

## Supporting Information

### Luminescence properties of $\text{Bi}^{3+}/\text{Sm}^{3+}$ co-doped $\text{K}_3\text{Gd}_5(\text{PO}_4)_6$ phosphors for self-referencing optical thermometry

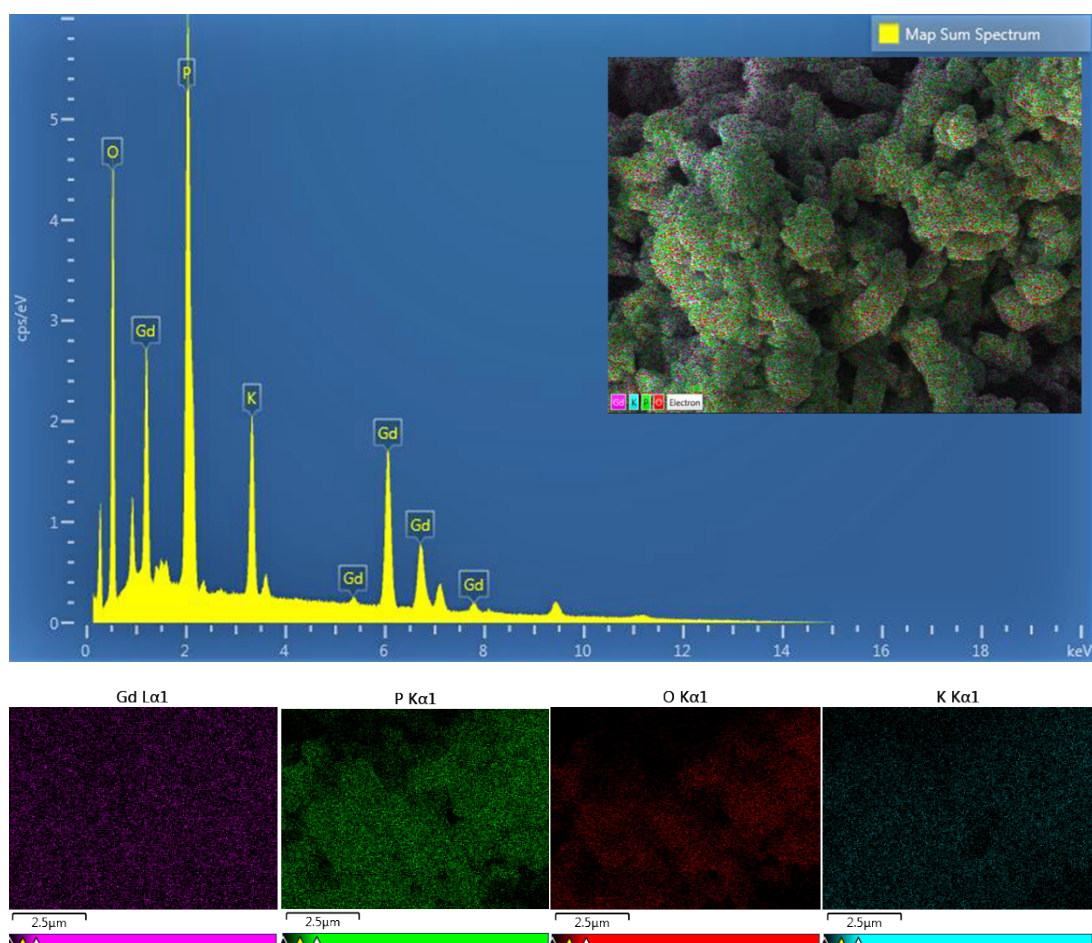


Figure S1 EDS mapping of  $\text{KGP}:\text{Bi}^{3+},\text{Sm}^{3+}$  phosphor.

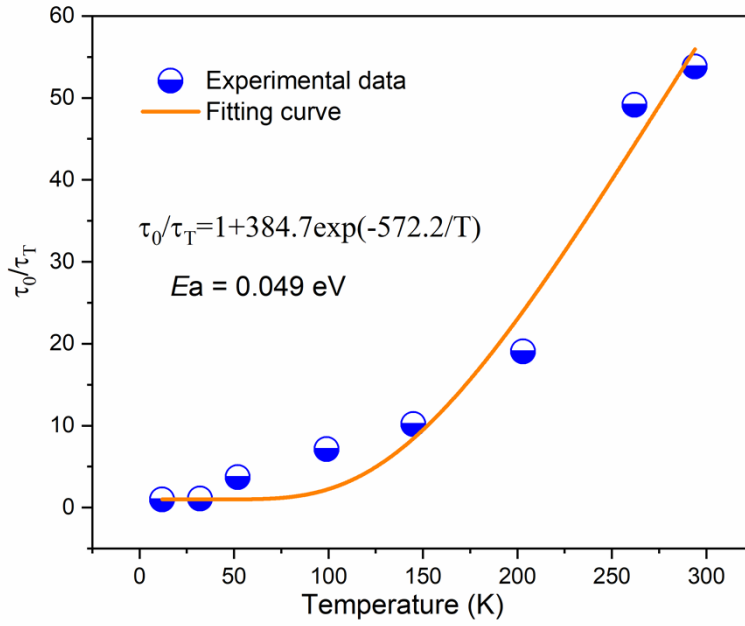


Figure S2 Plot of  $\tau_0/\tau_T$  versus T for the calculation of  $E_a$  in KGP:Bi<sup>3+</sup> phosphor.

Table S1 EDS of KGP:Bi<sup>3+</sup>,Sm<sup>3+</sup> phosphor.

Element	Apparent Concentration	k Ratio	Wt%	Wt% Sigma	Standard Label
O	2.43	0.00817	18.17	0.17	SiO2
P	1.78	0.00995	13.04	0.14	GaP
K	0.97	0.00820	7.71	0.09	KBr
Gd	5.70	0.05701	61.08	0.25	Gd (v)
Total:			100.00		

Table S2 CIE coordination of KGP:Bi<sup>3+</sup>,Sm<sup>3+</sup> phosphor in the low temperature range.

Temperature (K)	Coordinates
11	(0.4553,0.3573)
44	(0.4464,0.3629)
77	(0.3753,0.3357)
114	(0.3217,0.2918)
155	(0.2880,0.2730)
182	(0.2708,0.2556)
225	(0.2732,0.2564)
262	(0.2979,0.2633)
295	(0.3811,0.3272)

Table S3 CIE coordination of KGP:Bi<sup>3+</sup>,Sm<sup>3+</sup> phosphor in the high temperature range.

Temperature (K)	Coordinates
295	(0.3811,0.3272)
325	(0.4266,0.3539)
358	(0.4689,0.3714)
396	(0.4994,0.3846)
423	(0.5169,0.3946)
455	(0.5269,0.4014)
488	(0.5331,0.4055)
523	(0.5397,0.4097)