

Electronic supplementary Information

Multifunctional CuSCN interlayer in carbon electrode-based CsPbIBr₂ all-inorganic
perovskite solar cells for boosting the efficiency and stability

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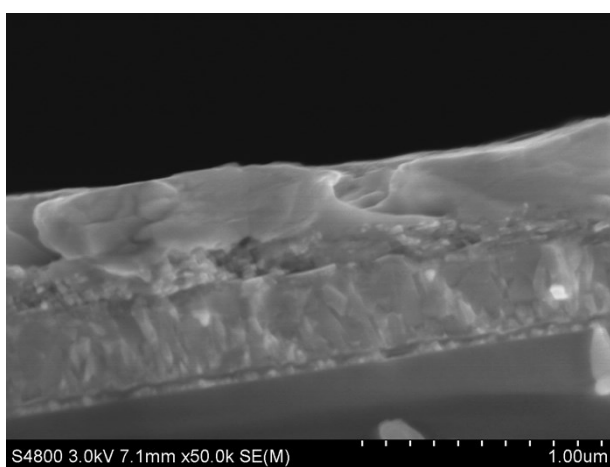


Fig. S1 The cross-sectional SEM image of FTO/TiO₂/CsPbIBr₂/CuSCN

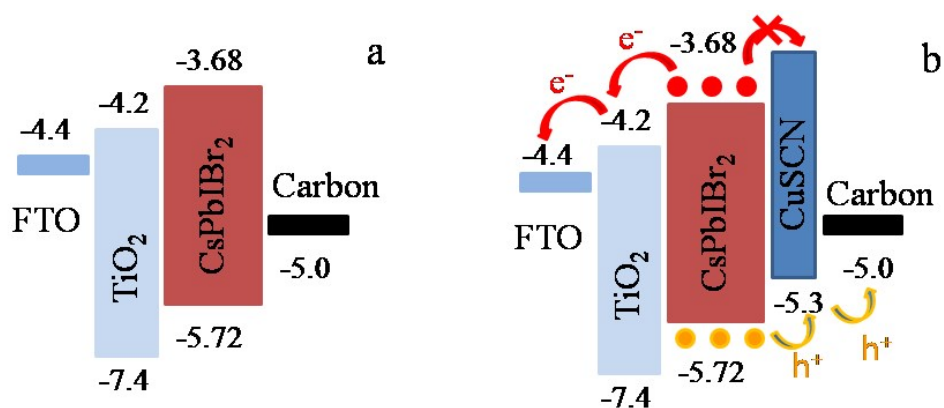


Fig. S2 The energy level diagrams of carbon electrode-based CsPbIBr₂ PSCs without
(a) and with (b) CuSCN interlayer

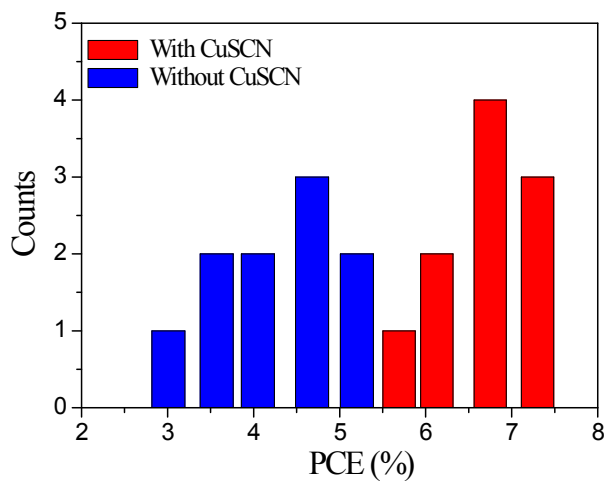


Fig. S3 The statistic histograms of PCE for the CsPbIBr₂ PSCs with and without CuSCN interlayer

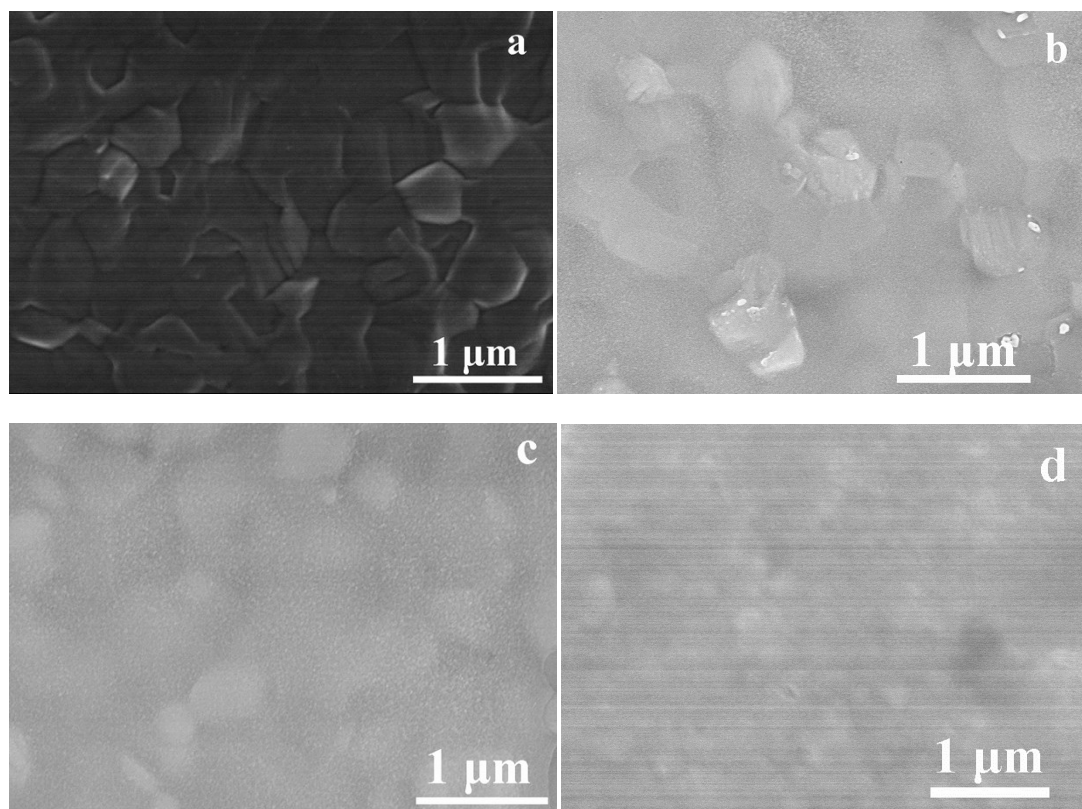


Fig. S4 Top-view SEM images of CsPbIBr₂ film with CuSCN overlayer formed at different concentration (a: 0 mg mL⁻¹, b: 10 mg mL⁻¹, c: 20 mg mL⁻¹, d: 30 mg mL⁻¹)

Table S1 Photovoltaic parameters of carbon electrode-based CsPbIBr₂ all-inorganic PSCs with CuSCN interlayer obtained at different concentrations.

CuSCN concentration	V _{oc} (V)	J _{sc} (mA cm ⁻²)	FF	η (%)
0 mg mL ⁻¹	1.06	10.01	0.49	5.19
10 mg mL ⁻¹	1.10	9.78	0.49	5.27
20 mg mL ⁻¹	1.13	10.43	0.62	7.30
30 mg mL ⁻¹	1.12	10.22	0.56	6.41

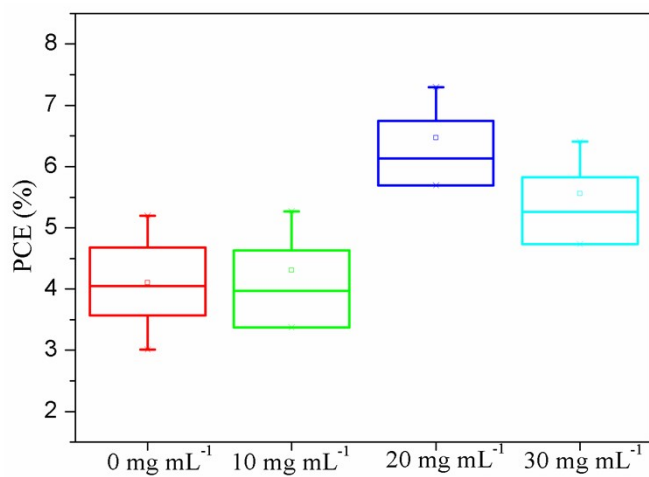


Fig. S5 Box charts of PCE of the CsPbIBr₂ PSCs with CuSCN interlayer obtained from different concentration

Table S2 Photovoltaic parameters of carbon electrode-based CsPbIBr₂ all-inorganic PSCs with and without CuSCN interlayer under forward and reverse scans

Devices		V _{oc} (V)	J _{sc} (mA cm ⁻²)	FF	η (%)
With CuSCN	Forward	1.12	10.31	0.56	6.46
	Reverse	1.13	10.42	0.62	7.30
Without CuSCN	Forward	0.93	9.66	0.33	2.97
	Reverse	1.06	10.01	0.49	5.19