

Electronic Supplementary Information

Investigation on a novel color tunable long afterglow phosphor $\text{KGaGeO}_4\text{:Bi}^{3+}$: Luminescence Properties and Mechanism

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Table S1 Selected K-O bond distances in KGGO:0.01Bi³⁺ sample

Bonds	Distance (Å)	Bonds	Distance (Å)	Bonds	Distance (Å)
K1-O5	2.792	K2-O1	2.777	K3-O2	2.750
K1-O12	2.467	K2-O6	2.467	K3-O3	2.579
K1-O13	2.930	K2-O8	2.597	K3-O11	2.987
K1-O15	2.799	K2-O10	2.698	K3-O14	2.635
(average)	2.747	(average)	2.635	(average)	2.738
K4-O6 (×3)	3.289	K5-O9 (×3)	2.715	K6-O1 (×3)	3.097
K4-O9 (×3)	3.160	K5-O15(×3)	3.113	K6-O4 (×3)	2.913
K4-O16(×3)	2.808	K5-O16(×3)	3.109	K6-O4 (×3)	3.053
(average)	3.086	(average)	2.979	(average)	3.021

Table S2 The CIE coordinates of KGGO:*x*Bi³⁺ (*x* = 0.005–0.13) for photoluminescence ($\lambda_{\text{ex}} = 320$ nm) and afterglow (irradiated by 254 nm UV lamp for 5 min)

Number	<i>x</i> (Bi ³⁺) / mol	CIE for PL	CIE for afterglow
1	0.005	(0.165, 0.348)	(0.163, 0.306)
2	0.01	(0.165, 0.324)	(0.161, 0.291)
3	0.02	(0.165, 0.353)	(0.160, 0.311)
4	0.03	(0.165, 0.349)	(0.159, 0.294)
5	0.04	(0.165, 0.347)	(0.159, 0.293)
6	0.05	(0.165, 0.338)	(0.161, 0.277)
7	0.06	(0.165, 0.331)	(0.161, 0.266)
8	0.07	(0.166, 0.308)	(0.162, 0.234)

9	0.08	(0.165, 0.278)	(0.163, 0.217)
10	0.09	(0.166, 0.262)	(0.163, 0.203)
11	0.10	(0.166, 0.258)	(0.163, 0.200)
12	0.11	(0.166, 0.257)	(0.163, 0.194)
13	0.12	(0.167, 0.256)	(0.164, 0.203)
14	0.13	(0.166, 0.256)	(0.163, 0.200)
