

Supporting Information

Sacrificial additive-assisted film growth enables self-powered CsPbBr₃ photodetector with ultra-low dark current and high sensitivity

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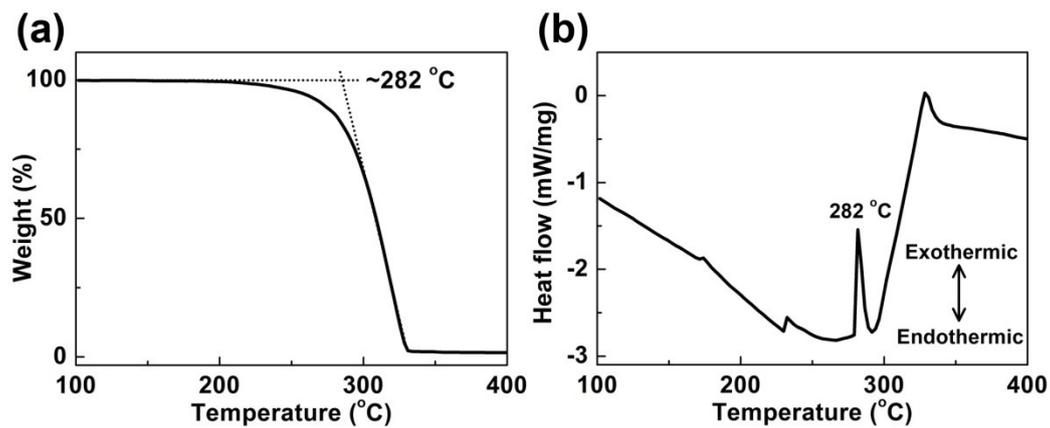


Fig. S1. (a) TGA and (b) DSC curves for PEAI powder as a function of applied temperature.

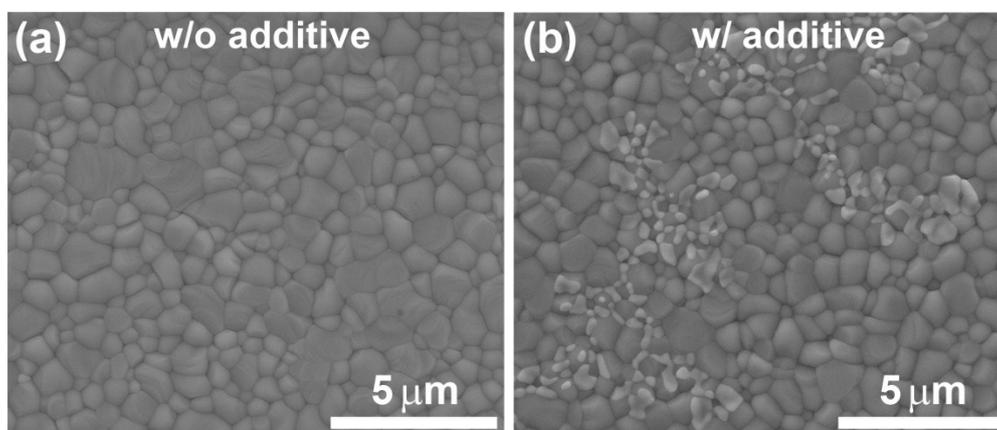


Fig. S2. Low-resolution SEM images of CsPbBr₃ films prepared (a) without and (b) with PEAI sacrificial additive, respectively.

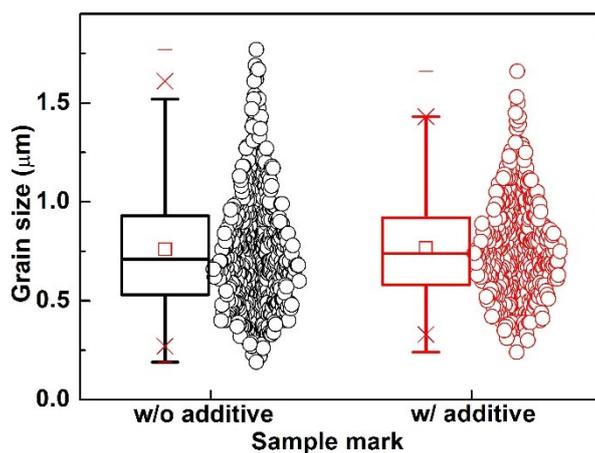


Fig. S3. Statistical grains sizes for CsPbBr₃ films prepared without and with PEAI sacrificial additive, respectively.

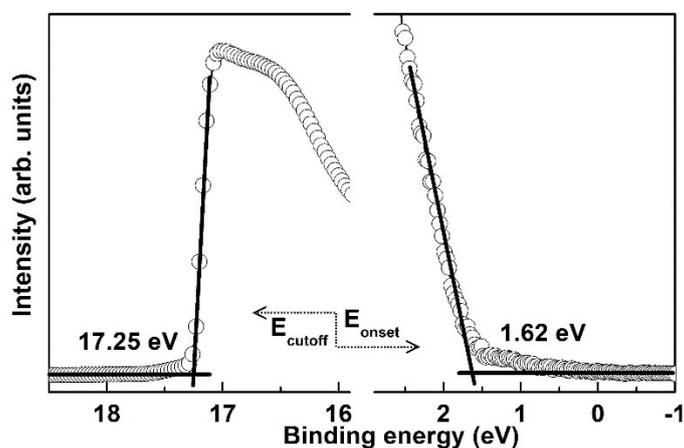


Fig. S4. UPS spectrum of CsPbBr₃ film prepared with PEAI sacrificial additive. The linear interpolations reveal the photoemission cut-off energy boundary (E_{cutoff}) along with the UPS photoemission onset energy (E_{onset}), respectively. The work function of the film can be derived by subtracting the E_{cutoff} value from 21.22 eV. Its valence band maximum (VBM) value is estimated to be -5.59 eV according to $\text{VBM} = -[21.22 - [E_{\text{cutoff}} - E_{\text{onset}}]]$, while conduction band minimum (CBM) of CsPbBr₃ film is calculated to be -3.29 eV in consideration of its bandgap of 2.3 eV.

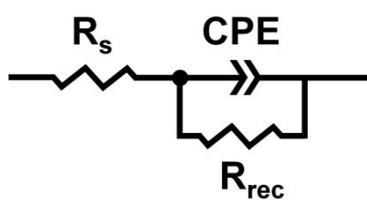


Fig. S5. Equivalent circuit model for the analysis of Nyquist plots of the optimized self-powered CsPbBr₃ PD fabricated without and with PEAI sacrificial additive, respectively.