Eu(2)–O(1)	138.85(8)
O(4)$^{\#3}$–Eu(2)–O(9)	133.29(8)	O(7)$^{\#4}$–Eu(2)–O(9)	69.47(8)
O(5)$^{\#4}$–Eu(2)–O(9)	95.32(8)	O(1)–Eu(2)–O(9)	114.89(7)
O(4)$^{\#3}$–Eu(2)–O(6)	76.09(8)	O(7)$^{\#4}$–Eu(2)–O(6)	78.38(7)
O(5)$^{\#4}$–Eu(2)–O(6)	145.94(7)	O(1)–Eu(2)–O(6)	74.75(7)
O(9)–Eu(2)–O(6)	65.80(7)	O(4)$^{\#3}$–Eu(2)–O(12)$^{\#4}$	78.18(8)
O(7)$^{\#4}$–Eu(2)–O(12)$^{\#4}$	124.37(8)	O(5)$^{\#4}$–Eu(2)–O(12)$^{\#4}$	69.27(8)
O(1)–Eu(2)–O(12)$^{\#4}$	70.52(8)	O(9)–Eu(2)–O(12)$^{\#4}$	148.23(7)
O(6)–Eu(2)–O(12)$^{\#4}$	140.28(7)	O(4)$^{\#3}$–Eu(2)–O(11)$^{\#4}$	129.14(8)
O(7)$^{\#4}$–Eu(2)–O(11)$^{\#4}$	135.64(7)	O(5)$^{\#4}$–Eu(2)–O(11)$^{\#4}$	71.29(7)
O(1)–Eu(2)–O(11)$^{\#4}$	77.37(7)	O(9)–Eu(2)–O(11)$^{\#4}$	97.45(7)
O(6)–Eu(2)–O(11)$^{\#4}$	136.25(7)	O(12)$^{\#4}$–Eu(2)–O(11)$^{\#4}$	51.83(7)
O(4)$^{\#3}$–Eu(2)–O(2)	121.57(8)	O(7)$^{\#4}$–Eu(2)–O(2)	130.75(7)
O(5)$^{\#4}$–Eu(2)–O(2)	134.08(7)	O(1)–Eu(2)–O(2)	51.30(7)
O(9)–Eu(2)–O(2)	65.64(7)	O(6)–Eu(2)–O(2)	65.71(7)
O(12)$^{\#4}$–Eu(2)–O(2)	104.59(7)	O(11)$^{\#4}$–Eu(2)–O(2)	70.55(7)

[a] Symmetry codes: $^{\#1}$ x, 0.5 – y, z – 0.5; $^{\#2}$ x + 1, 1/2 – y, z + 1/2; $^{\#3}$ x – 1, y, z; $^{\#4}$ x, 1/2 – y, z + 1/2.

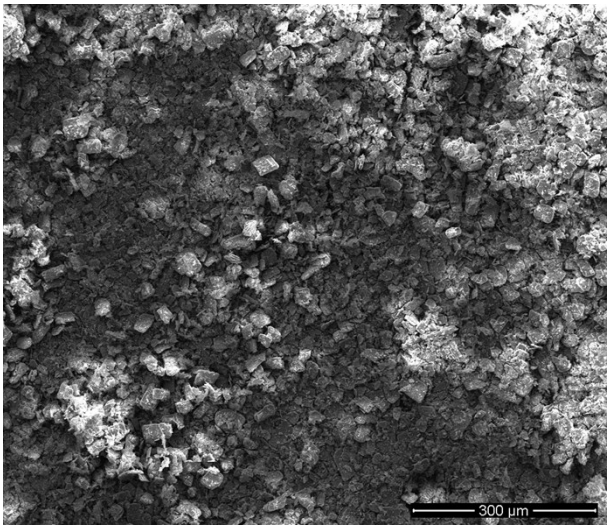
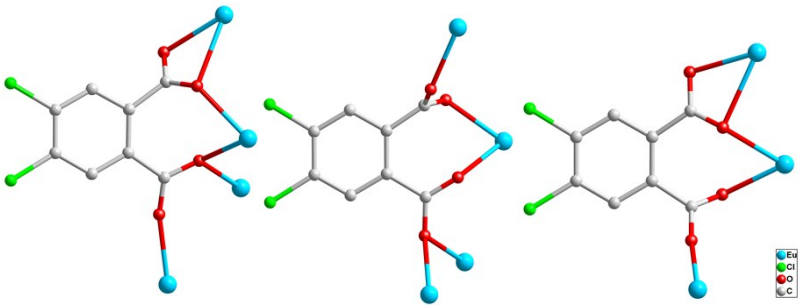


Fig. S1 SEM image of micrometer-sized **1**.



μ_4-η^1:η^2:η^2:η^1 μ_4-η^2: η^1: η^1: η^1 μ_3-η^1: η^1: η^2: η^1

Fig. S2 Binding modes of $DCPA^{2-}$ ligand in the targeted complex.

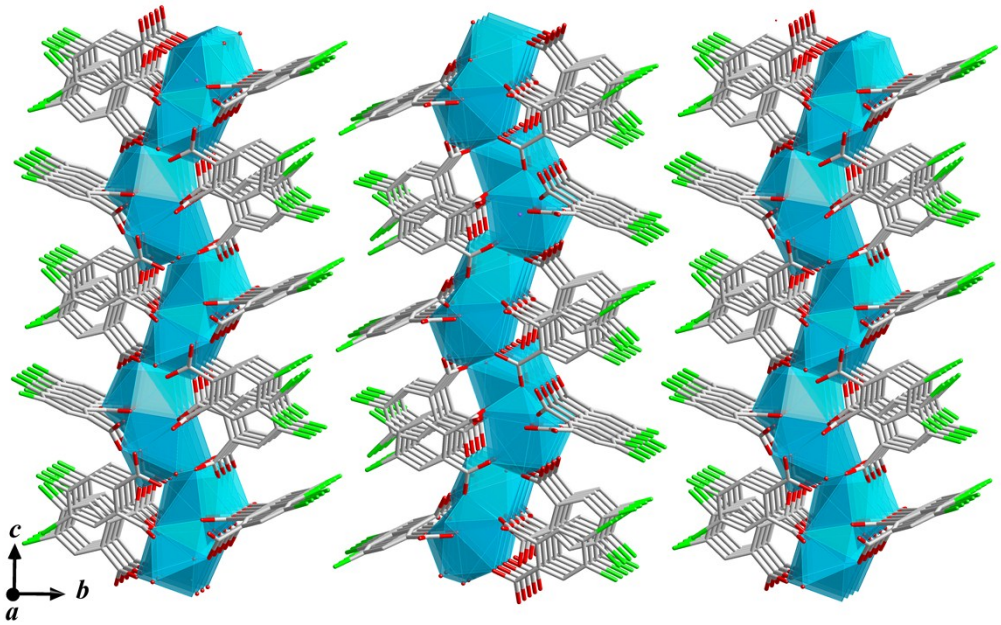


Fig. S3 Three-dimensional stacking structure of **1**.

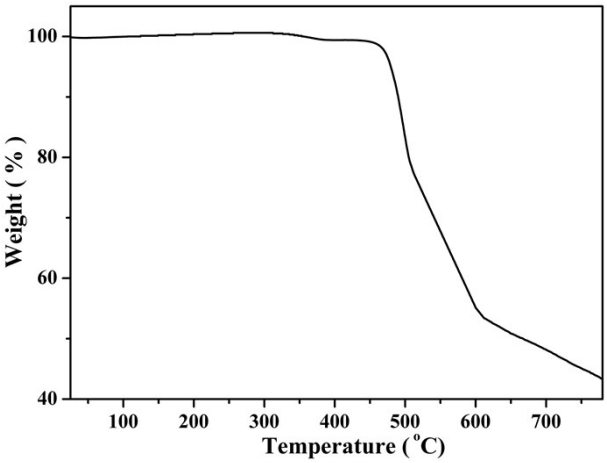


Fig. S4 TGA curve of **1**.

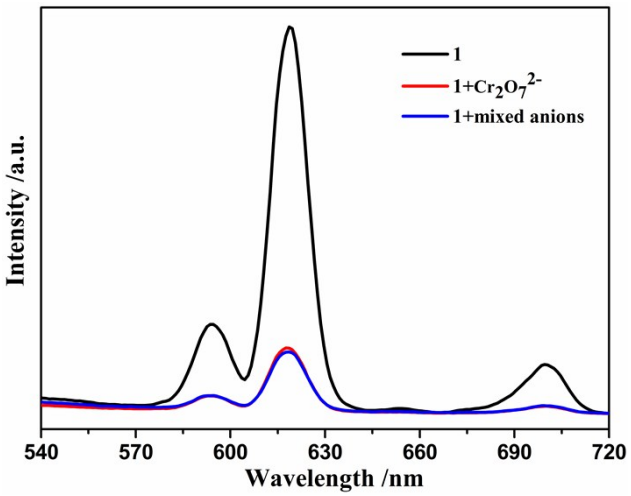


Fig. S5 Comparisons of the emission spectra of **1** immersed in different aqueous solutions with or without the anions to be recognized.

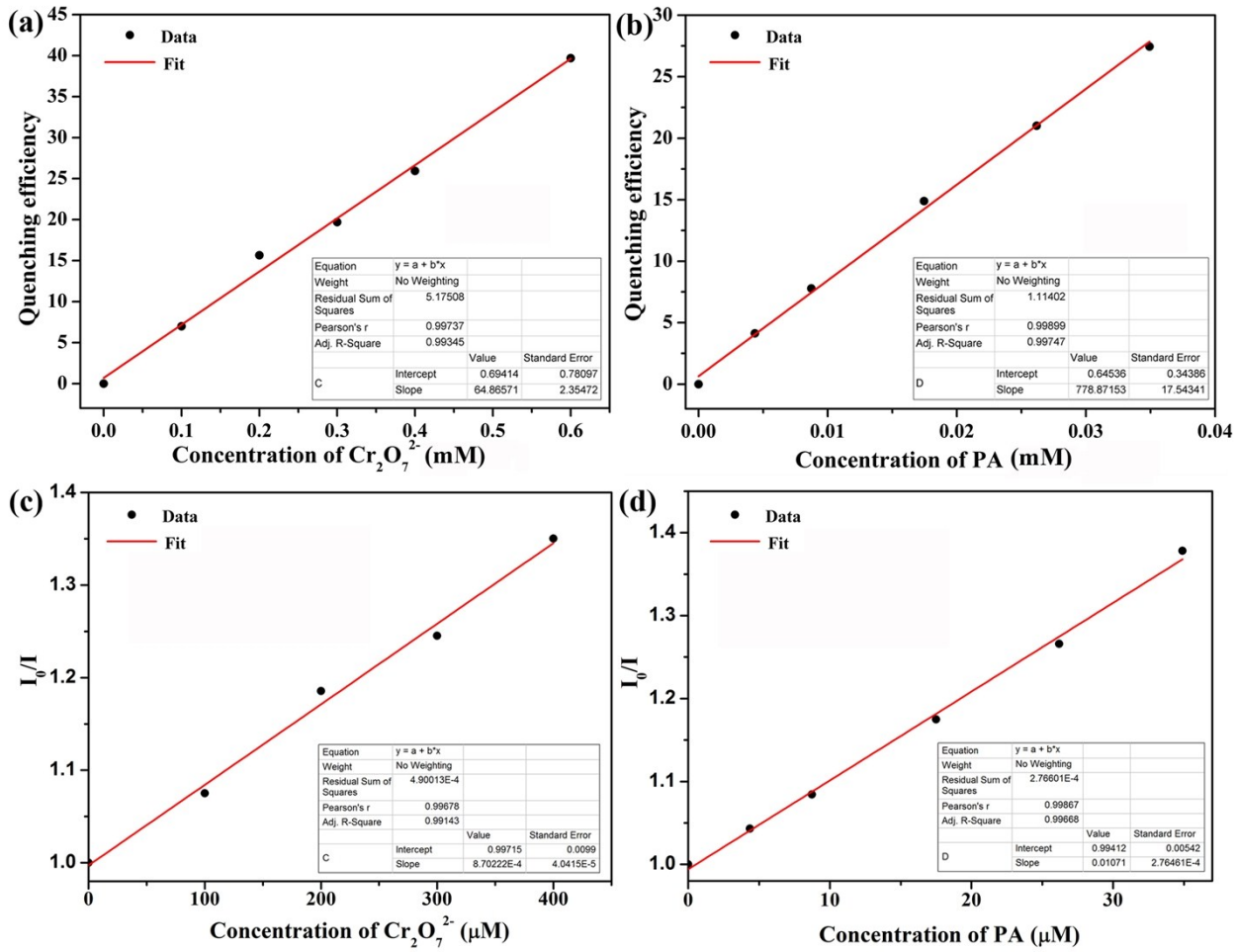


Fig. S6 Plots of quenching efficiency (a and b) and I_0/I (c and d) vs concentrations of $Cr_2O_7^{2-}$ anion and PA molecule.

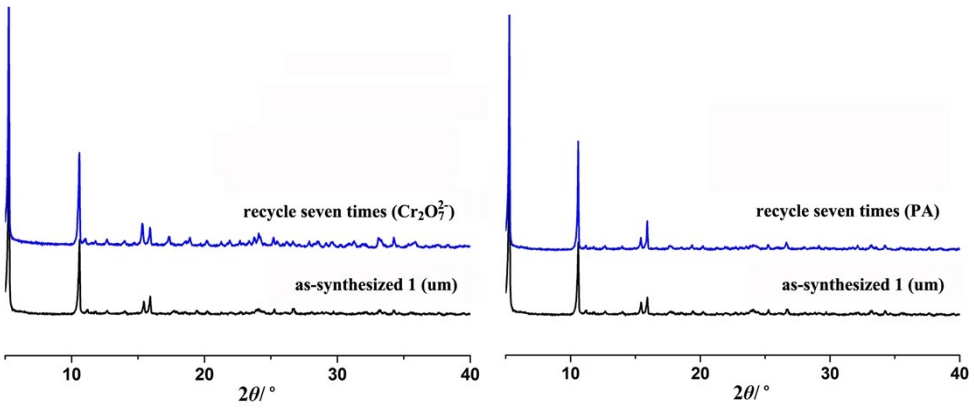


Fig. S7 PXRD patterns of **1** after recycling seven times in $Cr_2O_7^{2-}$ and PA aqueous solution.

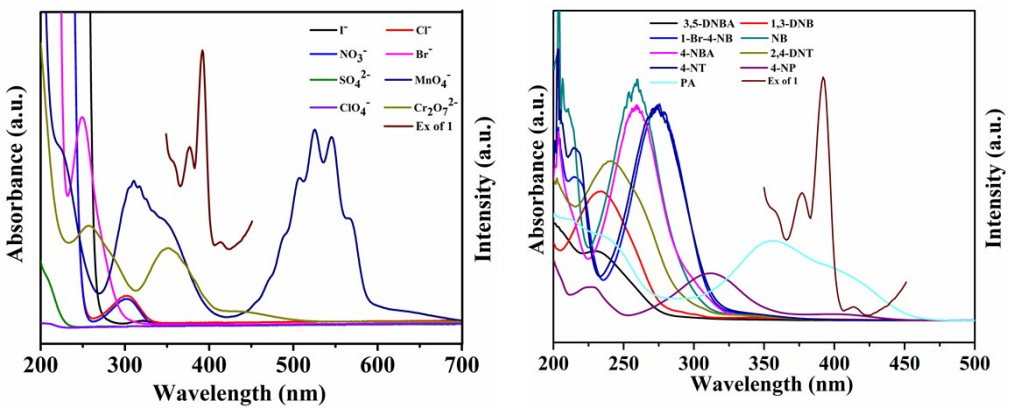


Fig. S8 Excitation spectrum of **1** and UV-Vis absorption spectra of different anions in aqueous solution (left) and NACs in ethanol (right).