Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Table S1. Summary of the bi-exponential fitting results for PL lifetime curves of $CsPbBr_3$ films with various PMOXA concentrations. Time-resolved PL lifetime curves were fitted as a bi-exponential function of time (t):

$$A = A_1 exp^{\left(-t/\tau_1\right)} + A_2 exp^{\left(-t/\tau_2\right)} \quad \text{(SE1)}$$

Where A is the normalized PL intensity, τ_1 and τ_2 stand for the characteristic PL decay lifetimes and A_1 and A_2 are the fractions of the two decay components. The average lifetime (τ_{ave}) was calculated with the A_i and τ_i (i= 1, 2) values according to the following equation:

$$\tau_{ave} = A_1\tau_1 + A_2\tau_2 \quad \text{(SE2)}$$

PMOXA	0%	5%	10%	15%	20%	25%
τ_1 (ns)	5.9	6.5	8.4	9.6	10.0	10.0
A_1	0.506	0.393	0.358	0.279	0.088	0.112
τ_2 (ns)	40.7	58.1	61.7	72.3	105.5	100.8
A_2	0.494	0.607	0.643	0.721	0.912	0.888
τ_{ave} (ns)	36.1	37.9	42.7	69.2	104.7	90.6

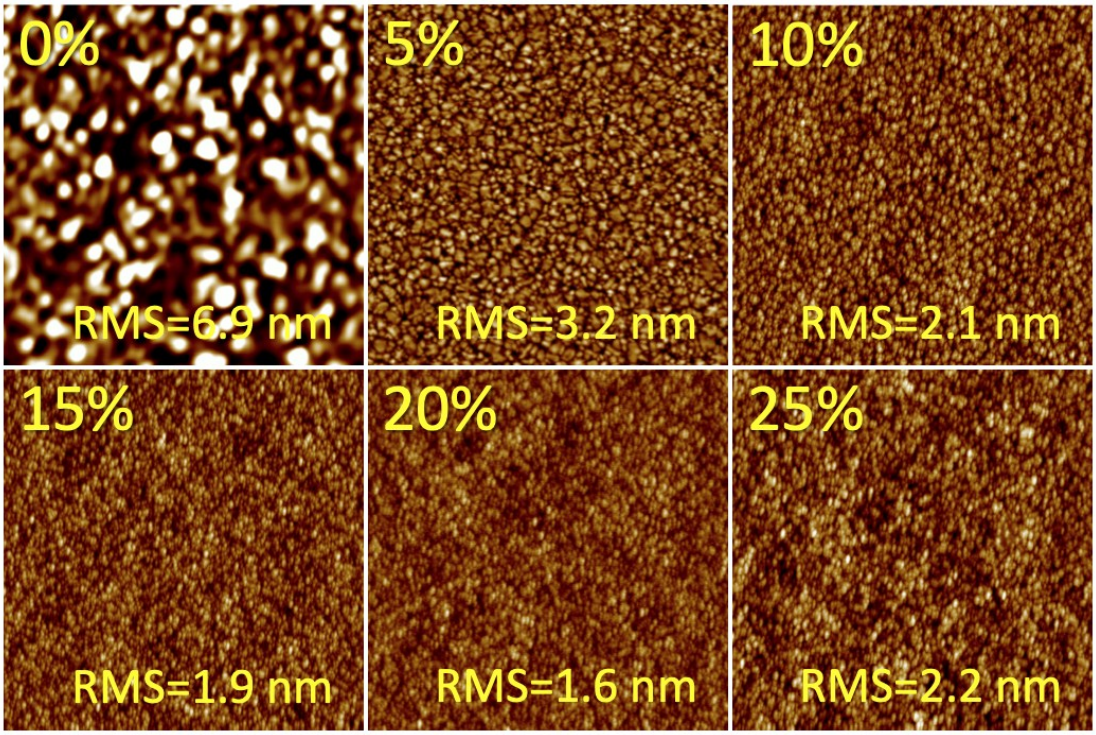

Figure S1. AFM images of $CsPbBr_3$ films with various concentrations of PMOXA. All images are 5 μm^2. Roughness in $CsPbBr_3$ films treated with 0%, 5%, 10%, 15%, 20% and 25%-PMOXA cases are 6.9 nm, 3.2 nm, 2.1 nm, 1.9 nm ,1.6 nm and 2.2 nm, respectively.

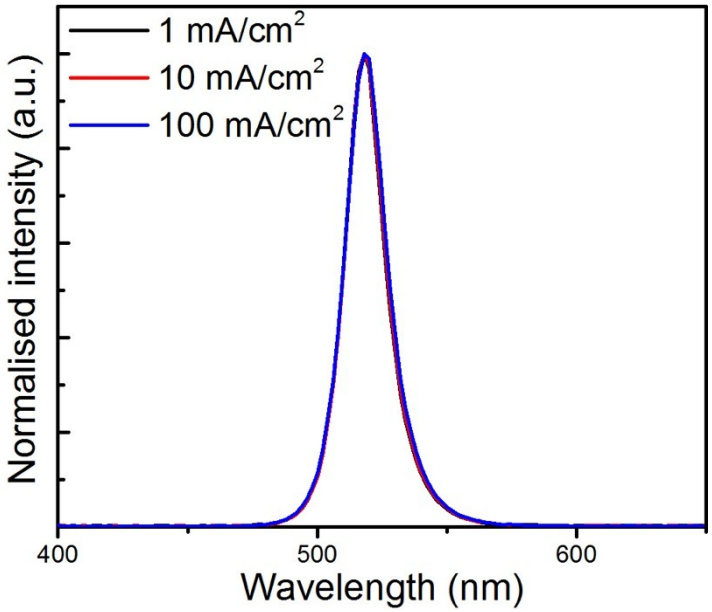

Figure S2. EL spectra of the LED $CsPbBr_3$ containing 20% PMOXA at various current densities.

Table S2. Stability performance of reported green perovskite LEDs tested at a high initial luminance (above 1000 cd/m^2).

Emission layer	EL peak (nm)	FWHM (nm)	Max. Luminance (cd/m^2)	Max. EQE (%)	Operational Lifetime	Lifetime measurement Conditions (cd/m^2)	Refs
$CsPbBr_3$+PMOXA	512	18	16648	3.0	$T_{50} \approx 2.4$ h	$L_0 \approx 1000$	This work
$CsPbBr_3$@MABr	525	20	14000	20.3	$T_{50} \approx 0.17$ h	$L_0 \approx 7130$	1
$FAPbBr_3$	540	22	109000	4.7	$T_{50} \approx 0.12$ h	$L_0 \approx 10000$	2
$CsPbBr_3$ QD	512	21	18600	15.2	$T_{50} \approx 1.2$ h	$L_0 \approx 1000$	3
$PEA_2Cs_{n-1}Pb_nBr_{3n+1}$	500	24	3259	4.51	$T_{50} \approx 1.2$ h	$L_0 \approx 1000$	4
$CsPbBr_3$+PEO	525	20	51890	4.76	$T_{80} \approx 80$ h	$L_0 \approx 1000$	5
$MAPbBr_3$	569	32	19420	7.3	$T_{50} \approx 5$ h	$L_0 \approx 10000$	6

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