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

High-performance self-powered broadband photodetector based on $CH_3NH_3PbI_3$ Perovskite/ZnO nanorod arrays heterostructure

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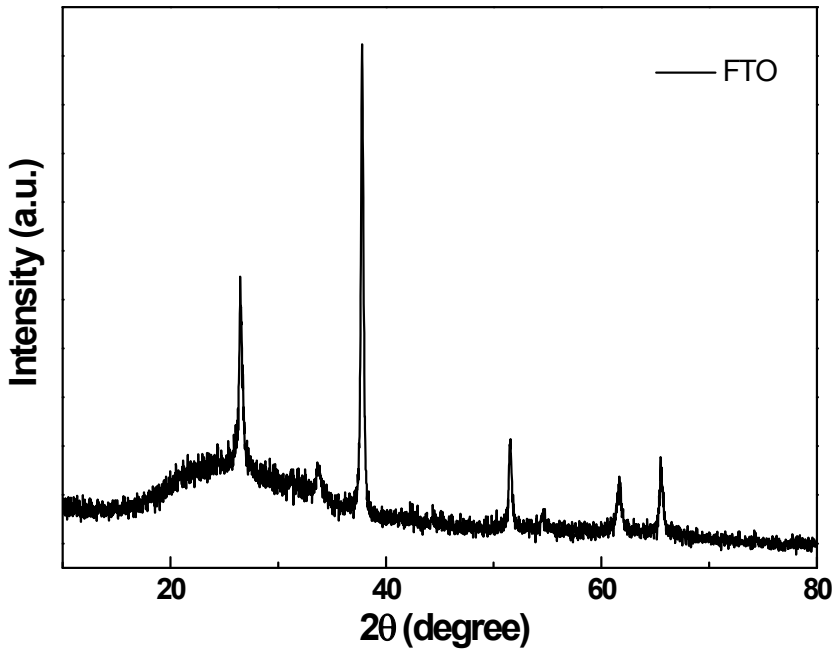

Figure S1 XRD pattern of the pristine FTO substrate.

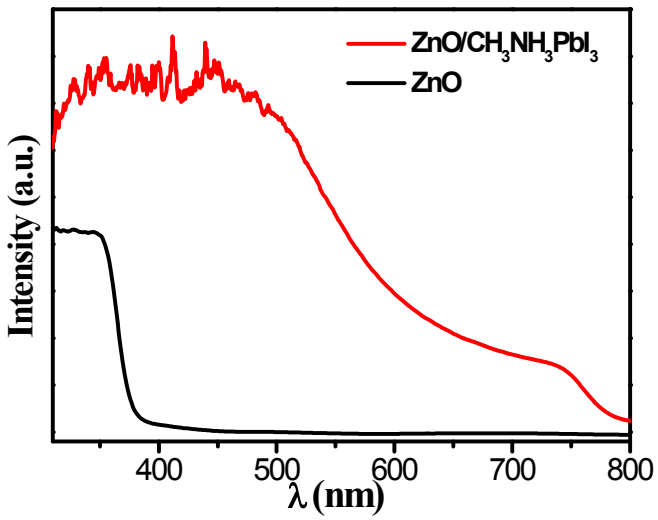

Figure S2The absorption spectra of ZnO nanorods and $CH_3NH_3PbI_3$ on ZnO nanorods.

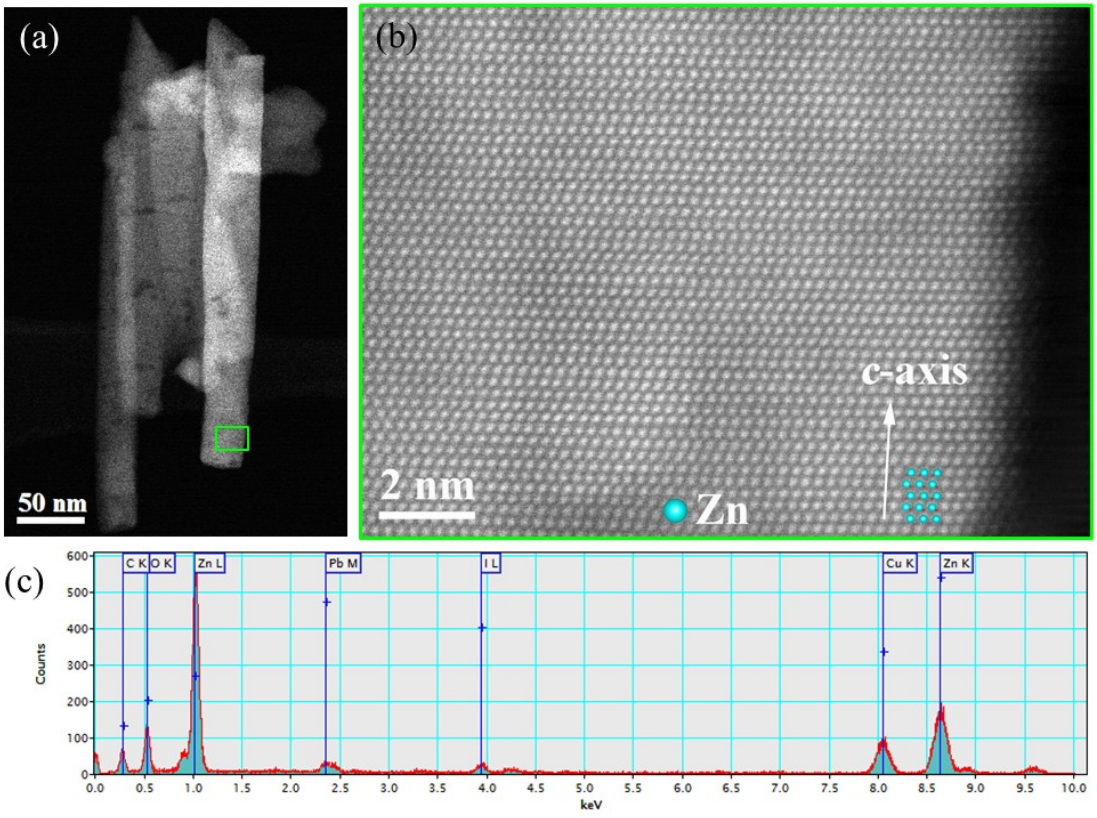

Figure S3 High-angle annular dark-field (HAADF) scanning transmission electron microscopy (STEM) images and EDXS analysis. (a) Low magnification HAADF-STEM image of ZnO-nanorods. (b) Atomic-column resolved HAADF image of a ZnO nanorod of the highlighted area in Fig. S2 (a). An atomic structure model of the hexagonal phase of ZnO along [010] projection is superimposed on the HAADF image. (c) STEM-EDXS spectrum of ZnO nanorods in Fig.S2 (a), in which Pb-*M* and I-*L* lines are clearly visible.

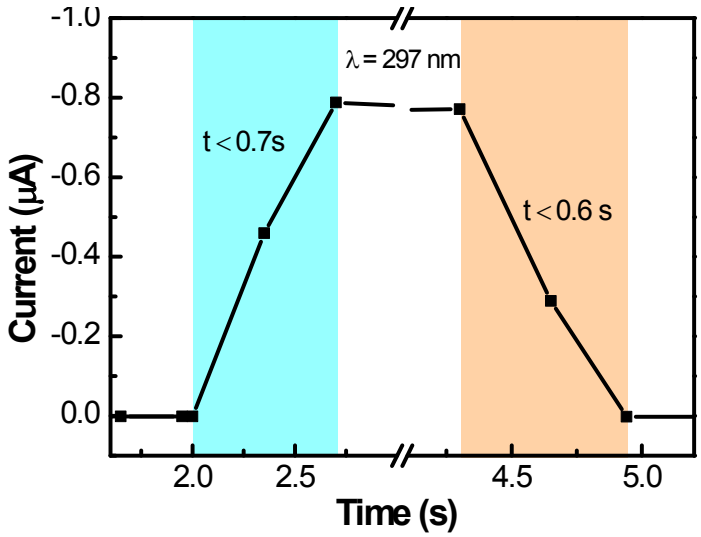

Figure S4 Photocurrent rise and decay of the device measured at a bias of 0 V.

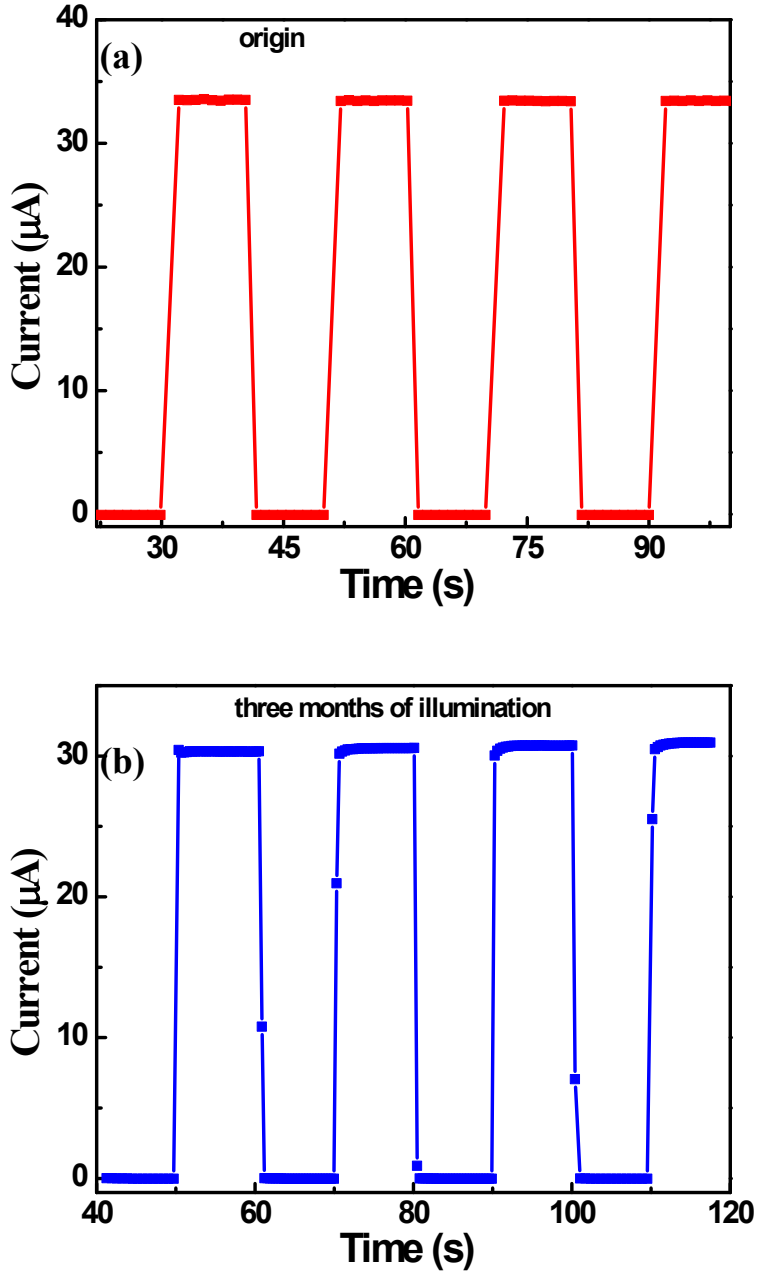

Figure S5 Photoelectric response curves of the original value (a) and after three months of illumination (b).