Supporting Information

Centimeter-Scale Gua_3SbBr_6 Single Crystals for White Light-Emitting Diodes Enabled by Inhibition of Multi-Site Nucleation

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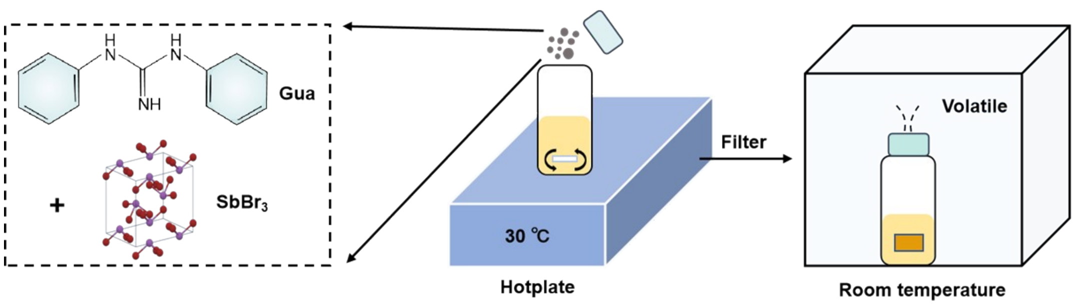

Figure S1: Schematic illustration of the solvent evaporation method of Gua_3SbBr_6 SC.

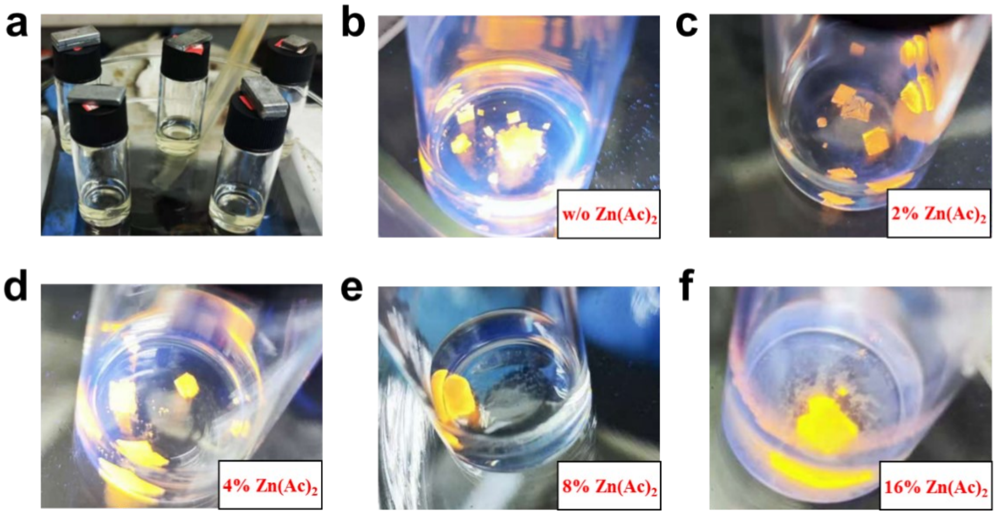

Figure S2: Photos of Gua_3SbBr_6 SC growth process without $Zn(Ac)_2$ and with different percentages of $Zn(Ac)_2$ (2%, 4%, 8% and 16%). (a) The initial precursor solution Photos of all samples. Photos of the precursor solution (b) without $Zn(Ac)_2$, (c) 2% $Zn(Ac)_2$, (d) 4% $Zn(Ac)_2$, (e) 8% $Zn(Ac)_2$ and (f) (d) 8% $Zn(Ac)_2$ under UV light after standing for 24 hours.

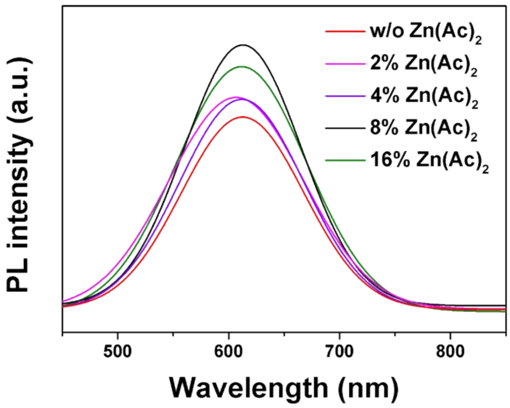

Figure S3: PL spectrum of Gua_3SbBr_6 SC untreated and treated with 2%, 4%, 8% and 16% $Zn(Ac)_2$.

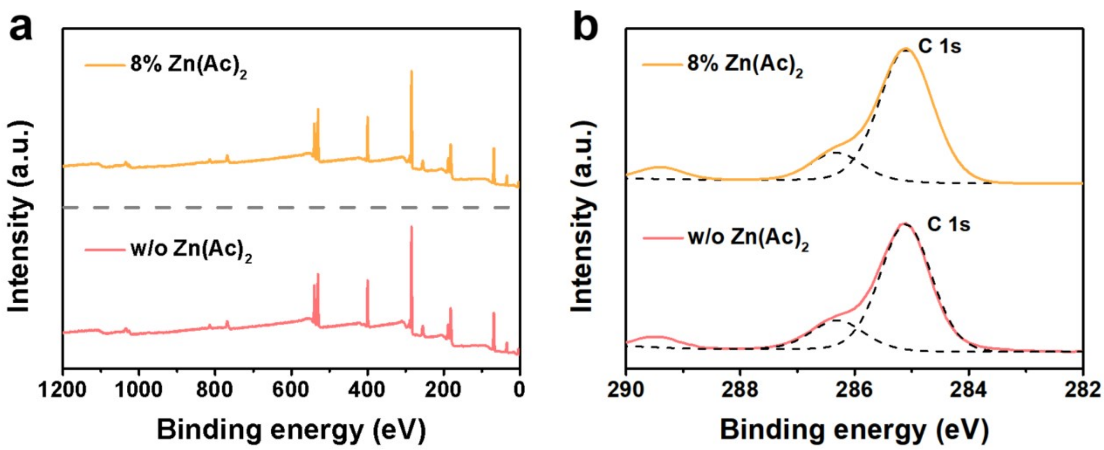

Figure S4. XPS spectra of (a) whole XPS spectrum and (b) C 1s of both samples.

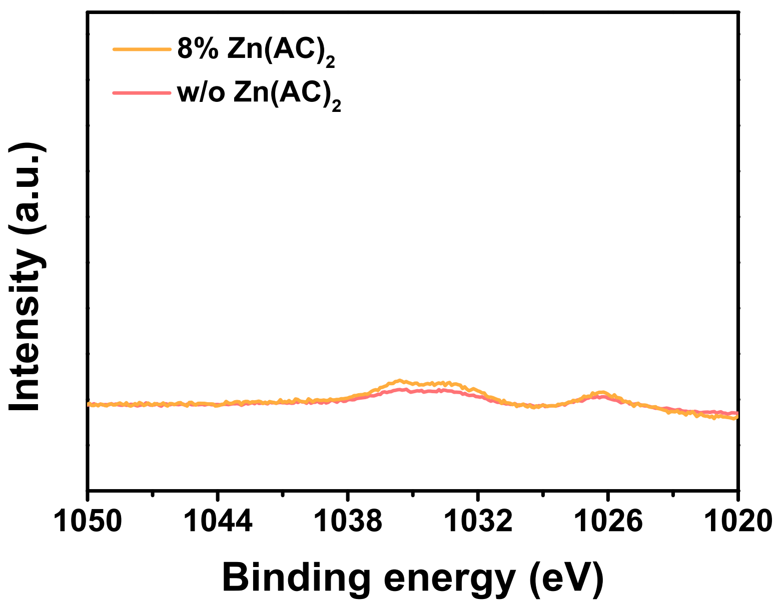

Figure S5. The corresponding Zn *2p* XPS spectra of Gua_3SbBr_6 powers without and with 8% $Zn(Ac)_2$.

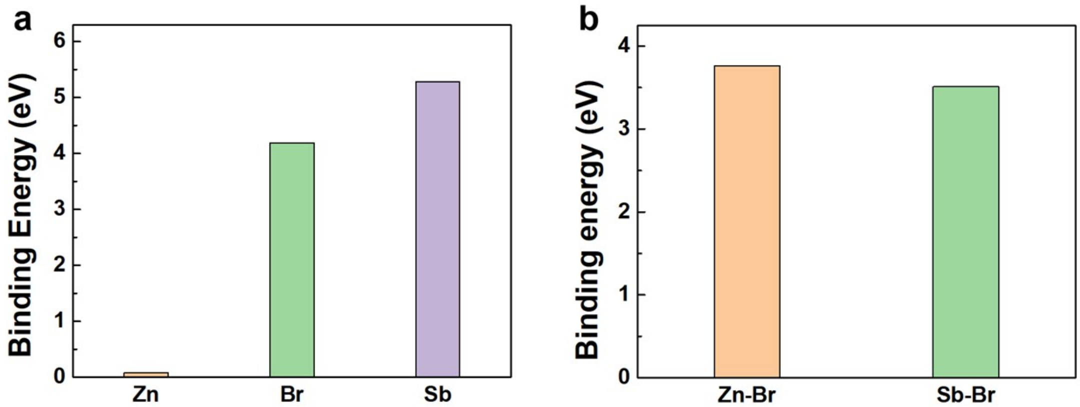

Figure S6. (a)The binding energies of DGP with Zn^{2+}, Br^{-}, Sb^{3+}. (b)The binding energies of Zn-Br and Sb-Br.

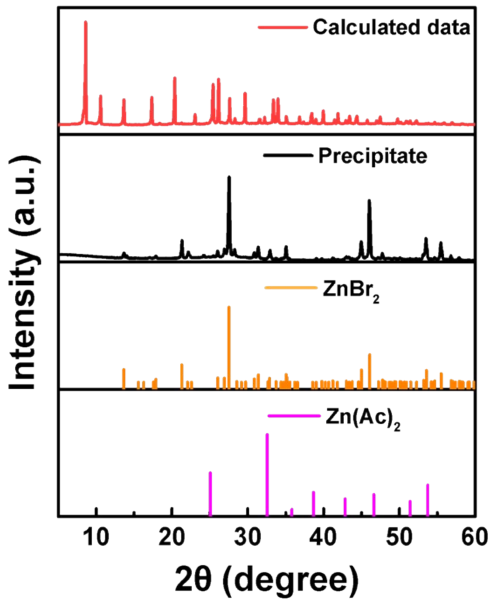

Figure S7. Calculated XRD patterns of Gua_3SbBr_6 SC, measured XRD patterns of precipitate and Standard XRD card of $ZnBr_2$ and $Zn(Ac)_2$.

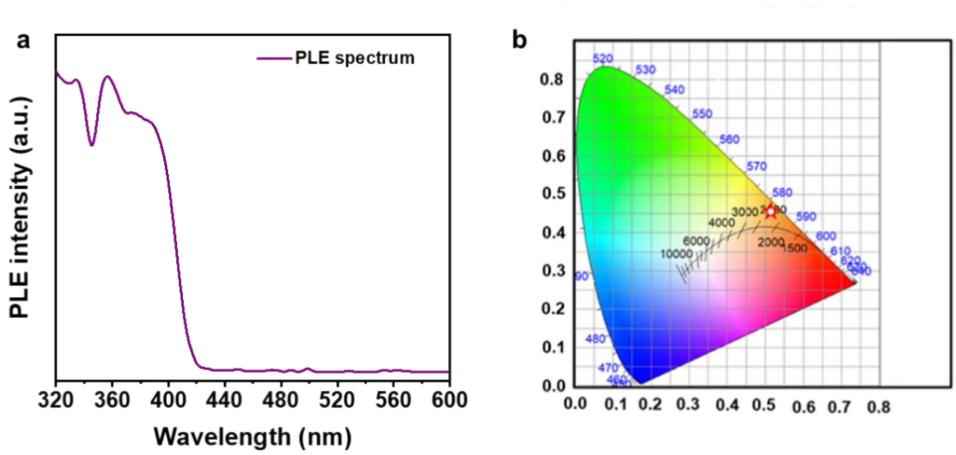

Figure S8. (a)The PLE spectrum and (b) CIE coordinate of Gua_3SbBr_6 SC.

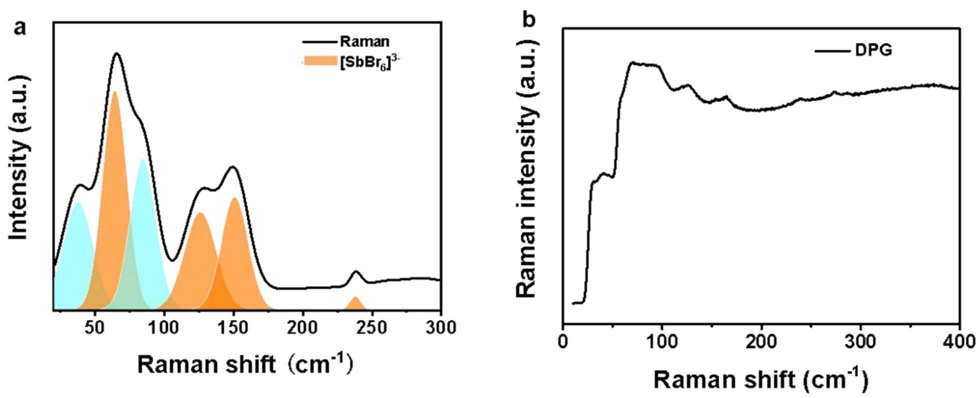

Figure S9. Raman spectrum of (a) Gua_3SbBr_6 and (b) organic Gua powers excited at 633 nm.

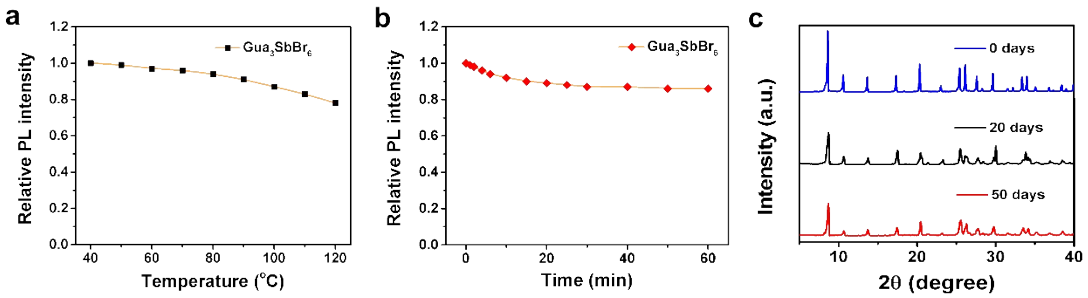

Figure S10. Variation of the relative PL intensities of the Gua_3SbBr_6 SC with 8% $Zn(Ac)_2$ placed (a) in a hotplate, (b) under UV light, and (c) prolonged exposure to the air with 70% humidity.

Table 1: Single-crystal X-ray diffraction data of a Gua_3SbBr_6 SC.

Empirical formula	$(C_{13}H_{13}N_3)_3Sb_1Br_6$
Formula weight	
Temperature	150 K
Wavelength	0.71073
Crystal system	P-3
Space group	R3
Unit cell dimensions	a=16.7199 α=90° b=16.7199 β=90° c=14.1411 γ=120°
volume	1238.02
2θ range for data collection	
Reflections collected	4669
Absorption correction	MULTI-SCAN
Max and min transmission	0.009 0.028
Refinement method	Full-matrix least-squares on F^2

Table 2: The performance of the state-of-the-art perovskite-based WLEDs.

Emitter	PL peak (nm)	PLQY (%)	Power efficiency (lm/W)	CRI	Ref
$(Gua\text{-}DPG)_3SbCl_6$	584	100%	-	86.5	1
$Cs_2NaInCl_6:Sb^{3+}$	605	92.4%	-	95.4	2
$Cs_2Cu_2Cl_5:Zn^{2+}$	522	70.19	-	95.8	3
$Cs_3InCl_6:Sb^{3+}/Mn^{2+}$	620	51.38	-	85.5	4
$(OTA)_{2+x}SnI_{4+x}$	617	92	-	92	5
$Cs_2NaInCl_6:Sb^{3+}$ NCs	460	80.1	37.5	80	6
$CsPbBr_3$ NCs	517	92	-	86	7
$(DPG)_3SbBr_6$	**611**	**100**	**48.6**	**89**	**This work**

Reference

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