

Supplementary Information

Synthesis and Optical Properties of $\text{Li}_3\text{Ba}_2\text{La}_3(\text{MoO}_4)_8\text{:Eu}^{3+}$ Powders and Ceramics for pcLEDs

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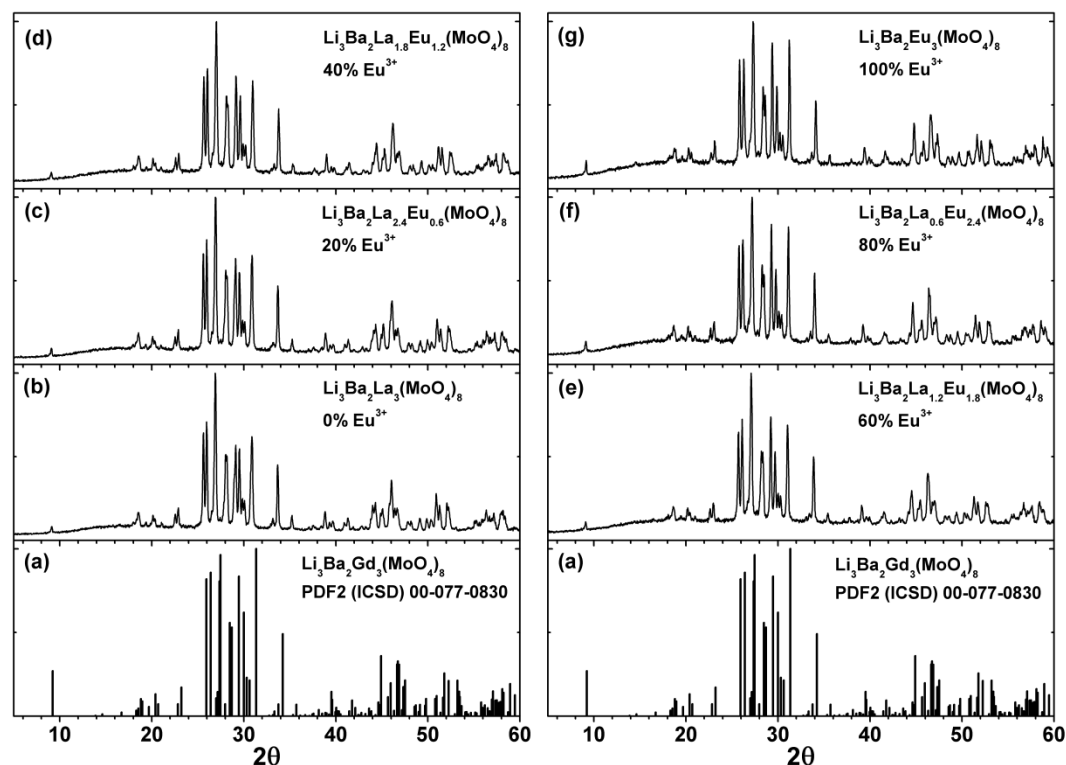


Fig. s1 XRD patterns of $\text{Li}_3\text{Ba}_2\text{La}_3(\text{MoO}_4)_8:\text{Eu}^{3+}$ samples with different Eu^{3+} concentrations: (a) reference pattern of $\text{Li}_3\text{Ba}_2\text{Gd}_3(\text{MoO}_4)_8$; (b) 0% Eu^{3+} ; (c) 20% Eu^{3+} ; (d) 40% Eu^{3+} ; (e) 60% Eu^{3+} ; (f) 80% Eu^{3+} ; (g) 100% Eu^{3+} .

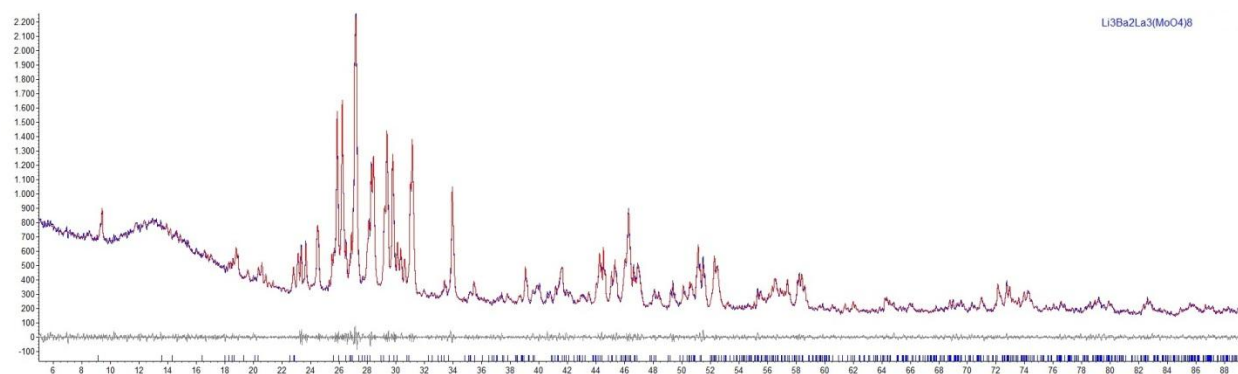


Fig. s2 Rietveld refinement of $\text{Li}_3\text{Ba}_2\text{La}_3(\text{MoO}_4)_8$ powder XRD pattern (blue and red lines correspond to measured and calculated patterns, respectively).

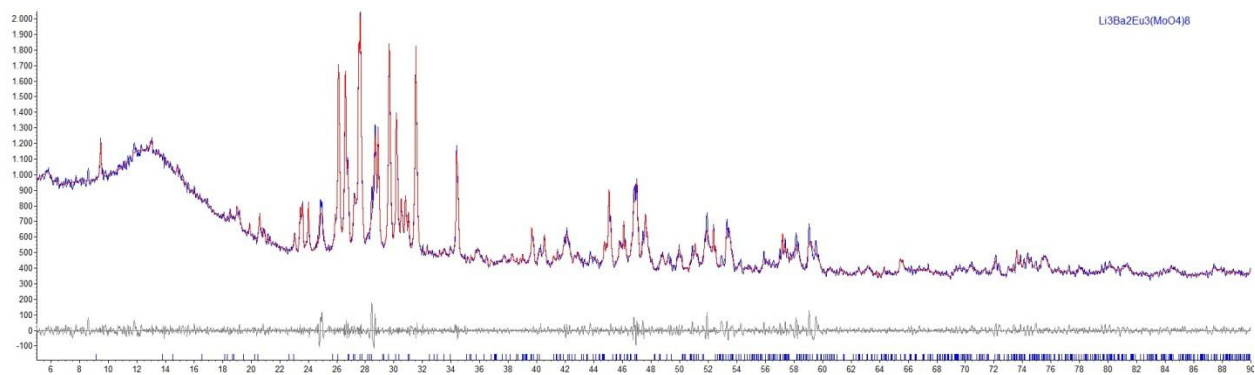


Fig. s3 Rietveld refinement of $\text{Li}_3\text{Ba}_2\text{Eu}_3(\text{MoO}_4)_8$ powder XRD pattern (blue and red lines correspond to measured and calculated patterns, respectively).

Table s1 Unit cell parameters of $\text{Li}_3\text{Ba}_2\text{La}_{3-x}\text{Eu}_x(\text{MoO}_4)_8$ derived from Rietveld refinement of the powder XRD patterns.

x	a (Å)	b (Å)	c (Å)	β (°)	V (Å ³)
0	5.3190	13.0113	19.3733	90.840	1340.61
0.3	5.3160	12.9958	19.3612	90.859	1337.45
0.6	5.3107	12.9787	19.3507	90.875	1333.60
0.9	5.3042	12.9536	19.3235	90.878	1327.52
1.2	5.2989	12.9364	19.3125	90.905	1323.68
1.5	5.2958	12.9231	19.3192	90.953	1321.99
1.8	5.2910	12.9107	19.3110	90.963	1318.96
2.1	5.2860	12.8928	19.3055	91.001	1315.50
2.4	5.2785	12.8682	19.2971	91.054	1310.53
2.7	5.2770	12.8517	19.2802	91.070	1307.33
3	5.2758	12.8389	19.3670	90.871	1311.70

Table s2 Decay constants ($\lambda_{\text{ex}} = 465 \text{ nm}$) of $\text{Li}_3\text{Ba}_2\text{La}_3(\text{MoO}_4)_8\text{:Eu}^{3+}$ phosphors as a function temperature and Eu^{3+} concentration.

T (K)	$\text{Li}_3\text{Ba}_2\text{La}_3(\text{MoO}_4)_8\text{:Eu}^{3+}$ decay time (μs)				
	20% Eu^{3+}	40% Eu^{3+}	60% Eu^{3+}	80% Eu^{3+}	100% Eu^{3+}
100	504	488	487	457	433
150	499	485	487	450	418
200	493	481	482	442	405
250	487	477	479	438	392
300	482	473	472	433	384
350	475	467	467	430	380
400	470	461	461	422	377
450	464	455	453	423	375
500	452	442	437	394	357

Table s3 Colour points and LE as a function of Eu^{3+} concentration in $\text{Li}_3\text{Ba}_2\text{La}_3(\text{MoO}_4)_8\text{:Eu}^{3+}$ at RT and as a function of temperature in $\text{Li}_3\text{Ba}_2\text{Eu}_3(\text{MoO}_4)_8$.

$\text{Li}_3\text{Ba}_2\text{La}_3(\text{MoO}_4)_8\text{:Eu}^{3+}$				$\text{Li}_3\text{Ba}_2\text{Eu}_3(\text{MoO}_4)_8$			
Eu^{3+} (%)	x	y	LE (lm/W_{opt})	T (K)	x	y	LE (lm/W_{opt})
10	0.660	0.340	330	100	0.669	0.331	321
20	0.664	0.336	325	150	0.669	0.331	318
30	0.666	0.334	322	200	0.669	0.331	316
40	0.667	0.333	320	250	0.669	0.331	314
50	0.668	0.332	318	300	0.668	0.331	312
60	0.668	0.332	316	350	0.668	0.332	312
70	0.668	0.331	315	400	0.667	0.333	313
80	0.669	0.331	314	450	0.665	0.335	316
90	0.669	0.331	313	500	0.662	0.338	319
100	0.669	0.331	312				