

Efficient Blue-Violet Phosphor: An Advanced Material Designed for High-Quality Full-Spectrum Lighting

Xiudi Wu,^{a, b} Yonghui Xu,^{a, b} Shuwen Yin,^a Chuansheng Zhong,^{a, b} Xibao Zhang,^{a, b} Liang

Zhou,^{a, b*} and Hongpeng You^{a, b c*}

^a State Key Laboratory of Rare Earth Resource Utilization, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, P. R. China

^b University of Science and Technology of China, Hefei 230026, P. R. China

^c Ganjiang Innovation Academy, Chinese Academy of Sciences, Ganzhou 341000,

China

*Corresponding author. Fax: +86 431 85698041. E-mail address: zhoul@ciac.ac.cn (L. Zhou), hpyou@ciac.ac.cn (H.P. You).

Table S1: Refined crystallographic parameters for samples BSBCl:0.03Ce³⁺.

Compound	BSBCl:0.03Ce ³⁺
Space group	<i>Pnma</i>
Symmetry	orthorhombic
a / Å	6.9295
b / Å	16.4428
c / Å	9.5153
V/Å ³	1084.1835
A = β = γ	90°
Z	4
R _{wp} , %	12.32
R _p , %	9.46
χ ²	3.22

Table S2: Main refinement parameters and crystallographic data of BSBCl:0.03Ce³⁺.

	x	y	z	Occ.	U	Site	Sym.
Ba1	0.36377	0.41068	0.11185	0.655	0.009	8d	1
Ce3	0.36377	0.41068	0.11185	0.03	0.128	8d	1
Sr1	0.36377	0.41068	0.11185	0.315	0.027	8d	1
Ce2	0.495	0.40106	0.72084	0.03	0.156	8d	1
Sr2	0.495	0.40106	0.72084	0.97	0.011	8d	1
Ce1	0.473	0.25	0.4655	0.03	0.018	4c	m
Sr3	0.473	0.25	0.4655	0.97	0.011	4c	m
Cl1	0.1103	0.25	0.3297	1	0.01	4c	m
O1	0.4168	0.25	0.7079	1	0.001	4c	m
O2	0.2646	0.1787	0.8883	1	0.159	8d	1
O3	0.7087	0.4328	0.9272	1	0.011	8d	1
O4	0.2764	0.503	0.8352	1	0.037	8d	1
O5	0.9858	0.1072	0.0875	1	0.017	8d	1
B1	0.8	0.4395	0.0582	1	0.243	8d	1
B2	0.31	0.25	0.838	1	0.112	4c	m

Table S3: Chromaticity parameters of WLED devices at 20–100 mA operating current.

<i>Type</i>	Current (mA)	CIE coordinates	CCT (K)	CRI
<i>pc-WLED</i>	20	0.3436, 0.3539	4755 K	97.2
	40	0.3388, 0.3480	4918 K	95.5
	60	0.3364, 0.3446	5001 K	94.4
	80	0.3354, 0.3424	5070 K	93.6
	100	0.3345, 0.3408	5105 K	93.1

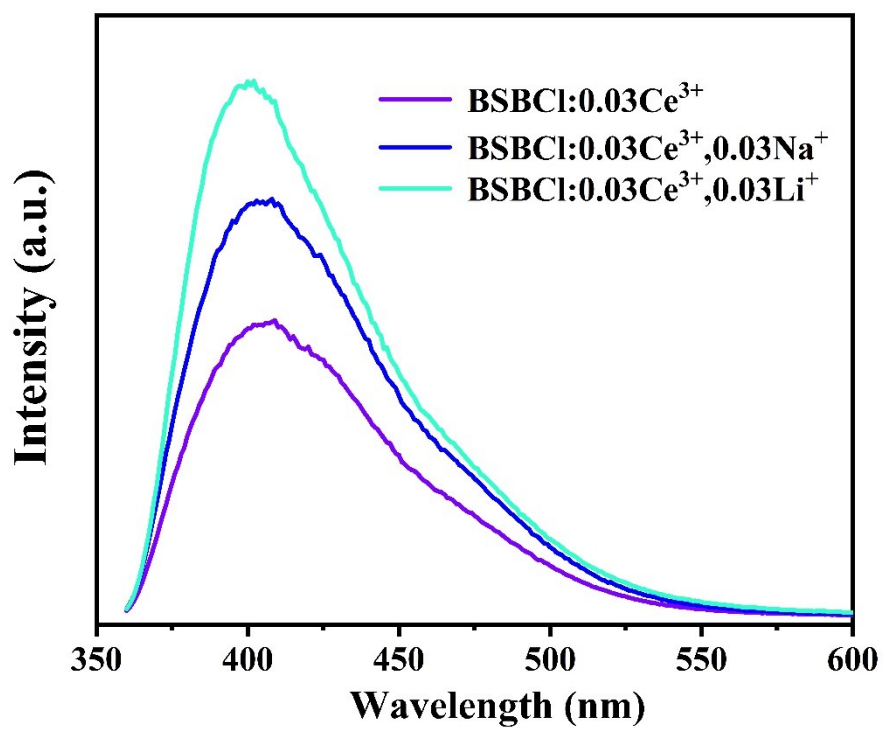


Fig. S1 PL emission spectra of BSBCl:0.03Ce³⁺ and BSBCl:0.03Ce³⁺,0.03M⁺ (M⁺=Li⁺ and Na⁺) excited at 330 nm.