Electronic Supplementary Information

An Integrated Approach towards Highly-Efficient and Long-Term Stable Perovskite Nanowires Solar Cells

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Table S1 Summary of the series and shunt resistances of the devices.

Device	Shunt resistance [KΩ cm^2]	Series resistance [Ω cm^2]
A	144.9	213.2
C	106	1005.2
D	117.6	48.7

Table S2 Comparison of the device characteristics of perovskite NWs solar cells previously reported as well as the present work.

Source	V_{oc} [volt]	J_{sc} [mA cm^{-2}]	FF [%]	PCE [%]
Reference 1	1.05	19.12	72.10	14.71
Reference 2	1.12	22.47	70.01	17.62
This work	1.01	23.39	79.74	18.83

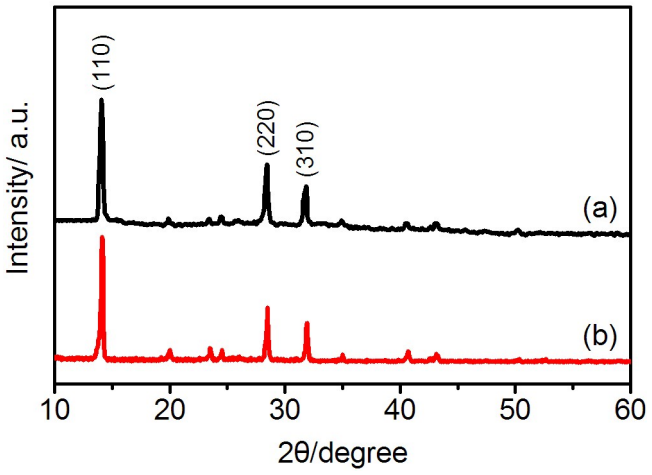

Fig. S1 X-ray diffraction patterns of: (a) $MAPbI_3$ compact film and (b) $MAPbI_3$ NWs.

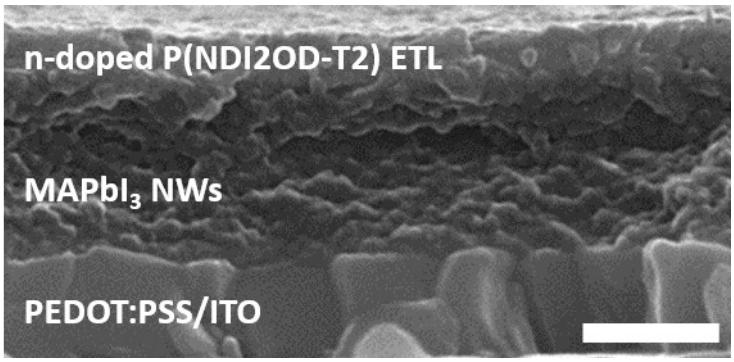

Fig. S2 Cross-sectional SEM image of $MAPbI_3$ NWs coated with 10 mol% N-DPBI-doped P(NDI2OD-T2) layer (scale bar = 400 nm).

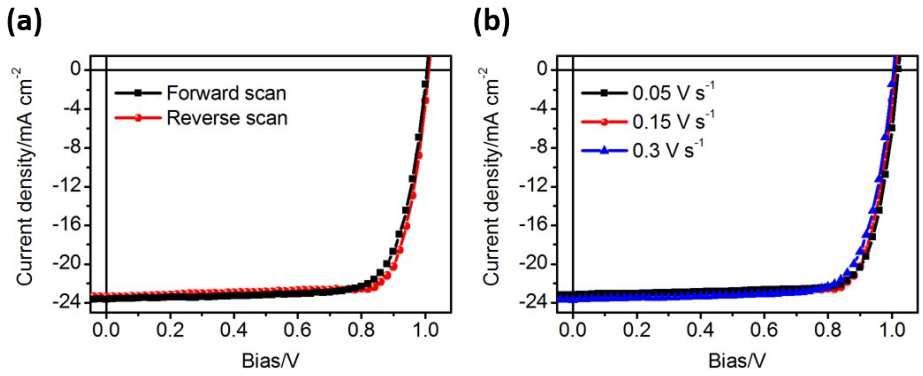

Fig. S3 *J-V* characteristics of device D measured under simulated AM 1.5G solar irradiation (intensity = 100 mW cm^{-2}) with: (a) different sweep directions (scan rate = 0.15 V s^{-1}) and (b) different voltage sweep rates.

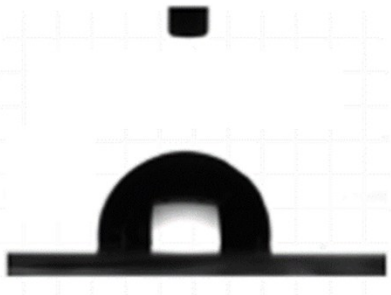

Fig. S4 Image of water droplet on N-DPBI-doped P(NDI2OD-T2) ETL.

References

1. J.-H. Im, J. Luo, M. Franckevičius, N. Pellet, P. Gao, T. Moehl, S. M. Zakeeruddin, M. K. Nazeeruddin, M. Grätzel and N.-G. Park, *Nano Lett.*, 2015, **15**, 2120-2126.
2. S. Wanga, S. Yana, M. Wang, L. Chang, J. Wang and Z. Wang, *Sol. Energy Mater. Sol. Cells*, 2017, **167**, 173-177.