Electronic Supplementary Material (ESI) for Analytical Methods.

Supporting information

Eu-doped MOF-Based High-efficiency Fluorescent Sensor for Detecting 2,4-dinitrophenol and 2,4,6-trinitrophenol Simultaneously

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1. $AlCl_3 \cdot 6H_2O$ (151 mg, 0.625 mmol), H_2bpydc (153 mg, 0.625 mmol) and glacial acetic acid (859 μL, 15.0 mmol) were added into 10 mL N,N-dimethylformamide (DMF). Then, the mixture was placed in 25 mL Teflon-lined Autoclave and heated in an electric heat oven at 413 K for 48 h. The expected white microcrystalline powder was then filtered, washed several times with DMF and dried at 60◦C for 6 h in vacuum oven.

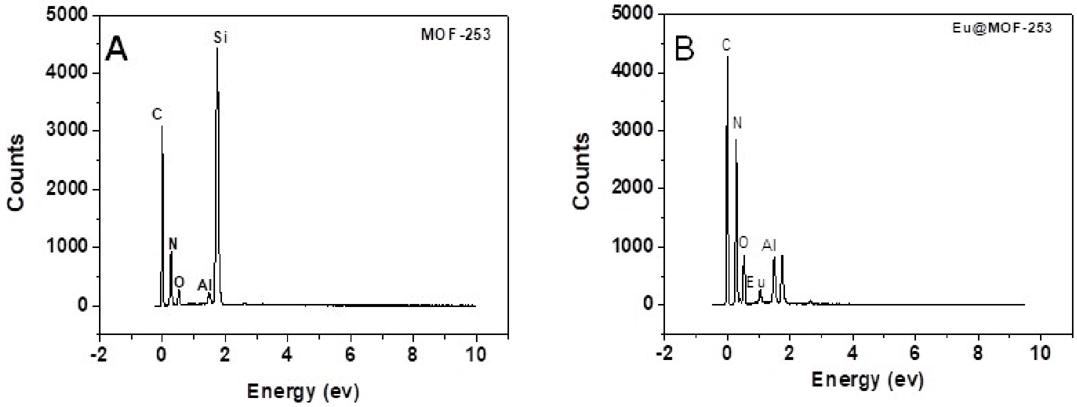

Fig. S1 EDS spectra of MOF-253 (A) and Eu@MOF-253 (B).

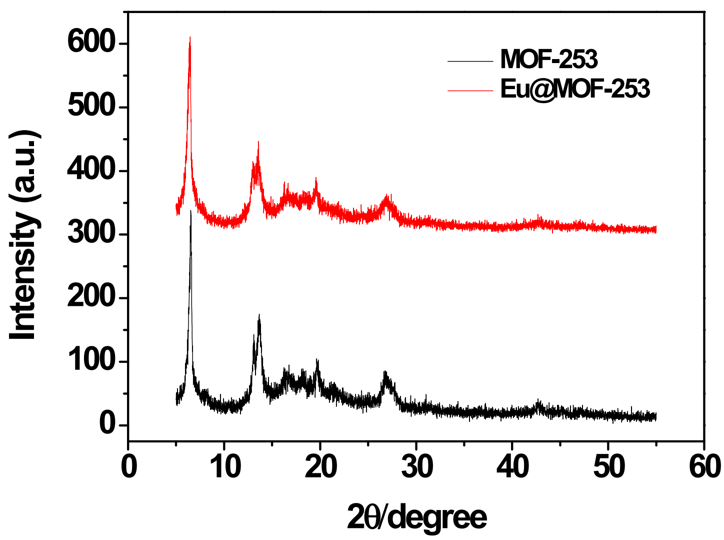

Fig. S2 XRD patterns of MOF-253 and Eu@MOF-253.

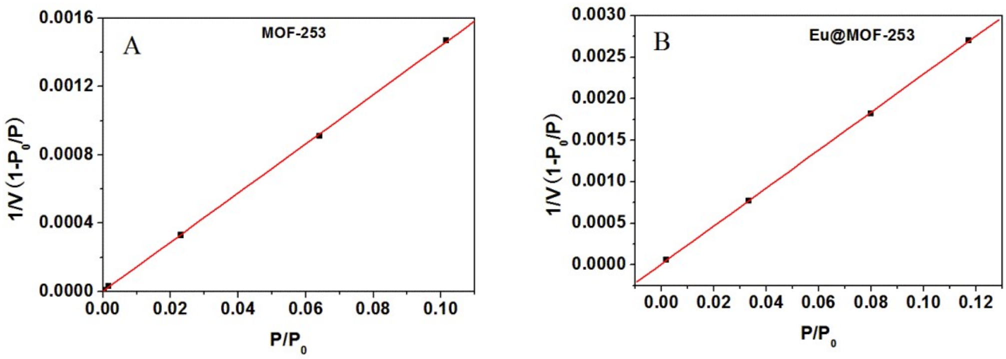

Fig. S3 BET specific surface curve of MOF-253 (A) and Eu@MOF-253 (B).

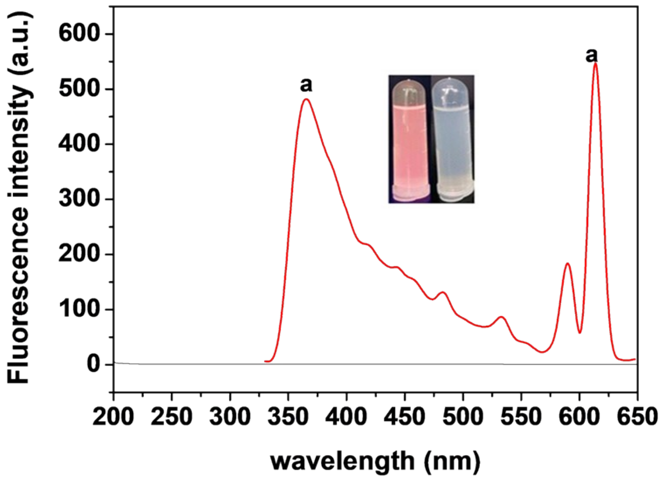

Fig. S4 Fluorescence spectra of Eu@MOF-253. Inset: The photos of Eu@MOF-253 sensor suspensions under UV lamp (orange) and Visible light (white).

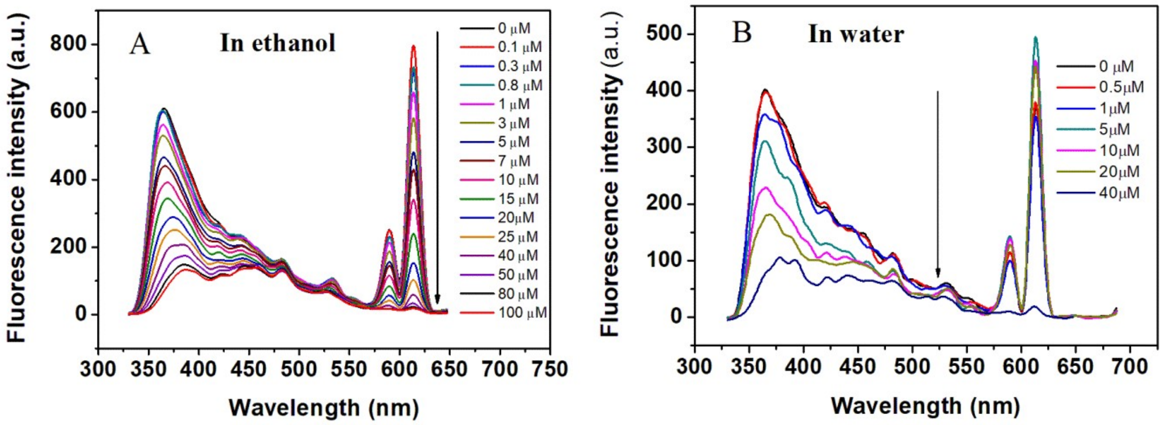

Fig. S5 Fluorescence spectra of Eu@MOF-253 sensor upon addition of 2,4-DNP in ethanol (A) and in water (B).

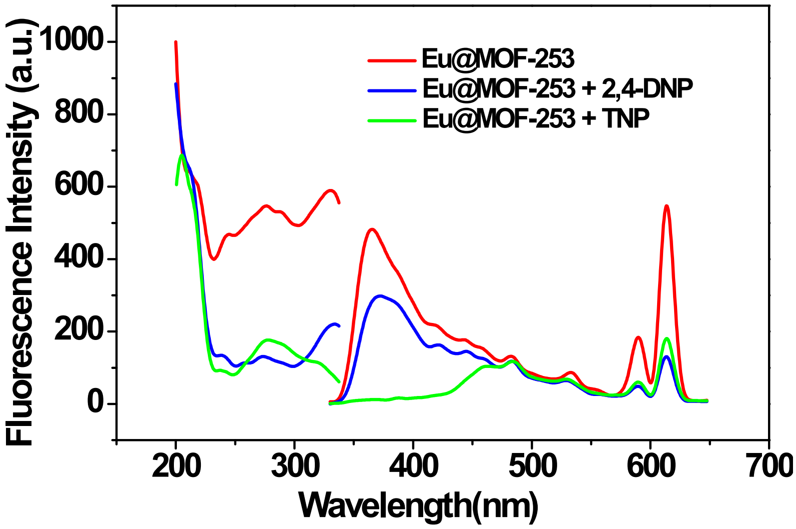

Fig. S6 Excitation and emission spectra of Eu@MOF-253, Eu@MOF-253+2,4-DNP and Eu@MOF-253+TNP.

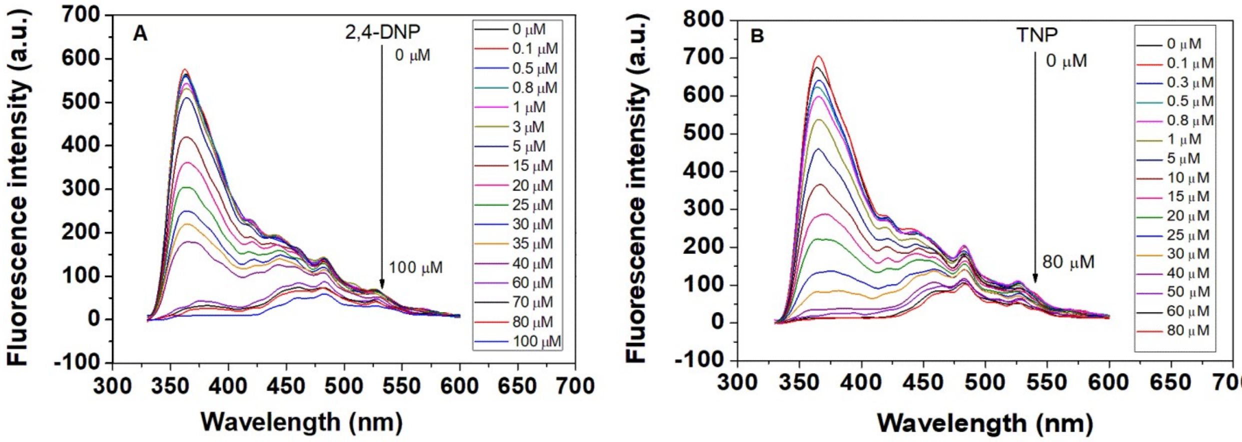

Fig. S7 Fluorescence emission spectra of MOF-253 compound upon addition different concentrations of 2,4-DNP (0-100 μM) and TNP (0-80 μM).

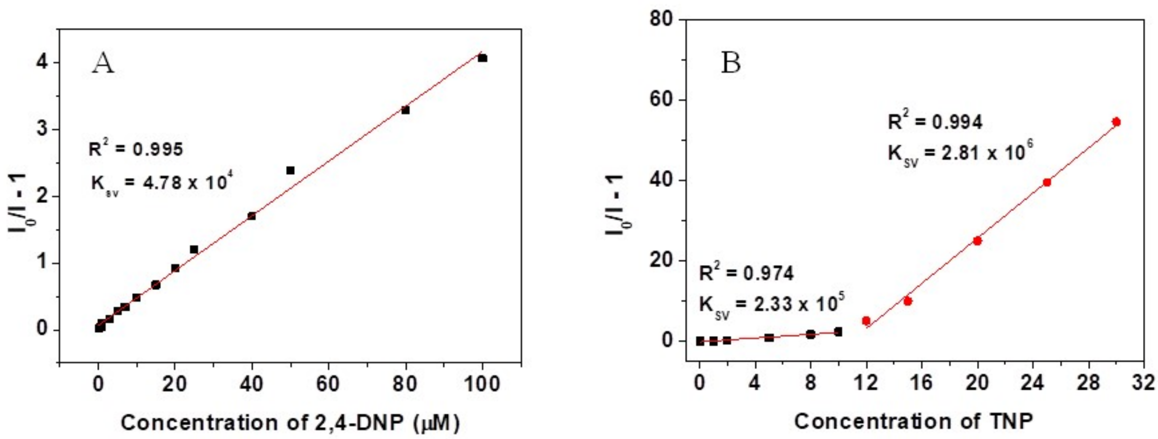

Fig. S8 The Stern-Volmer plots for the interaction of Eu@MOF-253 with 2,4-DNP (A) and TNP (B).

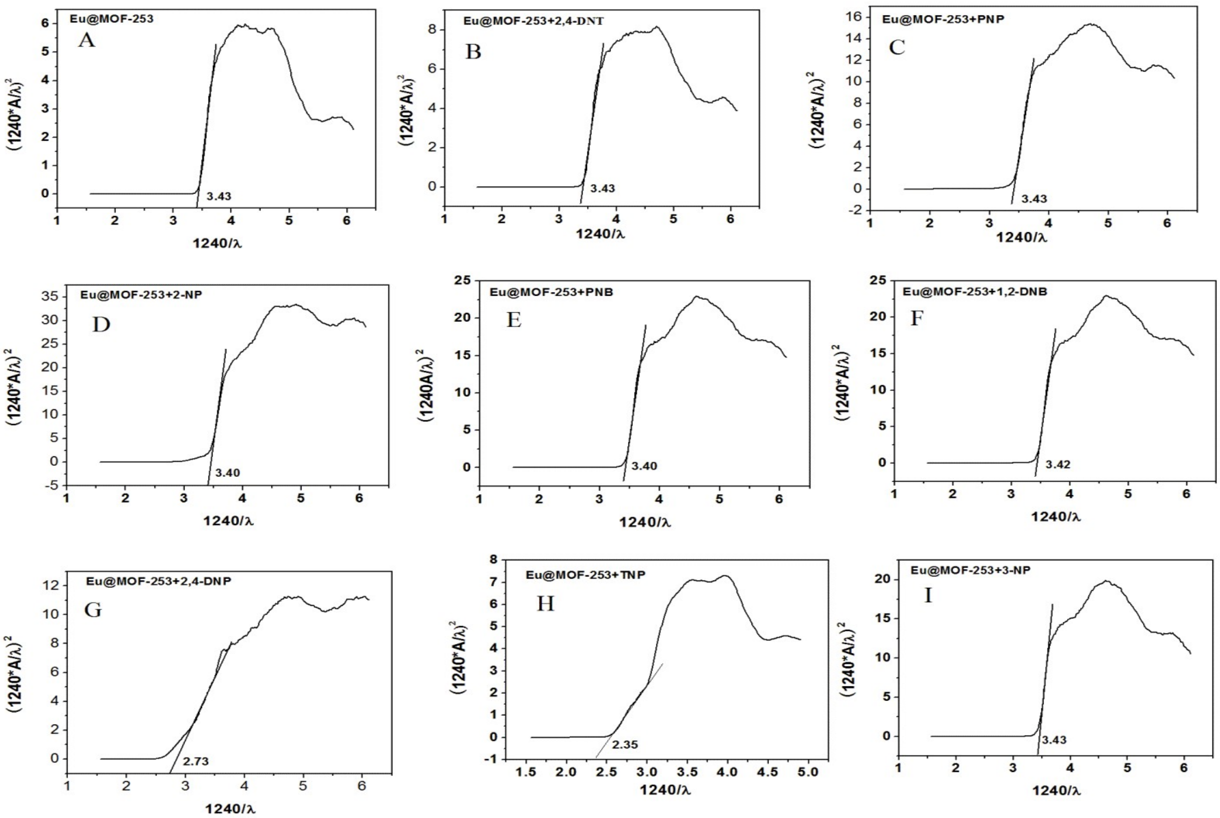

Fig. S9 The determination of Ultraviolet diffuse reflection of Eu@MOF-253 in the presence of various nitroaromatic explosives.

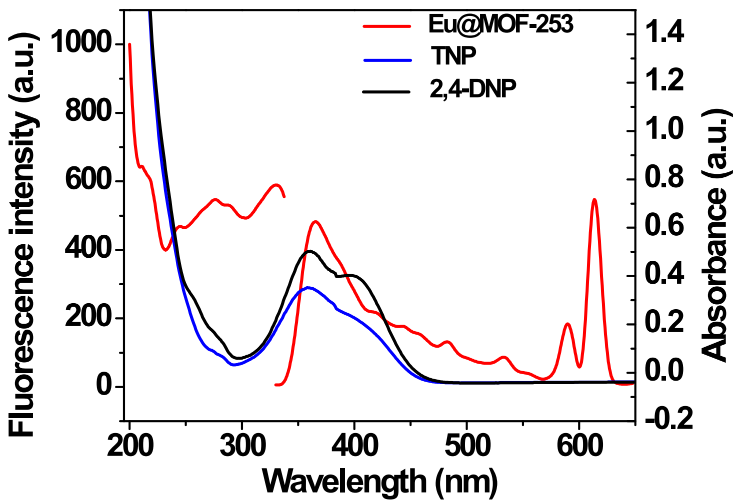

Fig. S10 UV–vis absorption spectra of 2,4-DNP and TNP (black and blue line) and fluorescence excitation and emission spectra (red line) of Eu@MOF-253.

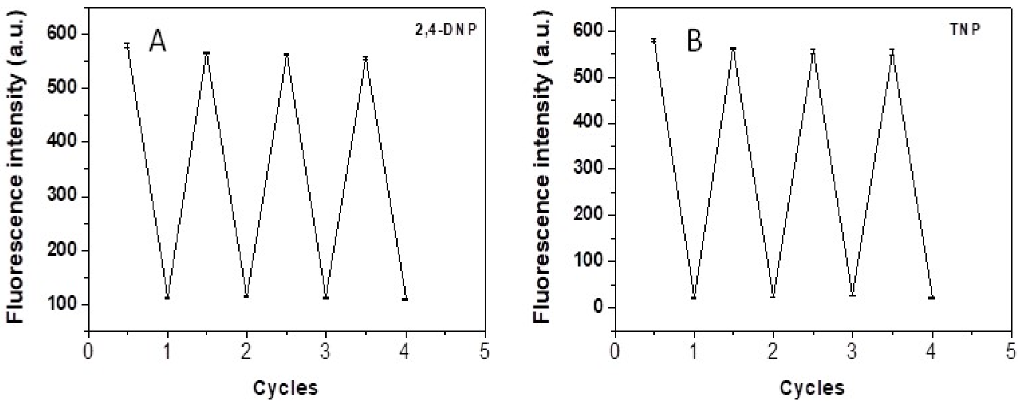

Fig. S11 Recyclability of the Eu@MOF-253 sensor immerses in ethanol with 60 μM 2,4-DNP (A) or 25 μM TNP (B).

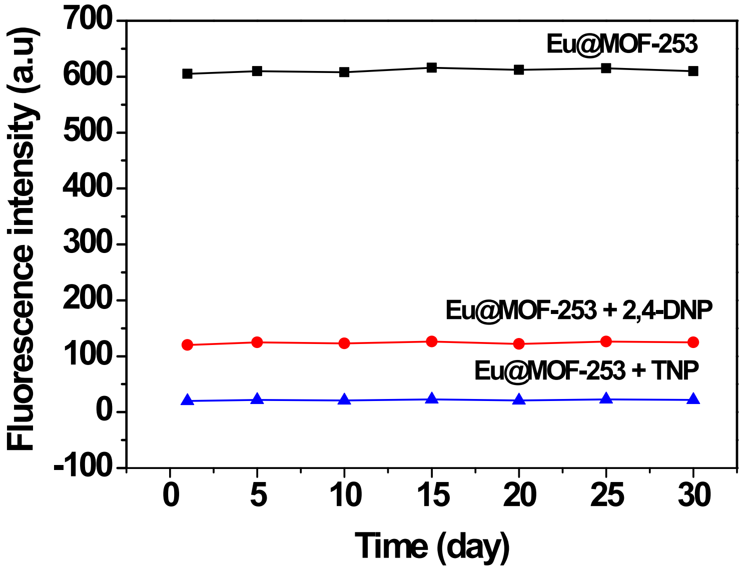

Fig. S12. Fluorescence intensity at 365 nm of Eu@MOF-253 sensor in the absence and presence of 60 μM 2,4-DNP or 25 μM TNP for different days.

Table S1 Comparisons of the detection limit and Ksv of different probes for TNP detection.

Method		Detection limit	Ksv	References
PM-GSH-CuNCs	TNP	2.74 μM	7.80×10^{4}	[1]
$[Ca(DMF)_4Ag_2(SCN)_4]_n$	TNP	2.33 μM	1.74×10^{4}	[2]
HPP-2	TNP	77.2 nM	2.41×10^{4}	[3]
$(ppy)_2Ir(oz)$	TNP	0.23 μM	1.50×10^{4}	[4]
H 2 ATAIA	TNP	4.2 nM	1.76×10^{4}	[5]
$ZnCr_2O_4$	TNP	100 nM	1.44×10^{5}	[6]
Eu@MOF-253	TNP	25 nM	1.58×10^{6}	this work

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