Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Solution-Processed Bathocuproine Cathode Interfacial Layer For High-Performance Bromine-Iodine Perovskite Solar Cells

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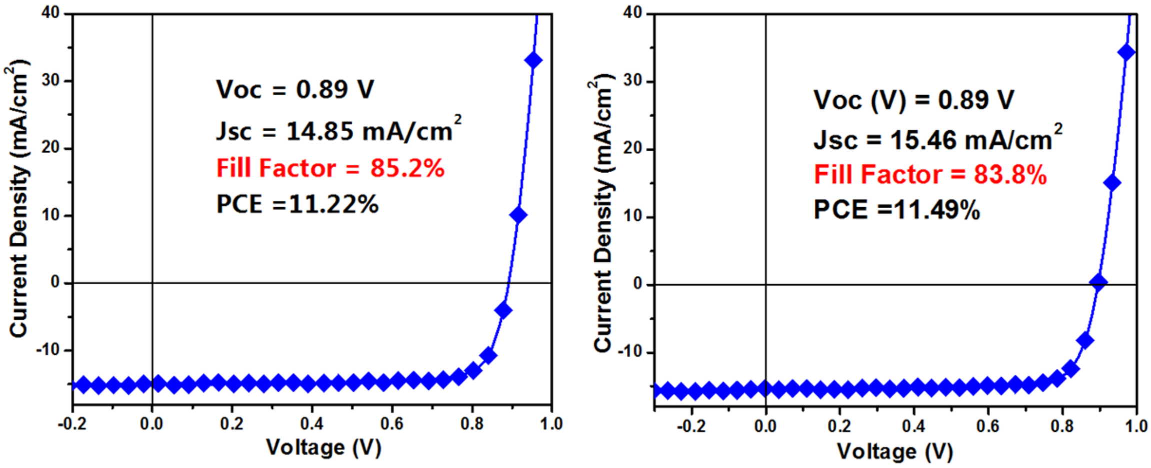

Fig. S1 J-V curves of the representative sBCP based $MAPbI_{2.4}Br_{0.6}$ perovskite solar cells with high fill factor.

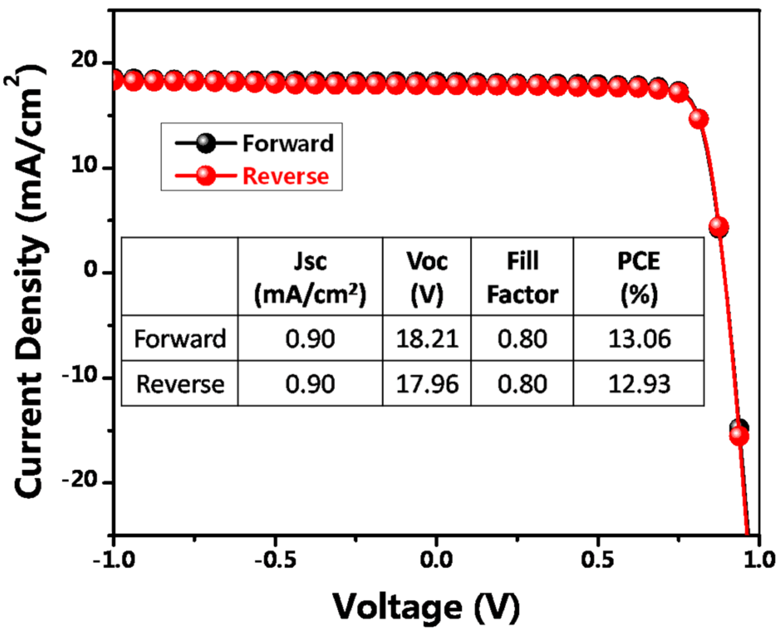

Fig. S2 J–V curve of a representative $MAPbI_{3-x}Br_x$-based device scan under forward and reverse directions, respectively. Our $MAPbI_{2.4}Br_{0.6}$ based device showed small hysteresis properties.

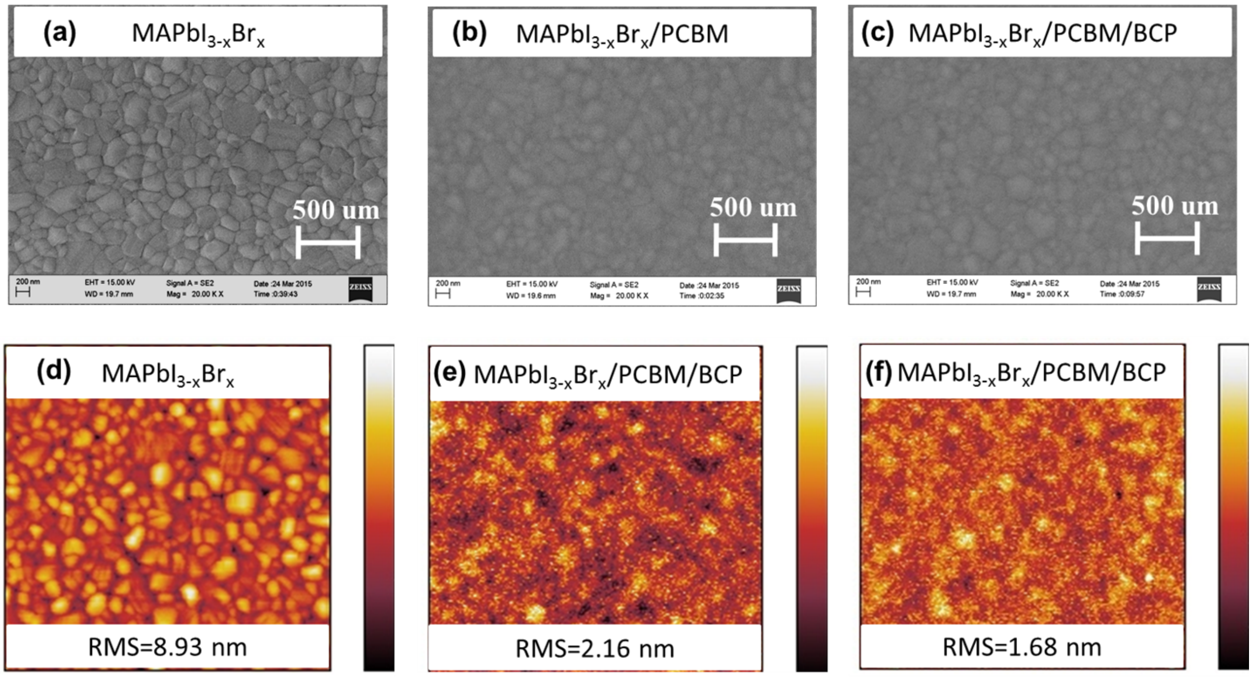

Fig. S3. SEM images of **(a)** $MAPbI_{2.4}Br_{0.6}$, **(b)** $MAPbI_{2.4}Br_{0.6}/PC_{60}BM$ and **(c)** $MAPbI_{2.4}Br_{0.6}/PC_{60}BM/sBCP$ films; AFM images of **(d)** $MAPbI_{2.4}Br_{0.6}$, **(e)** $MAPbI_{2.4}Br_{0.6}/PC_{60}BM$ and **(f)** $MAPbI_{2.4}Br_{0.6}/PC_{60}BM/sBCP$ films.

Table S1 Photovoltaic parameters of the $MAPbI_{2.4}Br_{0.6}$ based perovskite solar cells employing evaporated BCP (eBCP) as cathode interfacial layer.

eBCP	J_{sc} (mA/cm^2)	V_{oc} (V)	Fill Factor (%)	PCE (%)
4 nm	15.17	0.88	0.73	9.81
8 nm	16.11	0.89	0.76	10.87
12 nm	15.23	0.87	0.70	9.20

All the photovoltaic parameters are the average of a batch of twelve devices.

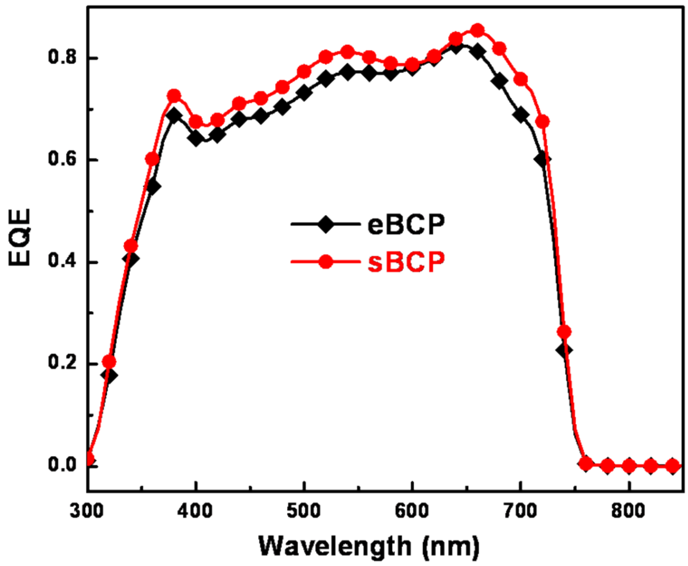

Fig. S4 EQE spectrum of the $MAPbI_{2.4}Br_{0.6}$ based devices employing evaporated BCP (eBCP) or solution processed BCP (sBCP) as interfacial layers, respectively.