Electronic Supplementary Material (ESI) for Nanoscale.


# Supporting Information

**Carbon nanotubes as efficient hole collector for high voltage methylammonium lead bromide perovskite solar cells**

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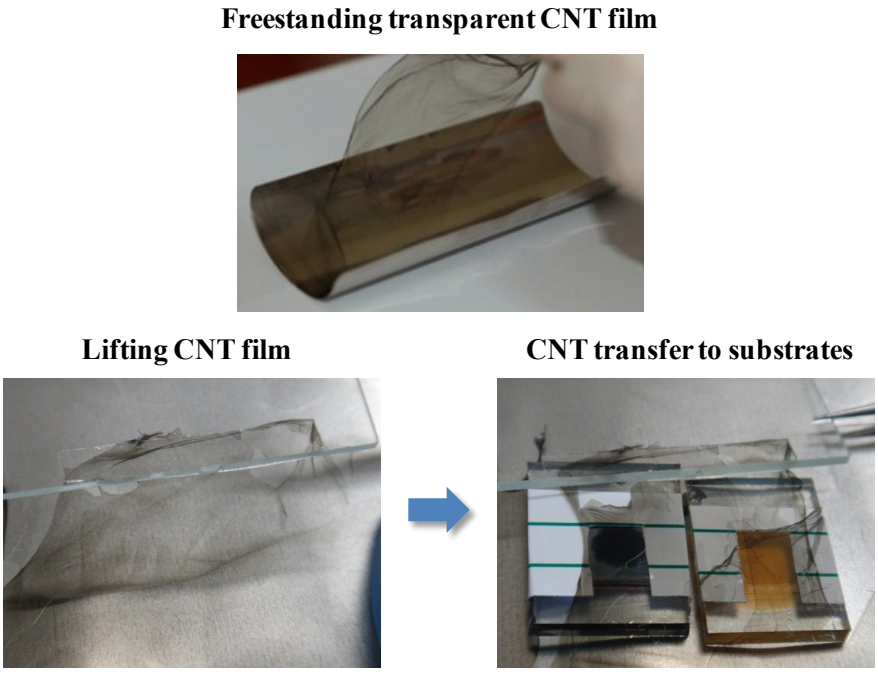


**Figure S1**. Photos of CNT deposition process.

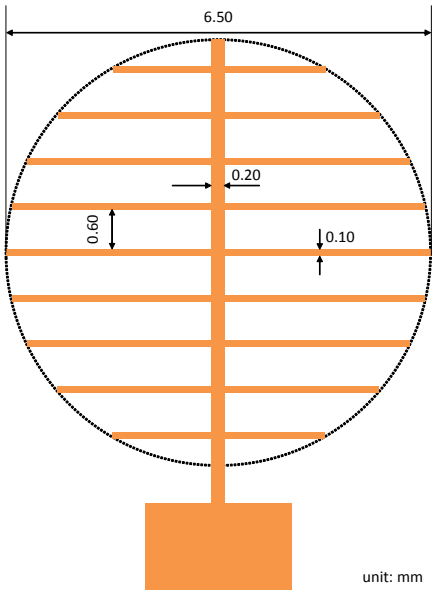


**Figure S2.** Design schematic for evaporated Au finger electrode.

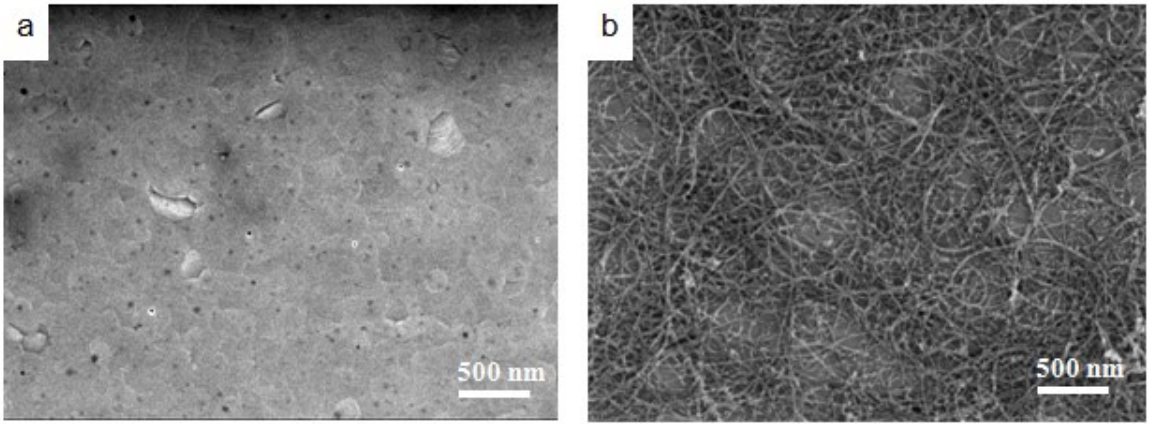


**Figure S3.** (a) Surface SEM image of $MAPbBr_3$. (b) SEM image of CNT networks coated on $MAPbBr_3$ surface.

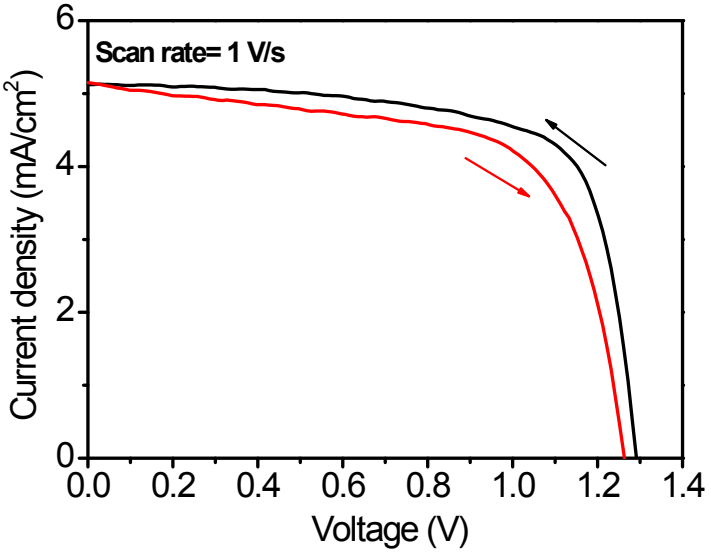


**Figure S4.** *J-V* hysteresis of $MAPbBr_3$/CNT solar cell.

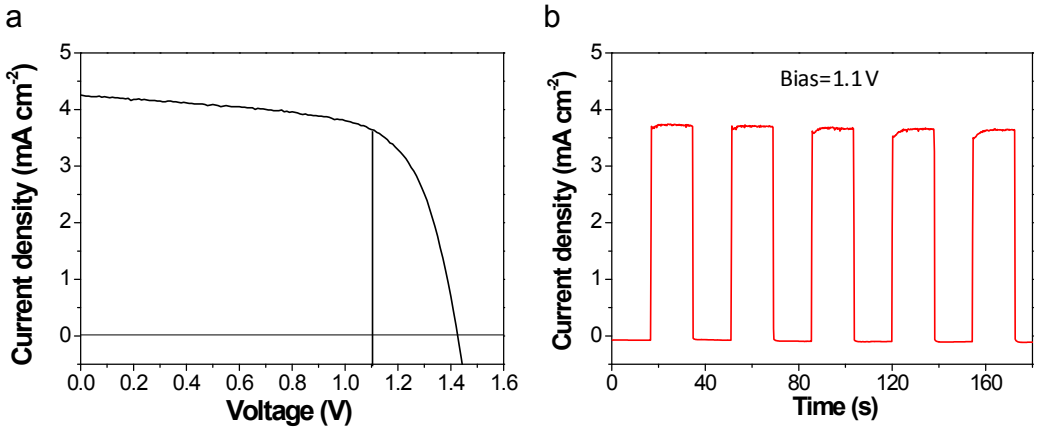


**Figure S5**. (a) J-V curve of a $MAPbBr_3$/CNT solar cell; (b) Stable output of the solar cell under 1.0 V bias.

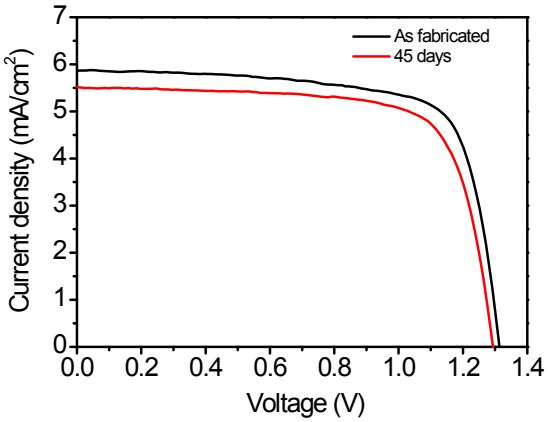


**Figure S6**. Stability of the $MAPbBr_3$/CNTs solar cell stored in desiccator.

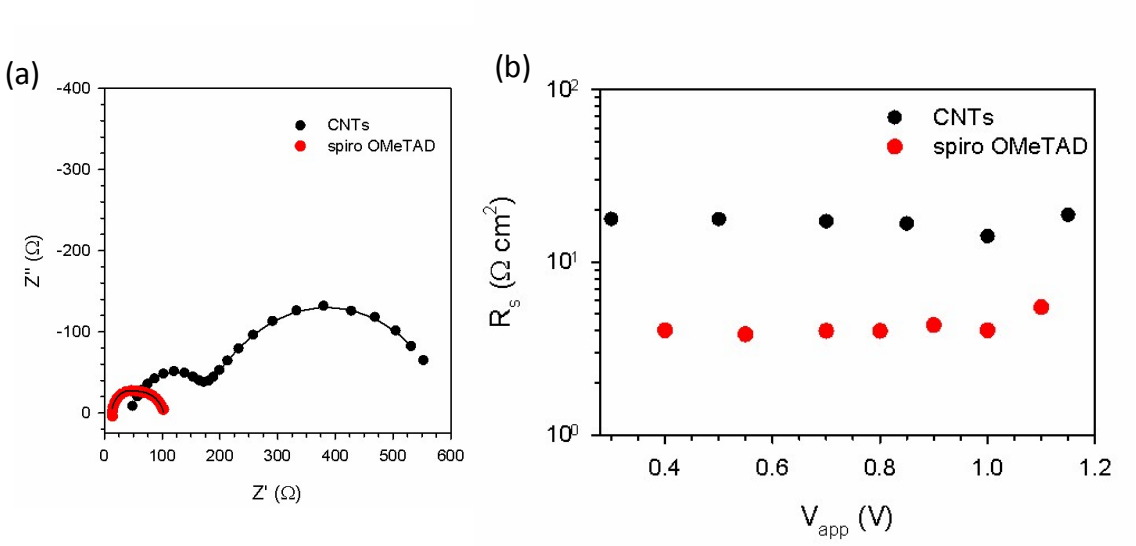


**Figure S7** (a) Nyquist plot under illumination and bias of 1.0 V; (b) Series resistance Rs extracted from the impedance spectra for $MAPbBr_3$/CNTs and $MAPbBr_3$/spiro-OMeTAD solar cells

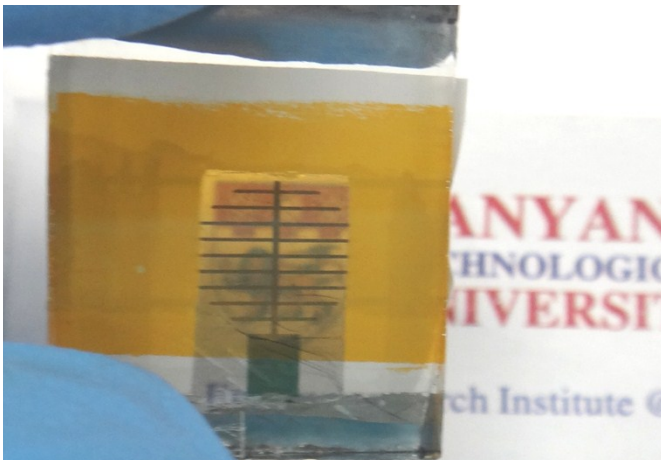

**Figure S8.** Photo of semi-transparent $MAPbBr_3$/CNT solar cell with gold finger electrode.