

Supplementary Materials: MACl-Induced Controlled Crystallization in Sequentially Deposited Perovskites for High-Efficiency and Stable Perovskite Solar Cells

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Table S1. Fitted EIS data of pure perovskite and MAPbCl₃-induced PSCs.

| Sample | <i>R_s</i> (ohm) | <i>R_{CT}</i> (ohm) | <i>R_{REC}</i> (ohm) |
|------------------------------|----------------------------|-----------------------------|------------------------------|
| Pure perovskite | 30.4 | 99.3 | 425.6 |
| MAPbCl ₃ -induced | 29.7 | 82.9 | 618.5 |

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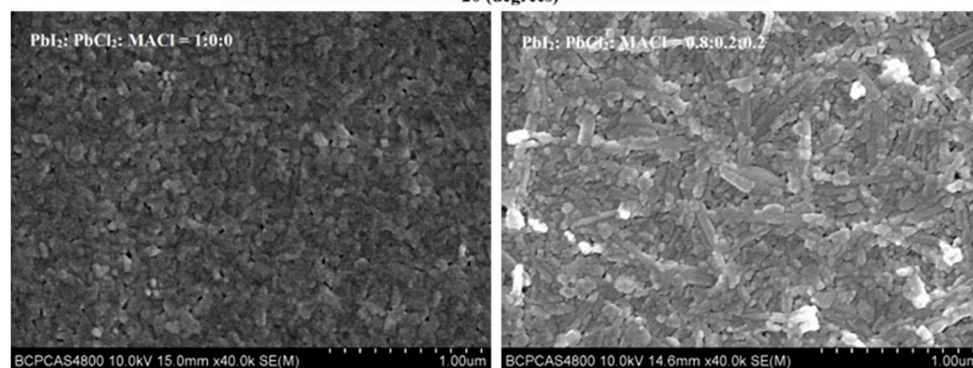
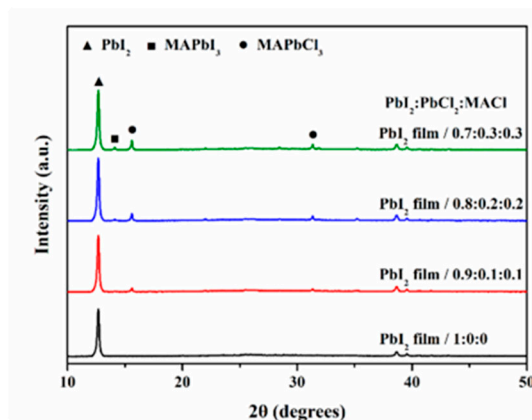


Figure S1. XRD and top-view SEM images of pure PbI₂ and PbI₂ films containing MAPbCl₃.

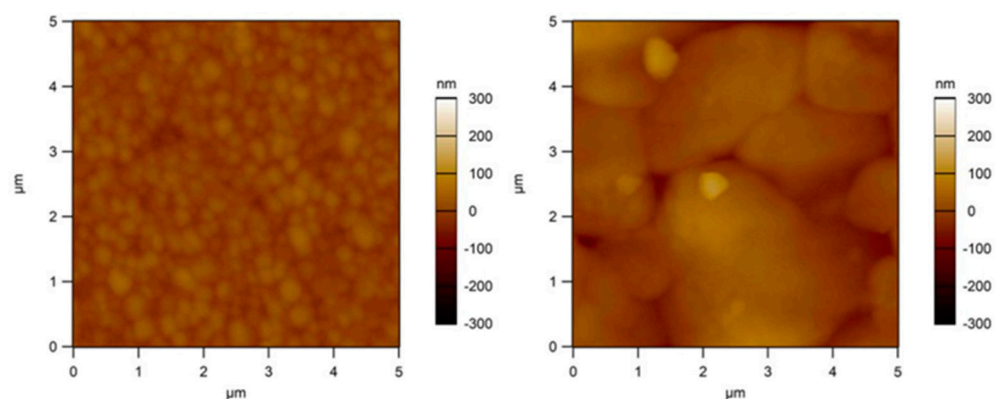


Figure S2. AFM of perovskite film prepared from a precursor solution containing $\text{PbI}_2\text{:PbCl}_2\text{:MACl}$ in 1:0:0 and 0.8:0.2:0.2 ratios.

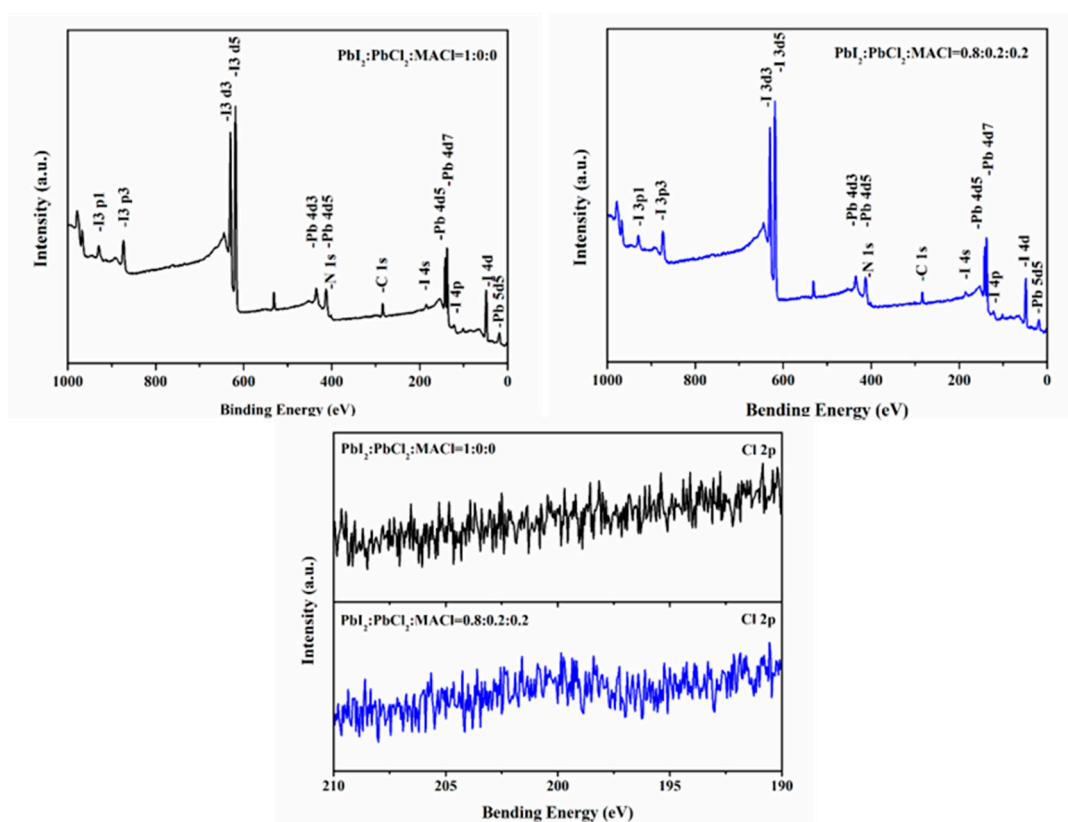


Figure S3. XPS spectra of perovskite film prepared from a precursor solution containing $\text{PbI}_2\text{:PbCl}_2\text{:MACl}$ in 1:0:0 and 0.8:0.2:0.2 ratios.

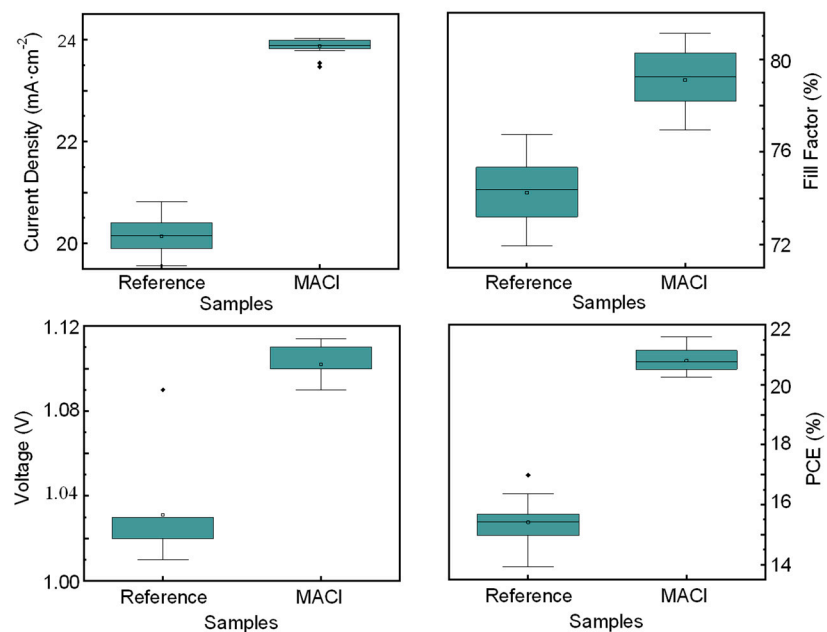


Figure S4. Distribution of photovoltaic parameters of perovskite solar cells.

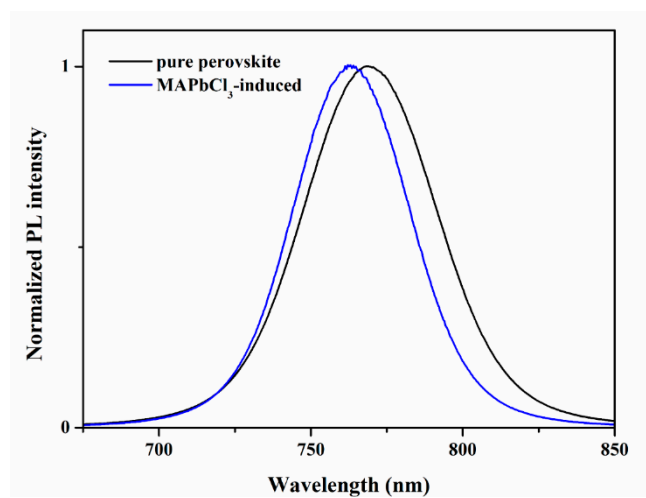


Figure S5. Normalized steady-state PL spectra of pure perovskite and MAPbCl₃-induced films.