Electronic Supplementary Material (ESI) for RSC Advances.

Taurine as a Powerful Passivator of Perovskite Layer for Efficient and Stable Perovskite Solar Cells

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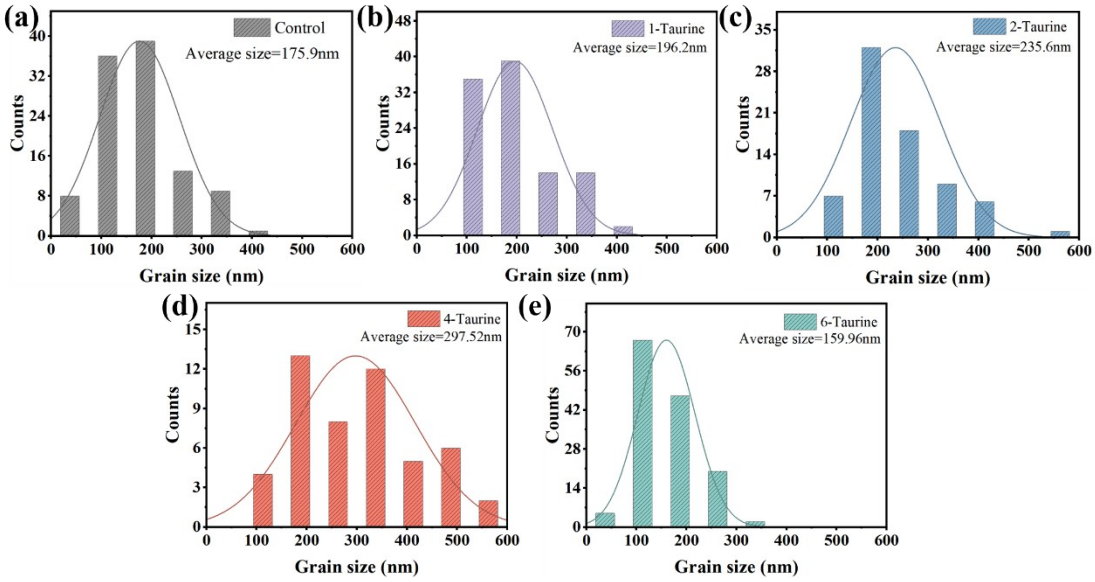

Fig. S1. Grain size distribution of the (a) control, (b) 1-Taurine, (c) 2-Taurine, (d) 4-Taurine and (e) 6-Taurine perovskite film.

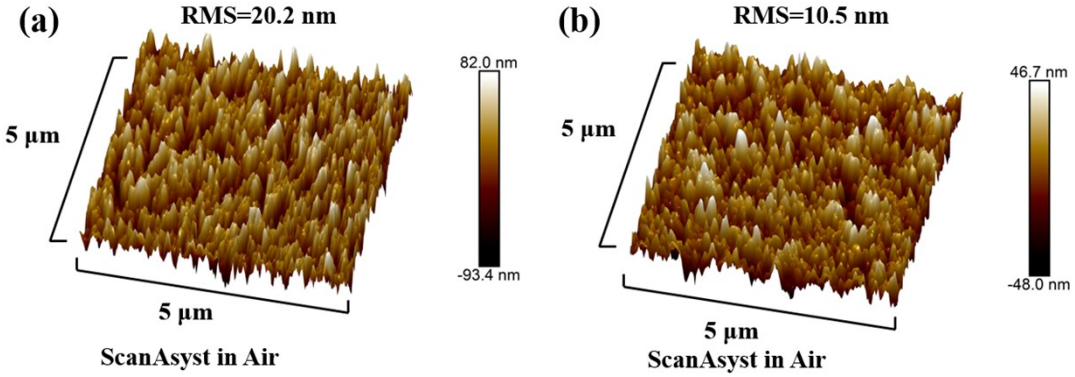

Fig. S2 SPM images of (a) control and (b) 4-Taurine perovskite films.

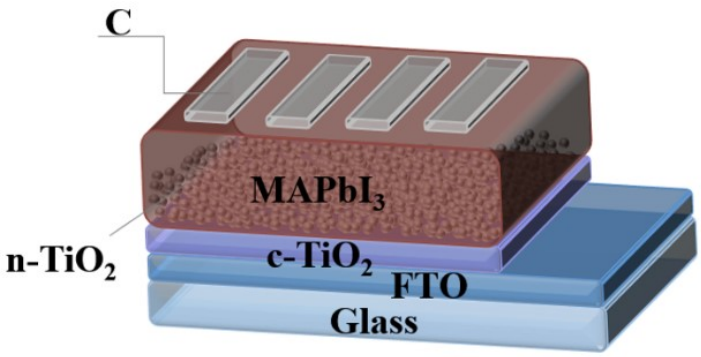

Fig. S3. Schematic diagram of FTO/n-TiO_2/c-TiO_2/$MAPbI_3$/C PSCs device structure.

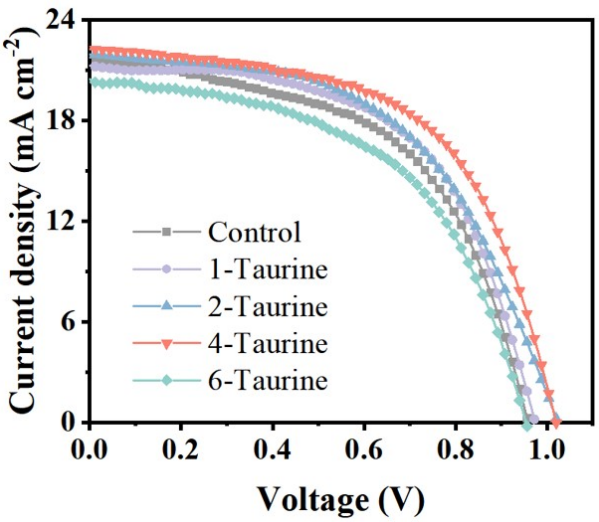

Fig. S4. The J-V curves of the PSCs devices with different concentrations of Taurine.

Table S1. The FWHM of (110) peak for perovskite films.

Samples	Control	1-Taurine	2-Taurine	4-Taurine	6-Taurine
FWHM	0.171	0.170	0.146	0.136	0.274

Samples	Control	1-Taurine	2-Taurine	4-Taurine	6-Taurine
τ_{ave} (ns)	12.42	16.39	21.34	29.26	25.26

Table S2. The calculated τ_{ave} of perovskite films.

Table S3. The Rs, R_{rec} and CPE of PSCs.

Samples	R_S (Ω)	R_{rec} (kΩ)	Capacitance of CPE (F)
$MAPbI_3$	46.20	8.38	5.94×10^{-9}
$MAPbI_3$:Taurine	9.37	16.87	5.82×10^{-9}

Table S4. The statistical PV permanents of PSCs.

Samples		PCE (%)	V_{OC} (V)	J_{SC} (mA cm^{-2})	FF (%)
$MAPbI_3$	Average	9.22±1.18	0.94±0.05	20.75±1.12	47.57±4.92
	Best	11.26	0.96	21.80	53.80
$MAPbI_3$:Taurine	Average	11.26±1.30	0.98±0.04	21.12±1.31	54.37±4.28
	Best	13.19	1.02	22.30	57.99