Supporting Information

Perovskite Single-Crystal Micro-Arrays for Efficient Photovoltaic Devices

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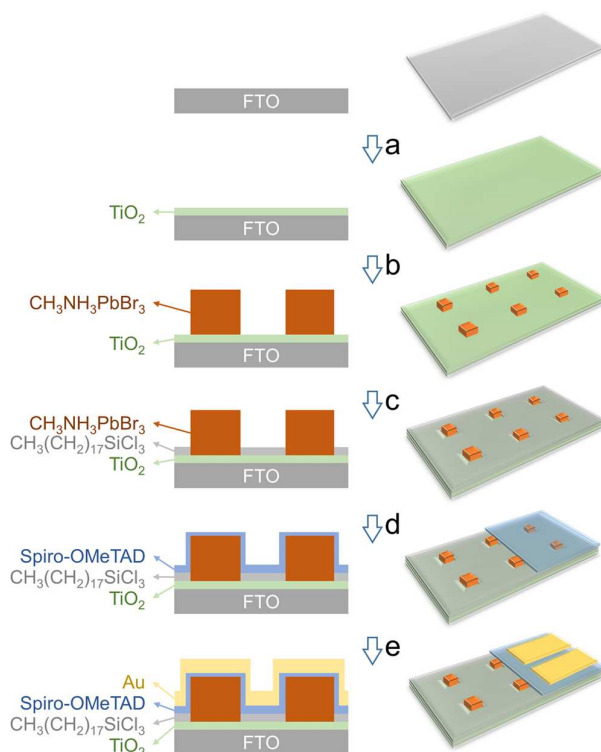
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Figure S1. Fabrication process of solar cells based on patterned CH$_3$NH$_3$PbBr$_3$ single-crystal micro-array. (a) Fabrication of compact TiO$_2$ electron-transporting layer. (b) Fabrication of patterned CH$_3$NH$_3$PbBr$_3$ single-crystal micro-arrays through the ORAP process. (See Fig. 1 and Fig. 2 in the maintext.) (c) Fabrication of OTS blocking layer according to literature[S1]. The substrates with partially covered CH$_3$NH$_3$PbBr$_3$ single-crystal micro-arrays were immersed in toluene kept in a petri dish. Octadecyl-trichloro silane (10 µL mL^{-1} of toluene) was then added to the toluene solution. After 10 min of incubation at room temperature, the substrates were rinsed with toluene followed by drying at 60 °C on a hotplate. (d) Spiro-OMeTAD spin-coating. (e) Au thermal evaporation.
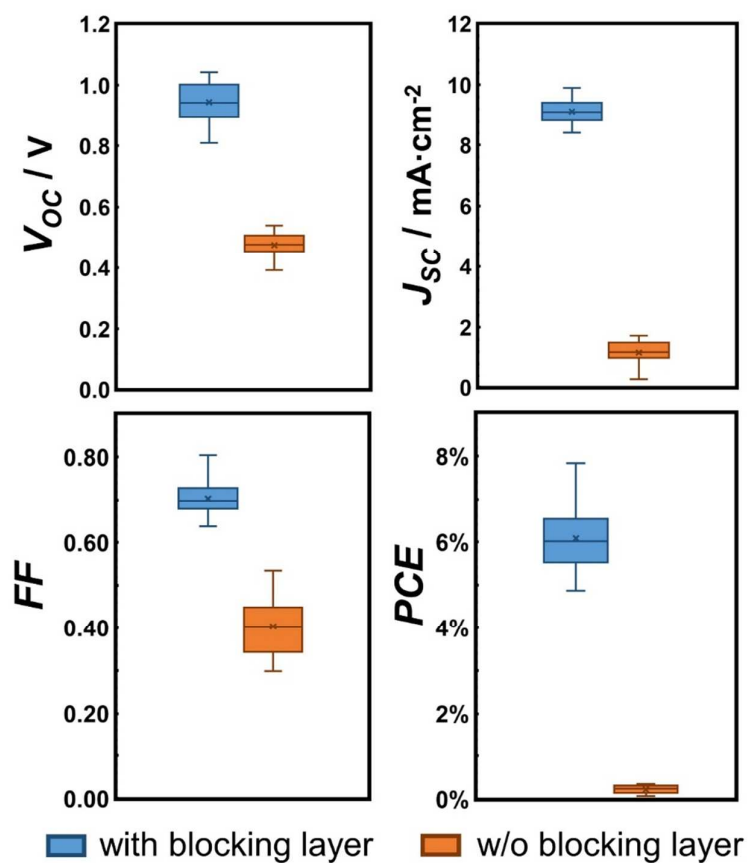
Figure S2. Performance statistics for the devices with (50 devices) and without (20 devices) the blocking layer.

REFERENCES

[S1]   Hörantner, M. T.; Nayak, P. K.; Mukhopadhyay, S.; Wojciechowski, K.; Beck, C.; McMeekin, D.; Kamino, B.; Eperon, G. E.; Snaith, H. J., Shunt-Blocking Layers for Semitransparent Perovskite Solar Cells. *Adv. Mater. Interfaces* **2016,** *3*, 1500837.