

ADVANCED FUNCTIONAL MATERIALS

Supporting Information

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Pyrite-Based Bi-Functional Layer for Long-Term Stability and High-Performance of Organo-Lead Halide Perovskite Solar Cells

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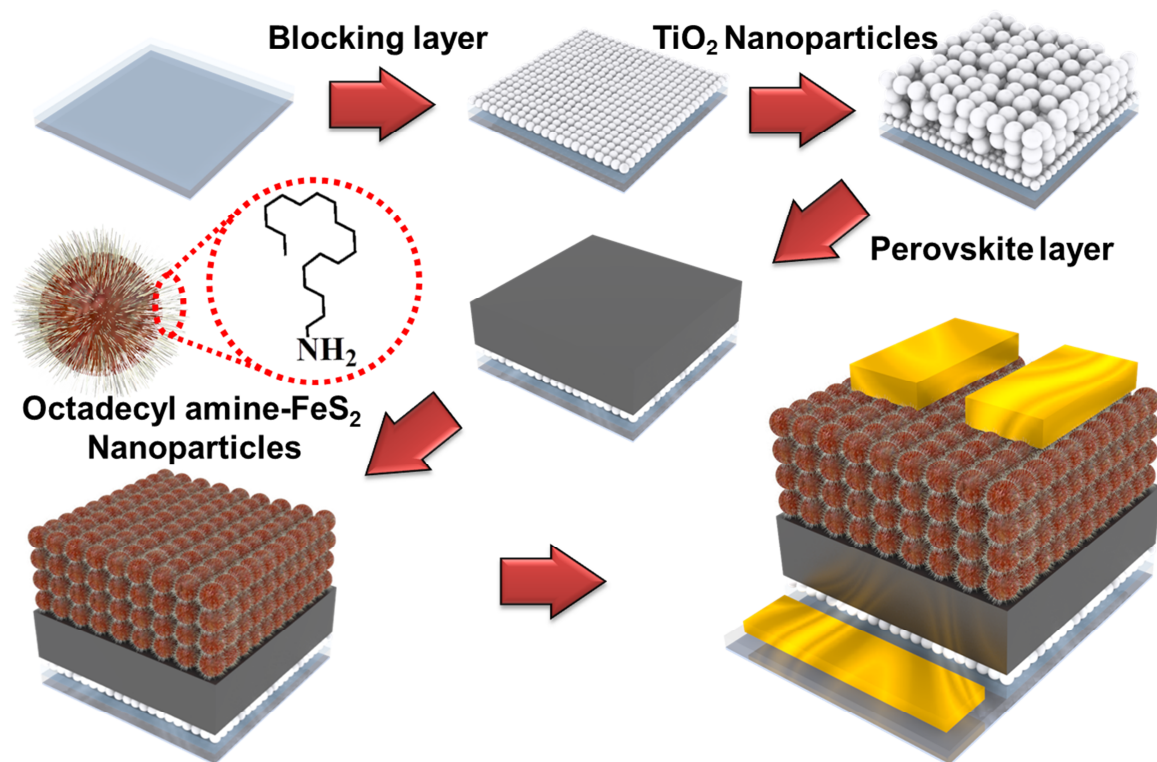


Figure S1. Schematic of the fabrication process for the CH₃NH₃PbI₃ PSC with hole transporting layer (HTL) based on ODA capped FeS₂ nanoparticles (ODA-FeS₂ NPs).

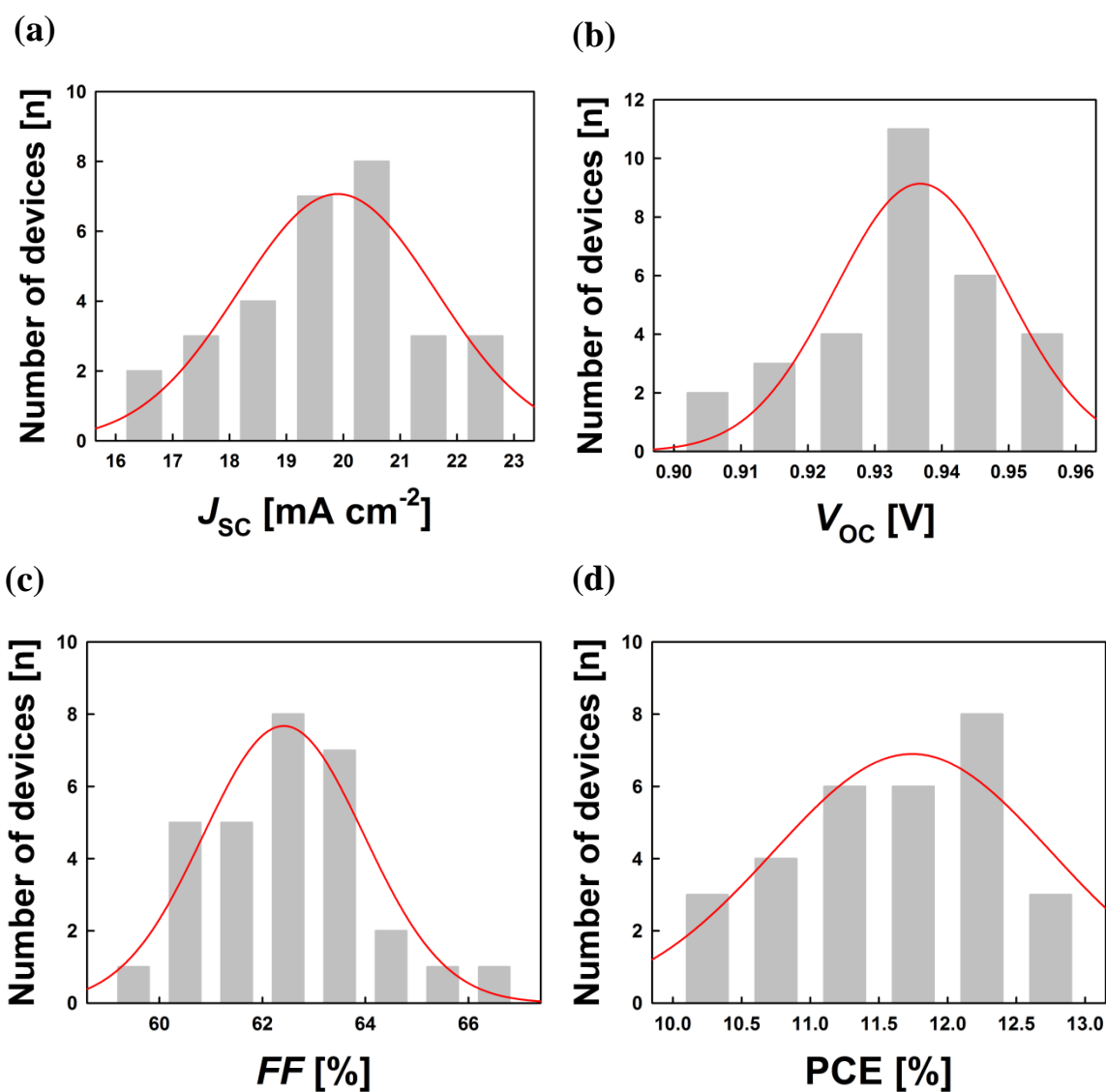


Figure S2. Histograms of device properties measured for 30 devices (a) J_{sc} (b) V_{oc} (c) FF (d) η for perovskite solar cells (PSCs) with ODA- FeS_2 nanostructured HTL. The histograms are fitted with normal distribution curves.

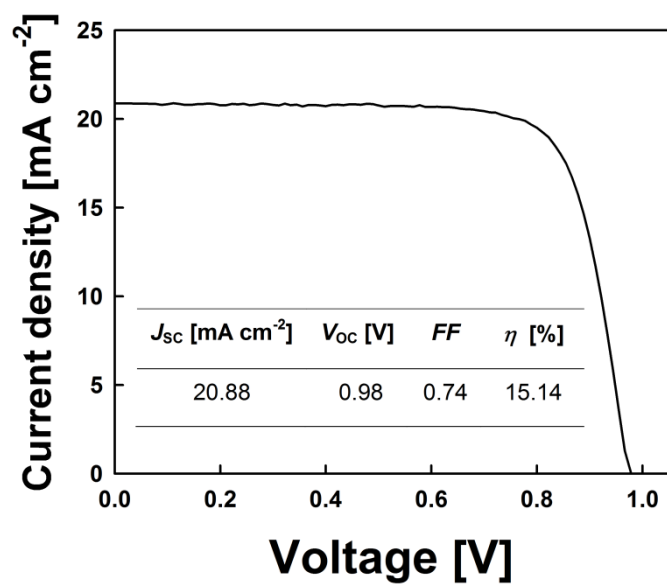


Figure S3. Photocurrent density-voltage (J - V) curve of the best performing reference cell using spiro-OMeTAD under $100 \text{ mW}\cdot\text{cm}^{-2}$ illumination (AM 1.5G)

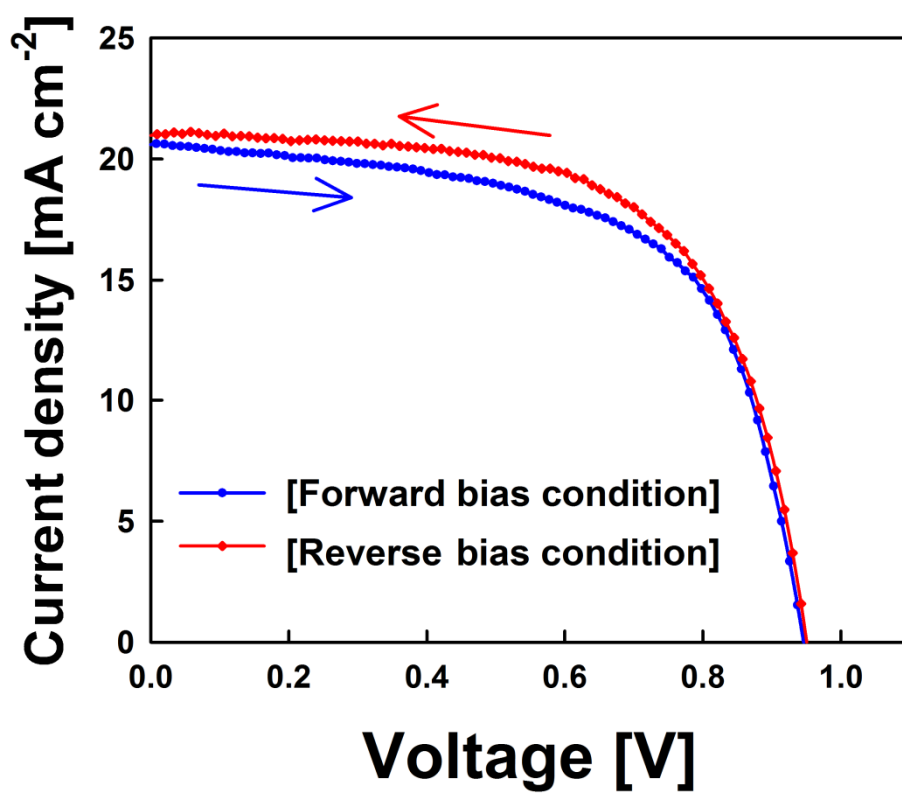


Figure S4. *J-V* curves of the PSCs with ODA-FeS₂ NPs-based HTL, measured at different sweep directions.

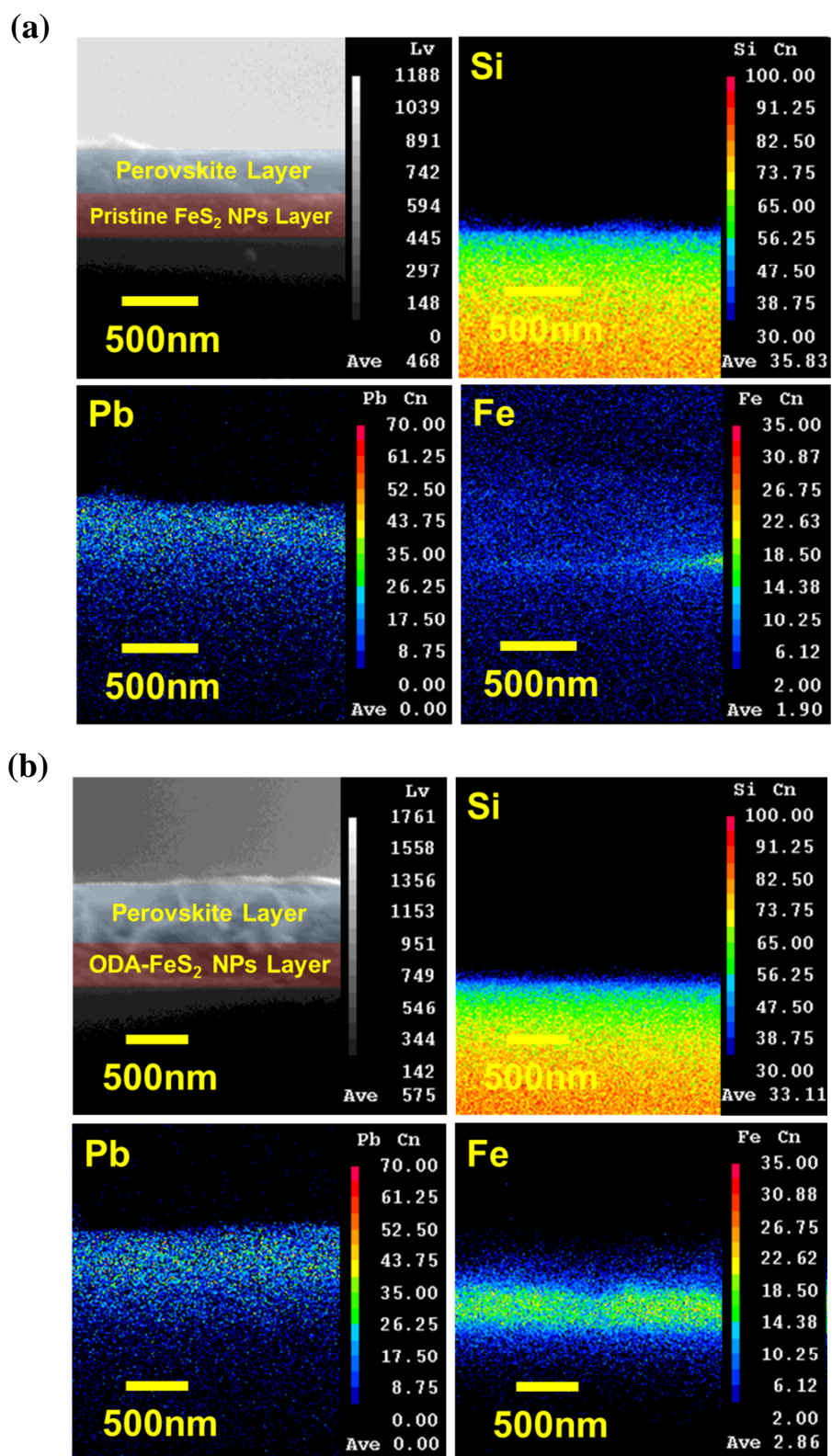


Figure S5. SEM-electron-probe microanalyzer (SEM-EPMA) mappings of silicon, lead, and

iron in (a) Si/ODA-FeS₂ NPs/CH₃NH₃PbI₃ film and (b) Si/pristine FeS₂ NPs/CH₃NH₃PbI₃ film.