

Supplementary Information

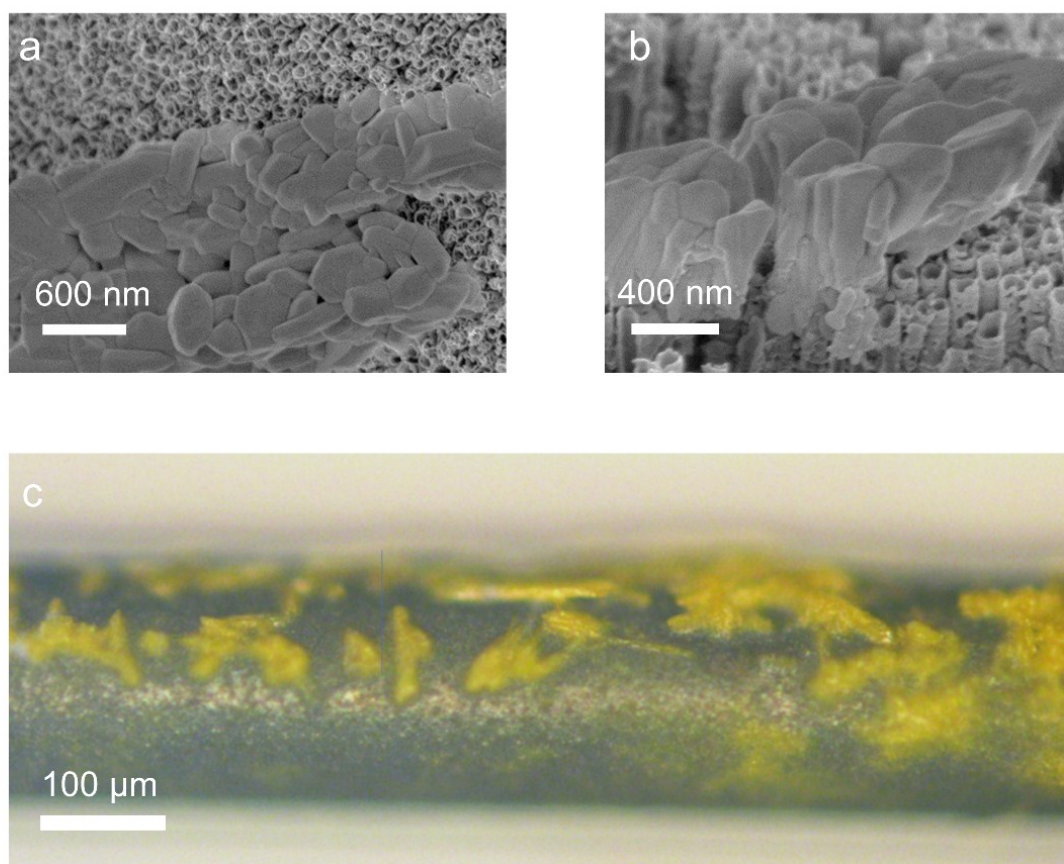


Fig. S1 (a) and (b) Scanning electron microscopy (SEM) images of top and side views of CsPbBr₃ on TiO₂ modified Ti wire using two-step solution deposition once, respectively. (c) Optical micrograph of CsPbBr₃ on the modified-Ti wire using two-step solution deposition for seven times.

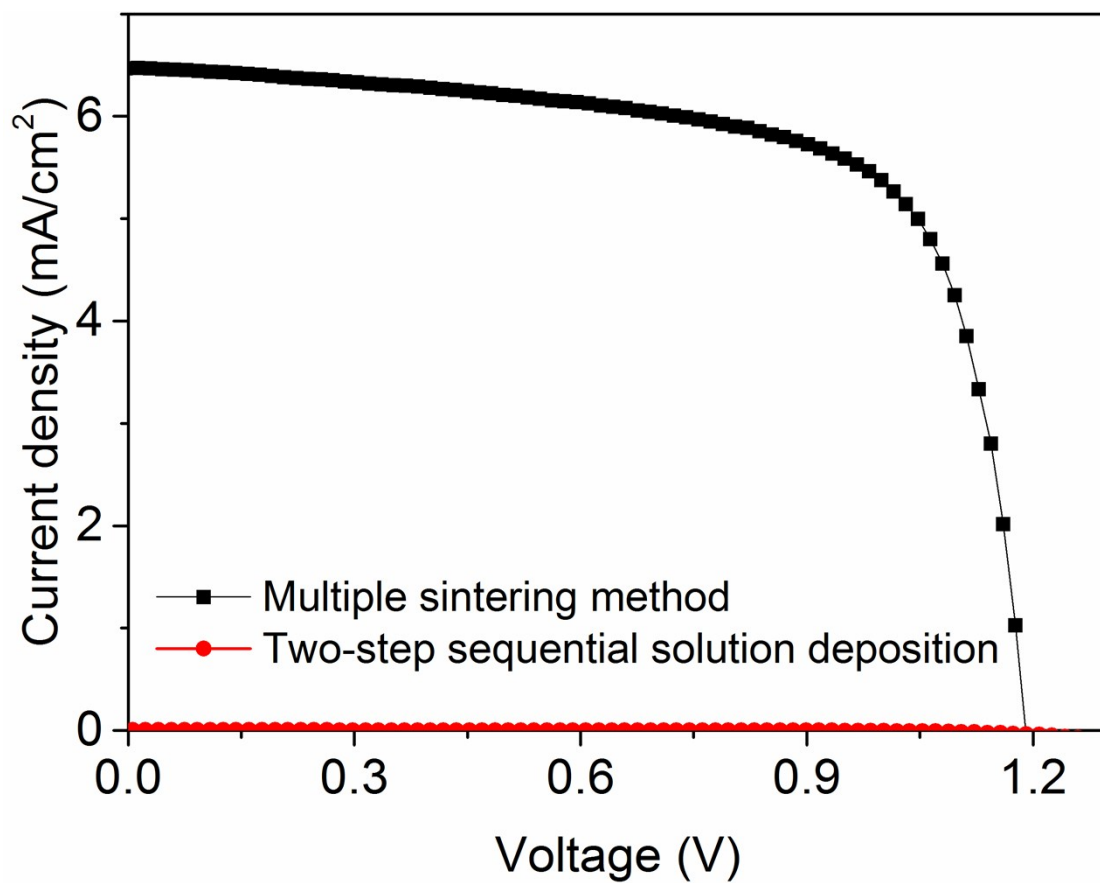


Fig. S2 Comparison of J-V curves between multiple sintering method and typical two-step sequential solution deposition.



Fig. S3 Photograph of the CsPbBr₃ quantum dot solution.

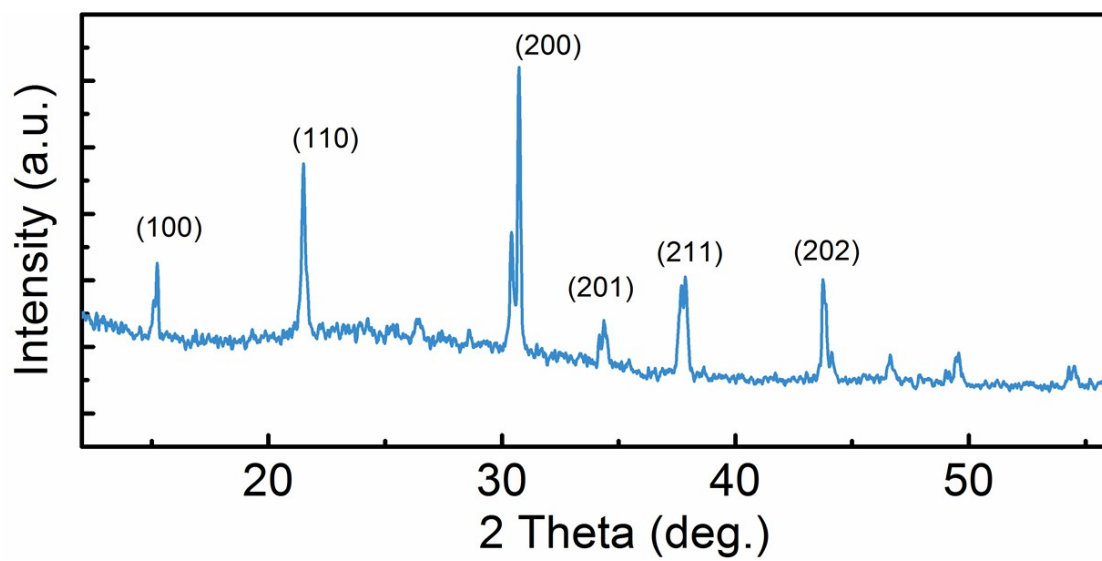


Fig. S4 XRD pattern of CsPbBr₃ quantum dots.

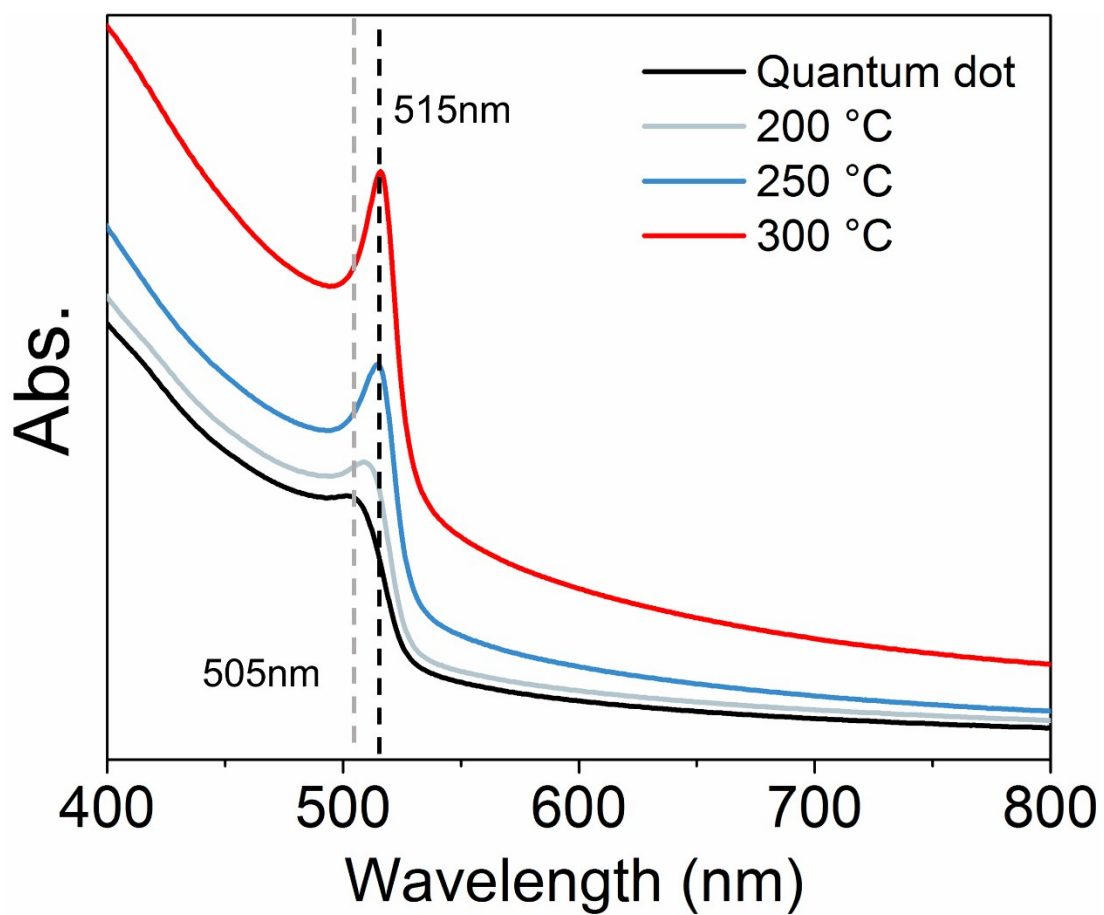


Fig. S5 UV-vis absorption of CsPbBr₃ quantum dots annealed at different temperatures.

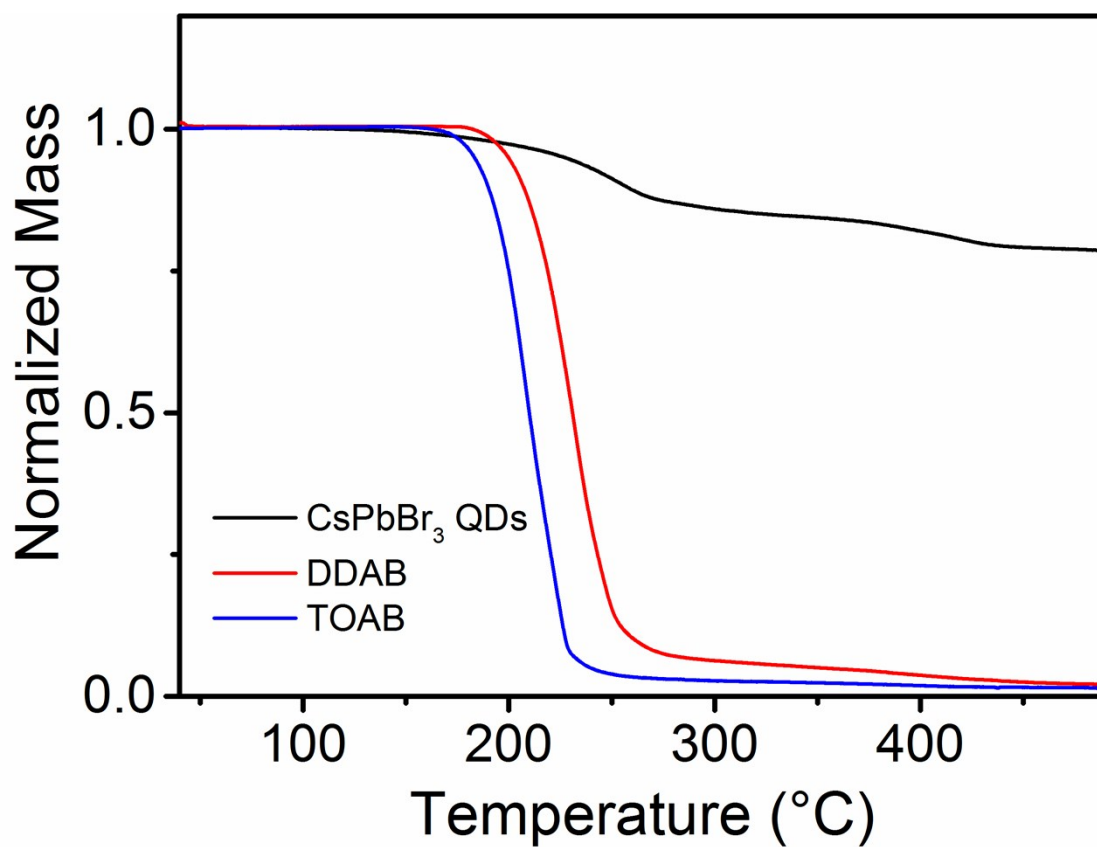


Fig. S6 TGA curves at a scan rate of 10 °C/min in air for CsPbBr₃ quantum dots after solvent removal, DDAB, and TOAB.

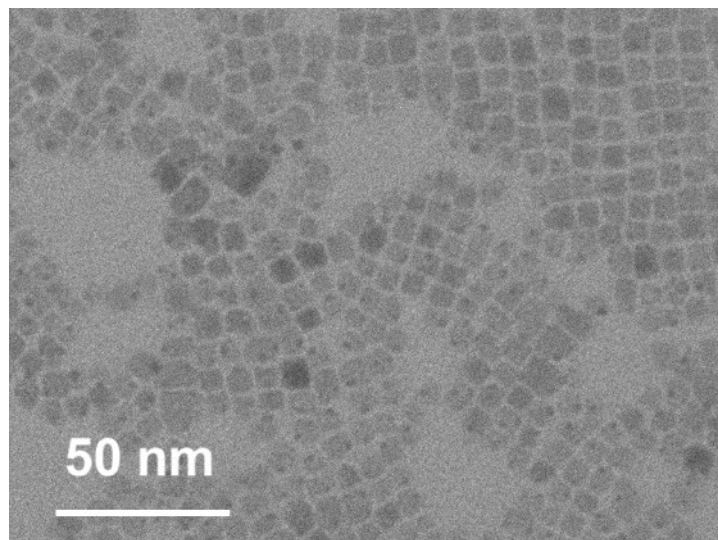


Fig. S7 Transmission electron microscope (TEM) image of typical CsPbBr₃ quantum dots.

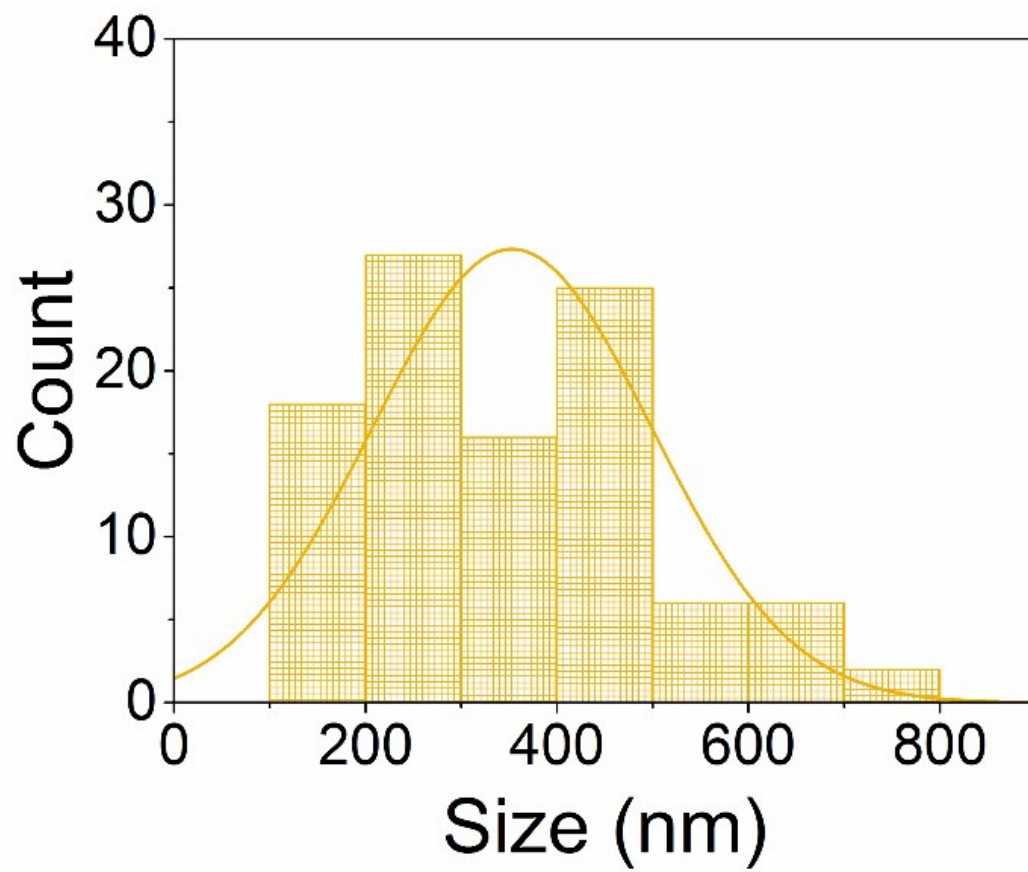


Fig. S8 The grain size distribution of CsPbBr₃.

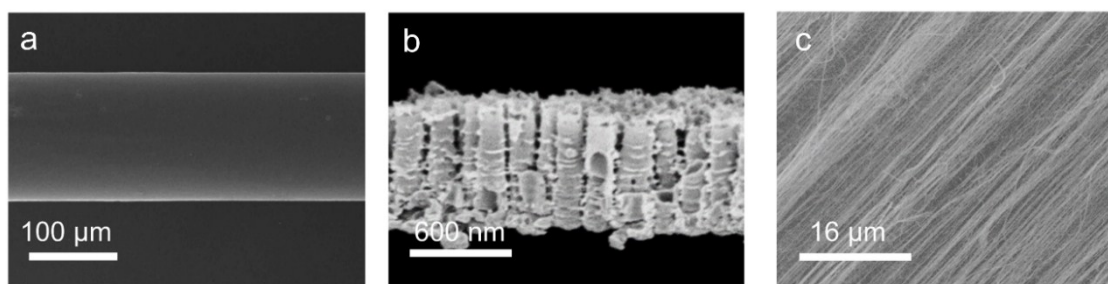


Fig. S9 SEM images of Ti wire (a), TiO₂ nanotubes (b), and CNT sheet (c).

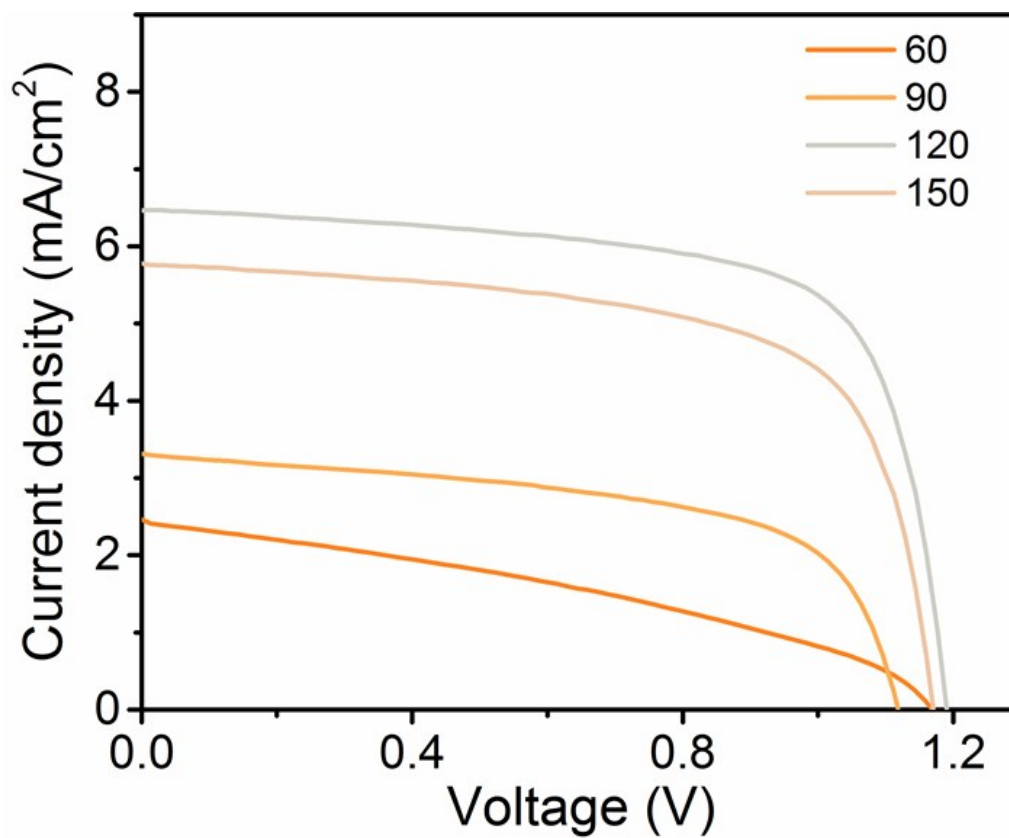


Fig. S10 J–V curves of fiber-shaped perovskite solar cells with increasing coating numbers of CsPbBr₃ quantum dots.

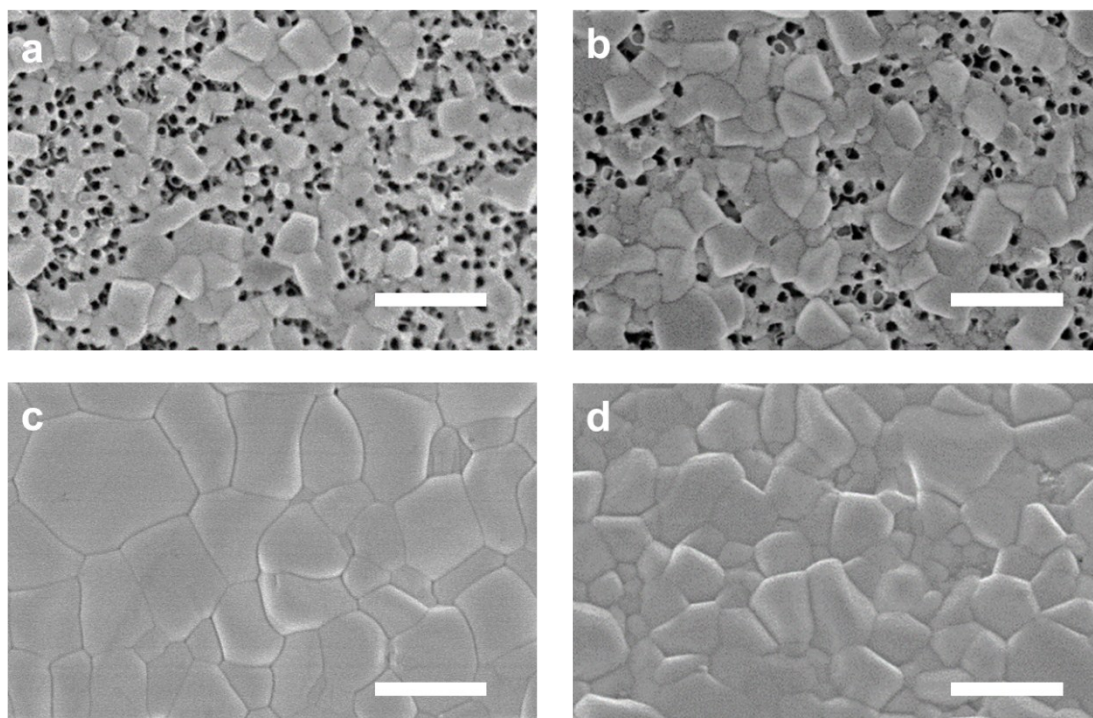


Fig. S11 SEM images of CsPbBr₃ layers at increasing coating times. (a) 60, (b) 90, (c) 120, (d) 150. Scale bar, 800 nm.

Table S1. Photovoltaic parameters of fiber-shaped perovskite solar cells with increasing coating numbers of CsPbBr₃ quantum dots.

Coating number	Voc (V)	Jsc (mA/cm²)	FF	PCE (%)
60	1.16	2.43	0.37	1.04
90	1.13	5.21	0.59	3.46
120	1.19	6.48	0.70	5.37
150	1.17	5.78	0.66	4.44

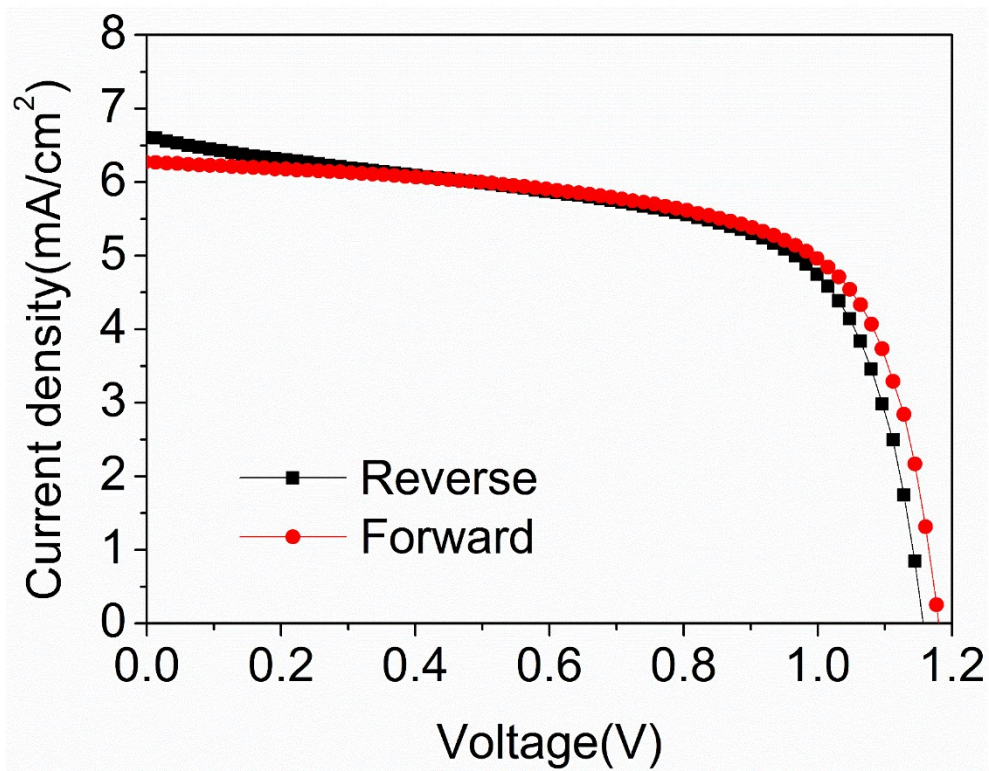


Fig. S12 J–V curves scanned in different voltage sweep directions.

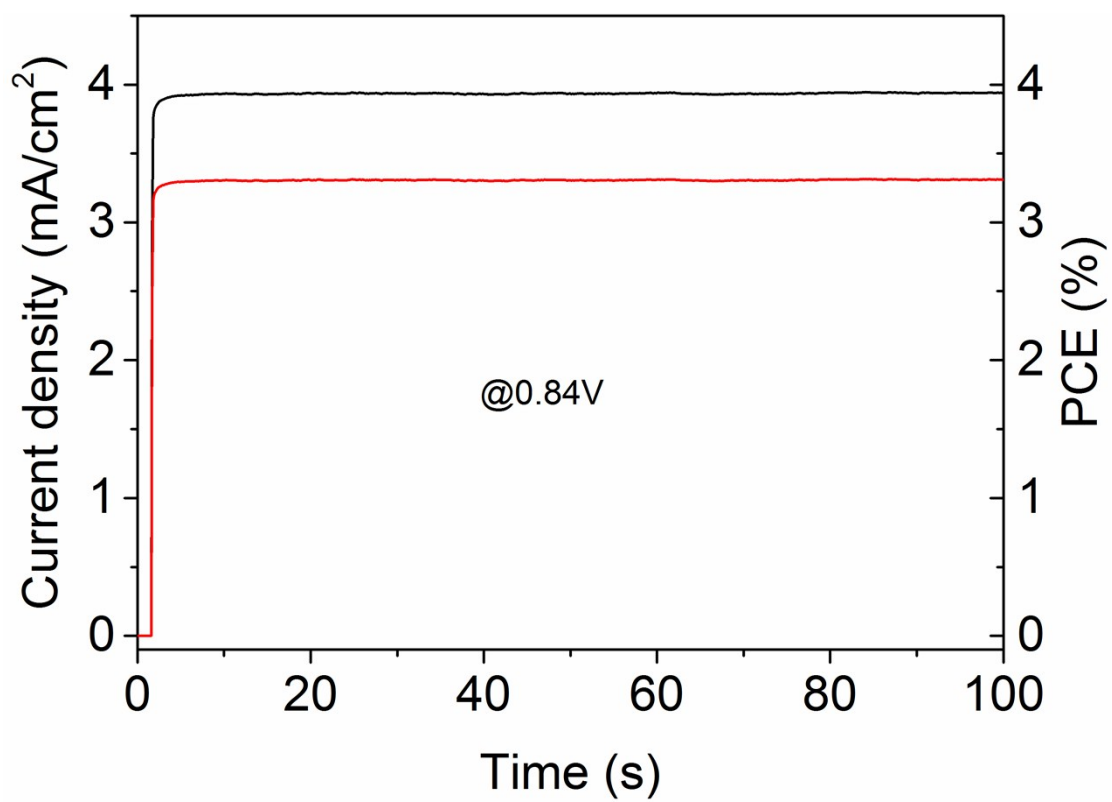


Fig. S13 Stabilized photocurrent measurement and power output at -20 °C.

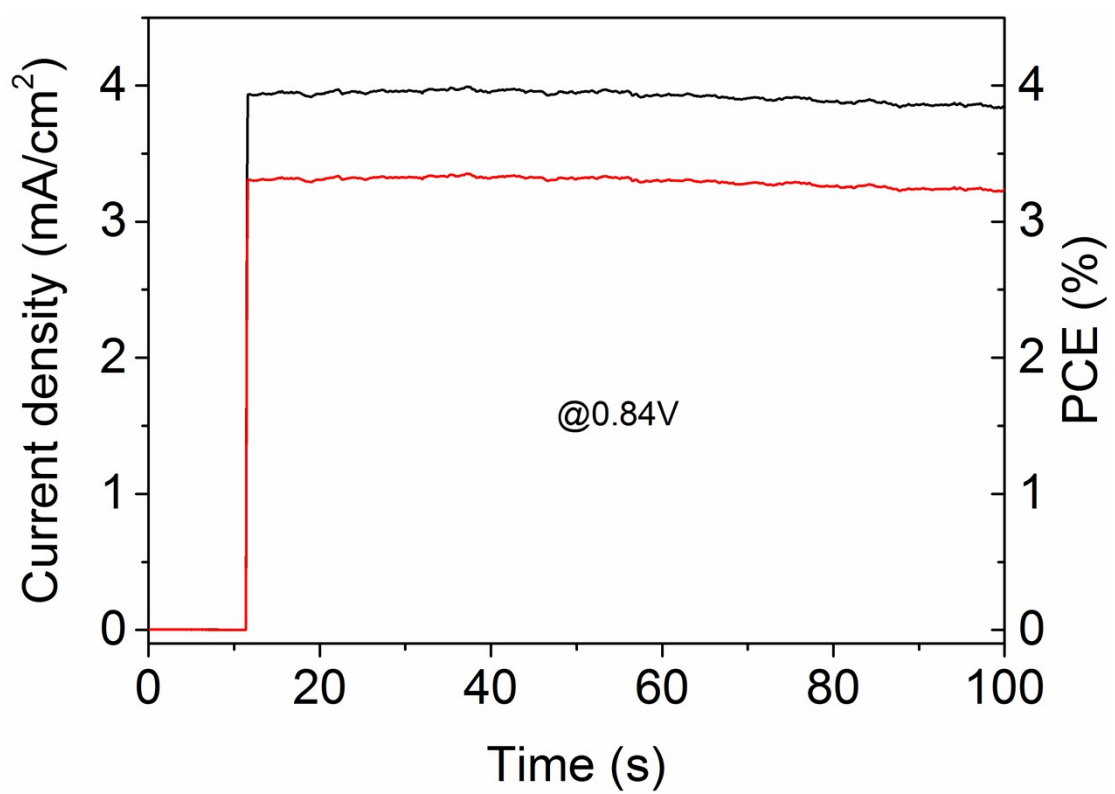


Fig. S14 Stabilized photocurrent measurement and power output at 100 °C.

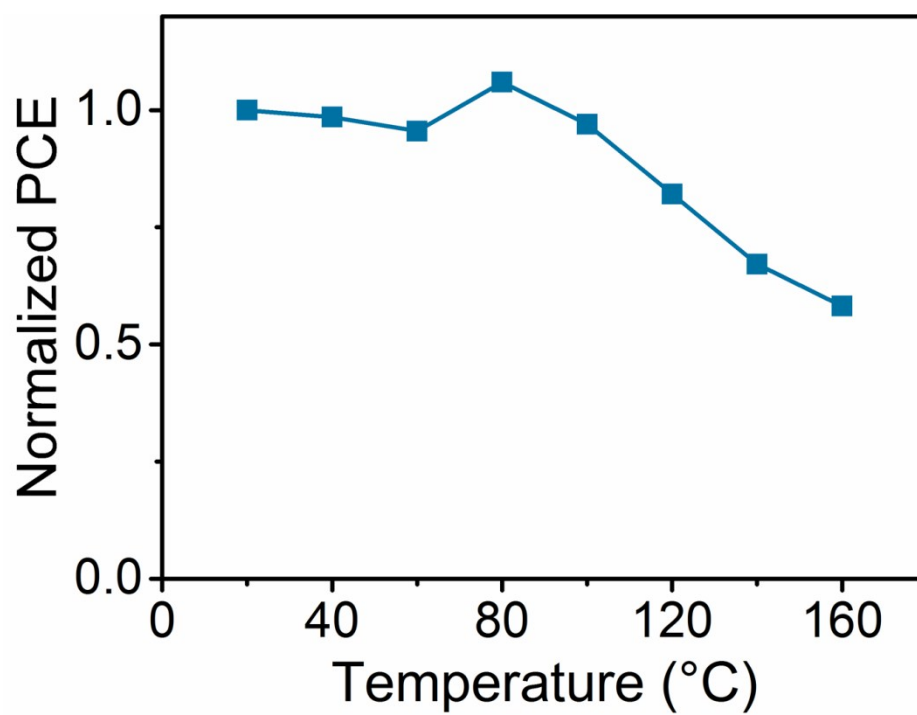


Fig. S15 Dependence of power conversion efficiency on temperature for the fiber-shaped solar cell with compact TiO₂ layer.