Supporting Information

A novel microporous Tb-MOF fluorescent sensor for highly selective and sensitive detection of picric acid

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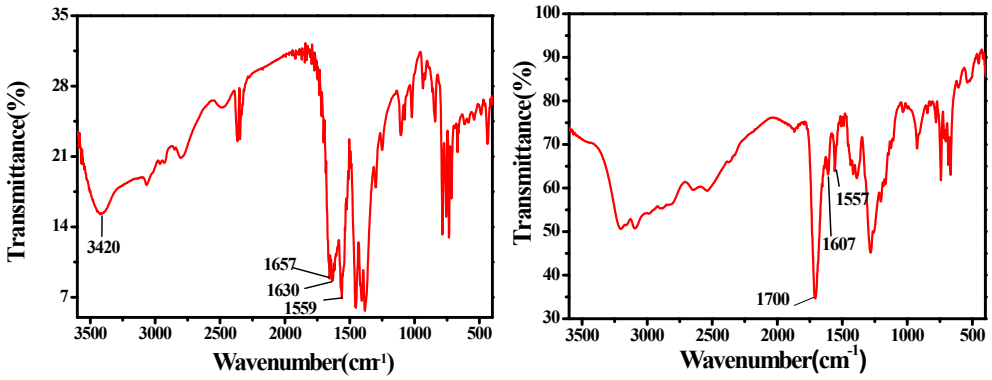


(a) Complex 1 **(b) H_4ptptc**

Fig. 1S IR spectrum of the complex1 and H_4ptptc

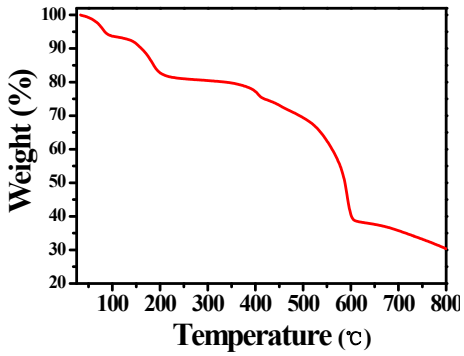


Fig. 2S TGA curve of complex 1

Table 1S. Selected Bond Lengths (Å) and Bond Angles (°)

Bond	Dist.	Bond	Dist.	Bond	Dist.
Tb(1)-O(1)	2.372(6)	Tb(1)-O(3)#1	2.476(7)	Tb(1)-O(4)#1	2.479(7)
Tb(1)-O(6)#3	2.268(7)	Tb(1)-O(9)	2.460(7)	Tb(1)-O(10)	2.438(7)
Tb(1)-O(15)#2	2.491(7)	Tb(1)-O(16)#2	2.456(7)	Tb(1)-O(17)	2.454(9)
Tb(2)-O(12) #5	2.503(7)	Tb(2)-O(8)#4	2.451(7)	Tb(2)-O(1W)	2.441(9)
Tb(2)-O(2)	2.340(7)	Tb(2)-O(5) #3	2.274(7)	Tb(2)-O(7)#4	2.432(7)
Tb(2)-O(11) #5	2.452(7)	Tb(2)-O(13)	2.411(7)	Tb(2)-O(14)	2.578(7)
Angle	**(°)**	**Angle**	**(°)**	**Angle**	**(°)**
O(1)-Tb(1)-O(3)#1	139.5(2)	O(1)-Tb(1)-O(4)#1	142.5(2)	O(1)-Tb(1)-O(9)	72.0(2)
O(1)-Tb(1)-O(10)	73.1(2)	O(1)-Tb(1)-O(15)#2	71.9(2)	O(1)-Tb(1)-O(16)#2	81.8(2)
O(1)-Tb(1)-O(17)	139.8(3)	O(3)#1-Tb(1)-O(4)#1	52.5(2)	O(3)#1-Tb(1)-O(15)#2	131.2(2)
O(4)#1-Tb(1)-O(15)#2	132.4(2)	O(6)#3-Tb(1)-O(1)	83.1(3)	O(6)#3-Tb(1)-O(3)#1	72.2(2)
O(6)#3-Tb(1)-O(4)#1	124.5(2)	O(6)#3-Tb(1)-O(9)	139.2(3)	O(6)#3-Tb(1)-O(10)	88.7(3)
O(6)#3-Tb(1)-O(15)#2	79.4(3)	O(6)#3-Tb(1)-O(16)#2	132.2(3)	O(6)#3-Tb(1)-O(17)	88.0(3)
O(9)-Tb(1)-O(3)#1	106.9(2)	O(9)-Tb(1)-O(4)#1	70.7(2)	O(9)-Tb(1)-O(15)#2	120.4(2)
O(10)-Tb(1)-O(3)#1	74.7(2)	O(10)-Tb(1)-O(4)#1	82.0(2)	O(10)-Tb(1)-O(9)	53.6(2)
O(10)-Tb(1)-O(15)#2	144.1(2)	O(10)-Tb(1)-O(16)#2	128.7(2)	O(10)-Tb(1)-O(17)	146.1(3)
O(16)#2-Tb(1)-O(3)#1	138.3(2)	O(16)#2-Tb(1)-O(4)#1	92.9(2)	O(16)#2-Tb(1)-O(9)	76.4(2)
O(16)#2-Tb(1)-O(15)#2	52.9(2)	O(17)-Tb(1)-O(3)#1	72.1(3)	O(17)-Tb(1)-O(4)#1	72.4(3)
O(17)-Tb(1)-O(9)	131.6(3)	O(17)-Tb(1)-O(15)#2	67.9(3)	O(17)-Tb(1)-O(16)#2	75.6(3)
O(2)-Tb(2)-O(7)#4	73.1(2)	O(2)-Tb(2)-O(8)#4	118.1(2)	O(2)-Tb(2)-O(11)#5	73.0(3)
O(2)-Tb(2)-O(12)#5	123.1(2)	O(2)-Tb(2)-O(13)	153.4(3)	O(2)-Tb(2)-O(14)	122.1(2)
O(2)-Tb(2)-O(1W)	73.2(3)	O(5)#3-Tb(2)-O(2)	83.6(3)	O(5)#3-Tb(2)-O(7)#4	156.7(3)
O(5)#3-Tb(2)-O(8)#4	145.5(2)	O(5)#3-Tb(2)-O(11)#5	83.4(3)	O(5)#3-Tb(2)-O(12)#5	74.5(2)
O(5)#3-Tb(2)-O(13)	81.0(3)	O(5)#3-Tb(2)-O(14)	122.4(3)	O(5)#3-Tb(2)-O(1W)	75.8(3)
O(7)#4-Tb(2)-O(8)#4	53.5(2)	O(7)#4-Tb(2)-O(11)#5	91.1(2)	O(7)#4-Tb(2)-O(12)#5	119.6(2)
O(7)#4-Tb(2)-O(14)	71.2(2)	O(7)#4-Tb(2)-O(1W)	95.5(3)	O(8)#4-Tb(2)-O(11)#5	78.6(2)
O(8)#4-Tb(2)-O(12)#5	71.2(2)	O(8)#4-Tb(2)-O(14)	70.7(2)	O(11)#5-Tb(2)-O(12)#5	53.0(2)
O(11)#5-Tb(2)-O(14)	149.3(2)	O(12)#5-Tb(2)-O(14)	113.9(2)	O(13)-Tb(2)-O(14)	52.6(2)
O(13)-Tb(2)-O(7)#4	119.8(2)	O(13)-Tb(2)-O(8)#4	86.1(2)	O(13)-Tb(2)-O(11)#5	126.0(2)
O(13)-Tb(2)-O(12)#5	73.1(2)	O(13)-Tb(2)-O(1W)	82.1(3)	O(1W) -Tb(2)-O(8)#4	133.9(3)
O(1W) -Tb(2)-O(11)#5	141.9(3)	O(1W)-Tb(2)-O(12)#5	143.7(3)	O(1W) -Tb(2)-O(14)	66.8(3)

Symmetry codes: #1 -1+x,y,z; #2 -x,-y,-z+1; #3 x,-1+y,z; #4 x+1,-1+y,z; #5 1-x,-y, 2-z; #6 1+x,y,z; #7 -1+x,1+y,z; #8 1-x,1-y,2-z; #9 2-x,-1-y, 1-z; #10 x,1+y,z.

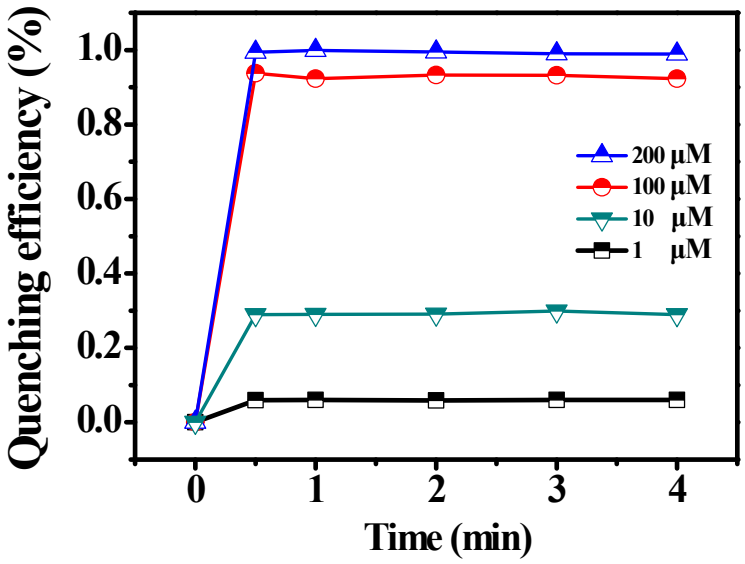
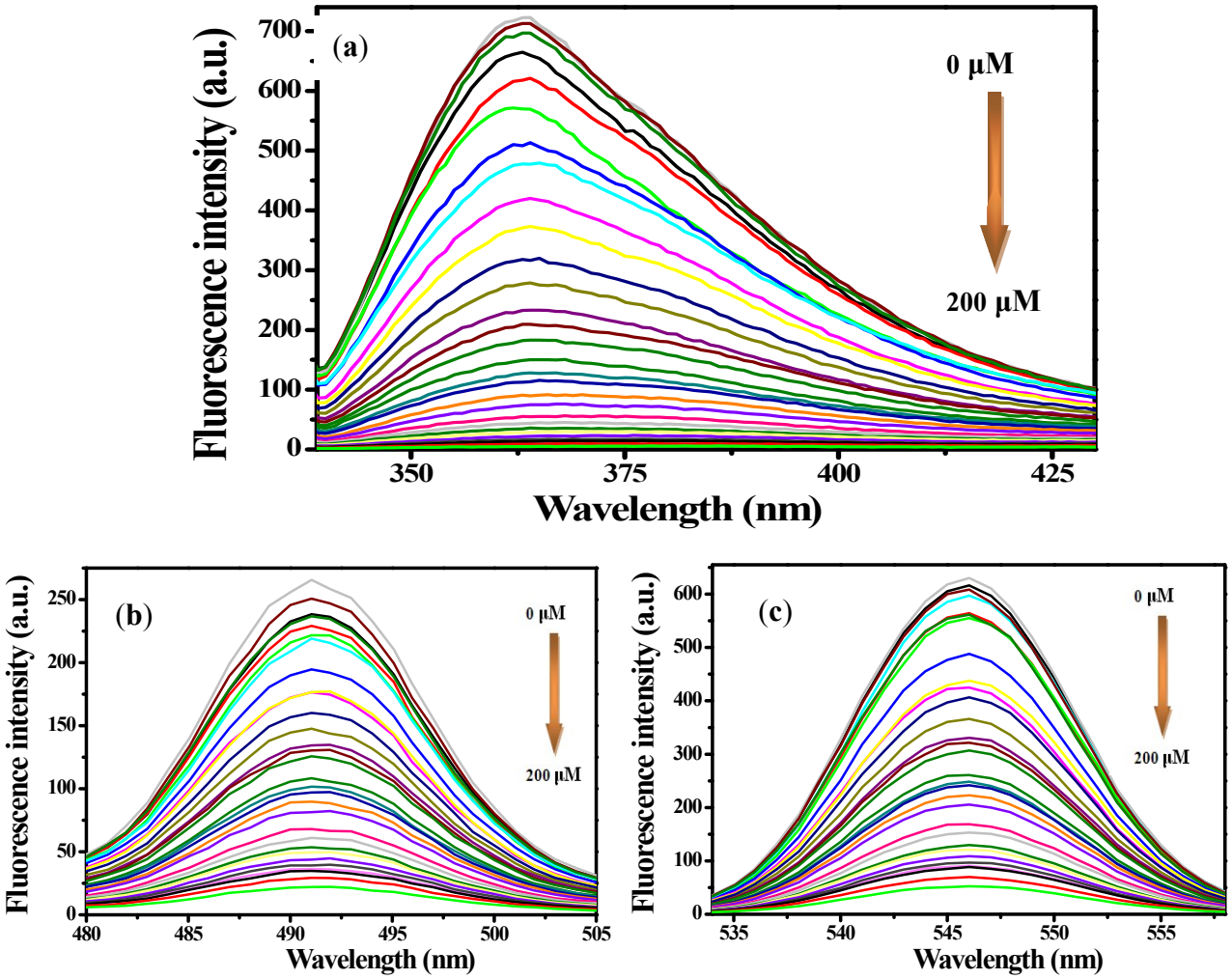


Fig. 3S Quenching efficiency of **1**-methanol suspension with different concentrations of PA with increasing of time.



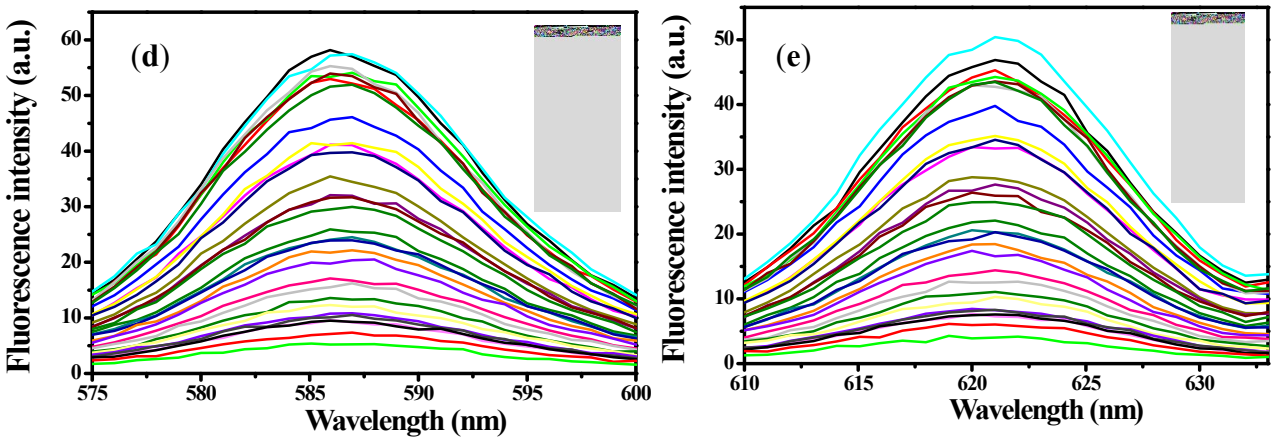


Fig. 4S Fluorescence response of **1** towards different concentration of PA in methanol (λ_{ex} = 325 nm, λ_{em} = 363 nm (**a**), λ_{em} = 491 nm (**b**), λ_{em} = 546 nm (**c**), λ_{em} = 586 nm (**d**), λ_{em} = 621nm (**e**); slits: 5 nm/10 nm)

The luminescent lifetime study of the compound has been carried out on an Edinburgh fluorescence spectrophotometer (Edinburgh Instruments FLS920). As shown in Fig. 5S, the luminescent lifetime of the compound is about 0.186 ns.

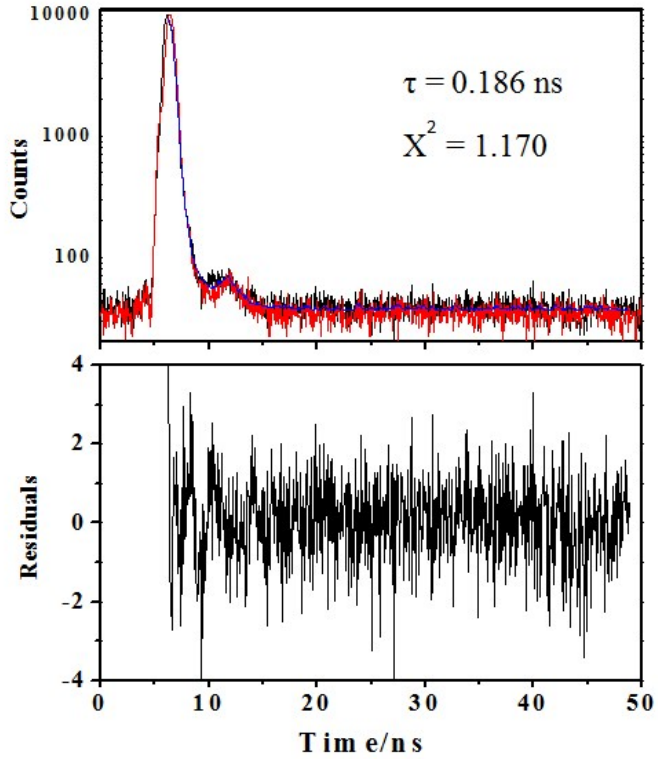


Fig. 5S Luminescent lifetime study of the compound 1(λ_{ex} = 325 nm, λ_{em} = 377 nm).

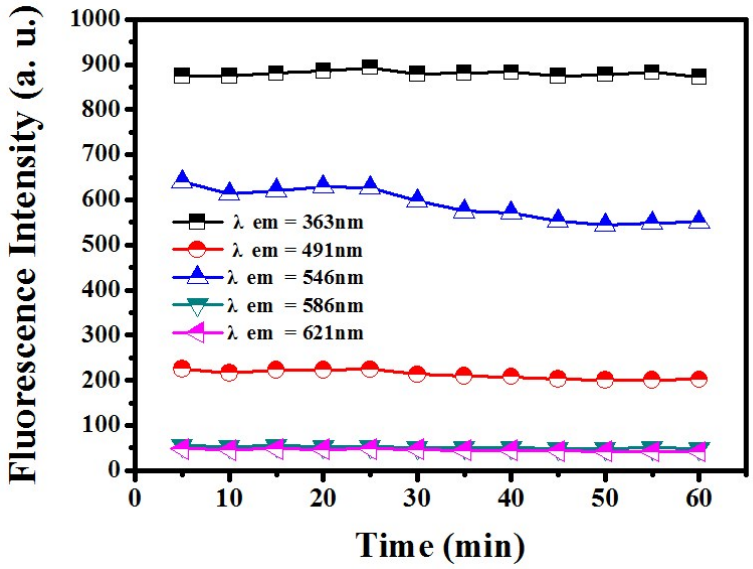


Fig. 6S Emission intensity of the **1**-methanol suspension with time (the fluorescence spectra were recorded every 5 minutes for 1 hour).