Electronic Supplementary Material (ESI) for Faraday Discussions.

Supporting information

Liquid Phase Deposition of TiO_2 Nanolayer Affords $CH_3NH_3PbI_3$/Nanocarbon Solar Cells with High Open-Circuit Voltage

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Supplementary results:

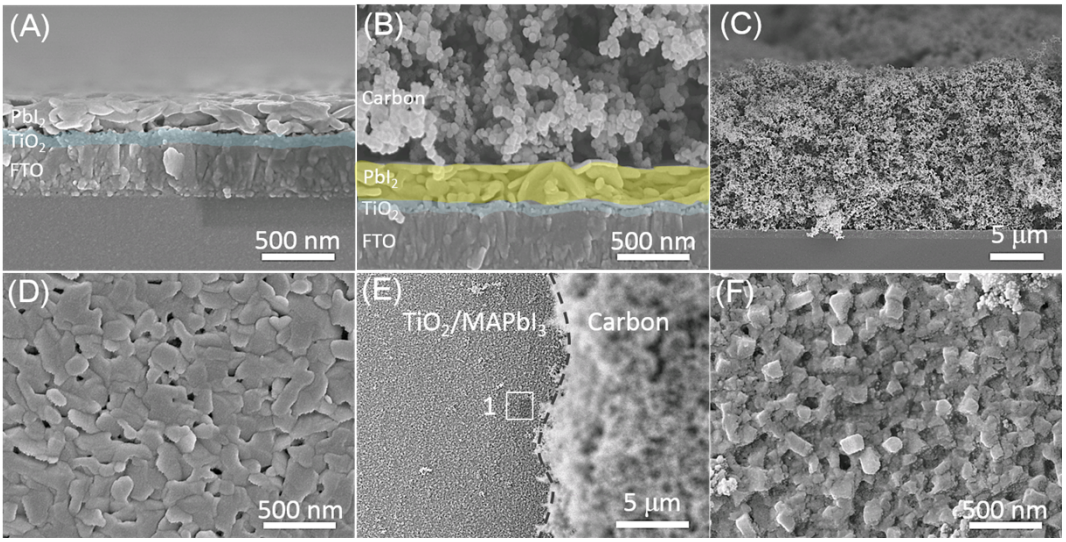

Figure S1 SEM images of the $CH_3NH_3PbI_3$/nanocarbon solar cells at different preparation steps. Cross sectional images of (A) FTO/TiO_2/PbI_2, (B) and (C) FTO/TiO_2/PbI_2/nanocarbon. Top view images of (D) FTO/TiO_2/PbI_2, (E) and (F) FTO/TiO_2/$CH_3NH_3PbI_3$/nanocarbon.

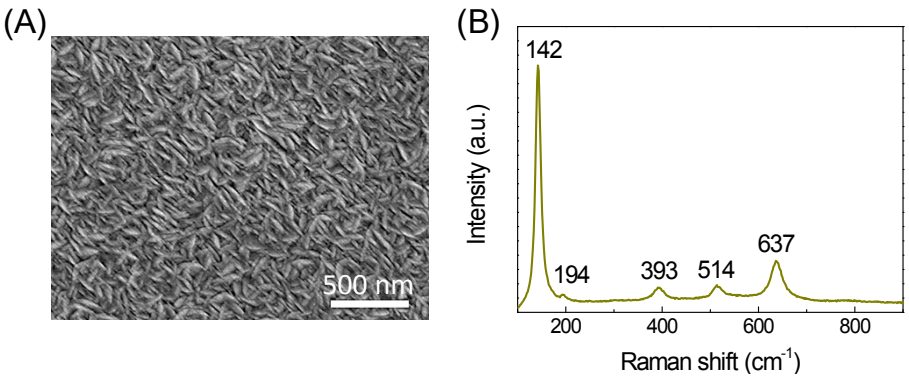

Figure S2 Characterizations of the USP-TiO_2 nanolayer: (A) Top view SEM image and (B) Raman spectrum. As indicated in the Raman spectrum, the crystallinity of the LPD-TiO_2 nanolayer is obviously lower than that of the USP-TiO_2 nanolayer.

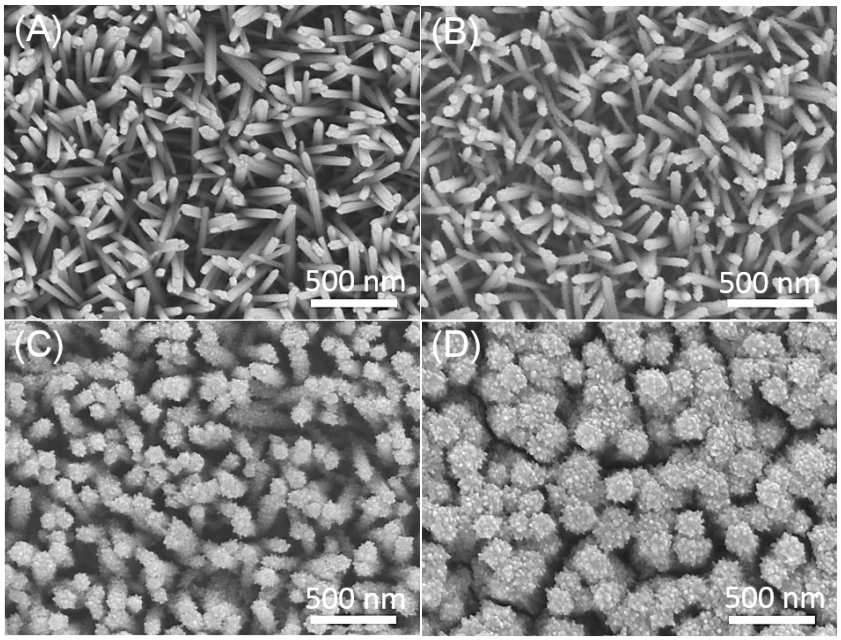

Figure S3 Top view SEM images of TiO_2 NRs/LPD-TiO_2 nanolayer with different LPD durations: (A) 0 h, (B) 2 h, (C) 5 h and (D) 9 h.

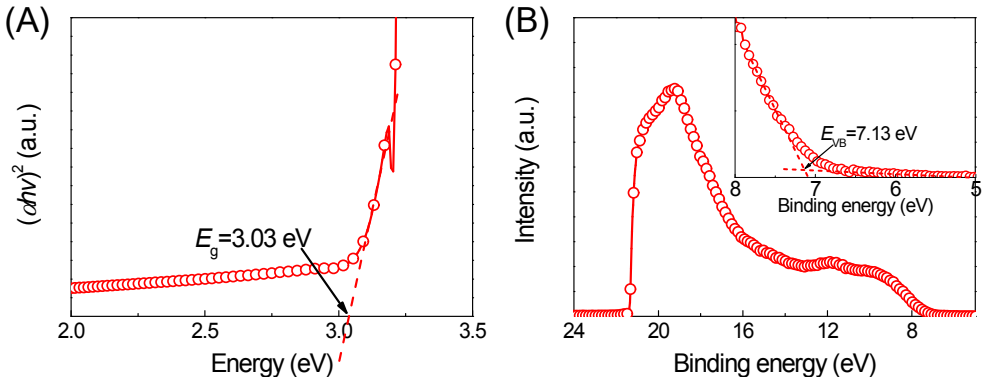

Figure S4 Energy band structure of the rutile TiO_2 NR array: (A) $(\alpha h\nu)^2$-$h\nu$ plot; (B) UPS spectrum. The E_{CB} is calculated to be -4.10 eV using the relation: E_g=E_{CB}-E_{VB}.