Supporting Information

Carbon nanotubes as efficient hole collector for high voltage methylammonium lead bromide perovskite solar cells
Zhen Li, Pablo P. Boix, Guichuan Xing, Kunwu Fu, Sneha A. Kulkarni, Sudip K. Batabyal, Wenjing Xu, Anyuan Cao, Tze Chien Sum, Nripan Mathews, and Lydia Helena Wong

Freestanding transparent CNT film

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 $R_s$ 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.