Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Enhanced performance of perovskite solar cells by strengthening self-embedded solvent annealing effect in perovskite precursor film

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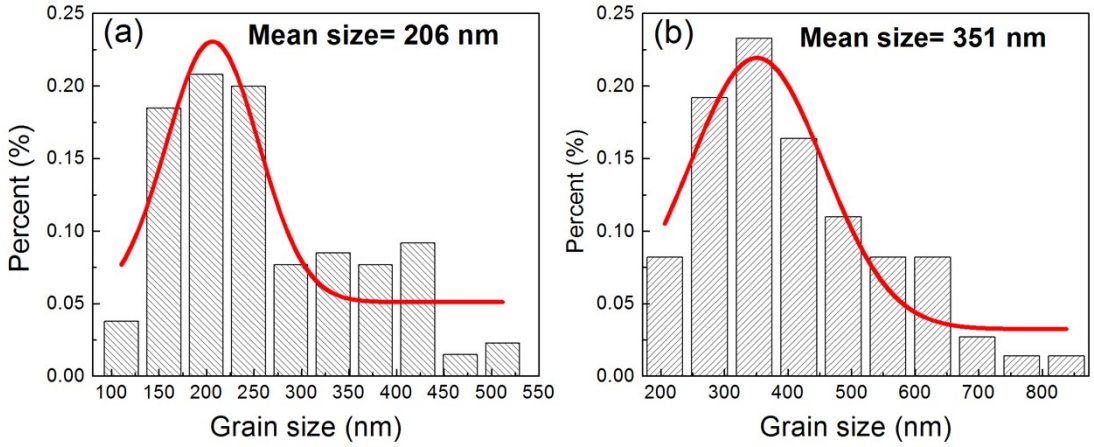

Figure S1 The distribution of grains size of the perovskite film fabricated from different annealing approaches. (a) Without protective layer, (b) with protective layer. All results are collected from SEM images using Nano measurer 1.2 software.

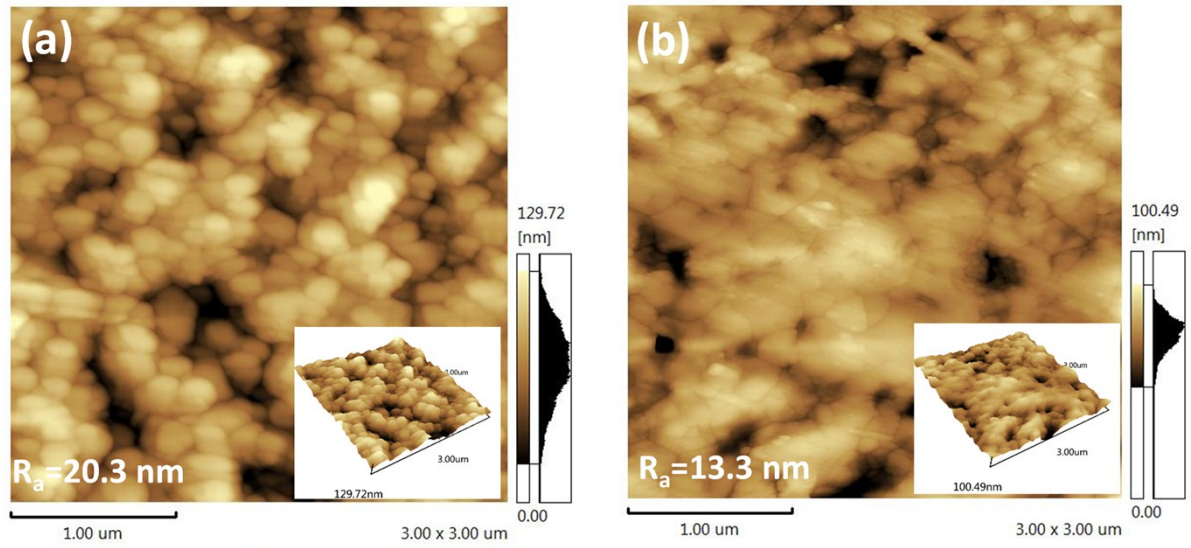

Figure S2 AFM images of perovskite film fabricated from different annealing approaches. (a) without a protective layer, (b) with a protective layer.

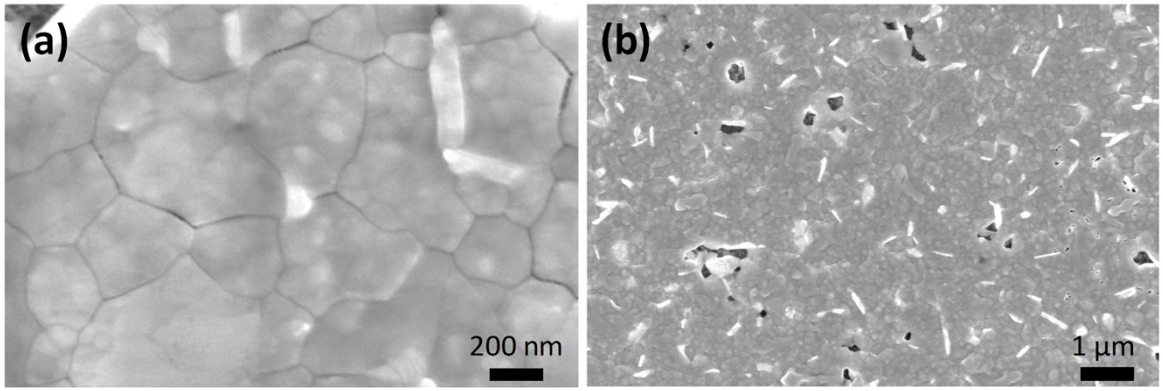

Figure S3 High (a) and low(b) magnification SEM images of perovskite fabricated from optimized DMSO in PbI_2/DMF solutions by employing $PC_{61}BM$ as protective layer.

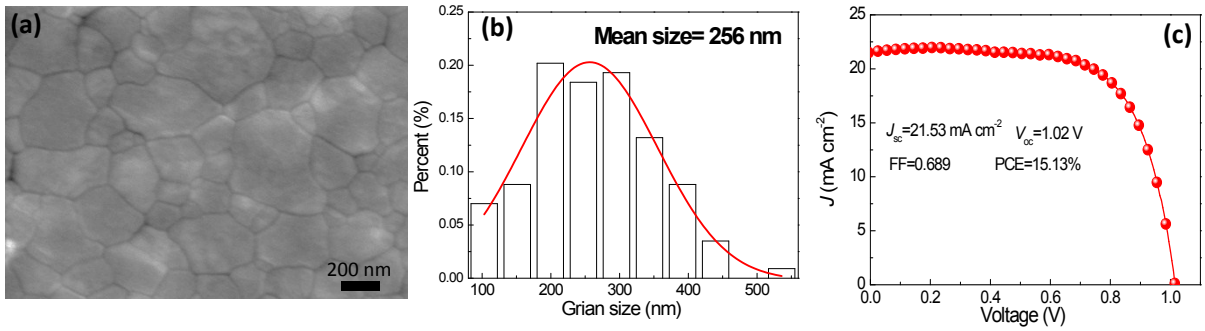

Figure S4 (a) SEM images of perovskite film by employing Spiro-OMeTAD as protective layer. (b)The distribution of grains size of the corresponding perovskite film. (c) *J-V* curves of the best solar cells by employing Spiro-OMeTAD as protective layer.

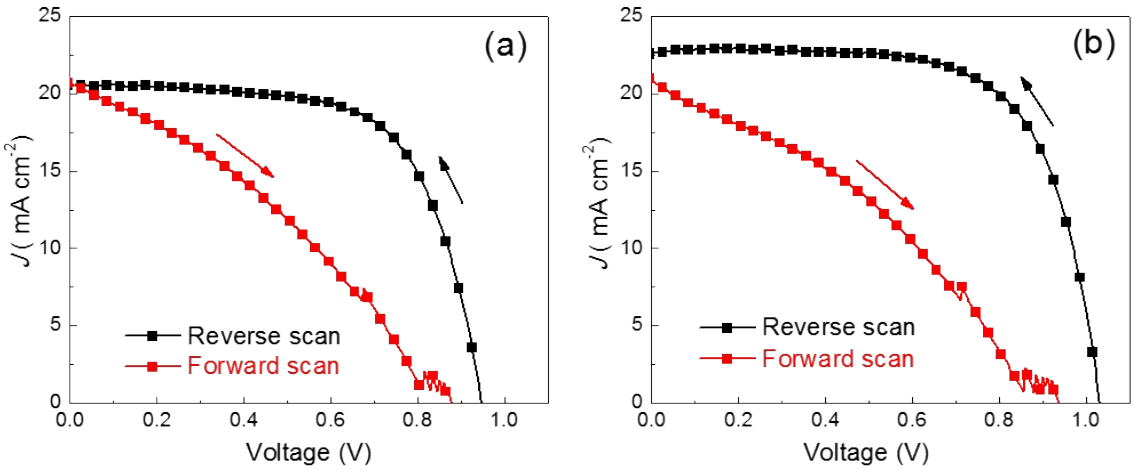

Figure S5 Typical hysteresis behavior of the PSCs. (a) without protective layer, (b) with protective layer. There is obvious discrepancy between reverse scan (dark line) and forward scan (red line).