2 The β-diketonate as second sensitized ligand can effectively sensitize the luminescence of Eu^{3+}-doped MOF. Subsequently, Eu^{3+}-β-diketonate functionalized sample could sensitively detect volatile organic amines and there is a distinct color variation. This means the luminescent intensity of $^5D_0 \rightarrow {}^7F_2$ transition can be significantly enhanced in the basic environment such as diethylamine and dramatically decreased in the acidic environment like formic acid.

Electronic Supporting Information

3 The color is accompanied by changing from bright red in diethylamine to light purple in formic acid.

A novel fluorescence probe for sensing organic amine vapors from Eu^{3+}β-diketonate functionalized bio-MOF-1 hybrid system

Xiang Shen, Bing Yan*

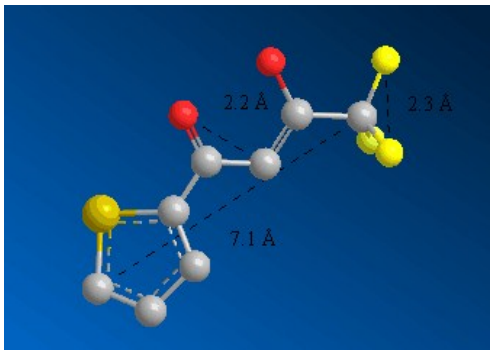


Figure S1 Molecule structure of TTA and simulated molecular dimension, 7.1 Å in length and 2.3 Å width.

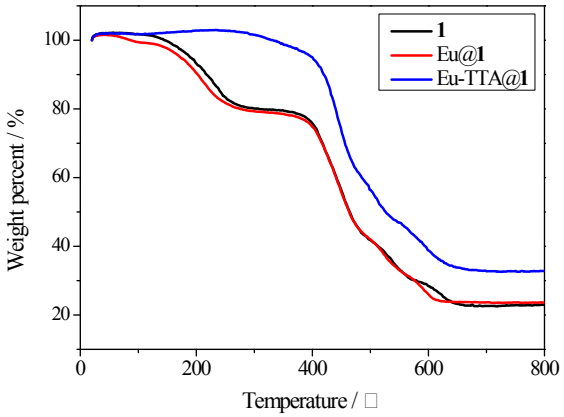


Figure S2 Thermal gravimetric analyses of compound **1**(black line), Eu^{3+}@**1** (red line) and Eu^{3+}-TTA@**1** (blue line).

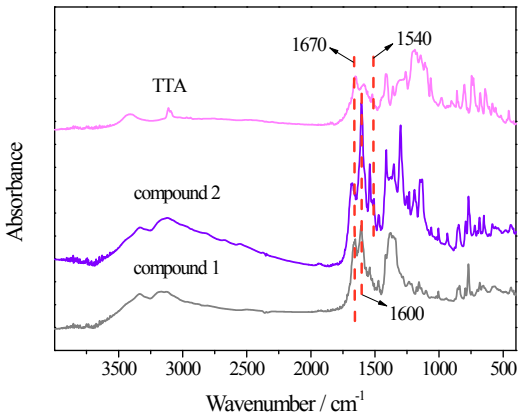


Figure S3 FT-IR spectrum of compound **1,** compound **2** and TTA for comparison.

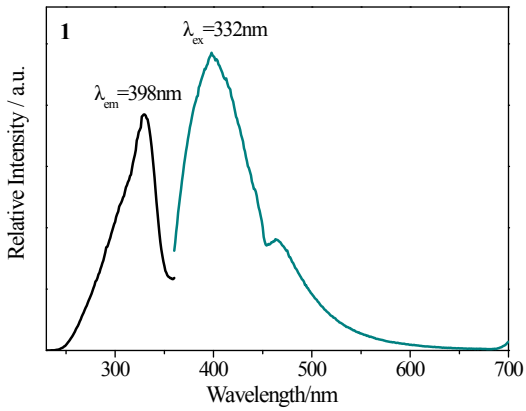


Figure S4 The excitation (black line) and emission spectra (blue line) of compound **1** (λ_{ex} = 332 nm, λ_{em} = 398 nm).

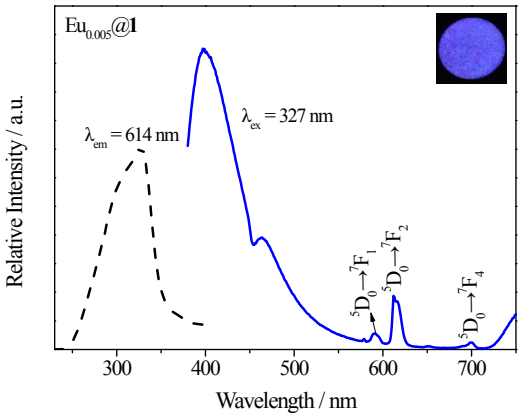


Figure S5 The excitation (dotted line) and emission spectra (solid line) of $Eu^{3+}_{0.005}$@**1** (λ_{ex} = 327 nm, λ_{em} = 614 nm) and the inset is its photograph under UV light of 365 nm displaying the color is blue.

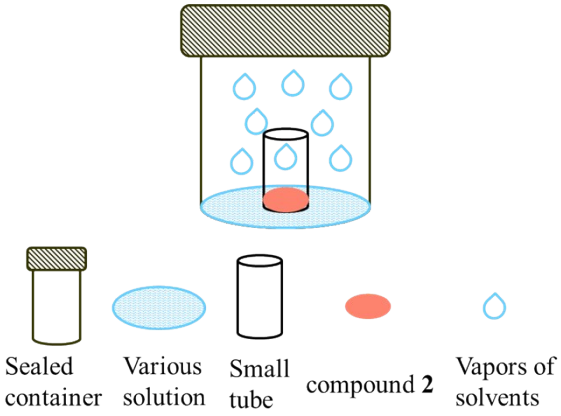


Figure S6 Diagram of sensing measurements for different solvent-vapors.

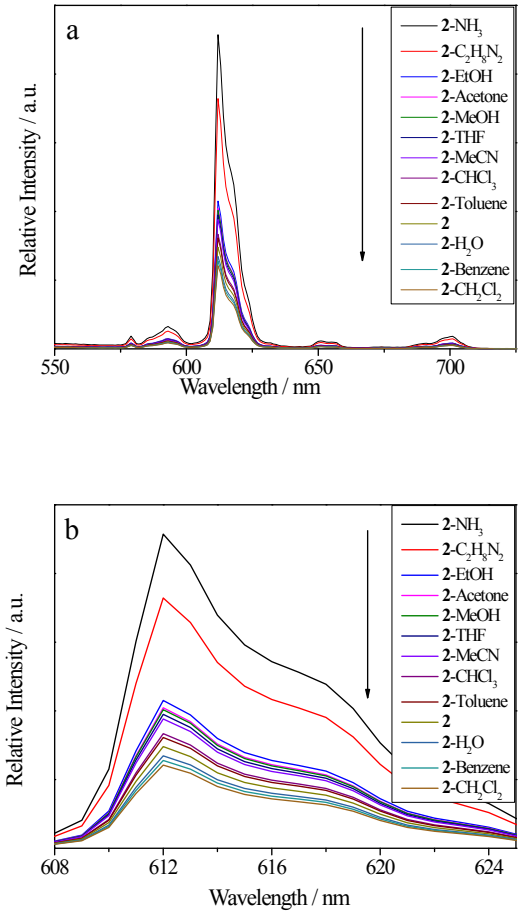


Figure S7 The photoluminescence spectra of **2**in different solvents when excited at 366 nm (a) and the amplifying image from 608 nm to 625 nm (b).

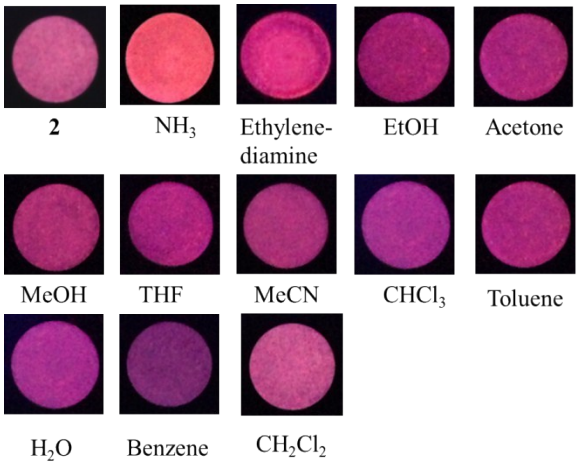


Figure S8 Digital photographs of compound **2** upon contact with corresponding vapors for 1 h taken under UV irradiation of 365 nm.

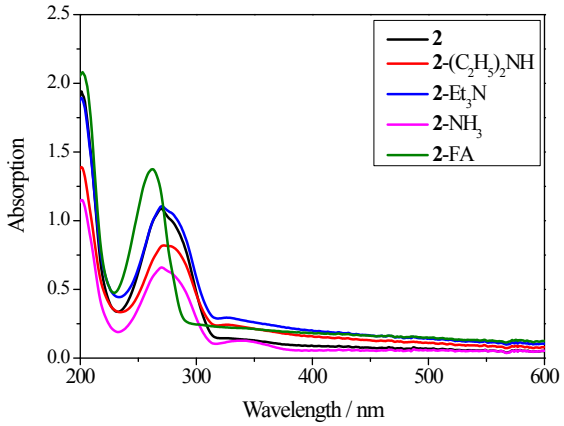
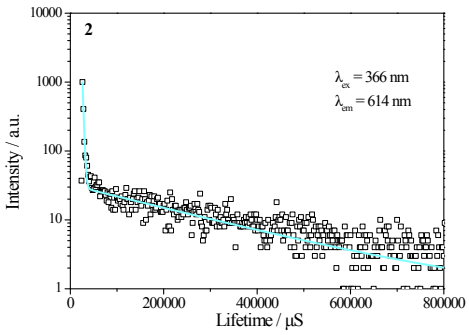
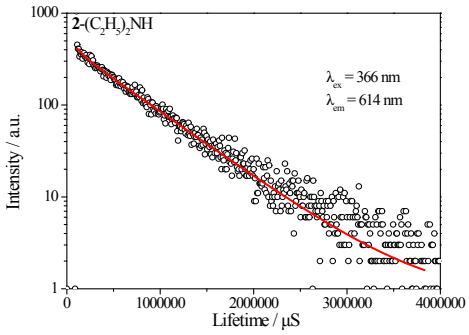


Figure S9UV-Vis spectra of compound **2** after exposure to three kinds of organic amines vapors and formic acid vapor.





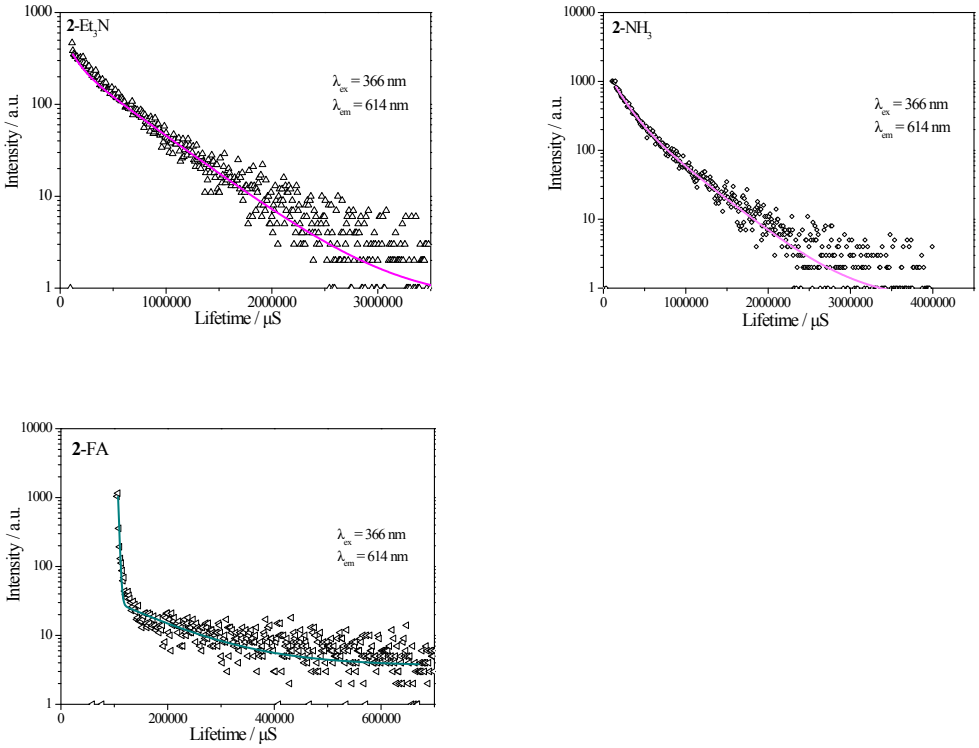


Figure S10 The decay curves of compound **2** when exposed to vapors of $(C_2H_5)_2NH$, Et_3N, NH_3 and FA, respectively.

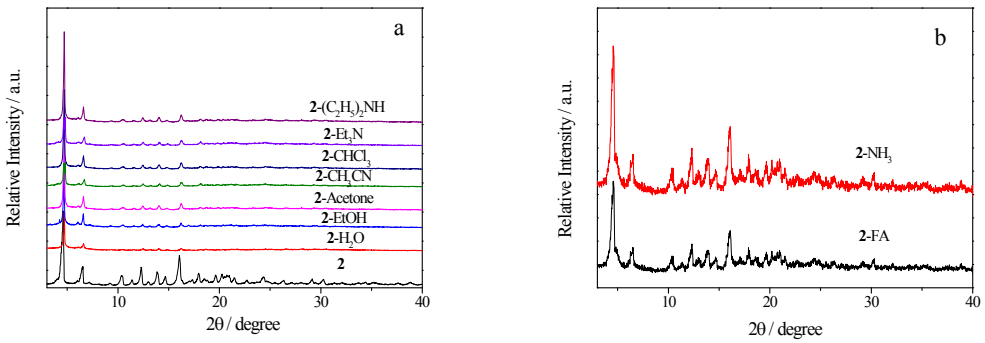


Figure S11 PXRD patterns of compound 2 after exposed to various volatile organic solutions.

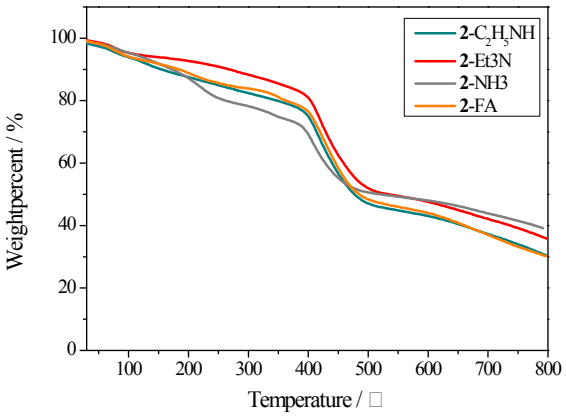


Figure S12 Thermal gravimetric analyses of compound 2 after exposition to various volatile organic solutions.

Table S1 Theluminescence data ofcompound **2** and the corresponding materials after exposed to volatile organic molecules

Sample	Color (CIE-X,Y)
a: **2**-CH_2Cl_2	(0.2922,0.1707)
b: **2**-Benzene	(0.3396,0.1987)
c: **2**-H_2O	(0.3415,0.1994)
d: **2**	(0.3739,0.2183)
e: **2**-Toluene	(0.3587,0.2095)
f: **2**-$CHCl_3$	(0.3577,0.2087)
g: **2**-MeCN	(0.3776,0.2176)
h: **2**-THF	(0.3886,0.2268)
i: **2**-MeOH	(0.3902,0.2278)
j: **2**-Acetone	(0.4039,0.2358)
k: **2**-EtOH	(0.3962,0.2313)
l: **2**-$C_2H_8N_2$	(0.4244,0.2477)
m: **2**-NH_3	(0.4708,0.3009)