Supporting Information

Surface Passivation Strategies for $CsPbBr_3$ Quantum Dots Aiming at Nonradiative Suppression and Electroluminescence Light-Emitting Diodes Enhancement

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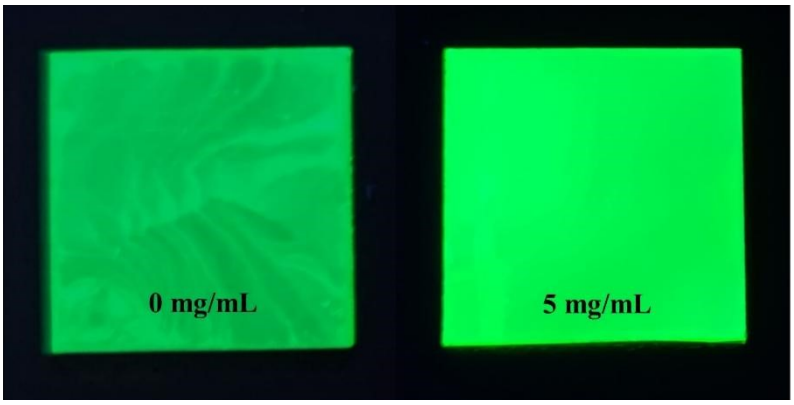

Figure S1. Display the digital images of the respective $CsPbBr_3$ QDs films with/without PEABr treatment under UV illumination.

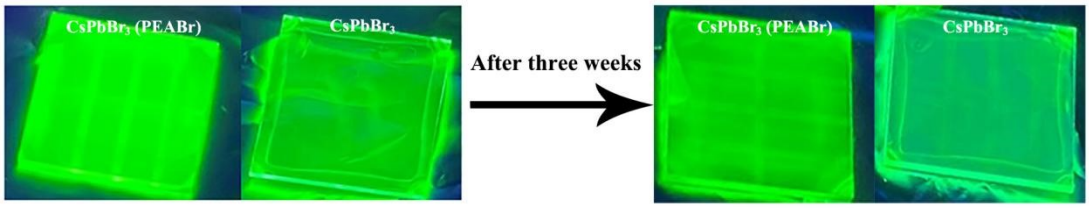

Figure S2. Change of brightness of $CsPbBr_3$ QDs films with/without PEABr treatment after stored three weeks under ambient environment.

Table S1. The best fit parameters of PL decay profiles for the $CsPbBr_3$ QD films measured at corresponding emission peak energies.

Samples	τ_1 (%)	A_1 (%)	τ_2 (%)	A_2 (ns)	τ_{avg} (ns)
0	5.2	55.4	25.3	44.6	21.21
2	6.2	39.2	29.8	60.8	27
3	6.9	33.3	31.4	66.7	28.98
5	10.8	15.7	47.2	84.3	45.71
7	7.7	25.6	33.9	74.4	32

Table S2. The radiative rate constant (k_r) and non-radiative rate constant (k_{nr}) of $CsPbBr_3$ QDs with different PEABr concentrations. k_r= PLQY/τ, k_{nr}= (1-PLQY)/τ

Samples	PLQY (%)	Average Lifetime (τ, ns)	k_r (ns^{-1})	k_{nr} (ns^{-1})
0	21.9	21.21	0.01	0.037
2	31.2	27	0.012	0.025
3	40.8	28.98	0.014	0.02
5	78.6	45.71	0.017	0.005
7	47.7	32	0.015	0.016

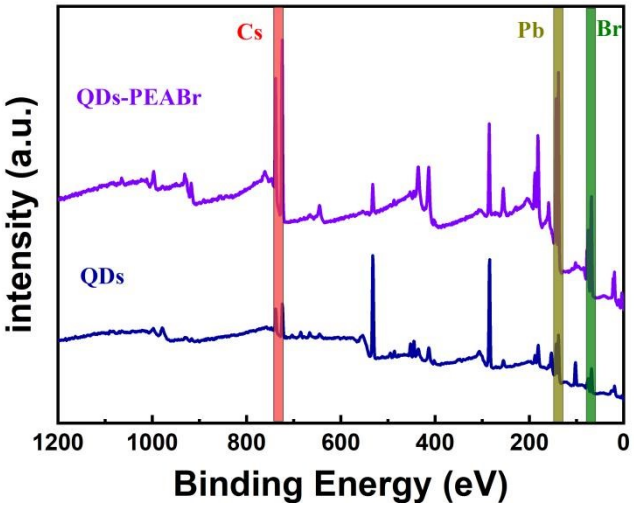

Figure. S3 Survey XPS spectra of pristine and PEABr-treated $CsPbBr_3$ QDs.

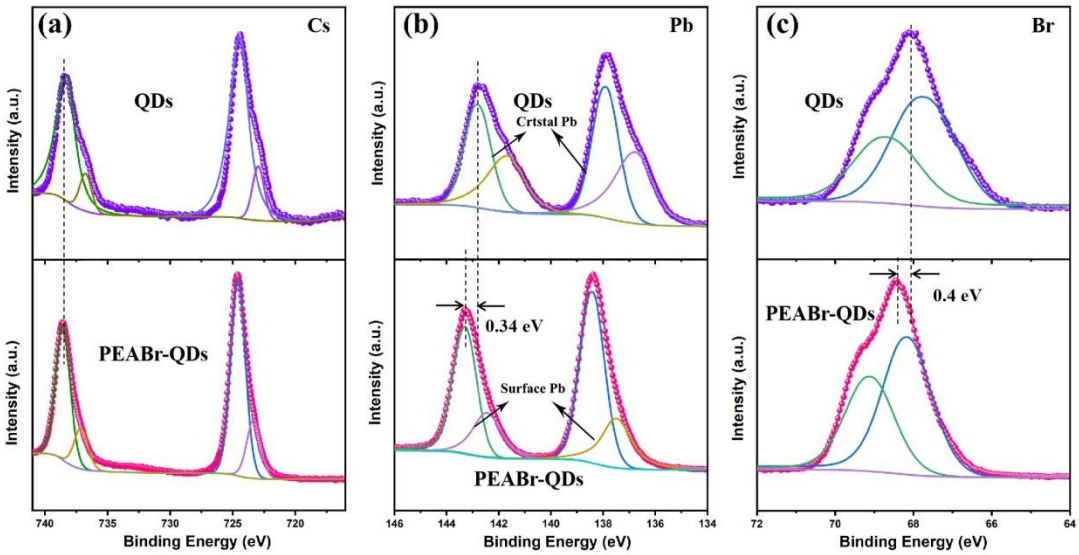

Figure. S4 Deconvolution of (a) Cs 3d, (b) Pb 4f and (c) Br 3d spectra from PEABr untreated (top) and treated (down) QDs.

Figure S5. The photograph of $CsPbBr_3$ QDs solution under ambient light.

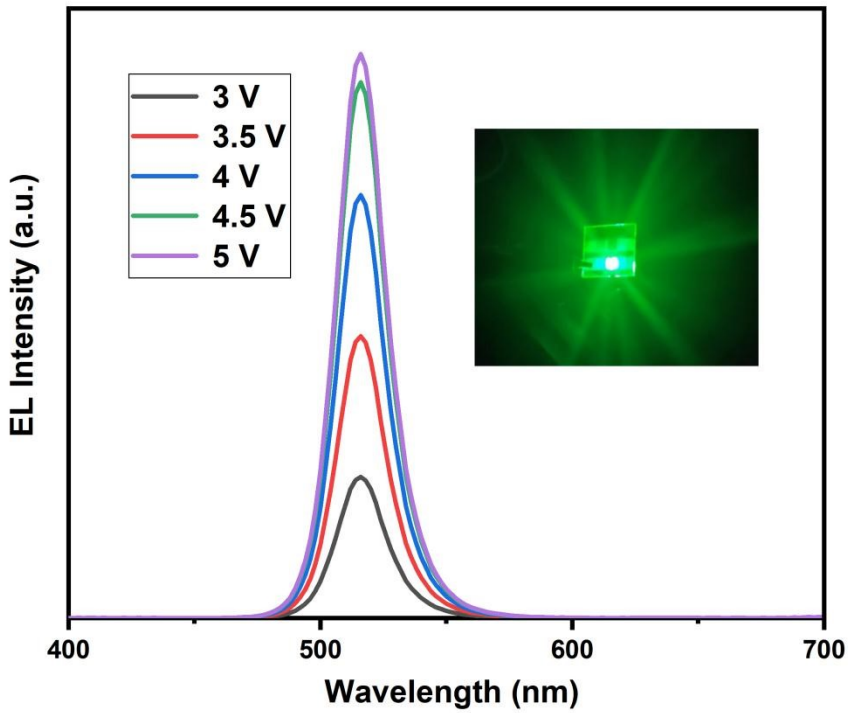

Figure S6. EL spectra of 5 wt% PEABr treated $CsPbBr_3$ QDs based QLED device under different driving voltage. Inset: emission image of the device with an emitting area of 3 mm×3 mm at 5.0 V.

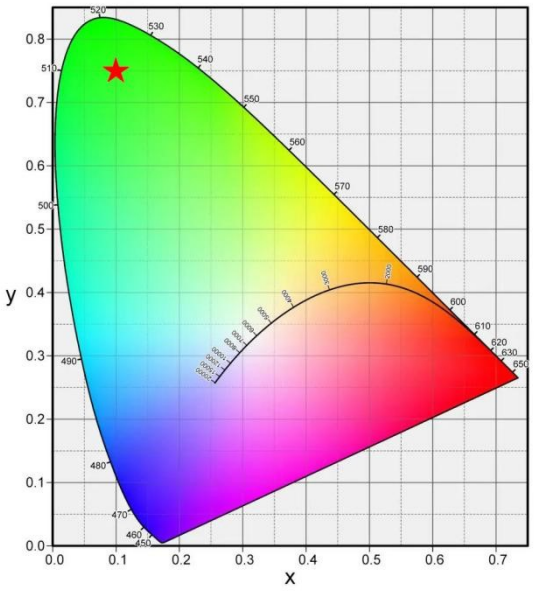

Figure S7. CIE coordinates of the PEABr treated device under an applied voltage of 5 V.

Table S3 Summary of device performance of various $CsPbBr_3$ QLEDs prepared with PEABr passivation.

Method	Luminance ($cd\ m^{-2}$)	CE ($cd\ A^{-1}$)	Max EQE (%)	References
Hot-injection	13770	14.54	4.59	1
Hot-injection	12807	23.79	6.85	2
Hot-injection	12650	13.43	4.33	3
LARP	14035	32.69	9.67	This work

References

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