

Supporting Information

Self-Aligned Fluorinated-Organic Ligand for Boosting the Performance of Perovskite Solar Cells

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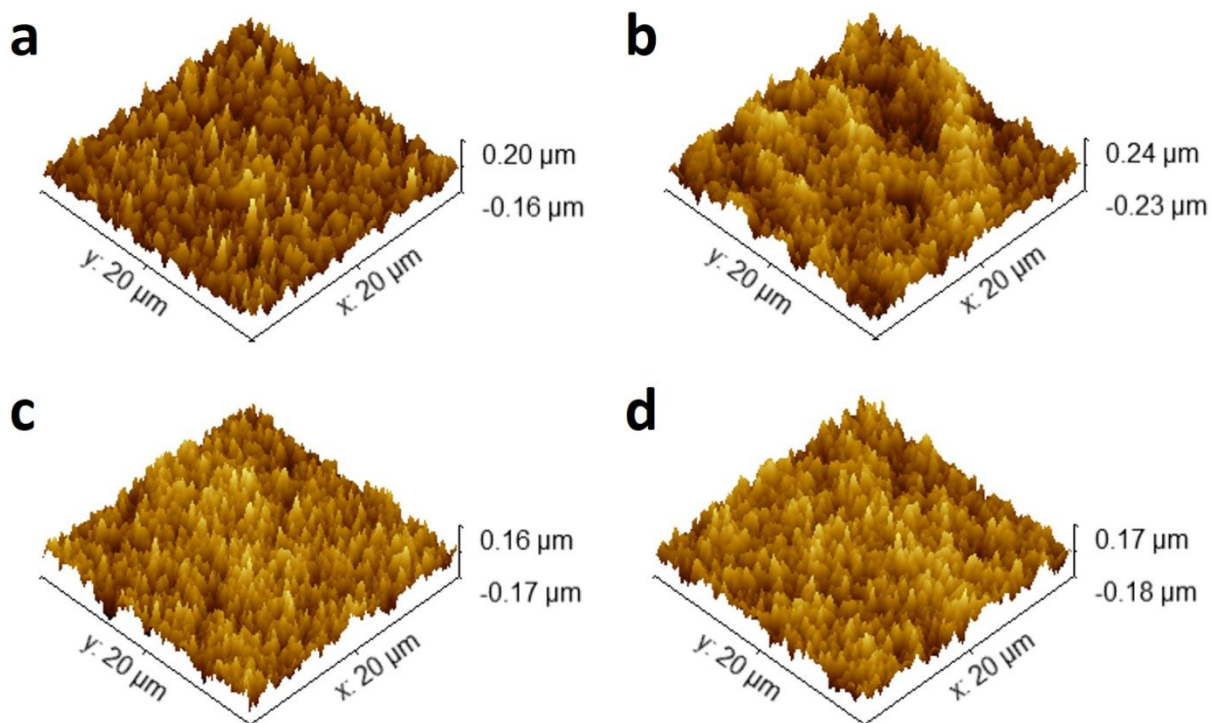


Figure S1. a-d) AFM images of perovskite films for a) control, b) 0.0005%, c) 0.005%, and d) 0.05% conditions.

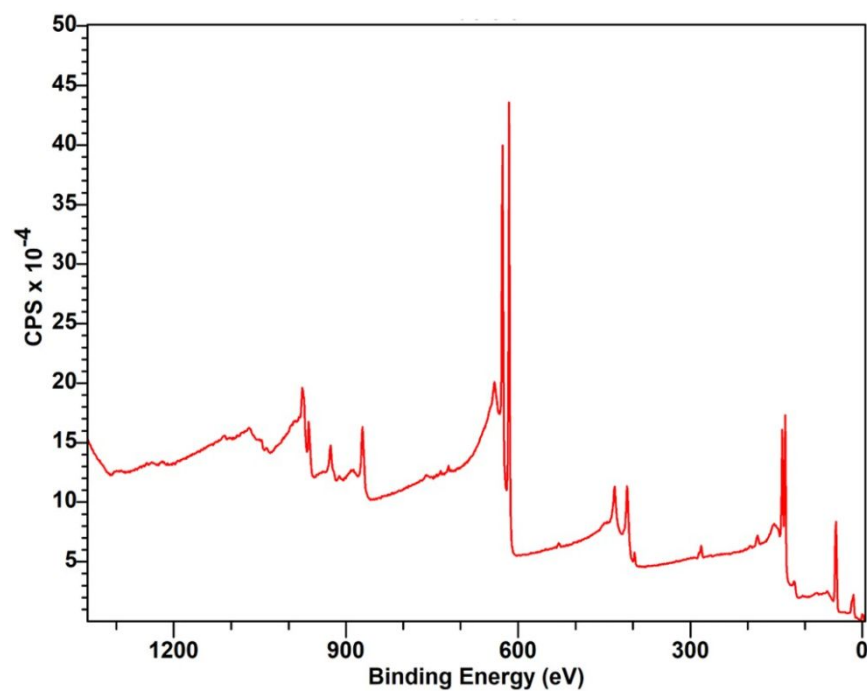


Figure S2. XPS results for the perovskite films without F4TmI.

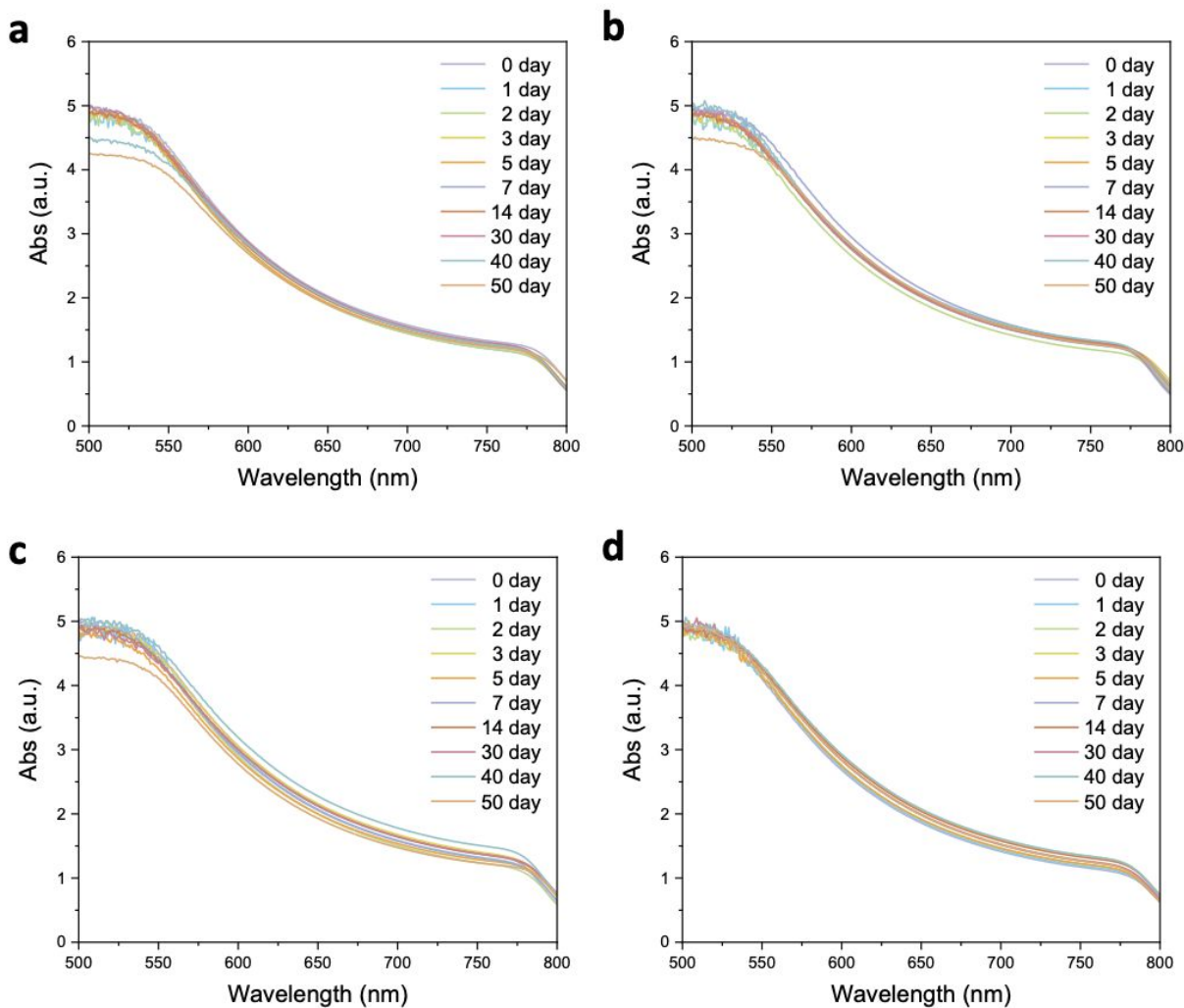


Figure S3. a-d) Absorption spectra of perovskite films for a) control, b) 0.0005%, c) 0.005%, and d) 0.05% conditions under 60°C hotplate.

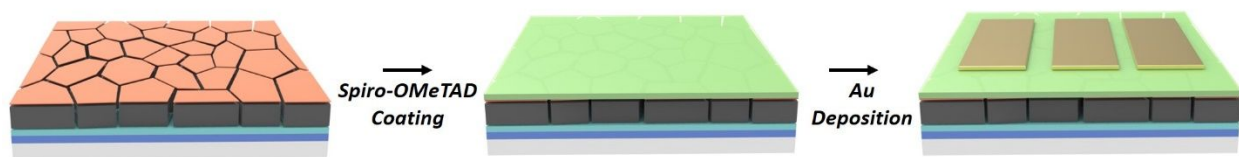


Figure S4. Schematic images for the fabrication process of PeSCs from the preparation of perovskite films step to the Au electrode deposition step.

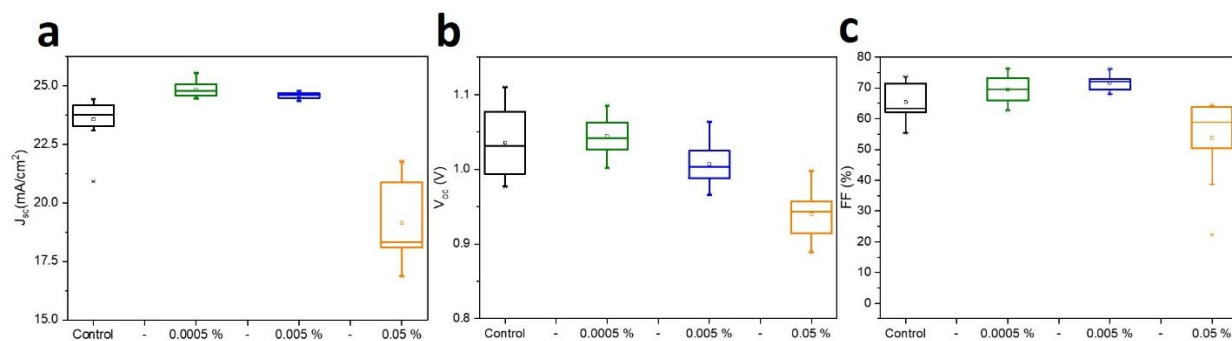


Figure S5. a-c) Statistics of the solar cell parameters of the PeSCs for a) J_{sc} , b) V_{oc} , and c) FF based on various types of perovskite films

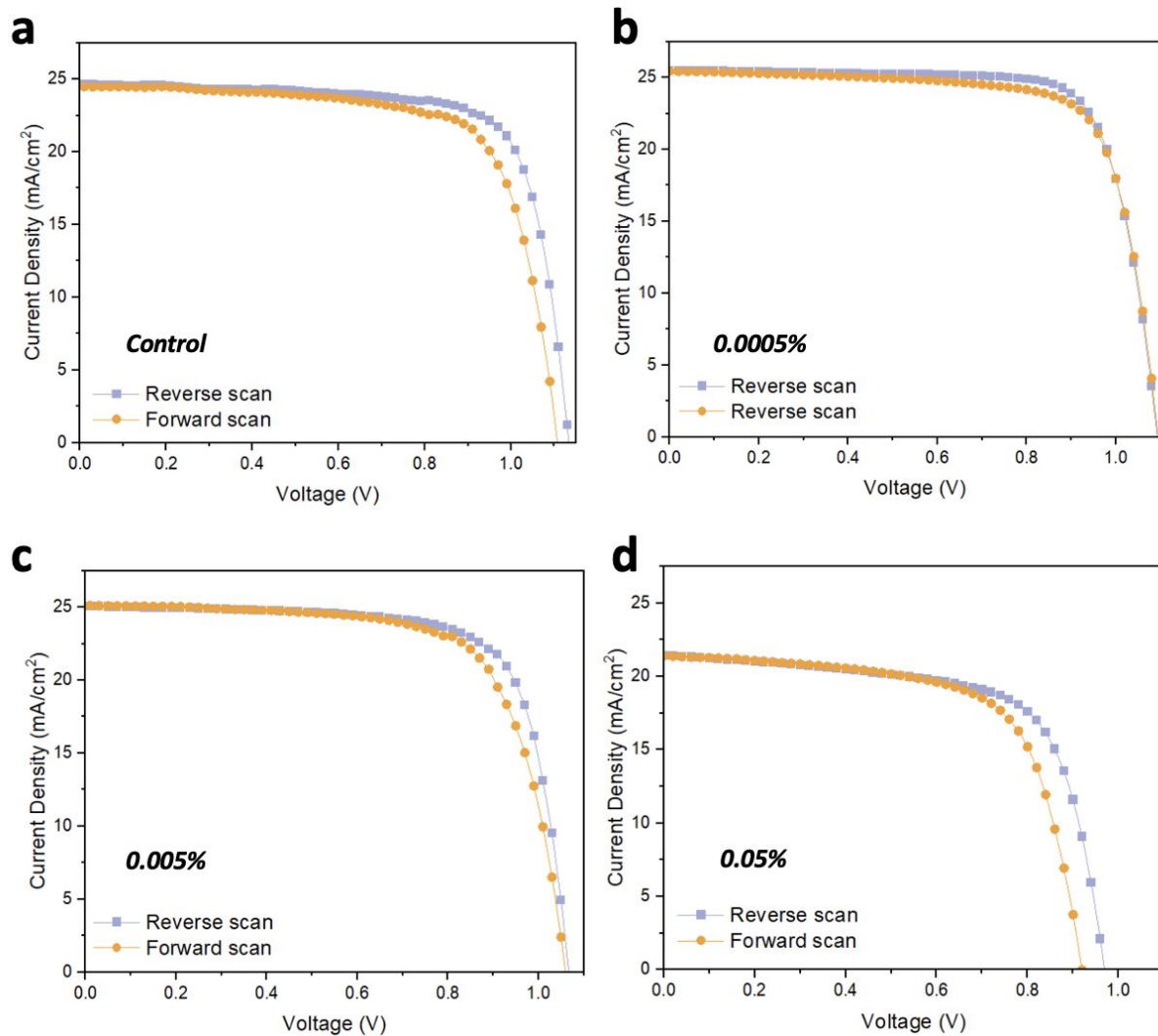


Figure S6. a-d) J - V curves by reverse and forward scan for PeSCs based on a) control, b) 0.0005%, c) 0.005%, and d) 0.05% conditions