Supporting Information for:

Structure and luminescence properties of multicolor phosphor $Ba_2La_3(GeO_4)_3F:Tb^{3+},Eu^{3+}$

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Table S1 Fractional atomic coordinates, and occupancies parameters of $BLSi_1Ge_2F$ obtained from the Topas Rietveld Refinement using X-ray powder diffraction data at room temperature.

Atom	*x*	*y*	*z*	occ	beq
La2	0.24205(23)	0.98677(31)	0.25	0.55	1
Ba2	0.24205(23)	0.98677(31)	0.25	0.45	1
La1	0.6666667	0.3333333	0.99899(63)	0.55	1
Ba1	0.6666667	0.3333333	0.99899(63)	0.45	1
Si1	0.4475(35)	0.4056(34)	0.25	0.33	1
Ge1	0.39391(65)	0.36443(82)	0.25	0.67	1
O1	0.5974	0.4496	0.25	1	1
O2	0.3442	0.4996	0.25	1	1
O3	0.3560	0.2721	0.0751	1	1
F	0	0	0.25	1	2.81

Table s2 Fractional atomic coordinates, and occupancies parameters of $BLSi_2Ge_1F$ obtained from the Topas Rietveld Refinement using X-ray powder diffraction data at room temperature.

Atom	*x*	*y*	*z*	occ	beq
La2	0.23989(25)	0.98658(37)	0.25	0.55	1
Ba2	0.23989(25)	0.98658(37)	0.25	0.45	1
La1	0.6666667	0.3333333	0.99822(73)	0.55	1
Ba1	0.6666667	0.3333333	0.99822(73)	0.45	1
Si2	0.4358(17)	0.3832(21)	0.25	0.67	1
Ge1	0.3840(15)	0.3625(24)	0.25	0.33	1
O1	0.5974	0.4496	0.25	1	1
O2	0.3442	0.4996	0.25	1	1
O3	0.3560	0.2721	0.0751	1	1
F	0	0	0.25	1	2.81

Table S3 Comparison of cell parameters for BLGOF, $BLGe_2Si_1F$, $BLGe_2Si_1F$, and BLSOF.

To be more intuitive, the microstructure of BLGOF:0.15Tb^{3+}

Formula	a （nm）	c(nm)	V(nm^3)
BLGOF	1.0157	0.7464	0.6668
$BLGe_2Si_1F$	1.0056	0.7433	0.6509
$BLGe_2Si_1F$	0.9959	0.7402	0.6358
BLSOF	0.9864	0.7363	0.6204