

Supporting Information

Controlled crystal facet of MAPbI₃ perovskite for highly efficient and stable solar cell via nucleation modulation

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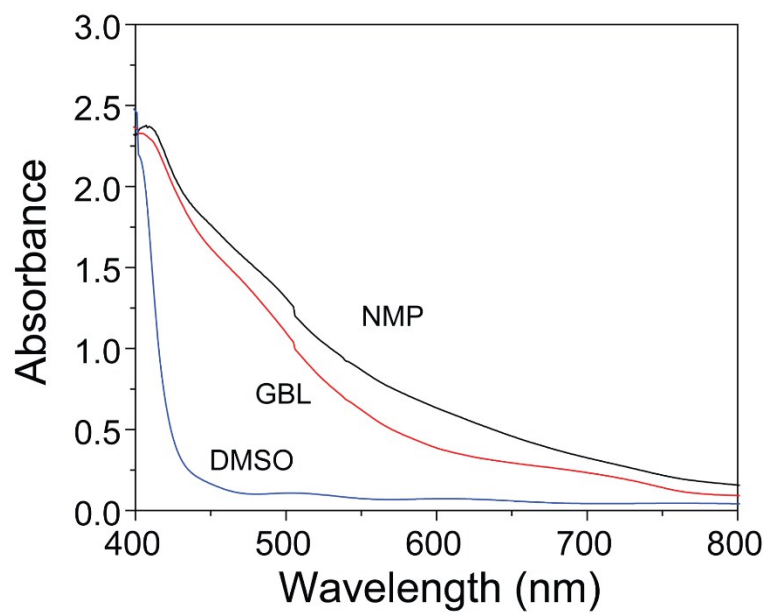


Fig. S1 UV-vis spectroscopy of the films prepared with DMSO, GBL and NMP solvent

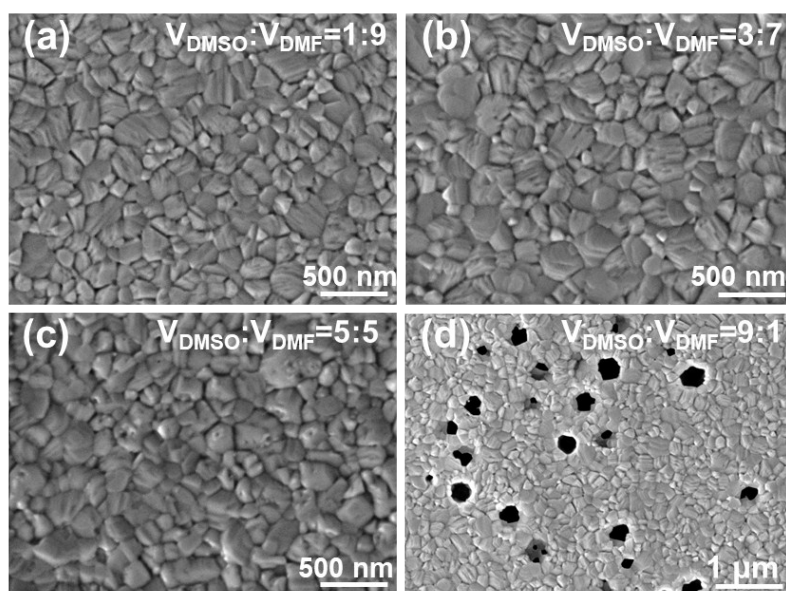


Fig. S2 Morphology variation of the precursor films with increasing DMSO concentration in the mixed solvent prepared by conventional annealing method

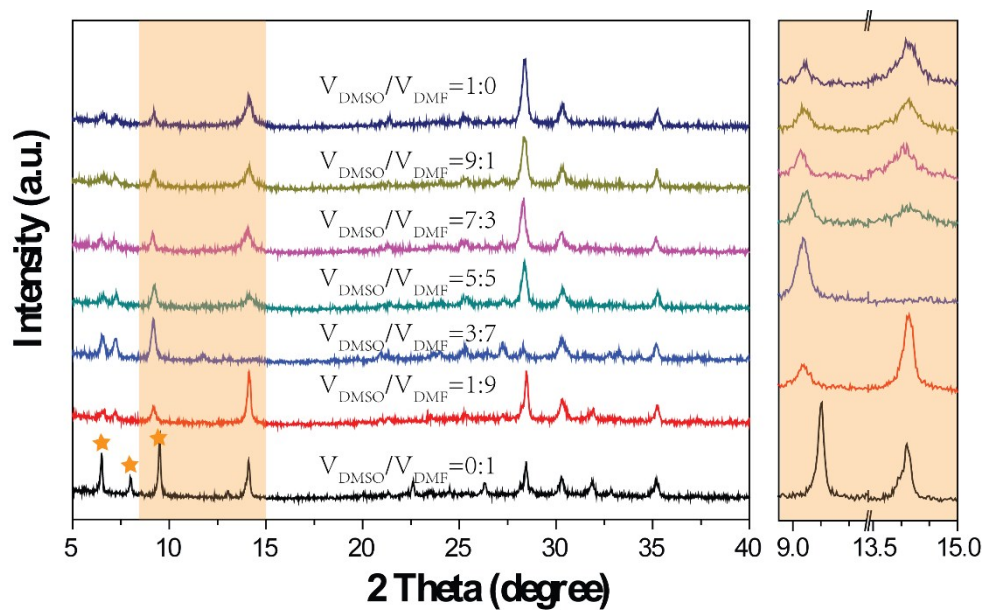


Fig. S3 XRD patterns of the precursor films prepared with different solvent ratios of DMSO and DMF before annealing.

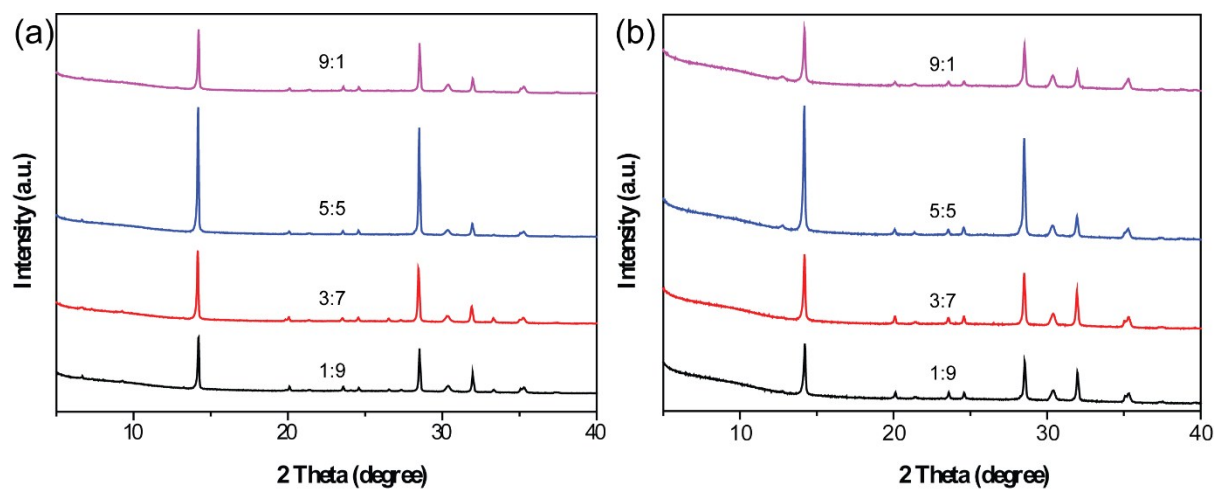


Fig. S4 XRD patterns of the complete films prepared with different solvent ratios of DMSO and DMF annealed by (a) merged annealing and (b) conventional annealing method.

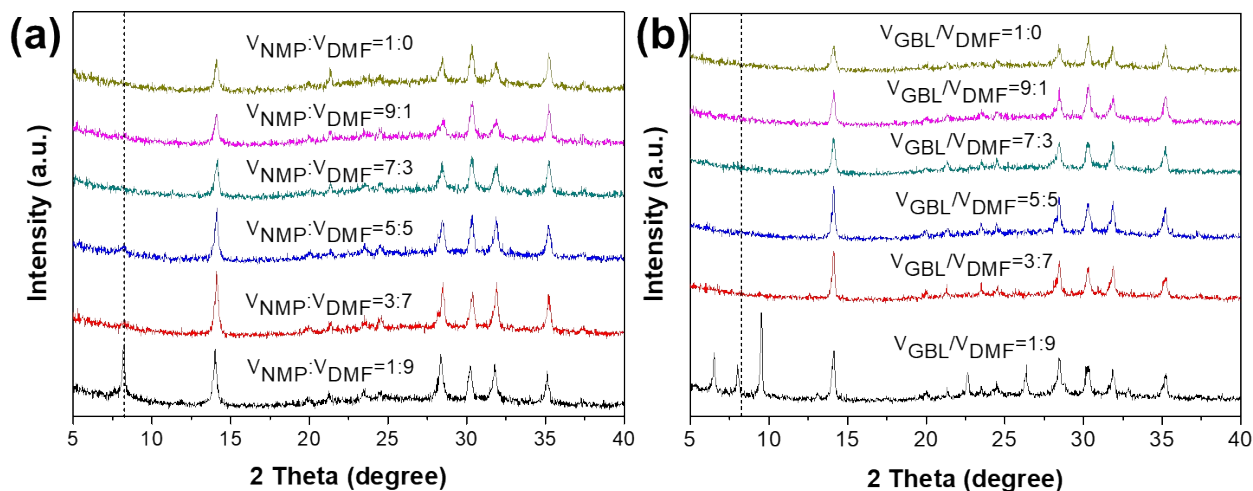


Fig. S5 XRD patterns of the precursor films with varied mixing ratio of (a) NMP:DMF and (b) GBL:DMF.

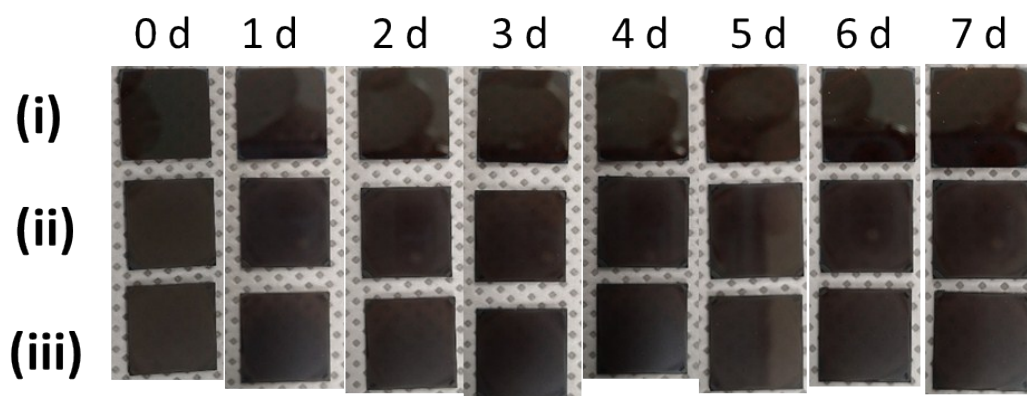


Fig. S6 The photographs of perovskite films with increasing exposure time: (i) perovskite grains with high grain orientation, (ii) perovskite grains with small grain orientation and large grain size, and (iii) perovskite grains with high grain orientation and large grain size, respectively.

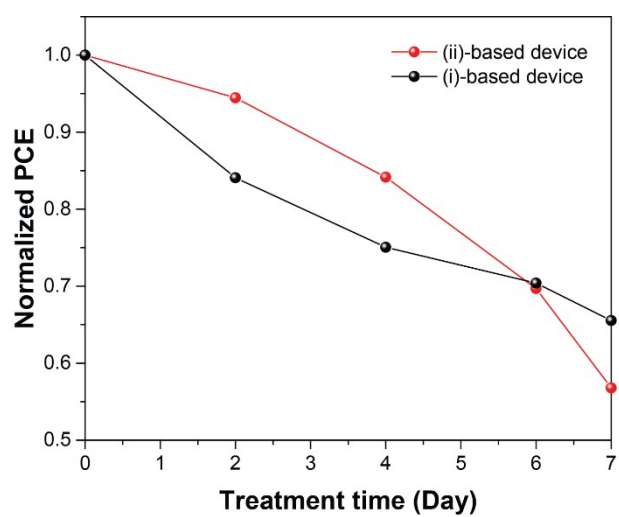


Fig. S7 Photovoltaic performance for the typical devices as a function of time: (i) perovskite grains with high grain orientation, (ii) perovskite grains with small grain orientation and large grain size.