Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supplementary Information

Impact of grain sizes on optoelectronic performances of 2D Ruddlesden-Popper perovskite-based photodetectors

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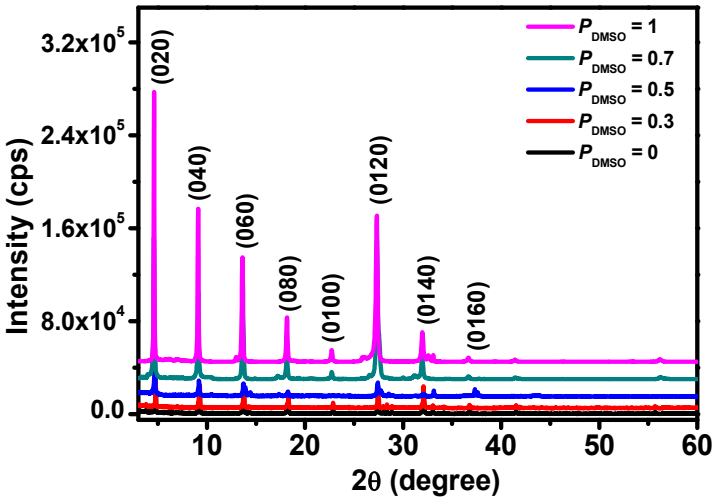

Fig. S1. X-ray diffraction patterns of the $BA_2MAPb_2I_7$ films that were cast from $P_{DMSO} = 0$, 0.3, 0.5, 0.7, and 1.

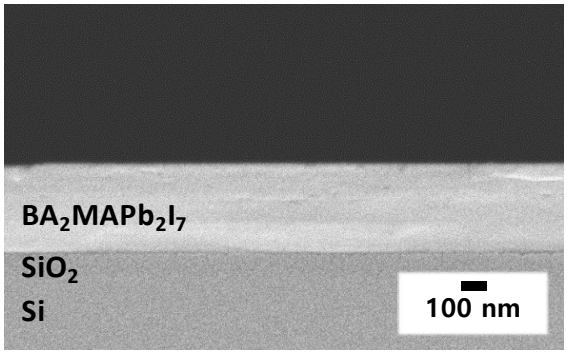

Fig. S2. Cross-sectional SEM image of the perovskite film that was formed using $P_{DMSO} = 1$.

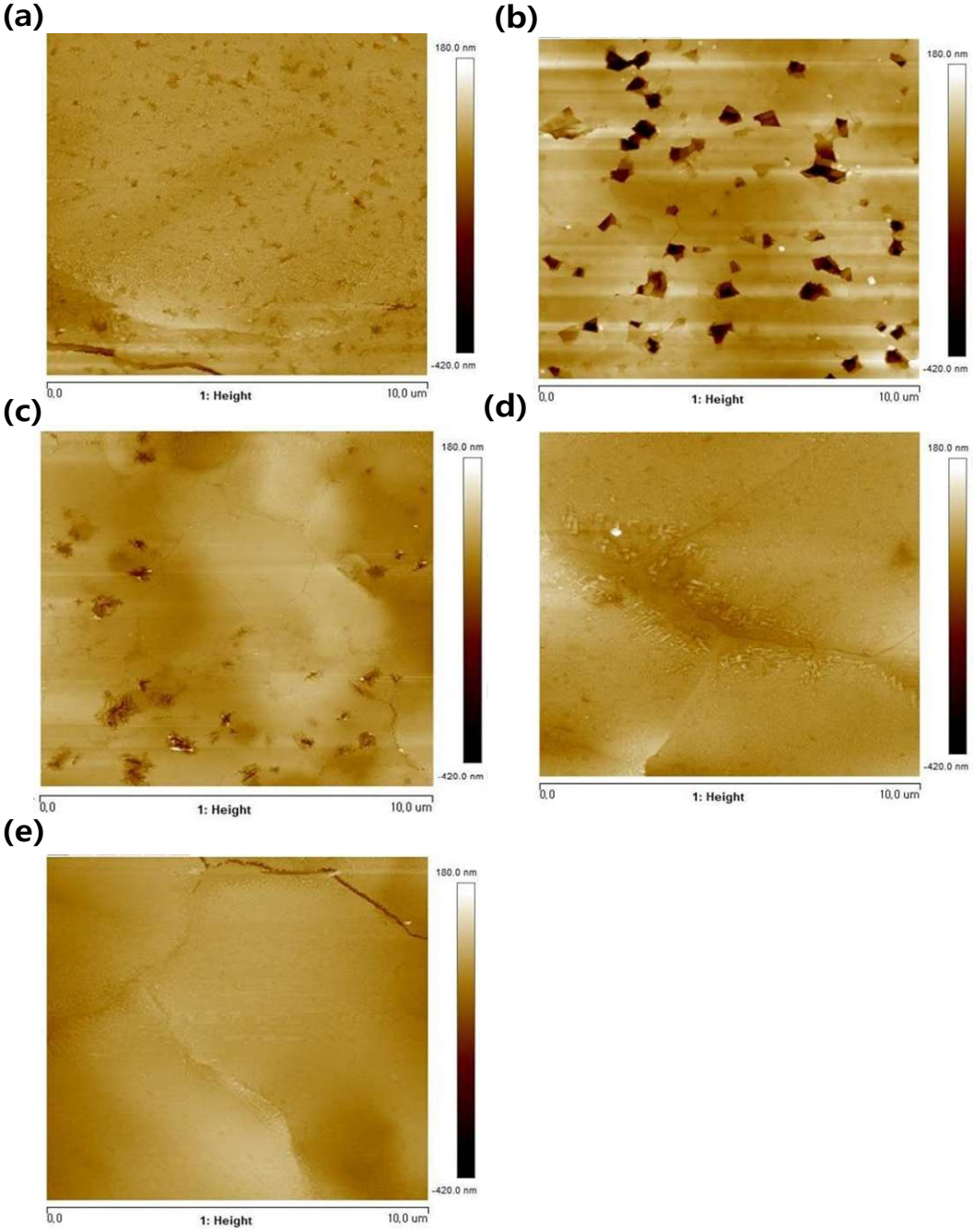

Fig. S3. Atomic force microscopy (AFM) images of the films that were cast from (a) P_{DMSO} = 0, (b) P_{DMSO} = 0.3, (c) P_{DMSO} = 0.5, (d) P_{DMSO} = 0.7, and (e) P_{DMSO} = 1.

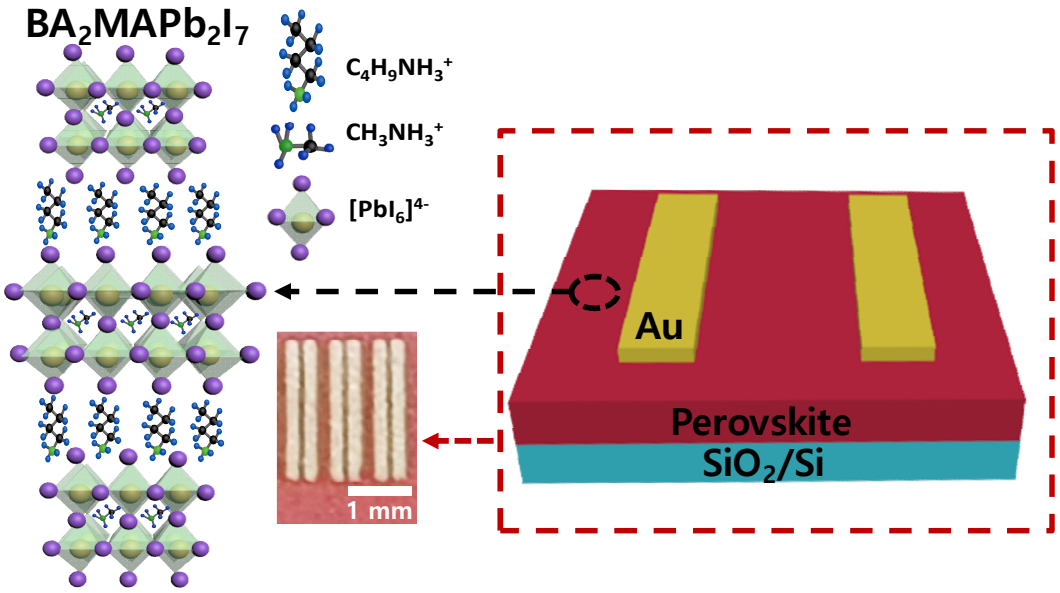

Fig. S4. Schematic illustration and optical image of fabricated photodetector device, and the structure of $BA_2MAPb_2I_7$ (atom colors: Pb = yellow; I = purple; C = black; N = green; H = blue).

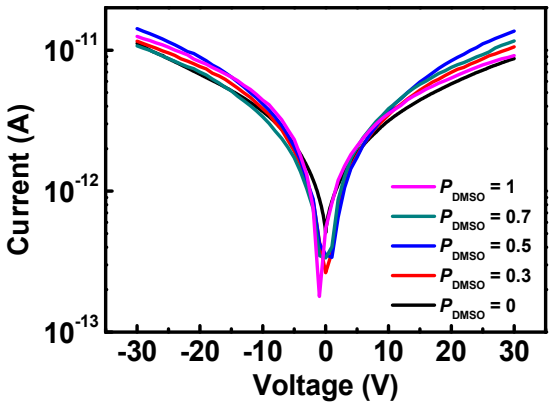

Fig. S5. (a) *I-V* characteristics of the photodetectors based on P_{DMSO} = 0, 0.3, 0.5, 0.7, and 1 in darkness.

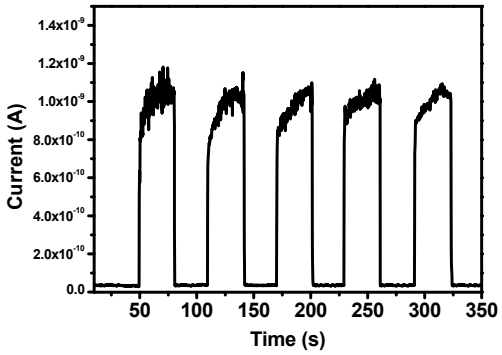

Fig. S6. Photoswitching characteristic at a bias of 5 V.

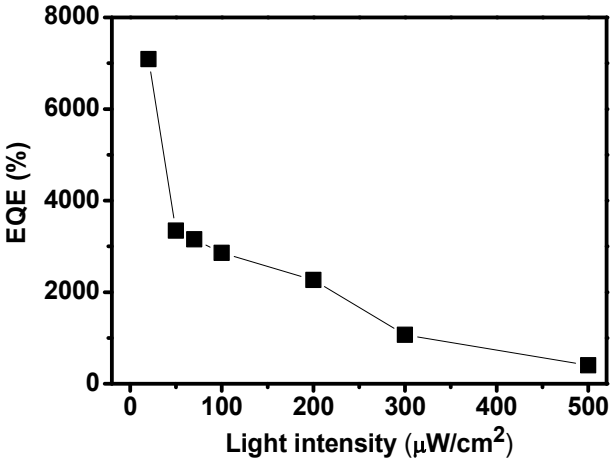

Fig. S7. EQE values according to light intensities.