Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting information

Lanthanides post-functionalized Indium metal-organic frameworks (MOFs) for luminescence tuning, polymer film preparation and near-UV white LED assembly

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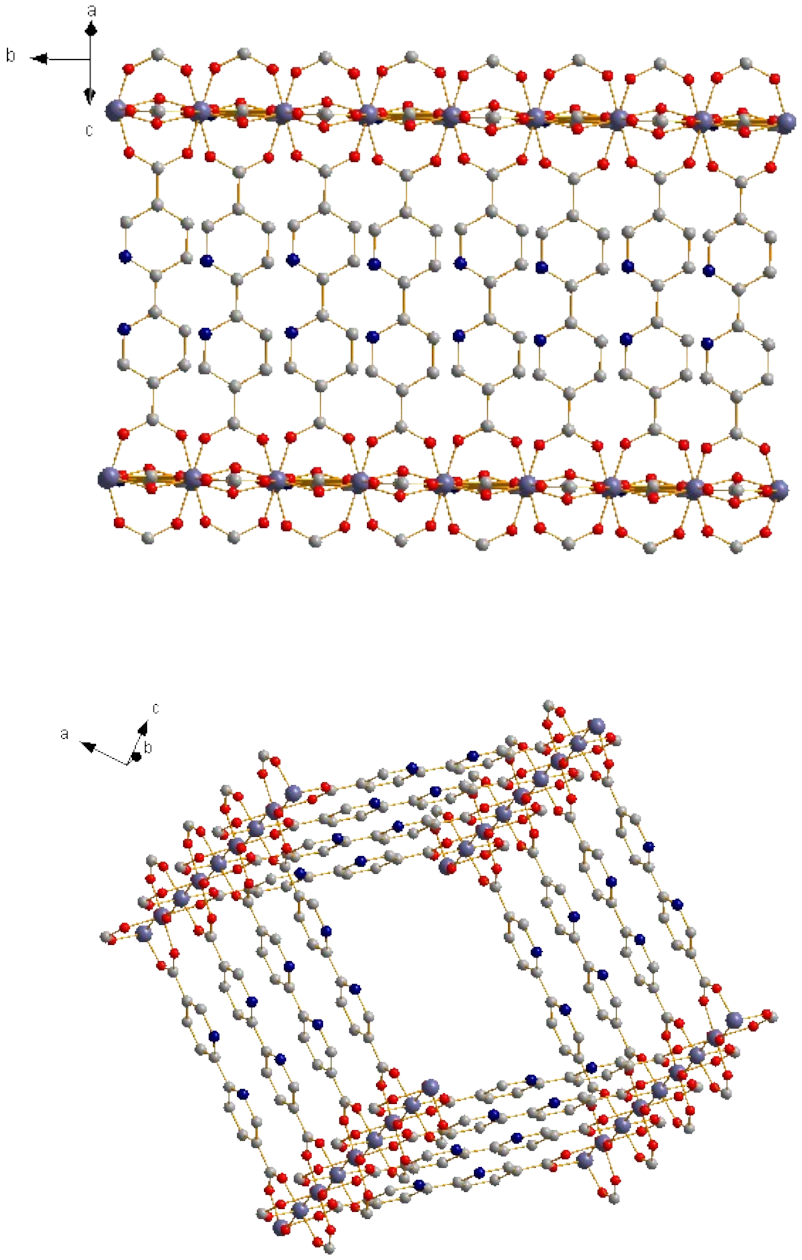


Fig. S1 The representative structure of In-MOF in different coordinate directions. Dark gray, blue, red, light gray represent In, N, O and C atoms, respectively.

Table S1. The loading level of Ln^{3+}cations, lifetime and quantum yield of In-MOF-Ln

Compounds [a]	In^{3+}/Ln^{3+} [b]	Lifetime / μS	quantum yield %
In-MOF-Eu (1:1)	1:0.253	712.23	16.44
In-MOF-Eu (1:0.5)	1:0.128	428.23	10.21
In-MOF-Tb (1:1)	1:0.191	663.45	14.32
In-MOF-Sm (1:1)	1:0.202	641.63	16.12

a: molar ration (In^{3+}:Ln^{3+}) of the added compounds

b: molar ration (In^{3+}:Ln^{3+}) of the actual measurements

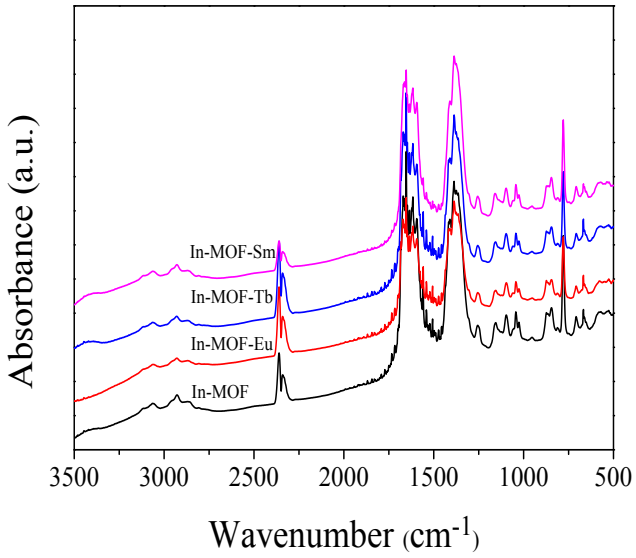


Fig. S2 FTIR spectra of In-MOF and In-MOF-Ln (Ln = Eu, Tb, Sm).

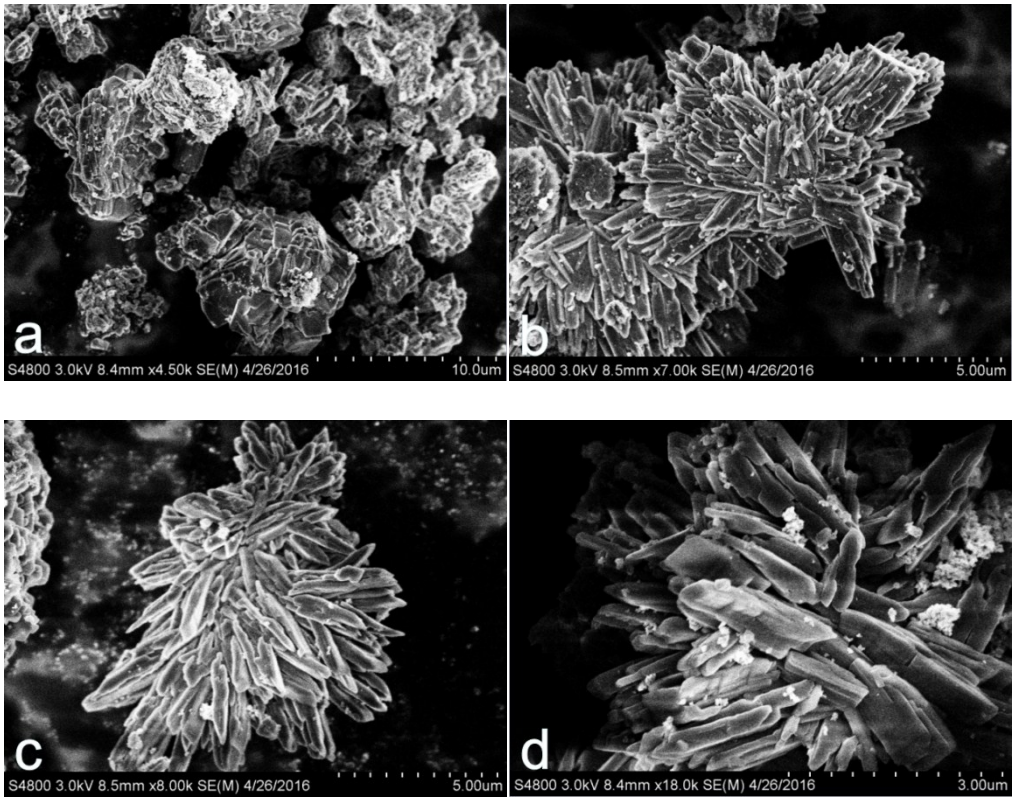


Fig. S3 SEM images of In-MOF (a) and In-MOF-Ln (Eu:b, Tb:c, Sm:d).

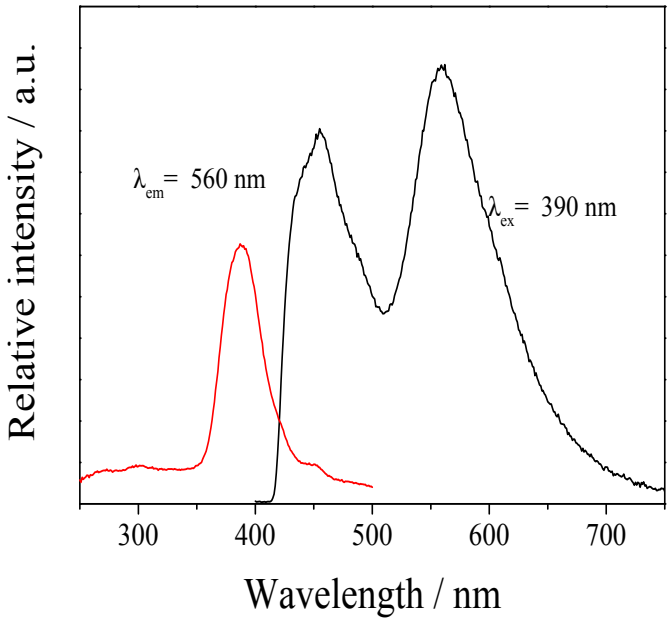
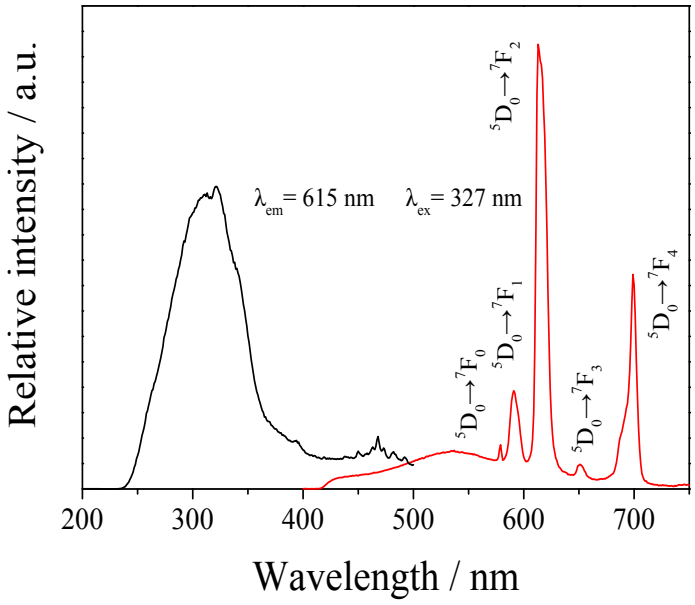


Fig. S4 Excitation and emission spectra of H_2bpydc.



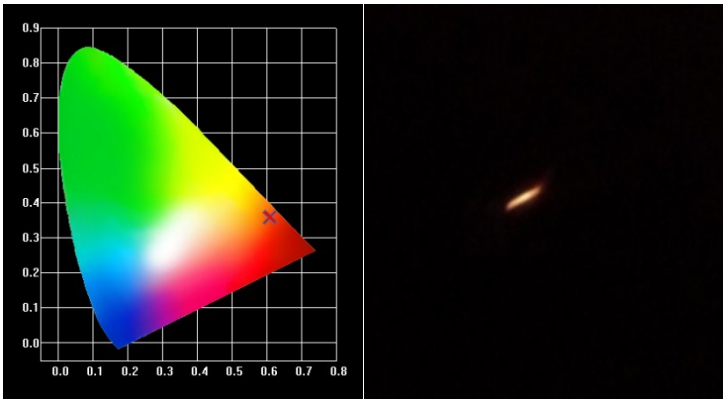
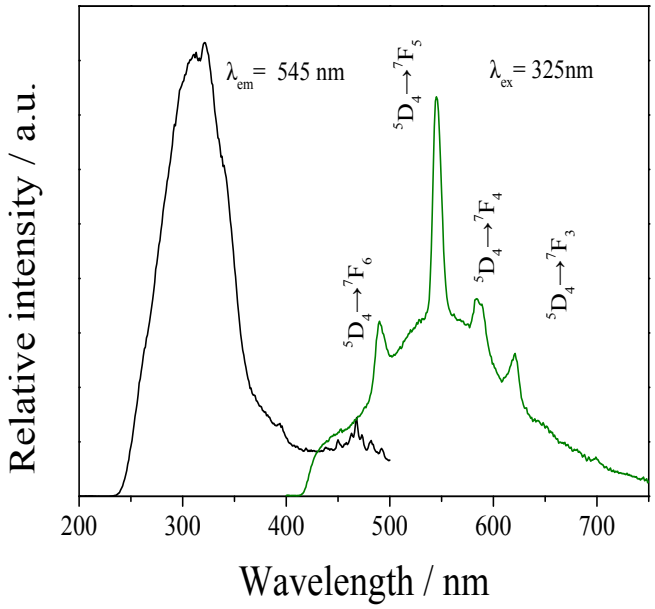


Fig. S5 The excitation and emission spectra of In-MOF-Eu (λ_{ex} = 327 nm, λ_{em} = 615 nm), and following two is the CIE chromaticity diagram (X = 0.60, Y = 0.35) and the corresponding photograph at excitation wavelength of 327 nm.



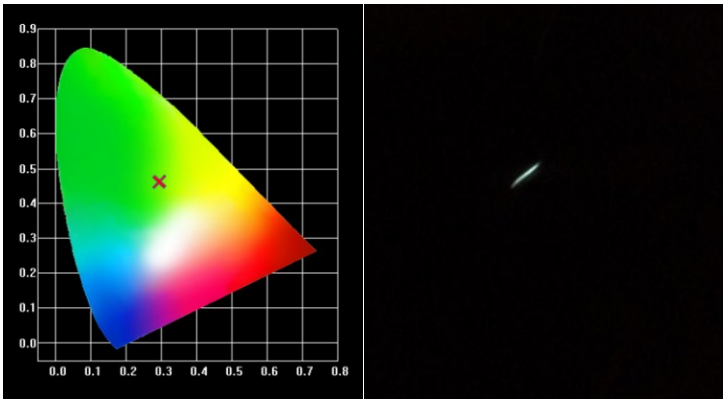
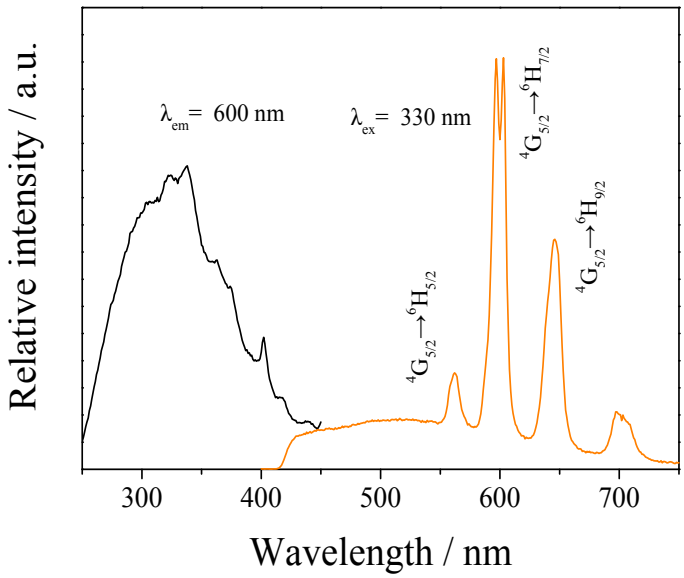


Fig. S6 The excitation and emission spectra of In-MOF-Tb (λ_{ex} = 325 nm, λ_{em} = 545 nm), and following two is the CIE chromaticity diagram (X = 0.29, Y = 0.46) and the corresponding photograph at excitation wavelength of 325 nm.



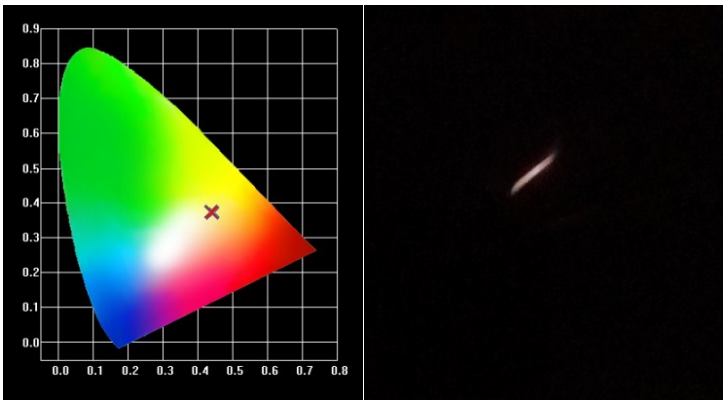


Fig. S7 The excitation and emission spectra of In-MOF-Sm (λ_{ex} = 330 nm, λ_{em} = 600 nm), and following two is the CIE chromaticity diagram (X = 0.44, Y = 0.37) and the corresponding photograph at excitation wavelength of 330 nm.

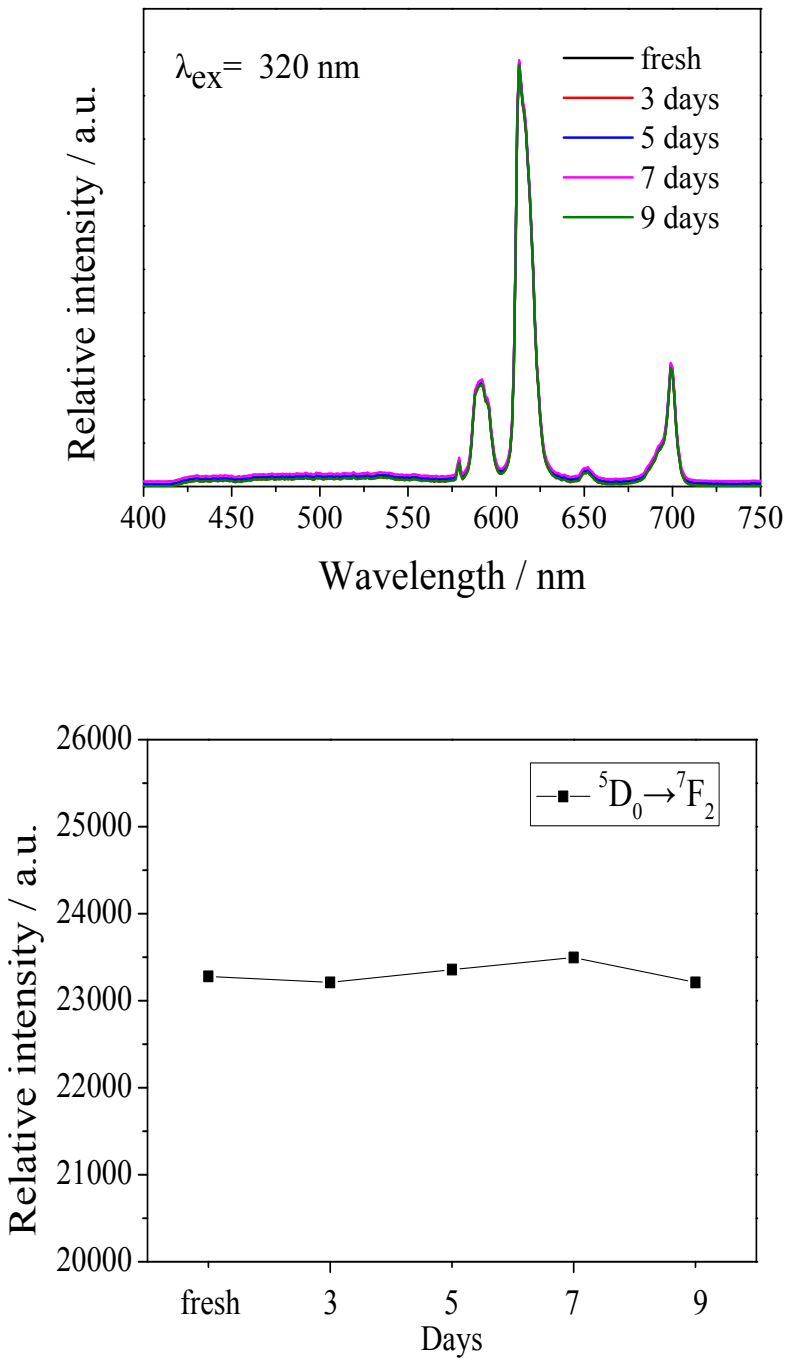


Fig. S8 Day-to-day fluorescence stability and luminous intensity at λ_{em}=614 nm of solid powder In-MOF-Eu in air environment at room temperature.

Table S2 The related coordinate values (x,y) of the CIE chromaticity diagram of In-MOF-Eu excited at different wavelength.

320	330	340	350	360	370	380	390	400
(0.60, 0.34)	(0.56, 0.35)	(0.52, 0.35)	(0.39, 0.36)	(0.29, 0.36)	(0.25, 0.35)	(0.23, 0.34)	(0.21, 0.35)	(0.21, 0.38)

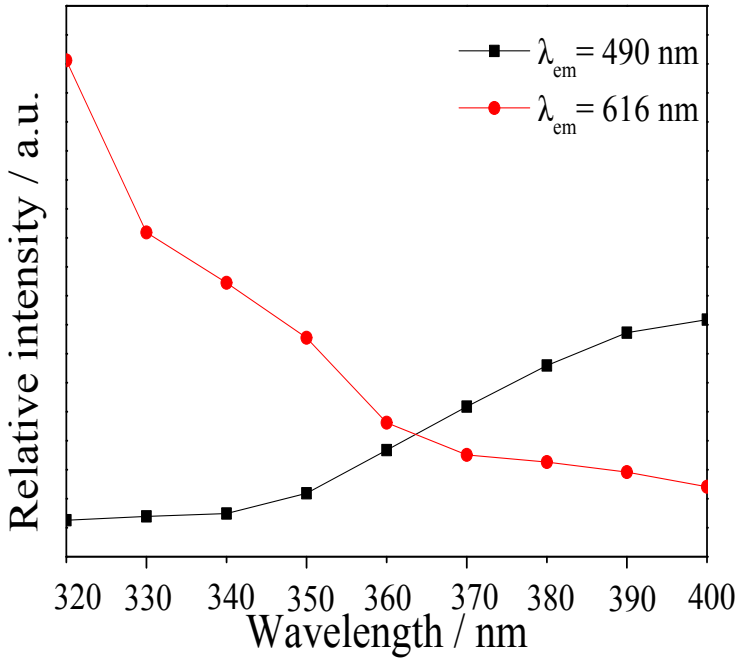


Fig. S9 Excitation wavelength-dependent intensity of the λ_{em}=616 nm ($^5D_0$-$^7F_2$) and λ_{em}=490 nm.

Table S3 The corresponding ratios of emission peak intensities (616 nm: 490 nm) under different excitation wavelengths.

320	330	340	350	360	370	380	390	400
62.34	25.90	17.35	5.53	1.35	0.60	0.40	0.29	0.20

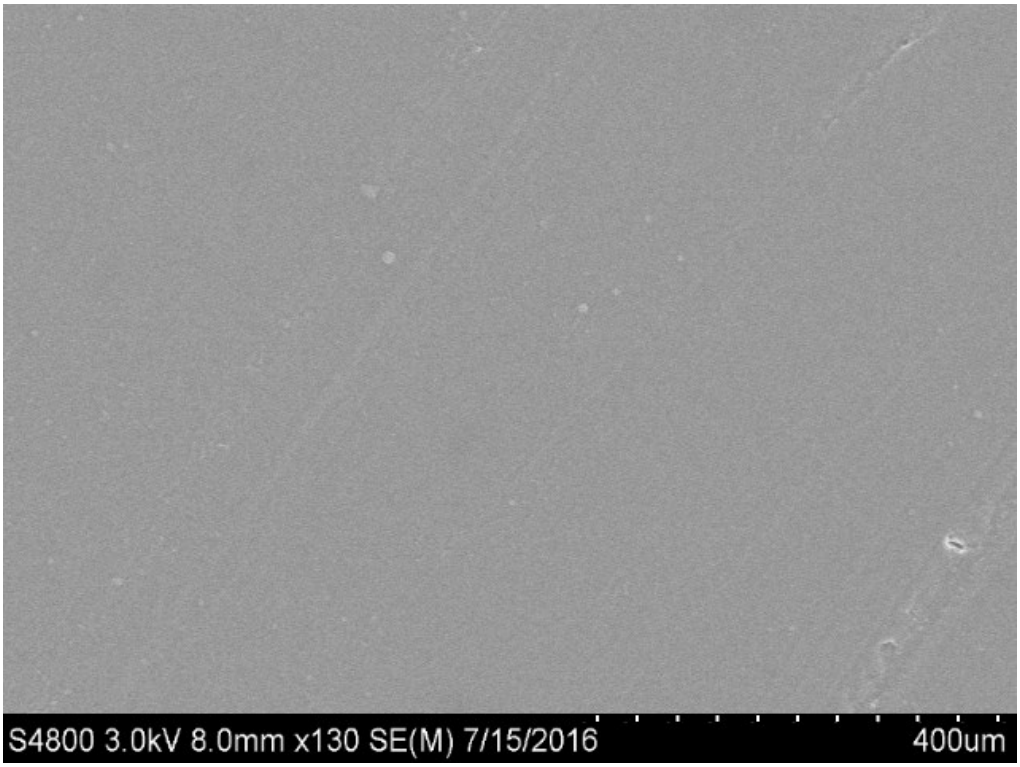


Fig.S10 SEM image of In-MOF-Eu polymer film.

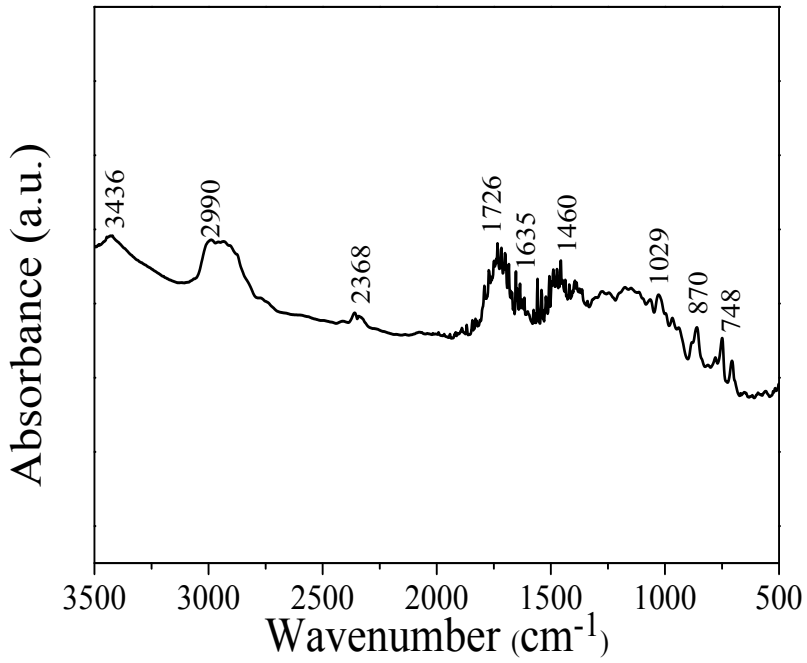


Fig.S11 FTIR spectra of In-MOF-Eu polymer film ranged from 500-3500 cm^{-1}.

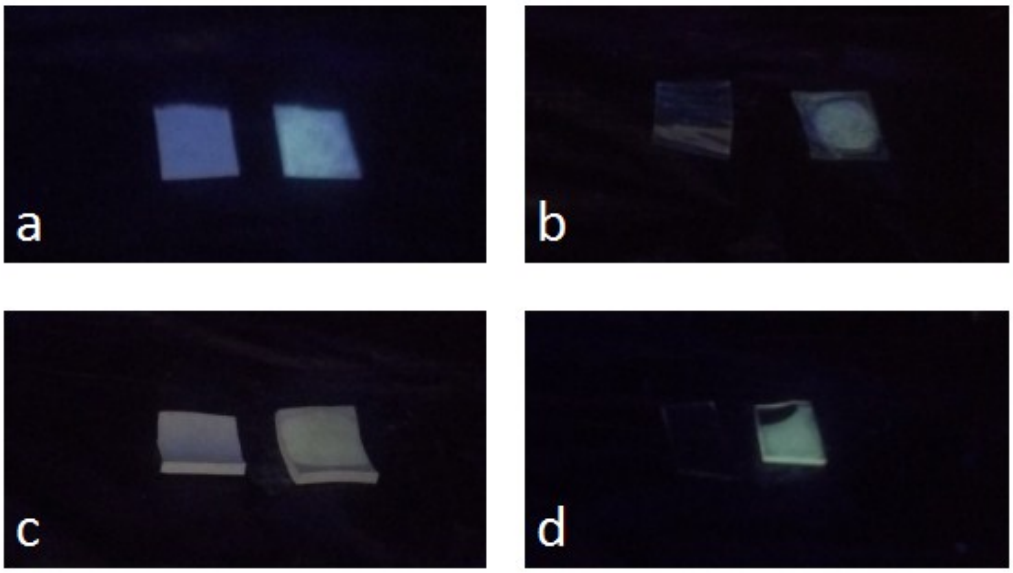


Fig.S12 Photographs of In-MOF-Eu polymer film on different matrices: (a) paper, (b) plastic, (c) rubber, (d) fused silica. The matrix on right is adhered by In-MOF-Eu polymer film, but the one on the left does not.