Supporting Information

Interfacial defect passivation via imidazolium bromide for efficient, stable perovskite solar cells

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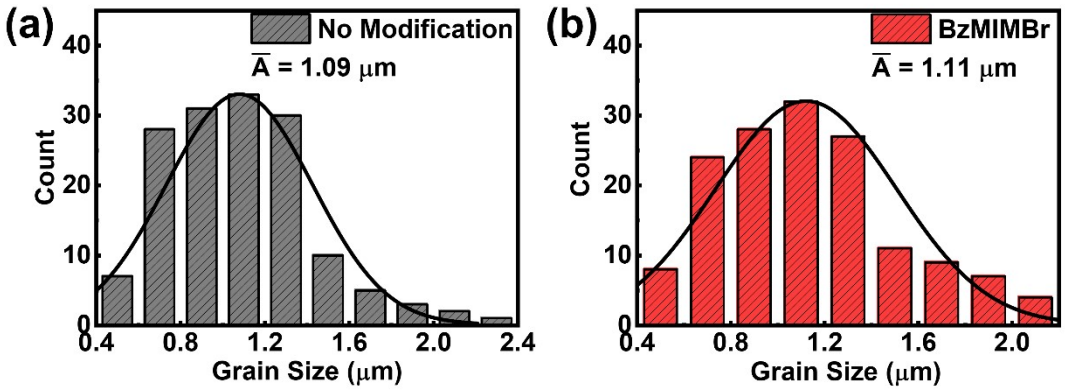

Fig. S1. The histogram distribution of grain sizes for (a) the perovskite film without modification and (b) the perovskite film with BzMIMBr.

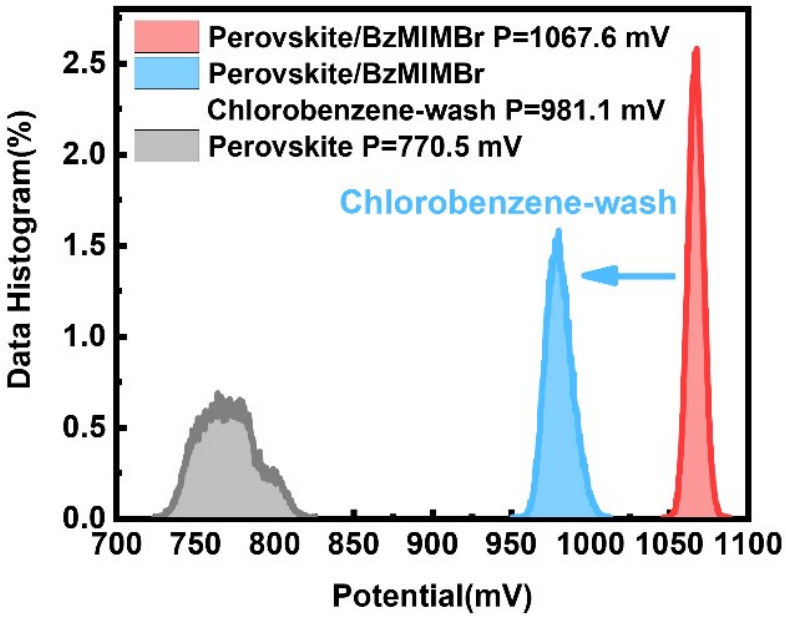

Fig. S2. Surface contacting potential difference (CPD) distributions for perovskite/BzMIMBr films after chlorobenzene washing treatment.

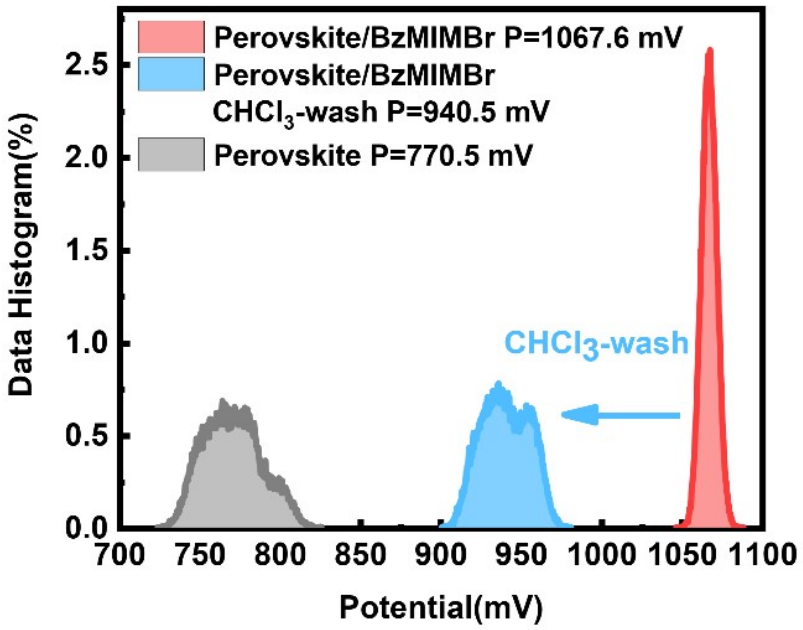

Fig. S3. Surface contacting potential difference (CPD) distributions for perovskite/BzMIMBr films after chloroform ($CHCl_3$) washing treatment.

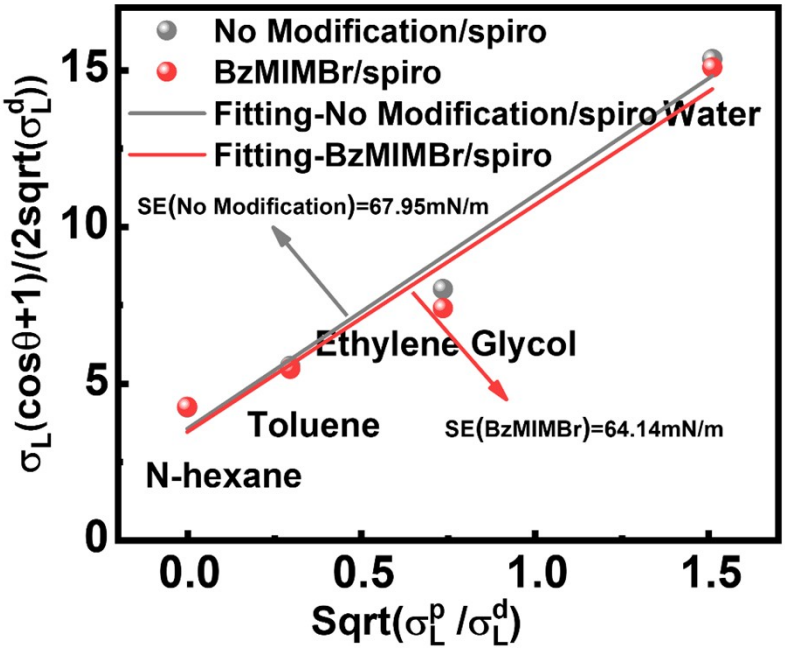

Fig. S4. Surface energy measurement of perovskite/spiro-OMeTAD films with/without BzMIMBr treatment using the OWRK method.

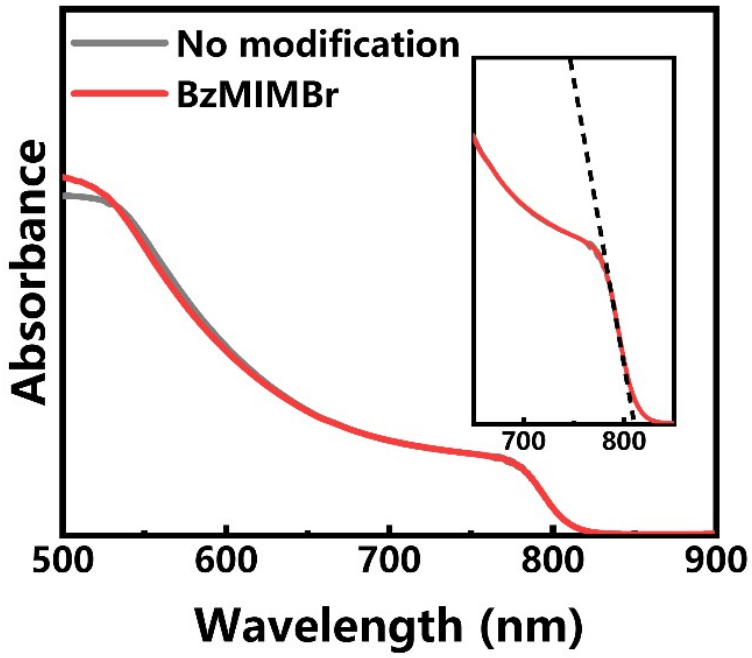

Fig. S5. UV-visible absorption spectra of perovskite films with/without BzMIMBr.

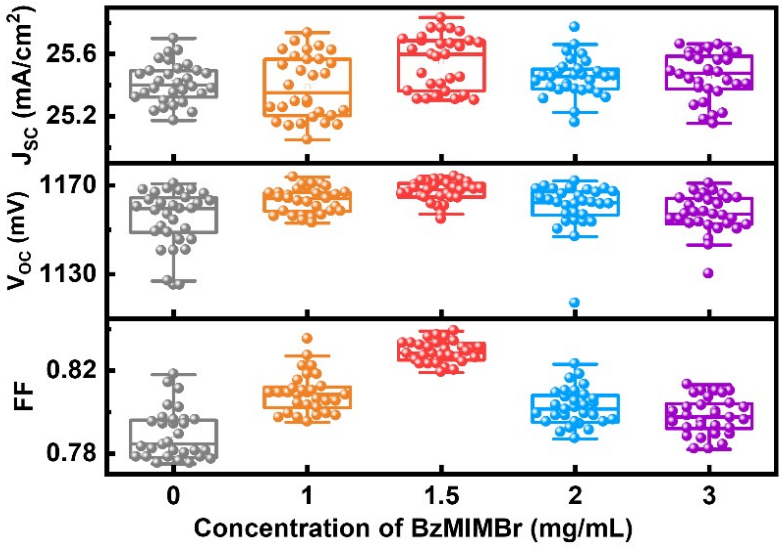

Fig. S6. Detailed performance parameters statistics of the cells modified by BzMIMBr with different concentration.

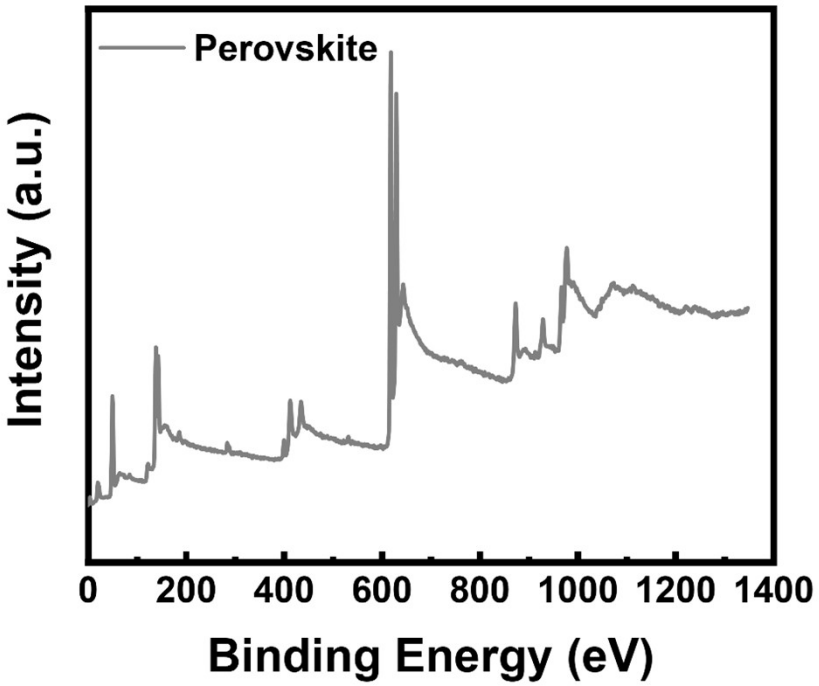

Fig. S7. XPS-spectra analysis in perovskite films without BzMIMBr.

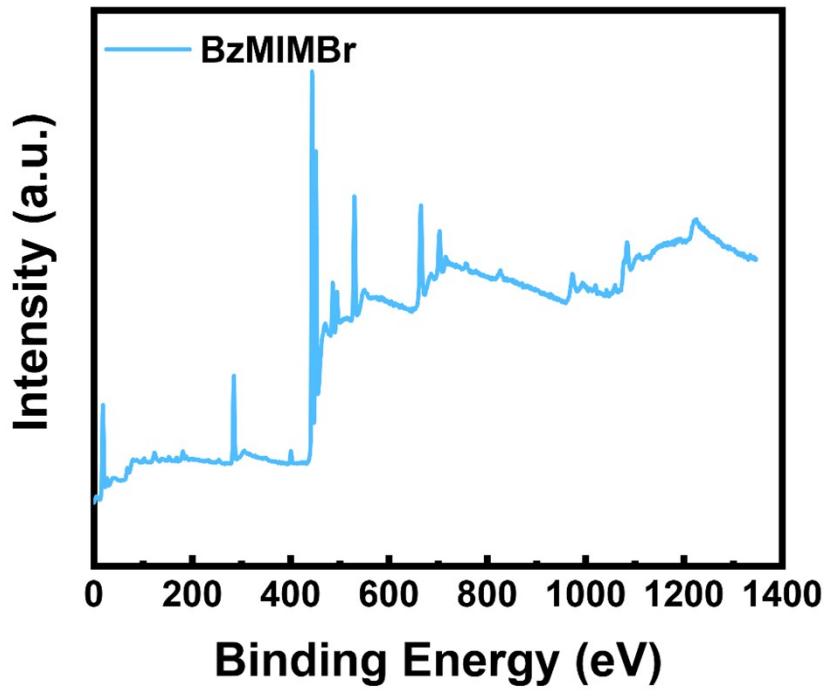

Fig. S8. XPS-spectra analysis in BzMIMBr films.

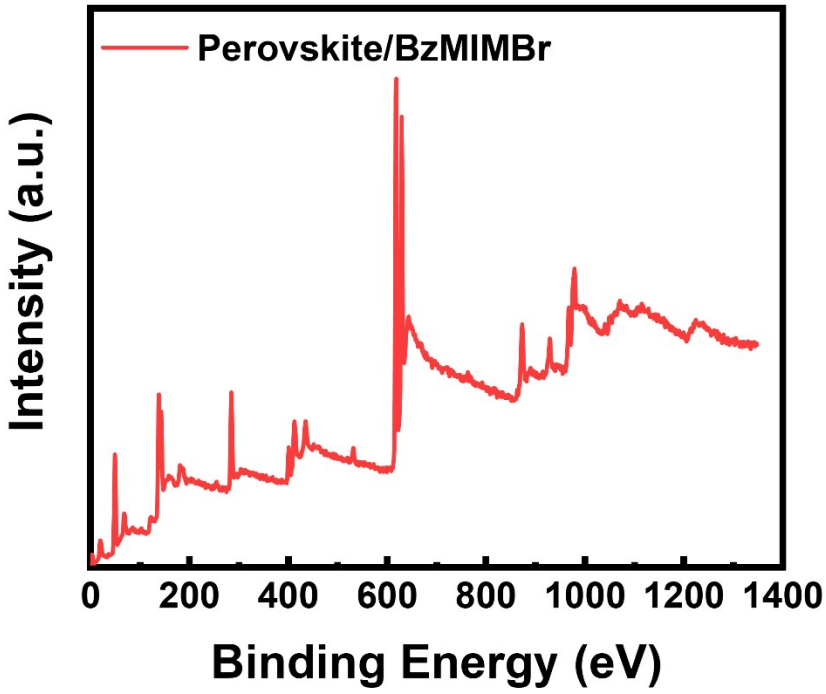

Fig. S9. XPS-spectra analysis in perovskite films with BzMIMBr.

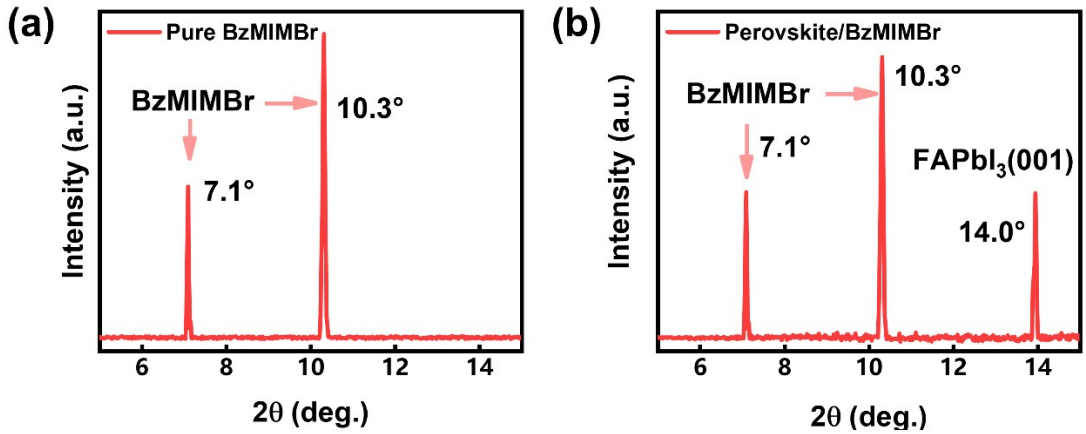

Fig. S10. XRD of (a) pure BzMIMBr; (b) perovskite films with excess BzMIMBr.

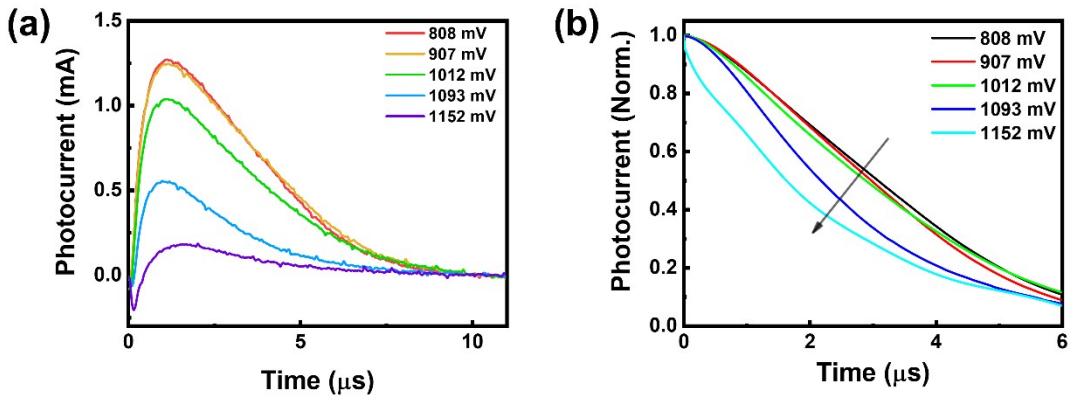

Fig. S11. (a) Bias-voltage-dependent TPC spectra of devices without BzMIMBr; (b) Normalized bias-voltage-dependent TPC spectra of devices without BzMIMBr.

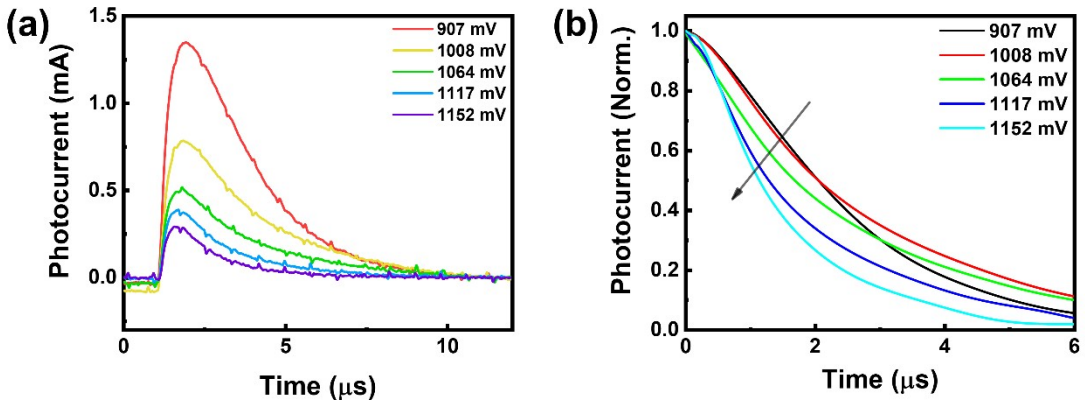

Fig. S12. (a) Bias-voltage-dependent TPC spectra of devices with BzMIMBr; (b) Normalized bias-voltage-dependent TPC spectra of devices with BzMIMBr.

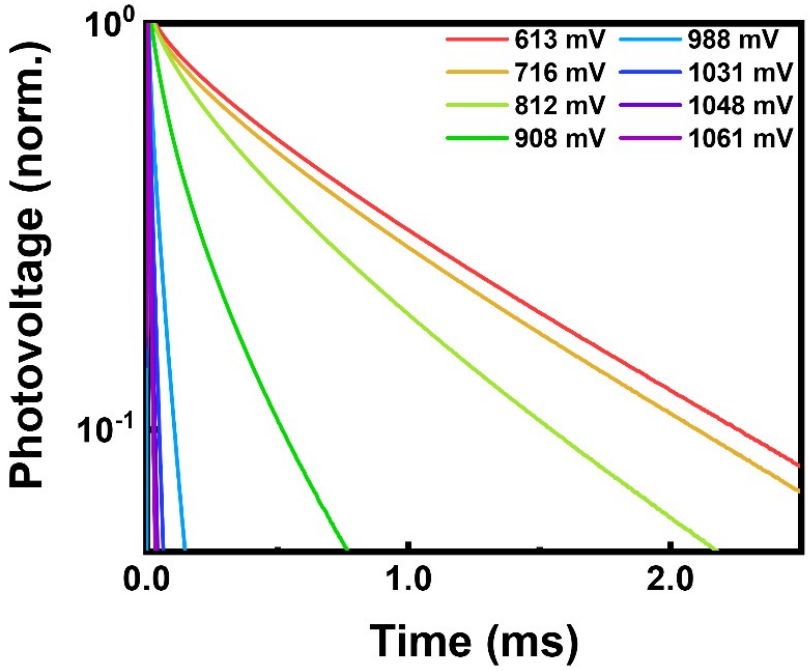

Fig. S13. Bias-voltage-dependent TPV spectra of devices without BzMIMBr.

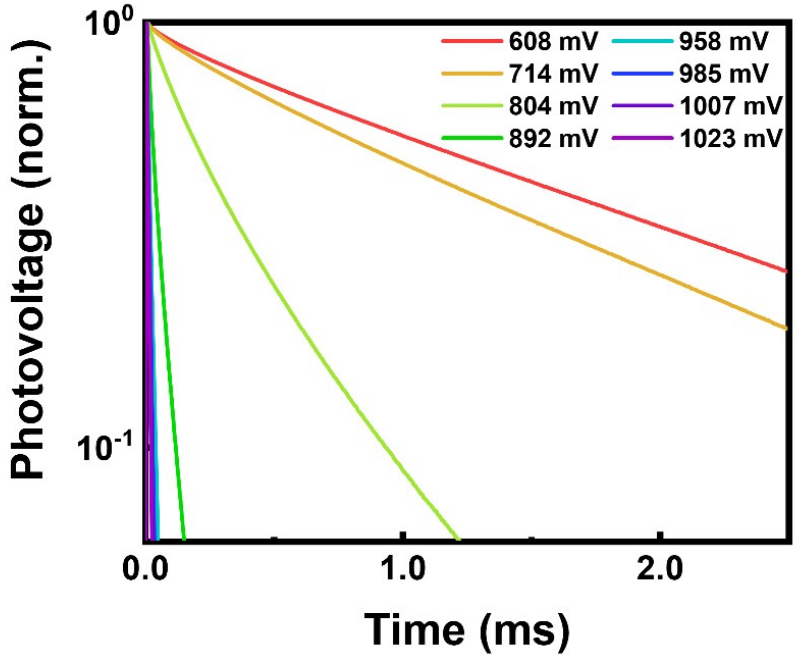

Fig. S14. Bias-voltage-dependent TPV spectra of devices with BzMIMBr.

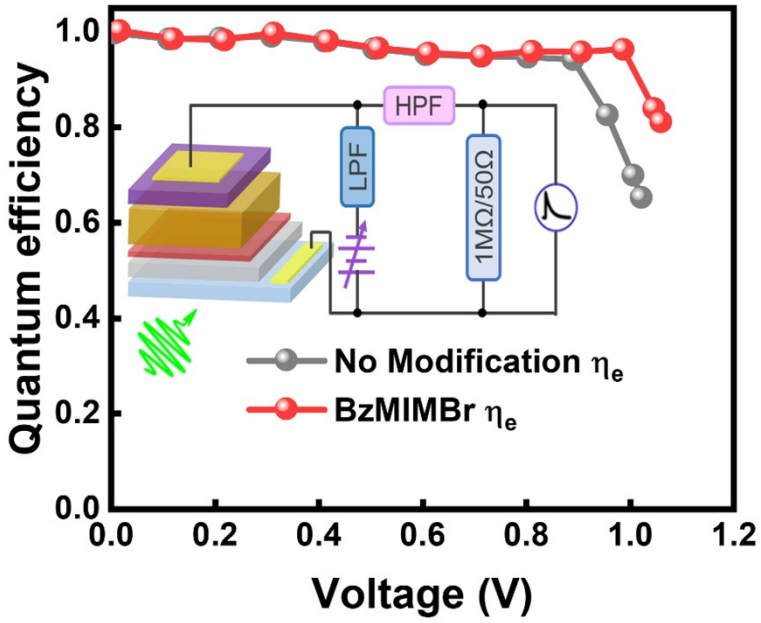

Fig. S15 Charge extraction efficiency (η_e) of the cells measured from modulated electrical transient measurements.