

Supplementary Information for

A multiple-coordination framework for CsPbI₂Br perovskite solar cells

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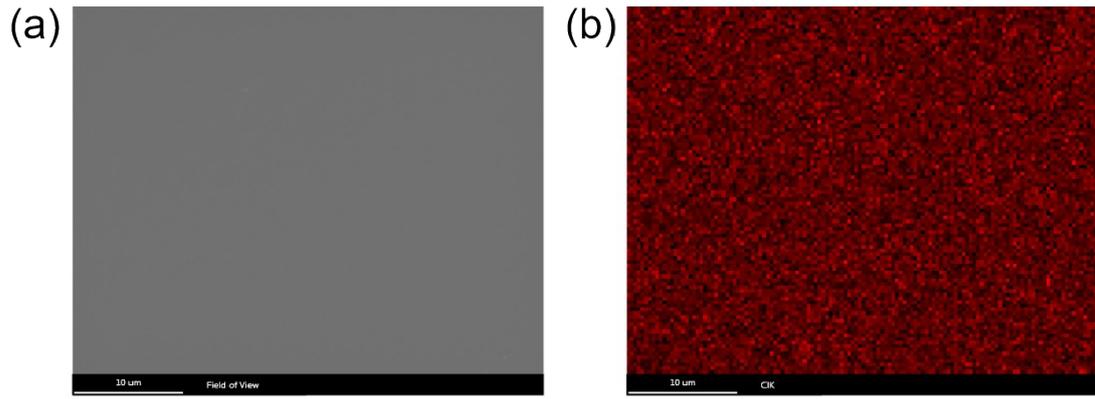


Fig. S1. a) The SEM images and b) corresponding energy dispersive spectrum image of ETL3.

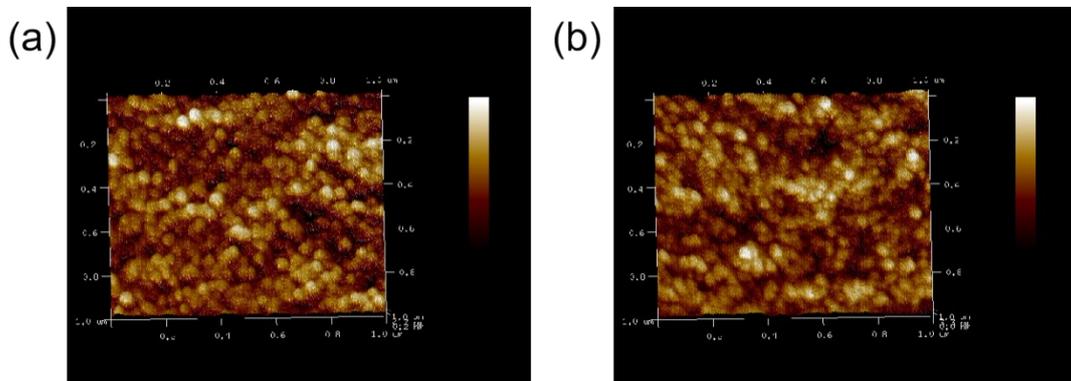


Fig. S2. The AFM images of a) ETL0 and b) ETL3.

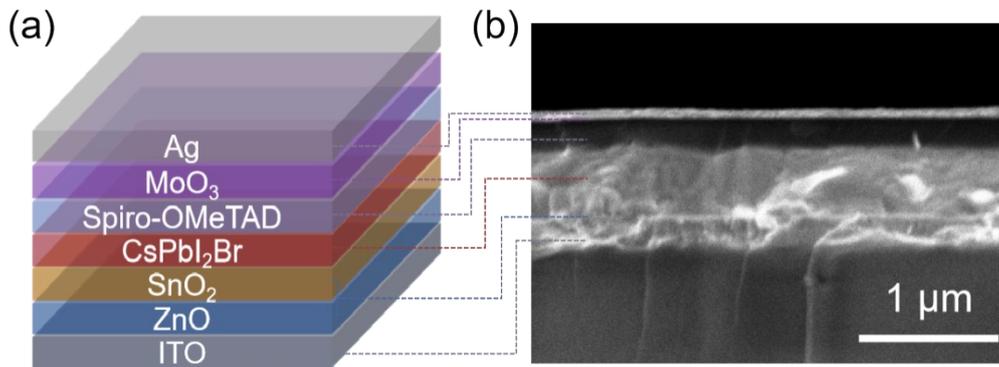


Fig. S3. a) The schematic diagram and b) the cross-section image of CsPbI₂Br PSCs.

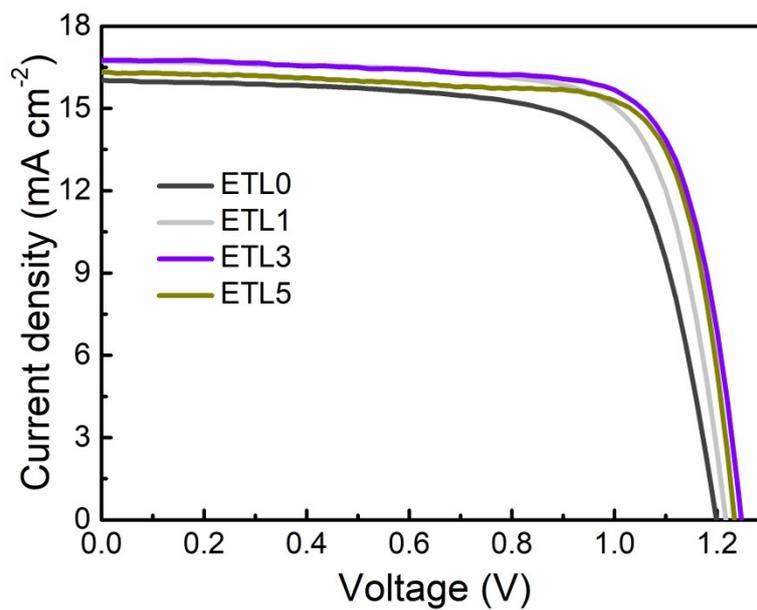


Fig. S4. The J-V characteristics of CsPbI₂Br PSCs based on different ETLs.

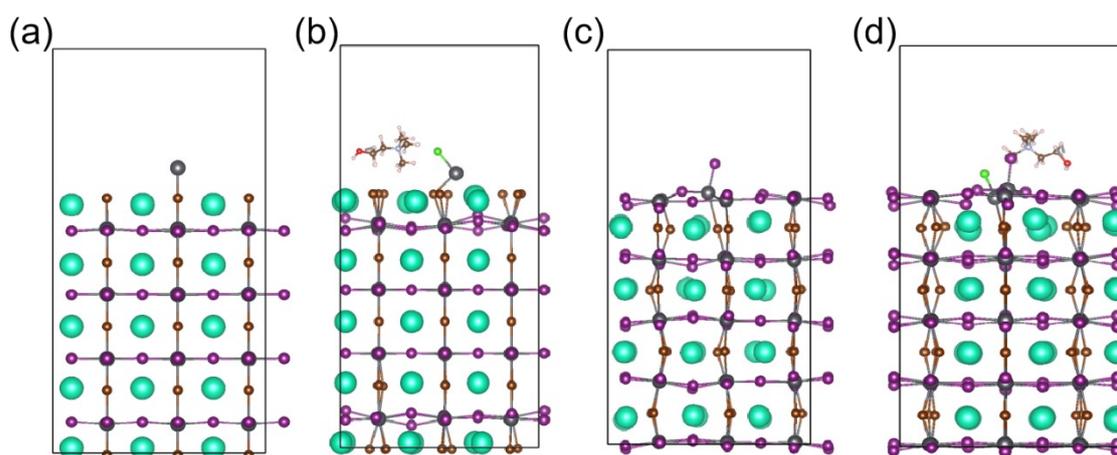


Fig. S5. The representative structure models: (a) unpassivated Pb cluster, (b) passivated Pb cluster, (c) unpassivated Pb-I antisite defect, (d) passivated Pb-I antisite defect.



Fig. S6. The mirror-liked CsPbI_2Br film.

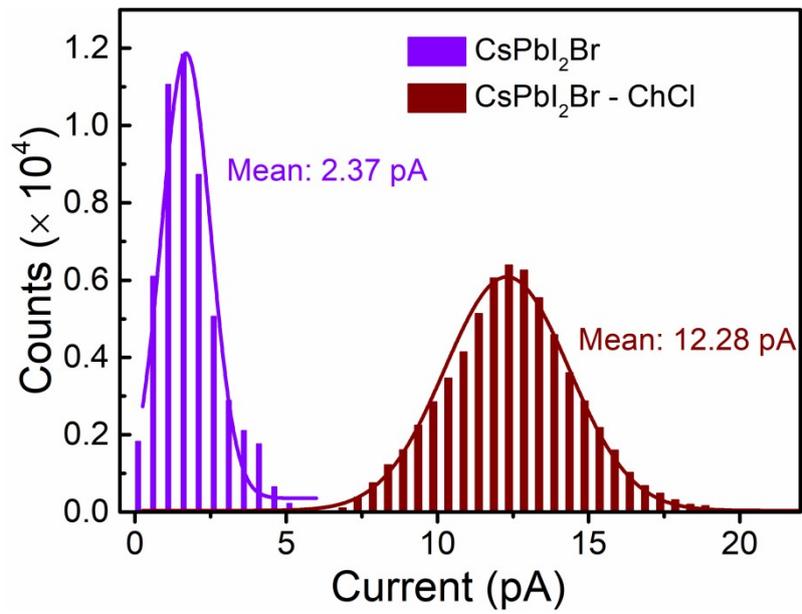


Fig. S7. The current distribution of CsPbI_2Br film.

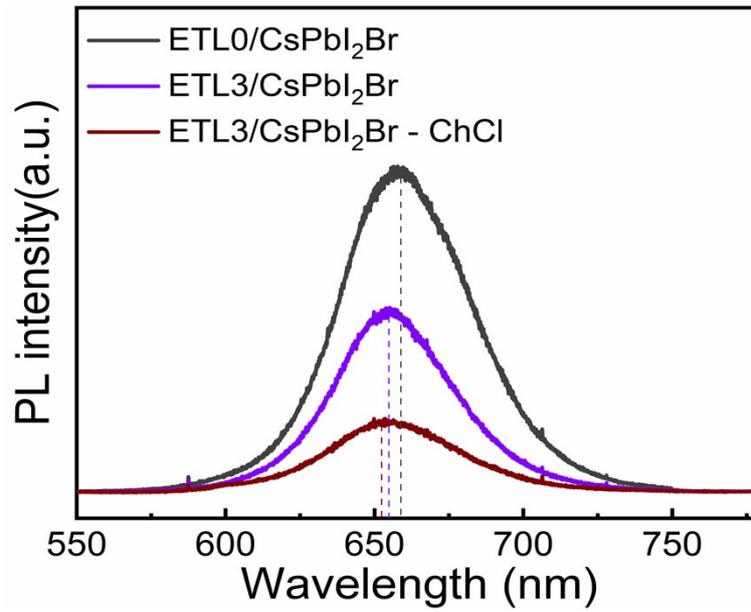


Fig. S8. Steady-state photoluminescence (PL) spectrum of CsPbI₂Br films deposited on ITO/ETL substrate, the excitation light incidents from the ITO side.

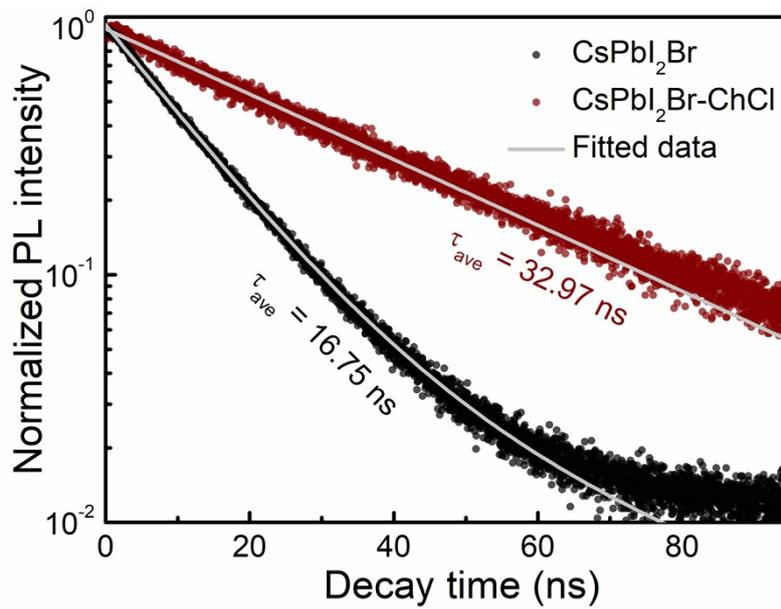


Fig. S9. Normalized TRPL decay profiles.

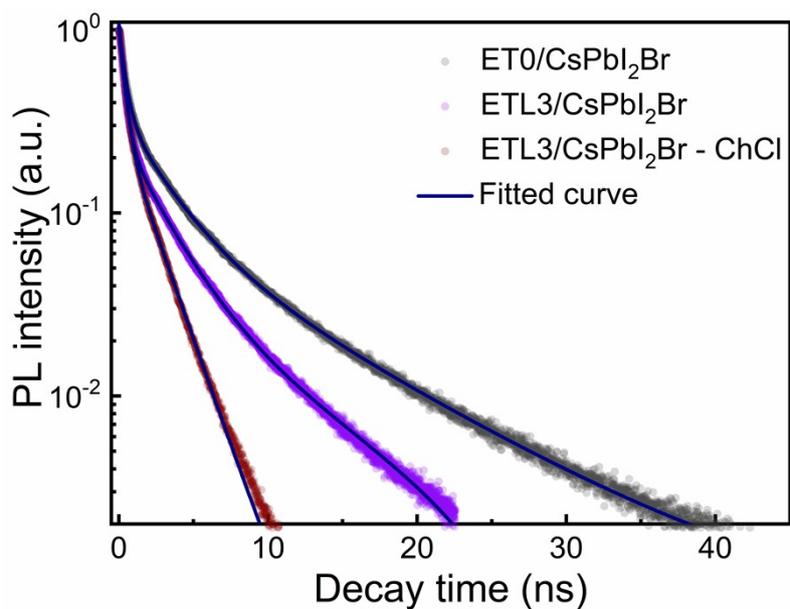


Fig. S10. The TRPL decay curves derived from FLIM.

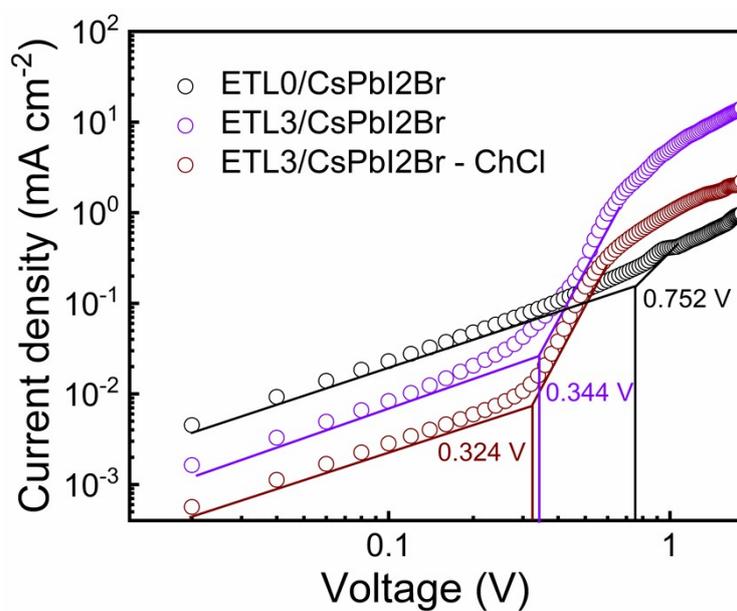


Fig. S11. SCLC measurements of hole-only devices.

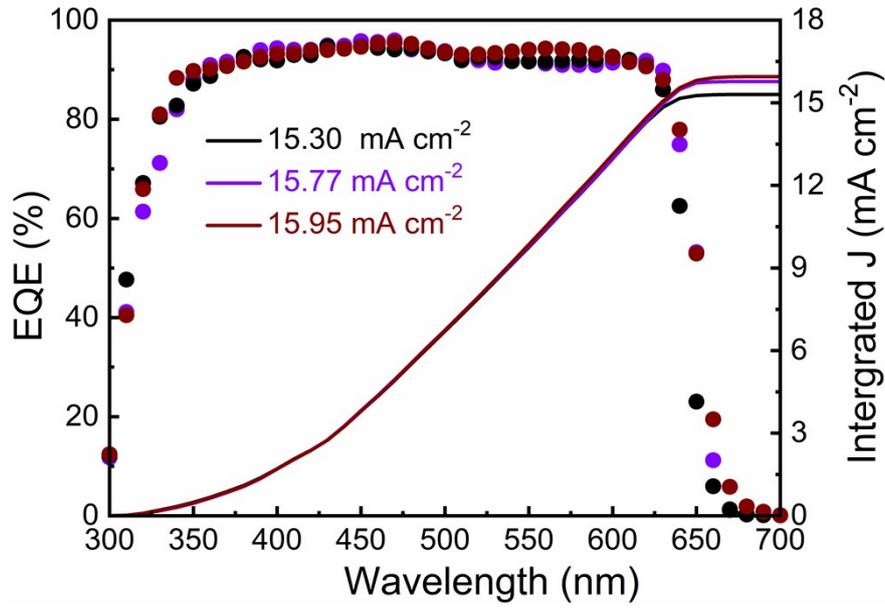


Fig. S12. EQE spectra of ETL3/CsPbI₂Br-ChCl PSCs.

Table S1. Fitting results of the TRPL spectra.

PSCs	A_1	τ_1 (ns)	A_2	τ_2 (ns)	τ_{ave} (ns)
ETL0	0.142	2.974	0.863	7.513	7.236
ETL3	0.263	1.423	0.749	3.898	3.617
ETL3-ChCl	0.192	0.758	0.816	2.322	2.210