Supporting Information

Efficient and Low-Temperature Processed Perovskite Solar Cells Based on a Cross-linkable Hybrid Interlayer

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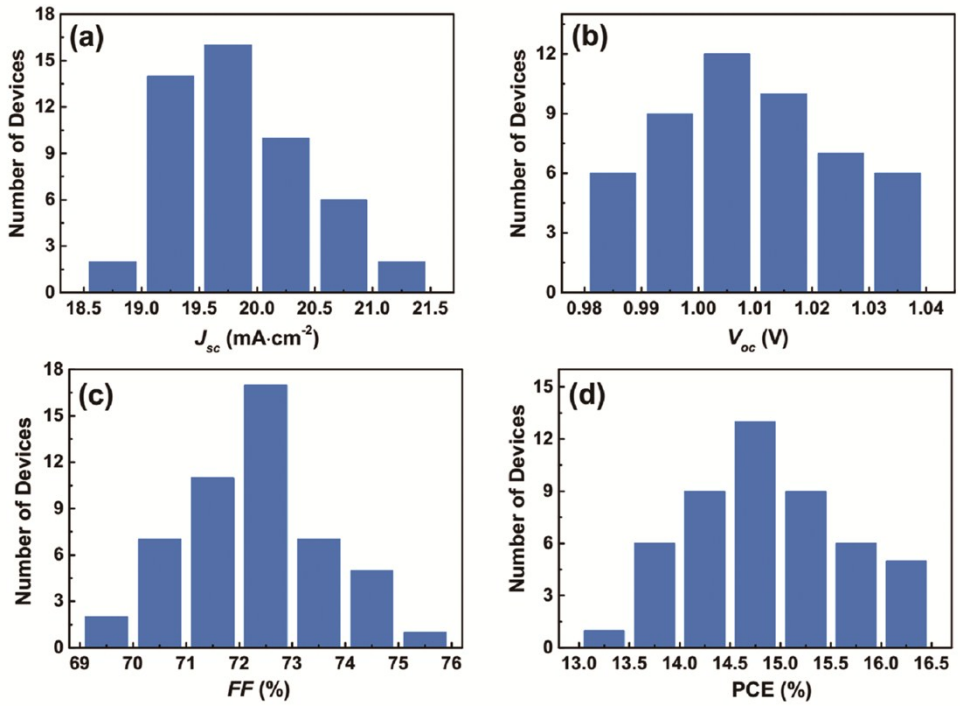

Figure S1. Device performance statistics for 50 separate PFN-OX:ZnO-based devices: (a) short-circuit current density (J_{sc}); (b) open-circuit voltage (V_{oc}); (c) fill factor (*FF*); (d) power conversion efficiency (*PCE*). The mean values and standard deviations of each characterization paremeters are: (a) *Jsc*, 19.8±1.1 mA·cm^{-2}; (b) *Voc*, 1.01±0.04V; (c) *FF* (%), 72.0±2.4; (d) *PCE* (%), 14.7±1.3.

(a) $CH_3NH_3PbI_3 \rightarrow PbI_2 + CH_3NH_2 + HI$[S1]

(b) $ZnO + 2HI \rightarrow ZnI_2 + H_2O$[S2]

(c)

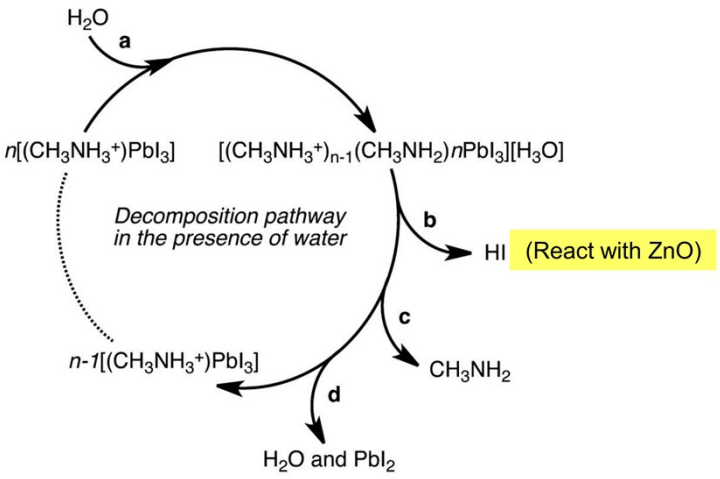

Figure S2. The proposed decomposition process for $CH_3NH_3PbI_3$ on ZnO interface (the Figure c is modified based on the literature results [S3]).

Table S1. Summary of the device performance based on hybrid PFN-OX:ZnO with varied thickness of PFN-OX under AM1.5G 100 mW·cm^{-2} illumination. The mean values and standard deviations of the characterization parameters are from 8 to 12 solar cells.

PFN-OX (mg·mL^{-1})	V_{oc} (V)	J_{sc} (mA·cm^{-2})	*FF*	*PCE* (%)
0.25	0.98±0.03	20.1±0.9	0.65±0.04	13.1±1.0
0.50	1.01±0.03	20.9±0.7	0.72±0.03	14.9±0.9
1.00	0.99±0.05	20.6±1.0	0.65±0.06	12.9±0.5
2.00	0.97±0.04	19.5±0.5	0.59±0.07	11.4±0.6

References

S1. A. Dualeh, N. Tétreault, T. Moehl, P. Gao, M. K. Nazeeruddin and M. Grätzel, *Adv. Funct. Mater.*, 2014, **24**, 3250-3258.

S2. X. Dong, H. Hu, B. Lin, J. Ding and N. Yuan, *Chem. Commun.*, 2014, **50**, 14405-14408.

S3. J. M. Frost, K. T. Butler, F. Brivio, C. H. Hendon, M. van Schilfgaarde and A. Walsh, *Nano Lett.*, 2014, **14**, 2584-2590.