Supplementary Materials: Synthesis, Structures, and Luminescence Properties of Metal Organic Frameworks Based on Lithium-Lanthanide and Terephthalate

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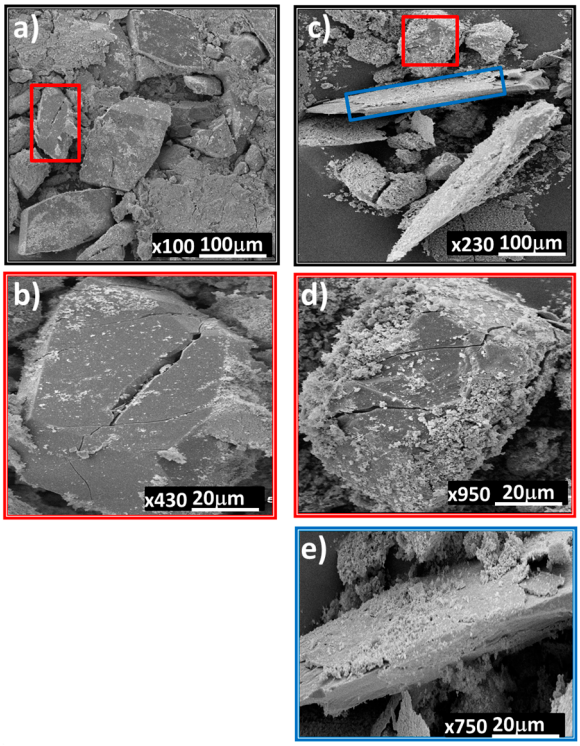

Figure S1. SEM images of **MS3** (**a**,**b**); **MS7** (**c**); **MS7a** (**d**) and **MS7b** (**e**).

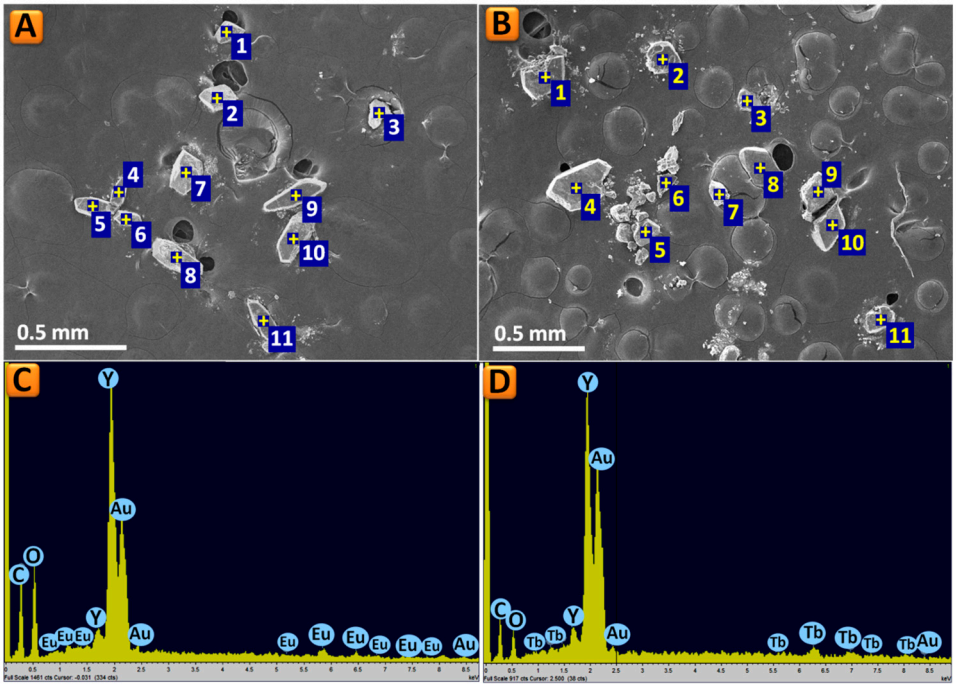

Figure S2. SEM images and EDX spectra of **MS5** (**A**,**C**) and **MS6** (**B**,**D**).

Table S1. The results of EDX quantitative analysis (in atomic %) for **MS5** and **MS6**.

Spectrum	MS5		MS6	
	Y	Eu	Y	Tb
1	94.5	5.5	97.3	2.7
2	96.7	3.3	74.7	25.3
3	96.5	3.5	97.9	2.1
4	95.5	4.5	96.9	3.1
5	97.6	2.4	96.3	3.7
6	95.7	4.3	96.6	3.4
7	94.7	5.3	93.5	6.5
8	95.0	5.0	94.9	5.1
9	96.4	3.6	95.2	4.8
10	96.6	3.4	92.2	7.8
11	96.6	3.4	93.1	6.9
Mean	96.0	4.0	94.0	6.4
Std. deviation	0.9	0.9	6.5	6.5
Max.	97.6	5.4	97.9	25.3
Min.	94.5	2.4	74.68	2.1

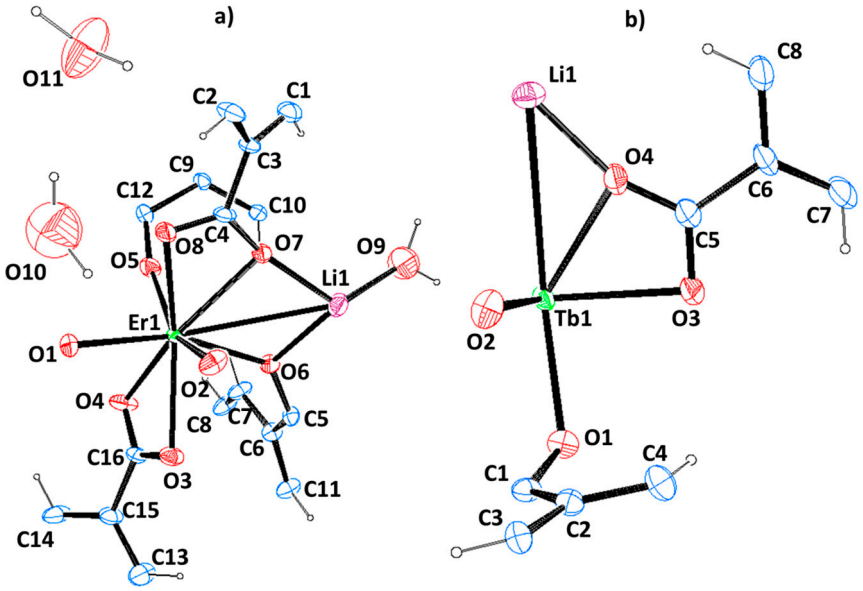

Figure S3. Perspective view of the asymmetric unit of **MS3** (**a**) and **MS7b** (**b**).

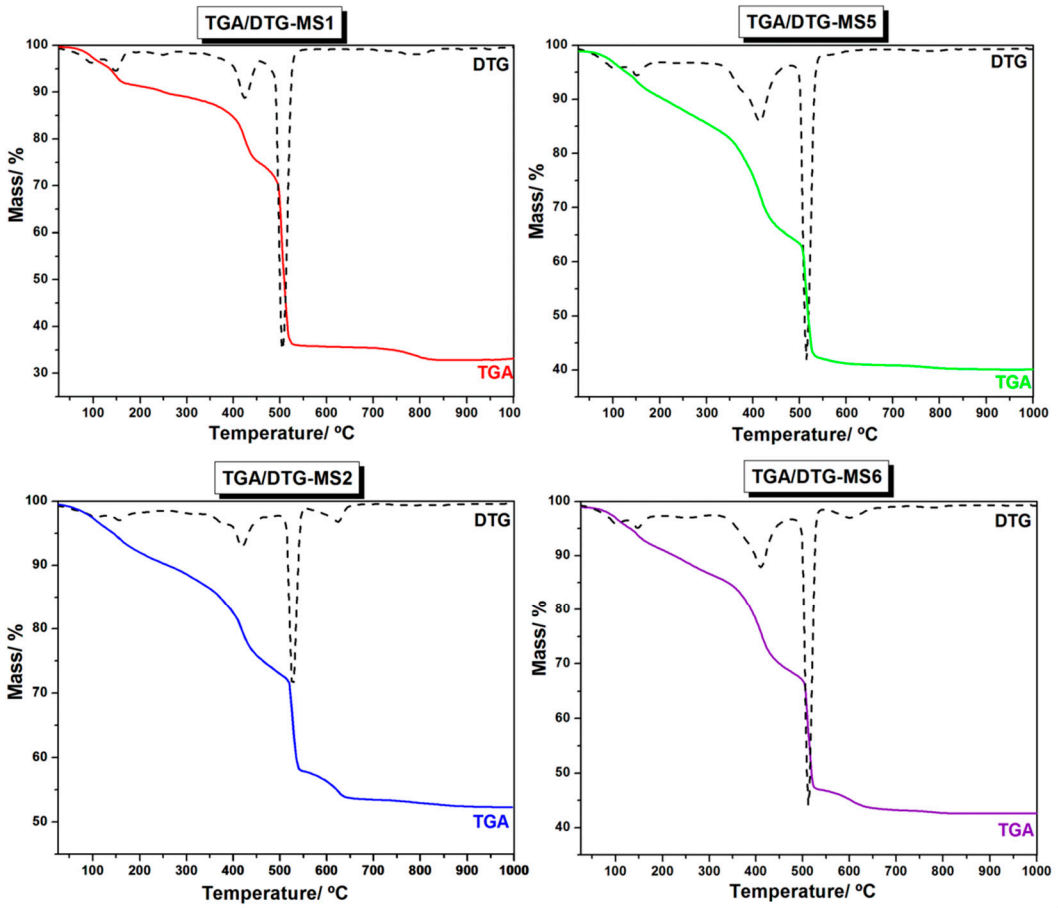

Figure S4. TGA/DTG curves of **MS1**, **MS2**, **MS5** and **MS6**.

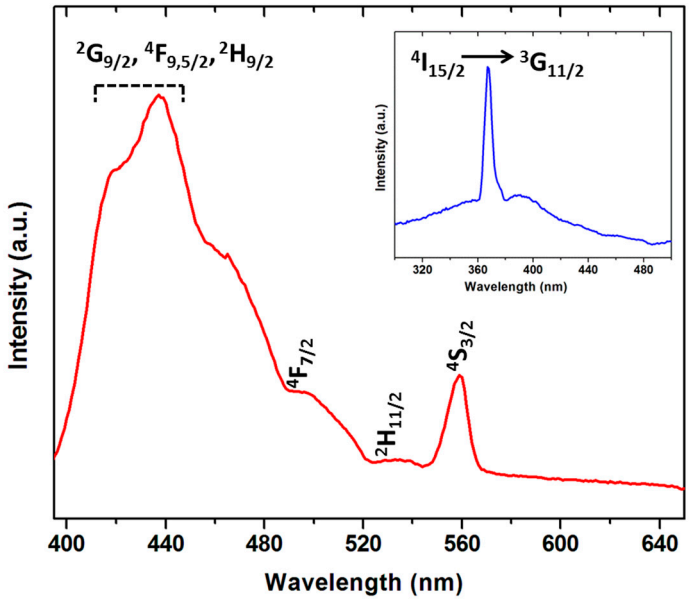

Figure S5. The emission spectrum of **MS3** upon excitation at 370 nm. The inset shows the excitation spectrum detecting luminescence at 557 nm.

Table S2. Selected bond lengths(BL/Å) and bond angles(BA/°) for **MS1–4** and **MS7b**.

MS1	BL/BA	MS2	BL/BA	MS3	BL/BA	MS4	BL/BA	MS7b	BL/BA
Dy1–O1	2.426(2)	Ho1–O1	2.419(6)	Er1–O1	2.274(2)	Yb1–O1	2.407(2)	Tb1–O1	2.394(2)
Dy1–O2	2.473(2)	Ho1–O2	2.469(6)	Er1–O2	2.294(2)	Yb1–O2	2.424(2)	Tb1–O2	2.279(2)
Dy1–O3	2.350(2)	Ho1–O3	2.302(5)	Er1–O3	2.455(2)	Yb1–O3	2.384(3)	Tb1–O3	2.410(2)
Dy1–O4	2.311(2)	Ho1–O4	2.335(5)	Er1–O4	2.412(2)	Yb1–O4	2.430(2)	Tb1–O4	2.434(3)
Dy1–O5	2.263(2)	Ho1–O5	2.445(6)	Er1–O5	2.241(2)	Yb1–O5	2.296(2)	Li1–O1	1.997(4)
Dy1–O6	2.294(2)	Ho1–O6	2.439(6)	Er1–O6	2.325(2)	Yb1–O6	2.270(3)	Li1–O3	1.888(5)
Dy1–O7	2.463(2)	Ho1–O7	2.274(5)	Er1–O7	2.447(2)	Yb1–O7	2.212(2)	Tb1–Li1	3.376(6)
Dy1–O8	2.445(2)	Ho1–O8	2.254(6)	Er1–O8	2.428(2)	Yb1–O8	2.245(3)		
Li1–O2	1.926(6)	Li1–O2	1.900(2)	Li1–O3	1.918(6)	Li1–O2	1.925(7)		
Li1–O3	2.055(5)	Li1–O4	2.060(2)	Li1–O6	2.050(6)	Li1–O4	1.919(7)		
Li1–O7	1.927(6)	Li1–O5	1.960(2)	Li1–O7	1.937(5)	Li1–O5	2.052(7)		
Li1–O1W	1.894(6)	Li1–O9	1.880(2)	Li1–O9	1.892(6)	Li1–O1W	1.882(8)		
Dy1–Li1	3.405(5)	Ho1–Li1	3.410(2)	Er1–Li1	3.390(6)	Yb1–Li1	3.373(7)		
O1–Dy1–O2	52.97(7)	O1–Ho1–O2	53.1(2)	O1–Er1–O2	86.66(9)	O1–Yb1–O2	53.89 (8)	O1–Tb1–O2	77.25(8)
O1–Dy1–O3	85.87(7)	O1–Ho1–O3	128.1(2)	O1–Er1–O3	83.51(8)	O1–Yb1–O3	145.15(9)	O1–Tb1–O3	126.87(9)
O1–Dy1–O4	128.30(7)	O1–Ho1–O4	85.4(2)	O1–Er1–O4	77.62(8)	O1–Yb1–O4	146.1 (1)	O1–Yb1–O4	82.86(9)
O1–Dy1–O5	77.64(7)	O1–Ho1–O5	144.9(2)	O1–Er1–O5	96.52(8)	O1–Yb1–O5	122.19(9)	O1–Li1–O5	122.19(9)
O1–Dy1–O6	77.73(8)	O1–Ho1–O6	145.8(2)	O1–Er1–O6	159.21(8)	O1–Yb1–O6	74.03(9)	O1–Li1–O3	115.3(1)
O1–Dy1–O7	145.21(7)	O1–Ho1–O7	78.3(2)	O1–Er1–O7	132.13(7)	O1–Yb1–O7	80.48(9)		
O1–Dy1–O8	145.92(8)	O1–Ho1–O8	77.6(2)	O1–Er1–O8	78.85(8)	O1–Yb1–O8	78.46(9)		
O2–Li1–O7	114.6(3)	O2–Li1–O5	114.5(7)	O3–Li1–O7	114.9(3)	O2–Li1–O4	115.4(4)		
O2–Li1–O1W	110.1(3)	O2–Li1–O9	110.8(8)	O3–Li1–O9	110.2(3)	O2–Li1–OW	118.7(3)		

Table S3. Hydrogen-bond geometry (Å, °) for **MS3**.

D–H···A	D–H	H···A	D···A	D–H···A
O9–H1W···O11 [I]	0.89	1.96	2.835	167
O9–H2W···O10 [II]	0.91	1.92	2.819	172
O10–H4W···O11 [III]	0.81	2.17	2.967	169
O11–H5W···O8 [IV]	0.89	1.87	2.673	178
O11–H6W···O4 [V]	0.87	2.13	2.847	139

Symmetry codes: (I) x,-y+1/2+1,+z-1/2; (II) x,+y+1,+z; (III) x,y,z; (IV) -x+1,-y+1,-z+1; (V) x+1,+y-1,+z+1.