Supporting Information

An Eu³⁺-functionalized metal-organic framework (Eu@Zn-MOF) using for highly sensitive detection of rotenone in serum

Yingmin Jin[+], Xin Xu[+], Wanpeng Ma, and Bing Yan*

School of Chemical Science and Engineering, Tongji University, Siping Road 1239, Shanghai 200092, China.

[+] Theseauthorscontributedequallyto this work.

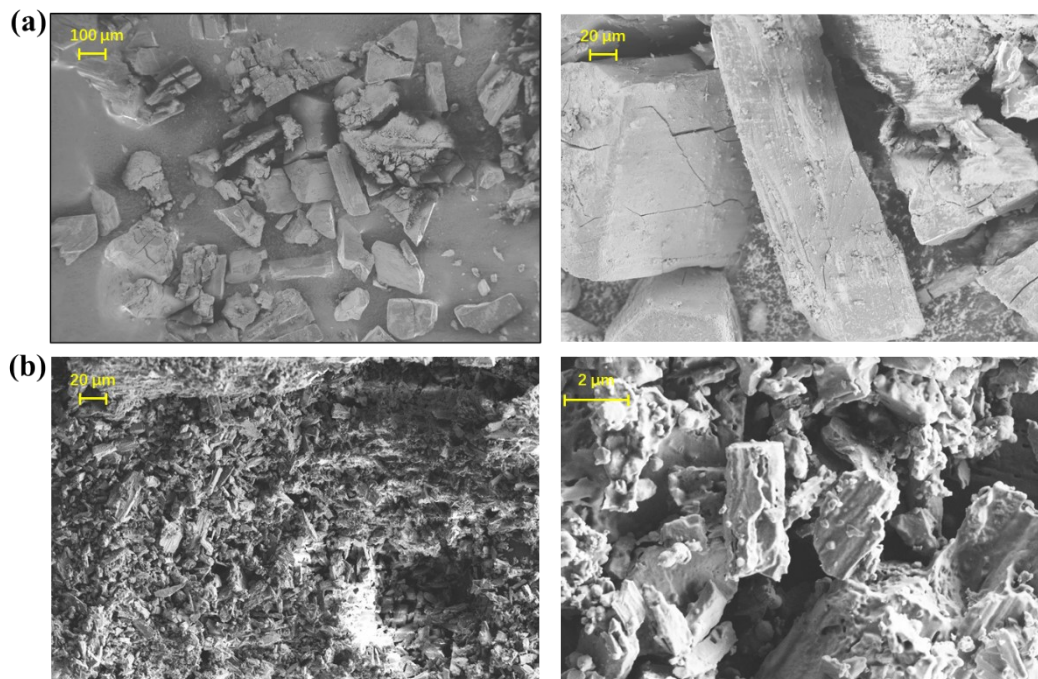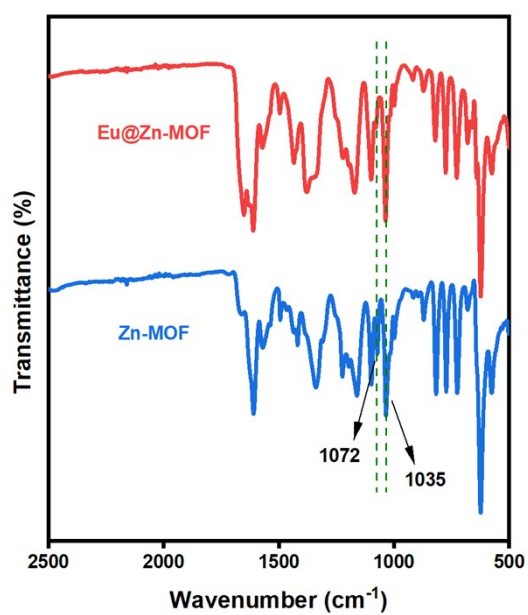**Fig. S1** The SEM images of (a) Zn-MOF (b) Eu@Zn-MOF.

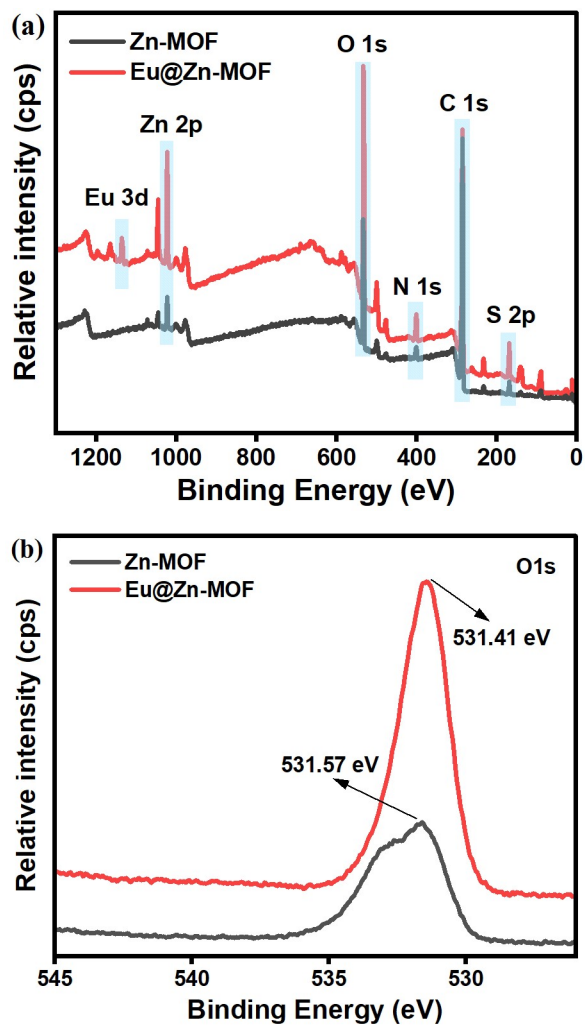**Fig. S2** The FTIR spectra of Zn-MOF and Eu@Zn-MOF.

Fig. S3 (a)The full XPS spectra (b) O 1s XPS patterns of solid-state Zn-MOF and Eu@Zn-MOF.
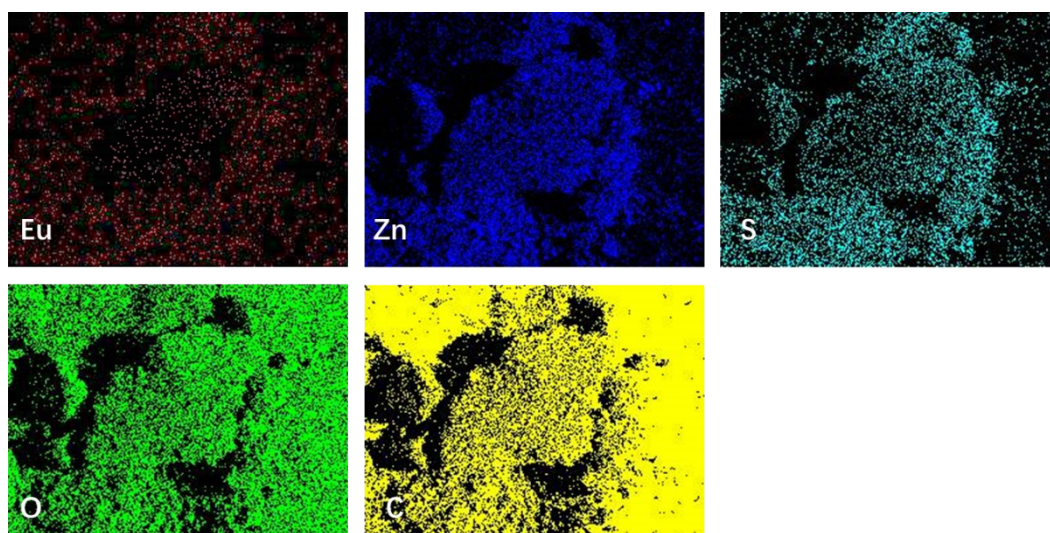

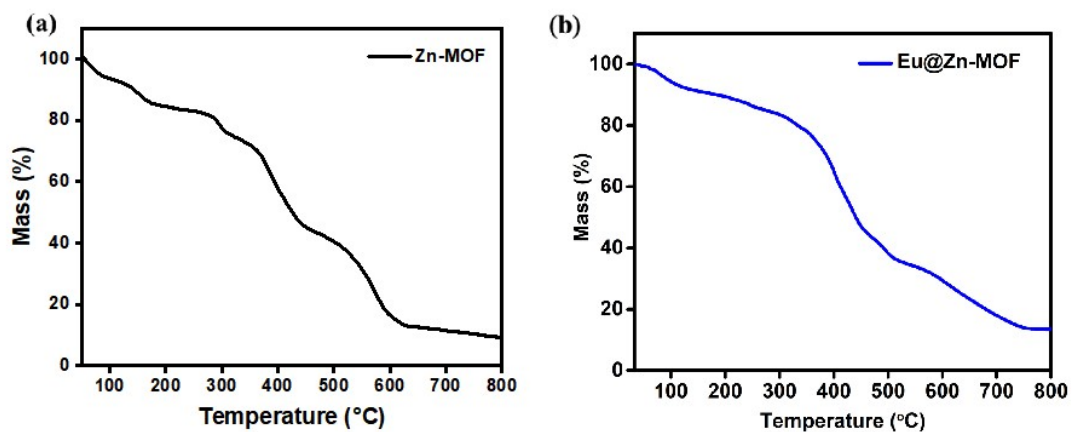**Fig. S4** The EDS mapping images of the solid Eu@Zn-MOF powder sample.

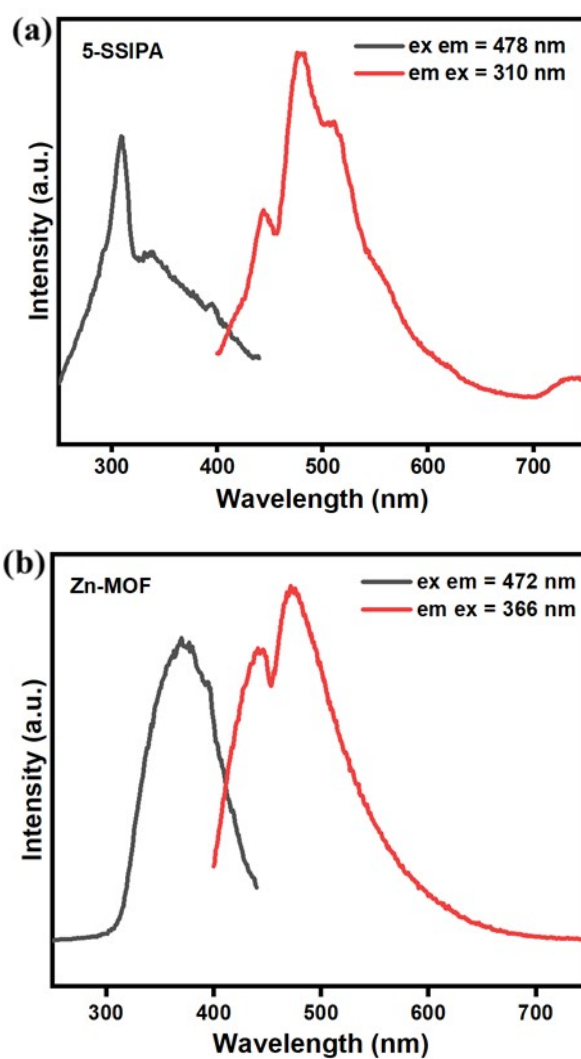**Fig. S5** The thermal gravimetric analysis (TGA) curve of (a) Zn-MOF (b) Eu@Zn-MOF.

Fig. S6 The fluorescence excitation and emission spectra of solid-state (a) 5-SSIPA (b) Zn-MOF at room temperature.
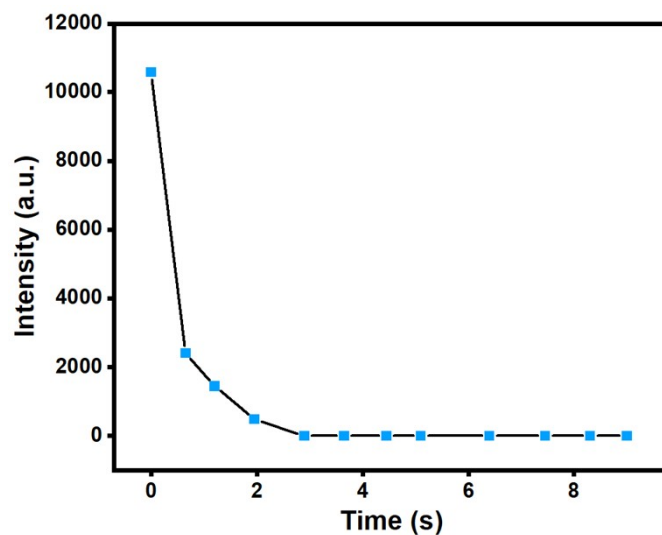
Fig. S7 Time dependence of emission intensities at 617 nm of Eu@Zn-MOF solution with the addition of rotenone (10 mM).
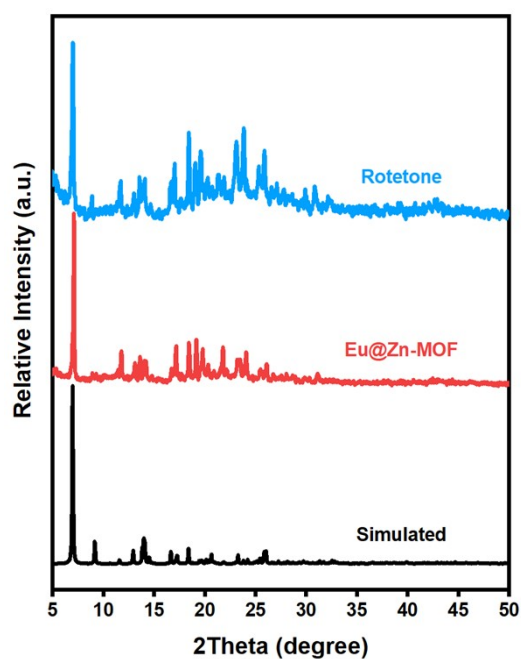

Fig. S8 The PXRD patterns of Eu@Zn-MOF before and after immersing into rotenone suspension (10 mM).
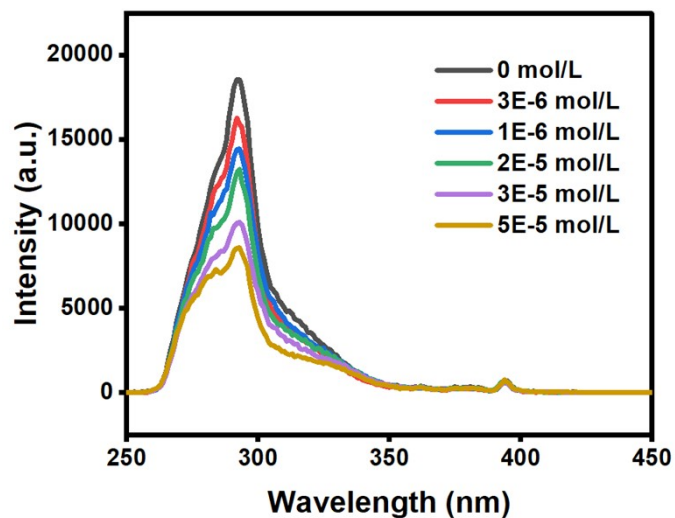
Fig. S9 The fluorescence excitation spectra of Eu@Zn-MOF solutions under different concentrations of rotenone (0-5×10^{-5} mol/L).
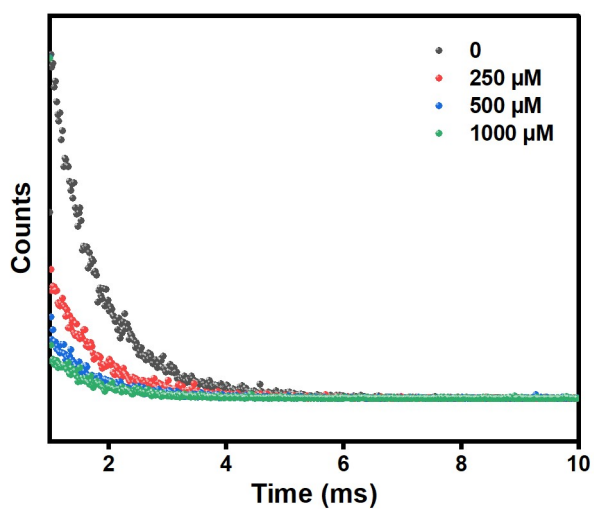

Fig. S10 Emission decay profiles of Eu@Zn-MOF suspensions under different concentrations of rotenone.
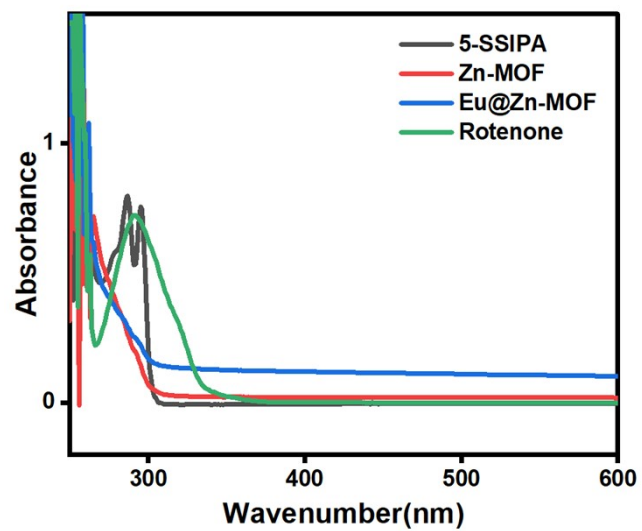
Fig. S11 The UV-vis spectra of the ligand 5-SSIPA, Zn-MOF, Eu@Zn-MOF and rotenone solutions.

Table S1 Fluorescence lifetimes of Eu@Zn-MOF in different concentrations of rotenone.

Concentration (μM)	τ (μs)
0	831.74
250	810.31
500	763.92
1000	759.32

The detection limit (LOD) of Eu@Zn-MOF towards rotenone can be calculated by the following equation:

$$LOD = 3\sigma / k$$

where σ is the standard deviation of luminescent intensity for 10 replicating fluorescence measurements of blank Eu@Zn-MOF solution, k is the slope of the linear fit of the concentration-dependent luminescence intensity curve monitored at 617 nm.