

Supporting information

Highly Conductive Flat Grains of Cesium Lead Bromide Perovskite via Additive Engineering with Methylammonium Bromide

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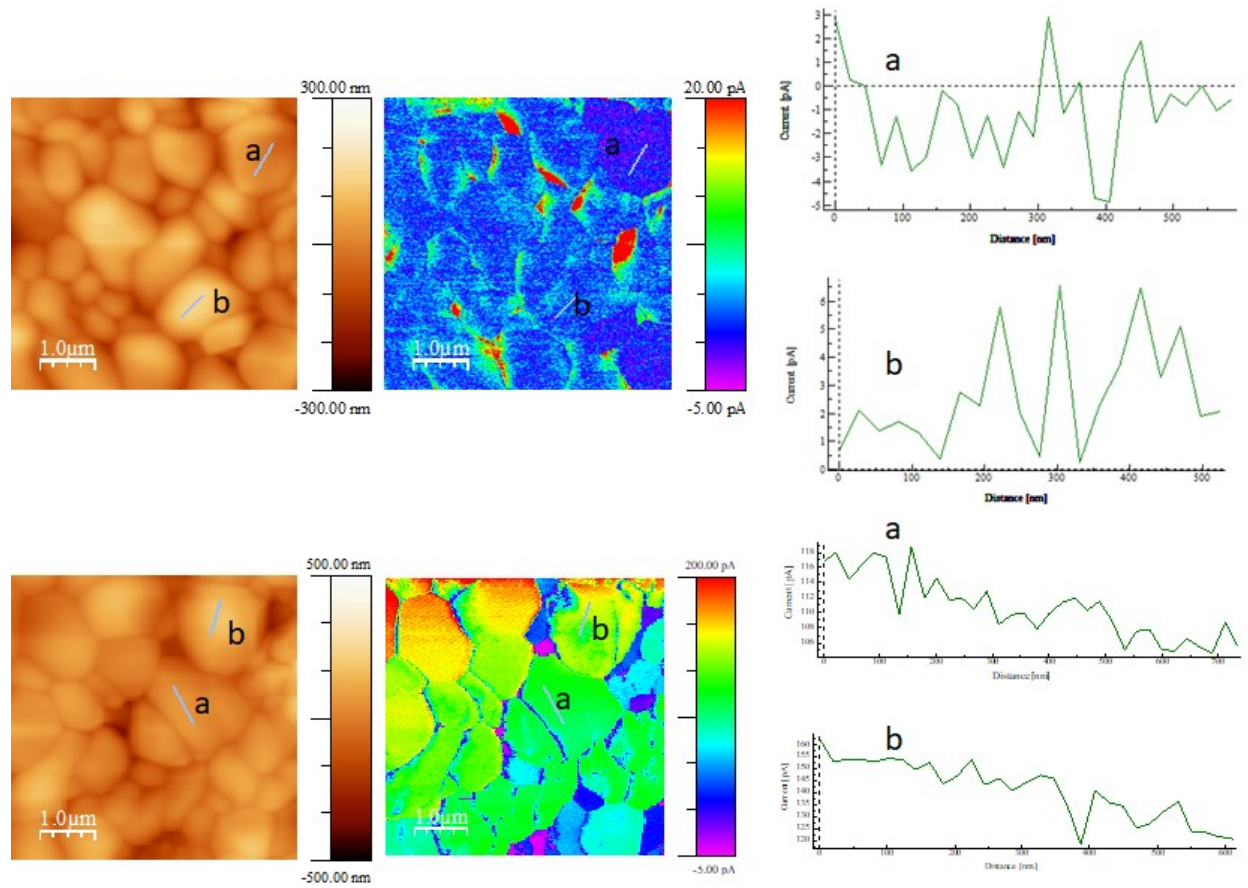


Figure S1. Topography, corresponding current maps and line section of (top) bare, (bottom) perovskite-15 mg MABr film with 0.5 V under illumination. a. represent flat grain and b. rounded grain.

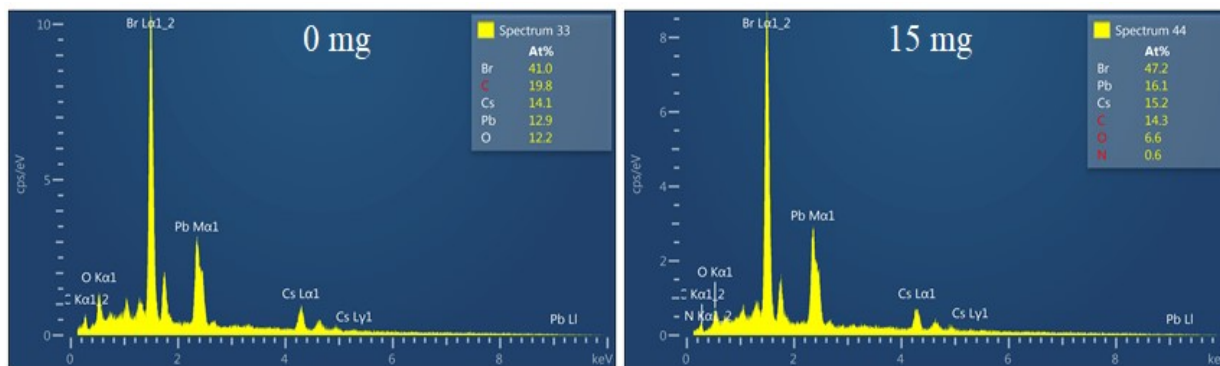


Figure S2. EDX spectra of 0 mg and 15 mg MABr- perovskite films

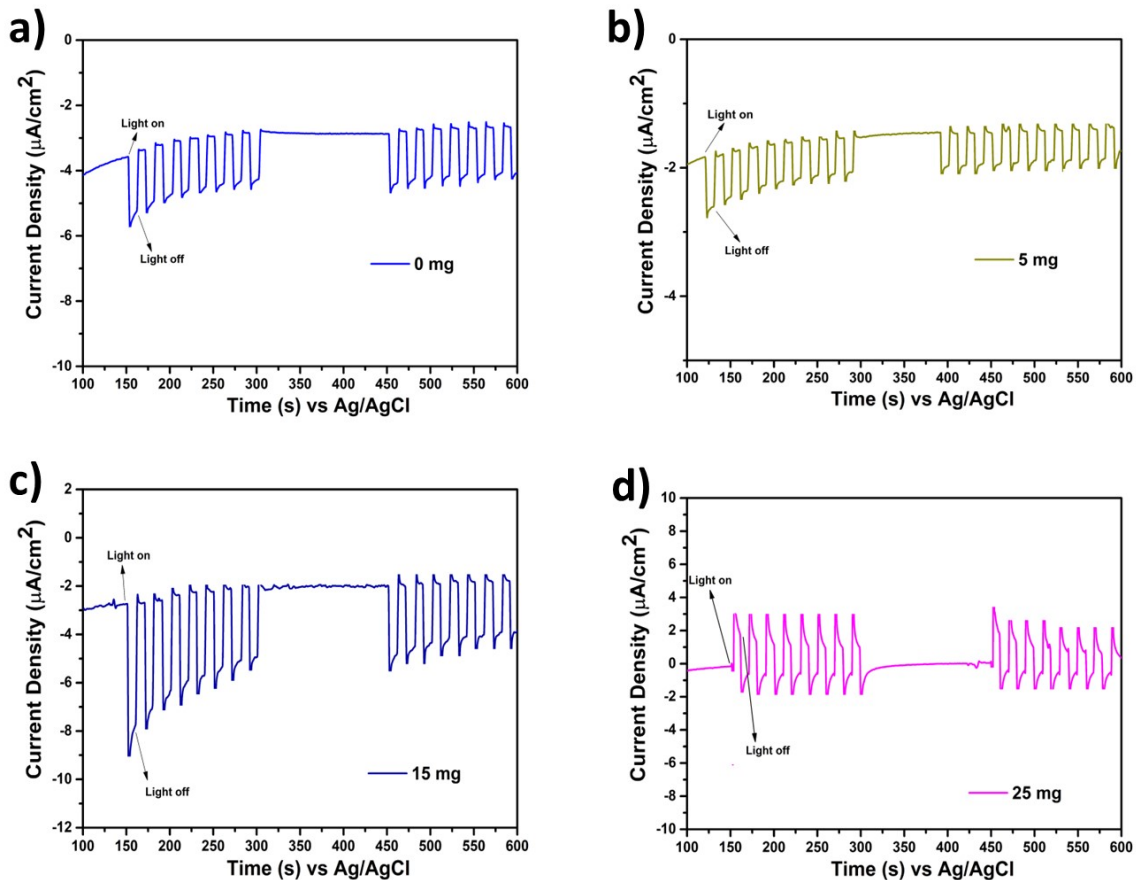


Figure S3: Chronoamperometric plots of CsPbBr₃ perovskites incorporated with a) 0 mg, b) 5 mg, c) 15 mg, and d) 25 mg, MABr respectively

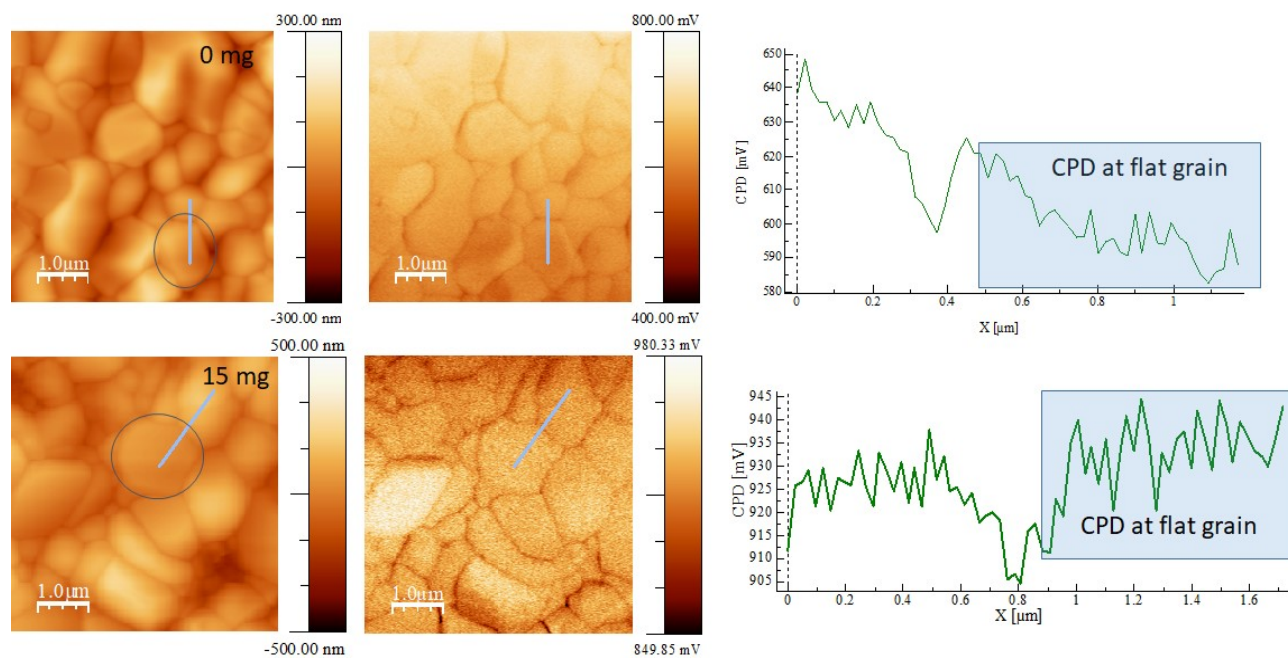


Figure S4. Height, CPD map and line section of rounded and flat grain of 0 mg and 15 mg MABr-perovskite films, the circle shows the flat grain. In x- axis X denotes distance.

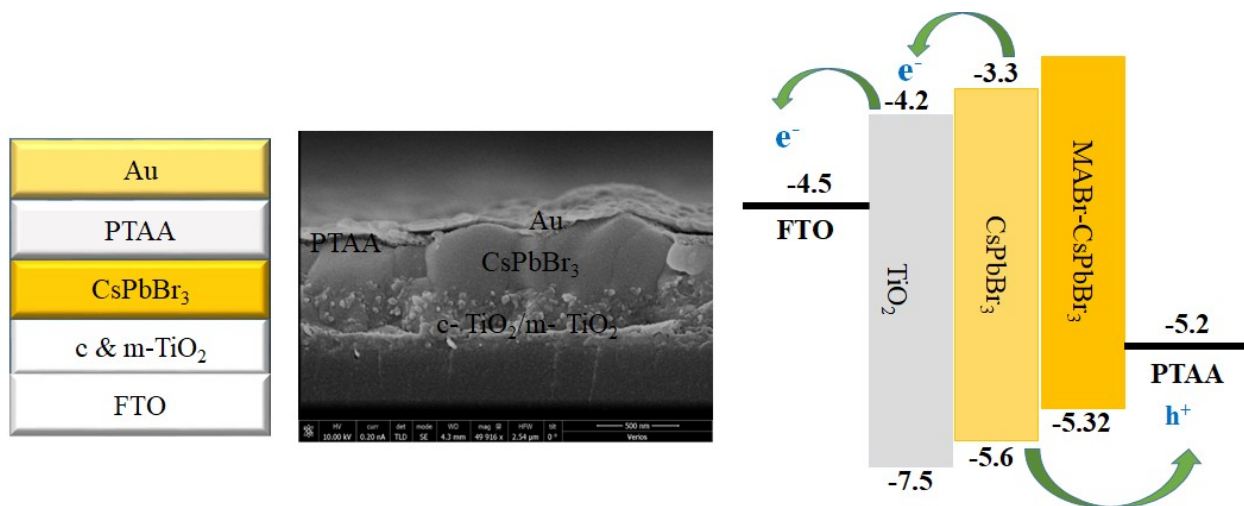


Figure S5. Cross-sectional SEM of CSPbBr₃ PSC and energy diagram

Table S1. Atomic% of different composition of perovskite film deduced from XPS

sample	Pb 4f,	Cs 3d,	Br 3d	O 1S	N 1S
0 mg	12.66	14.84	35.25	37.25	0
15 mg	16.41	17.91	44.61	19.34	1.74

MABr	Jsc (mA/cm²)	Voc (V)	FF (%)	PCE (%)
0 mg	4.80 ±0.24	0.96± 0.09	38.35± 3.15	1.88 ±0.30
Champion cell	6.30	1.02	35.91	2.23
5 mg, Average values	5.80± 1.01	0.89 ±0.099	33.65±6.77	1.74 ± 0.46
Champion cell	5.27	1.04	43.5	2.39
15 mg, Average values	8.64± 0.51	1.03 ±0.008	37.70 ±0.54	3.36±0 .27
Champion cell	8.99	1.04	38.1	3.55
25 mg, Average	6.52 ±3.86	0.718± 0.31	32.30 ±8.17	1.17 ±0.099

values				
Champion cell	3.36	0.98	38.74	1.28

Table S2.
Photo

voltaic parameters of CsPbBr₃ -PSCs with MABr

Table S3. Molar ratio of CsBr:MABr

Precursor solution	Concentration of CsBr (M)	Concentration of MABr (M)	Molar ratio (CsBr:MABr)
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0 mg MABr	0.07	0	
5 mg MABr	0.07	0.04	7:4
15 mg MABr	0.07	0.13	7:13
20 mg MABr	0.07	0.22	7:22