Supporting Information

Surface Passivation of Organic-Inorganic Hybrid Perovskites with Methylhydrazine Iodide for Enhanced Photovoltaic Device Performance

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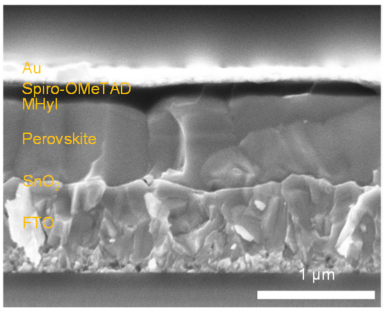

Figure S1. Cross-sectional SEM image of target device.

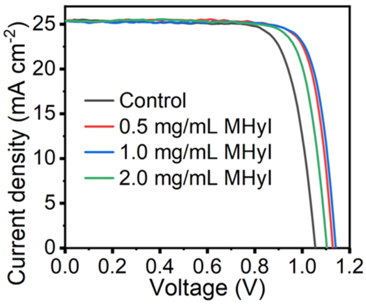

Figure S2. *J–V* curves of the PSCs treated with different concentrations of MHyI solution.

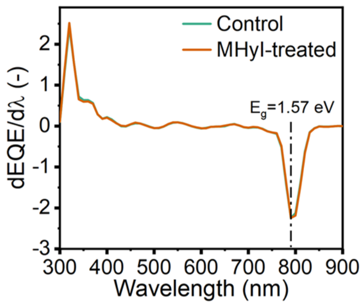

Figure S3. Determination of the absorption of the perovskite absorber by the differential of EQE curves.

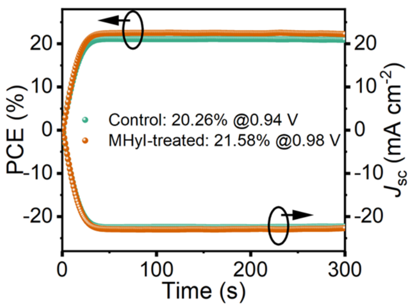

Figure S4. The SPO of the control and MHyI-treated devices.

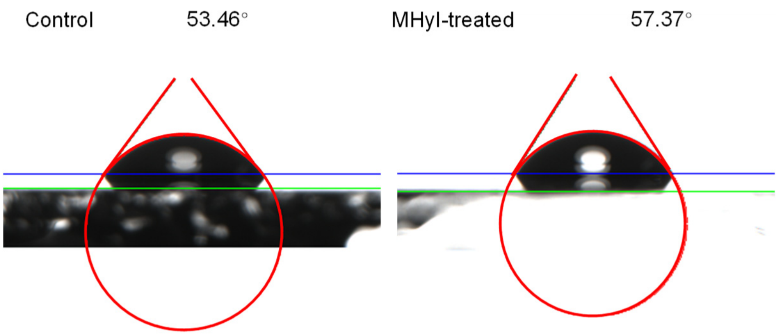

Figure S5. The static water contacts angle of the standard film and MHyI-treated film.

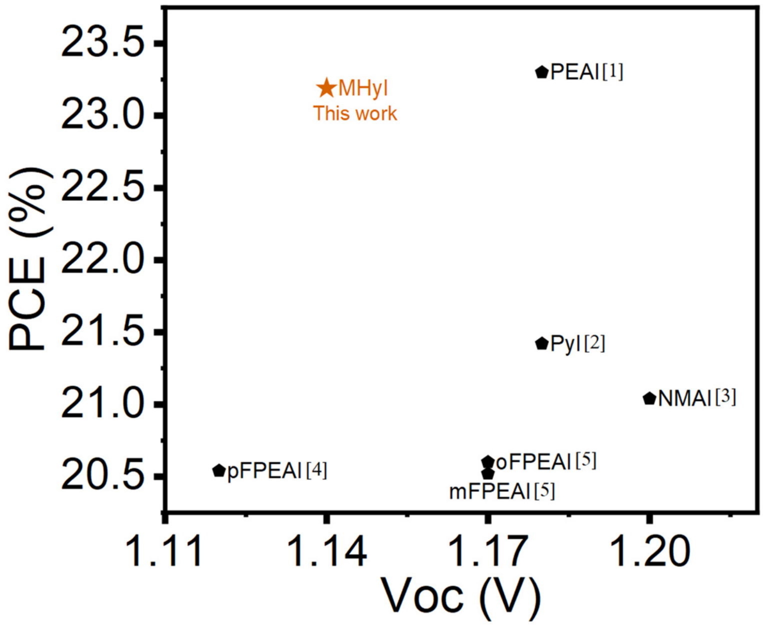

Figure S6. Comparative performance of devices with different post-treatment ammonium salts (PEAI [1], PyI [2], NMAI [3], pFPEAI [4], oFPEAI [5], mFPEAI [5]).

Table S1. Fitted results of TRPL curves of perovskite films with and without MHyI-modified and average PL lifetime τ_{ave} was calculated using $\tau_{ave}=(A_1\tau_1^2+A_2\tau_2^2)/(A_1\tau_1+A_2\tau_2)$.

	A_1	τ_1 (ns)	A_2	τ_2 (ns)	τ_{ave} (ns)
Control	0.36	31.67	0.57	131.53	118.09
MHyI-treated	0.19	35.46	0.73	354.56	346.37

Table S2. Fitting parameters of the EIS measurement based on control and MHyI-treated perovskite solar cells.

	R_s (Ω)	C_{tr} (F)	R_{tr} (Ω)	C_{rec} (F)	R_{rec} (Ω)
Control	10.90	2.115×10^{-6}	1.125×10^{5}	1.092×10^{-8}	2.189×10^{4}
MHyI-treated	10.16	1.796×10^{-6}	1.504×10^{5}	1.101×10^{-8}	3.932×10^{4}

References:

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