Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information to

Polarization-enhanced Photoelectric Performance in Molecular Ferroelectric Hexane-1,6-diammonium Pentaiodobismuth (HDA-BiI_5)-based solar device

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This PDF file includes:
Figures. S1 to S6

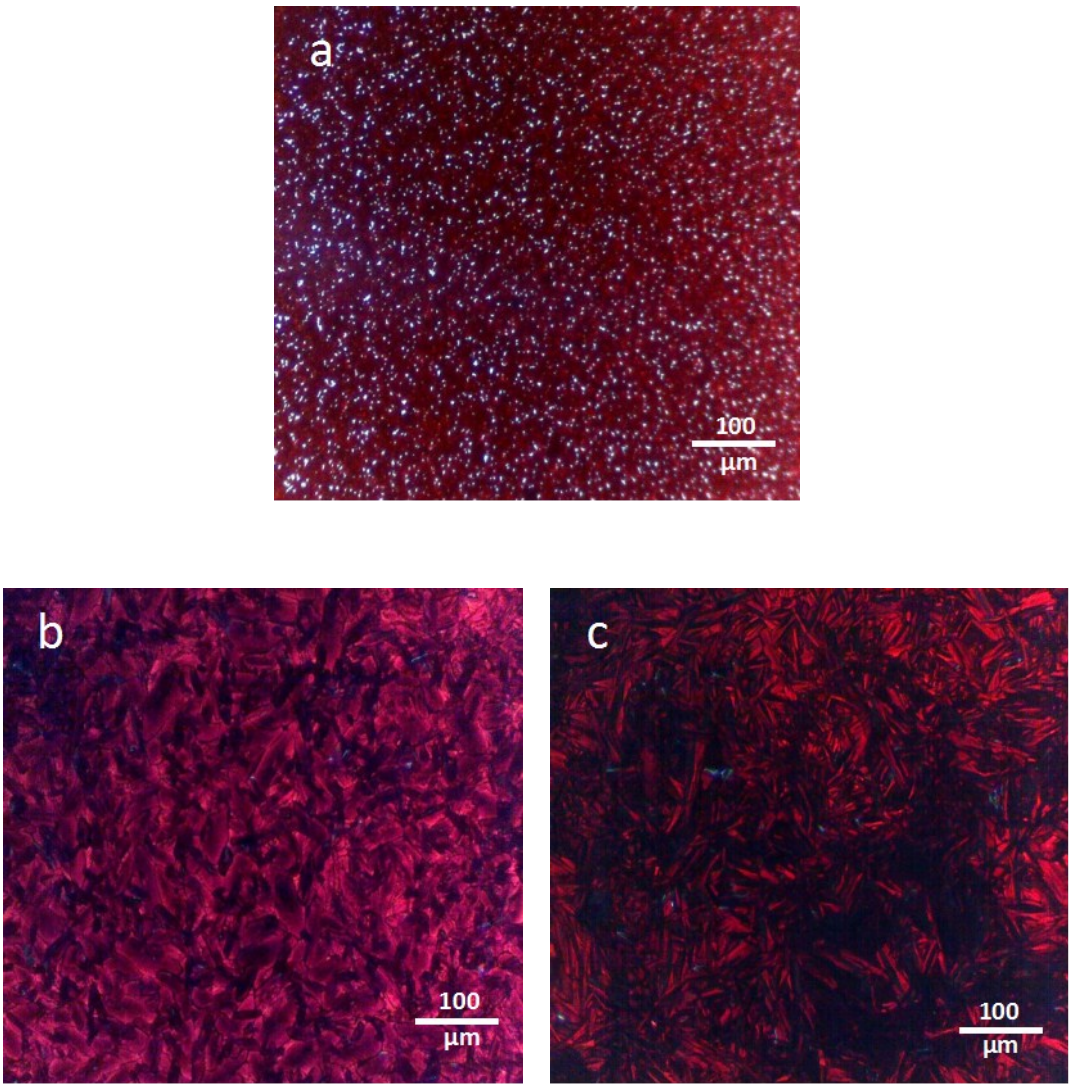
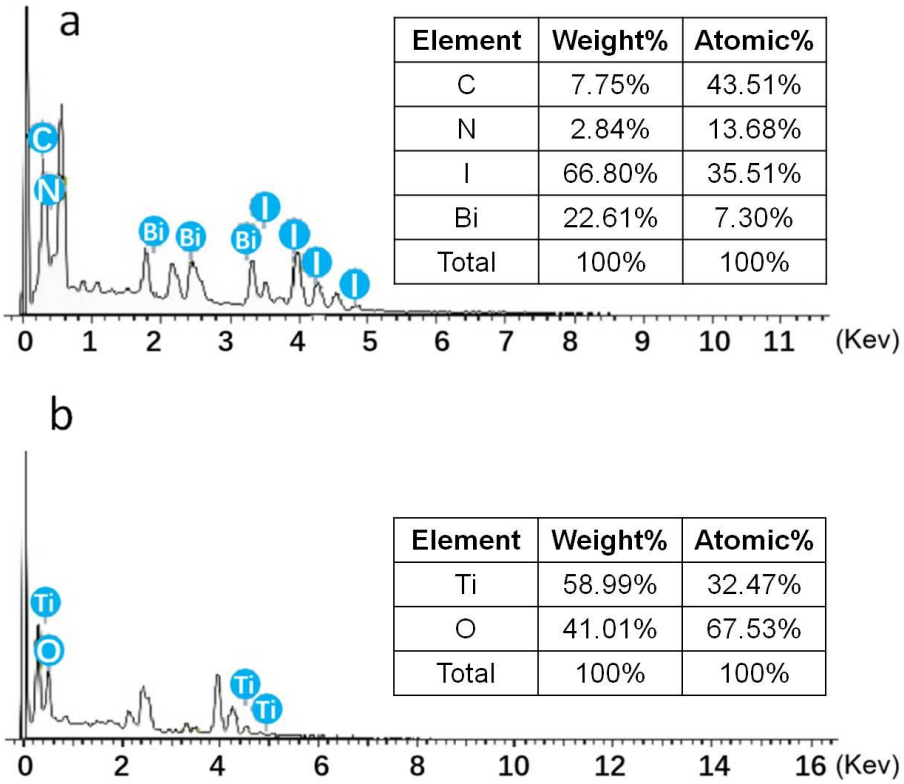


Figure S1. Optical photograph of HDA-BiI_5 thin films with different thicknesses of 35 µm (a), 25 µm (b) and 10 µm (c).



Element	Weight%	Atomic%
C	7.75%	43.51%
N	2.84%	13.68%
I	66.80%	35.51%
Bi	22.61%	7.30%
Total	100%	100%

Element	Weight%	Atomic%
Ti	58.99%	32.47%
O	41.01%	67.53%
Total	100%	100%

Figure S2. EDS spectra of HDA-BiI_5 (a) and TiO_2 (b) in HDA-BiI_5/TiO_2 composite film.

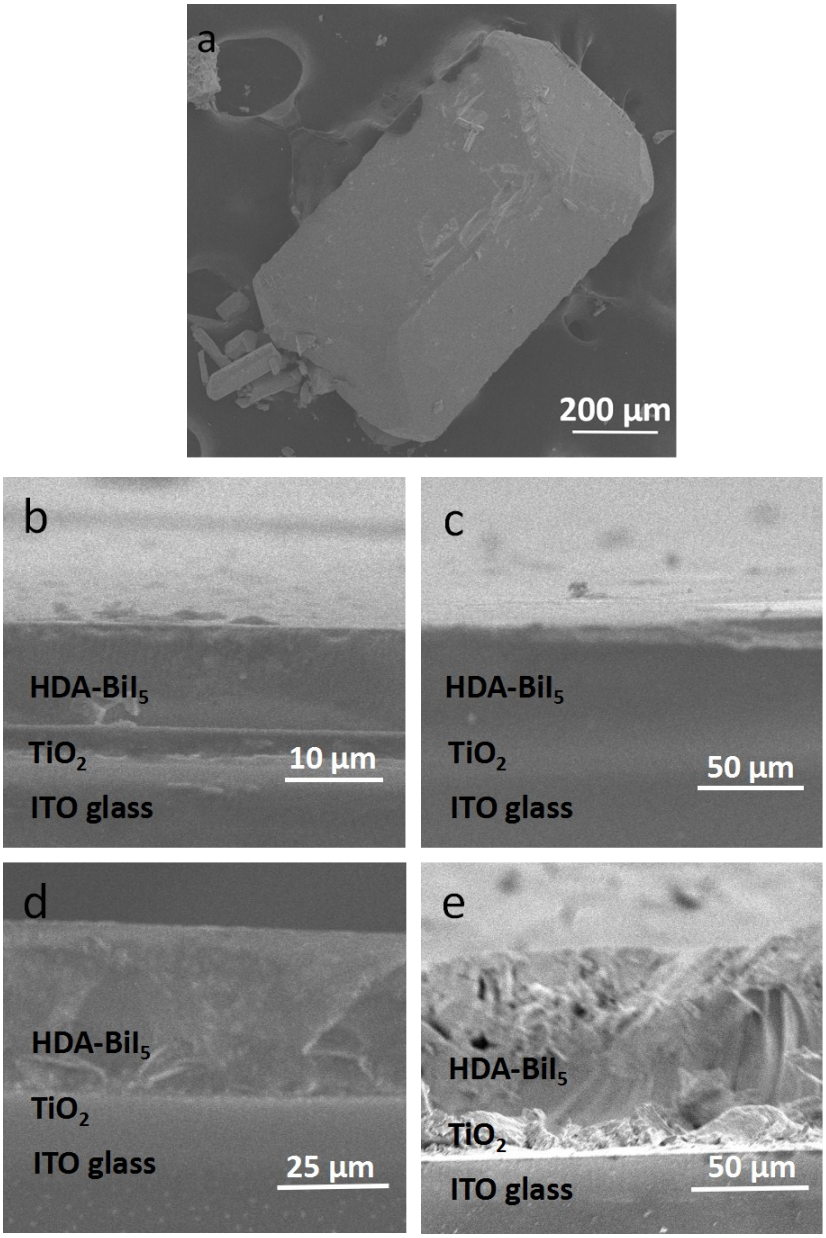


Figure S3. SEM images of HDA-BiI_5 single crystal (a) and HDA-BiI_5/TiO_2 films with different thicknesses of 10 µm (b), 35 µm (b), 45 µm (c) and 70 µm (e).

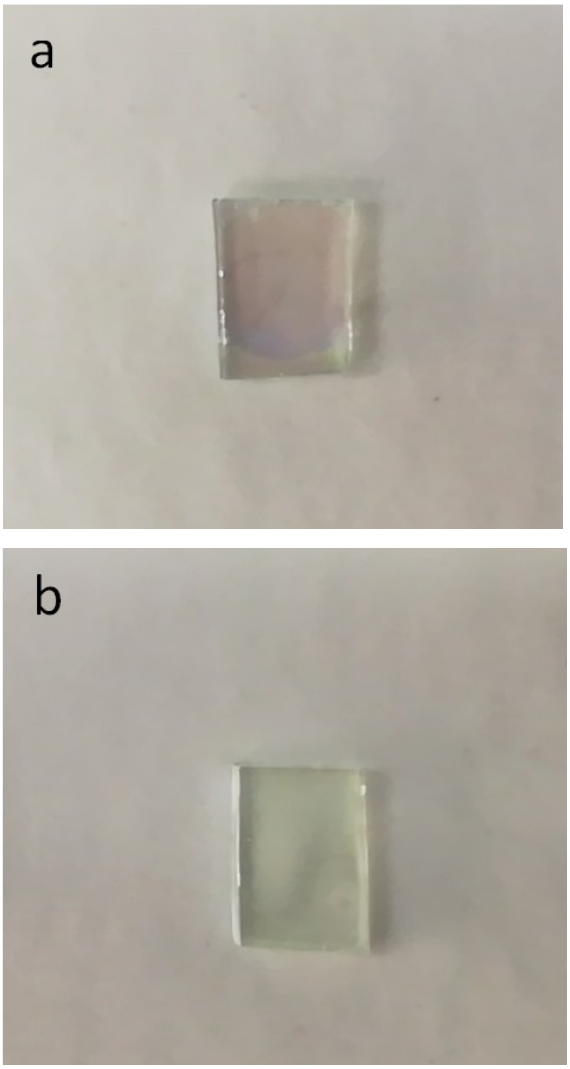


Figure S4. Optical photographs of TiO_2 thin-film before (a) and after (b) hydrothermal retreatment.

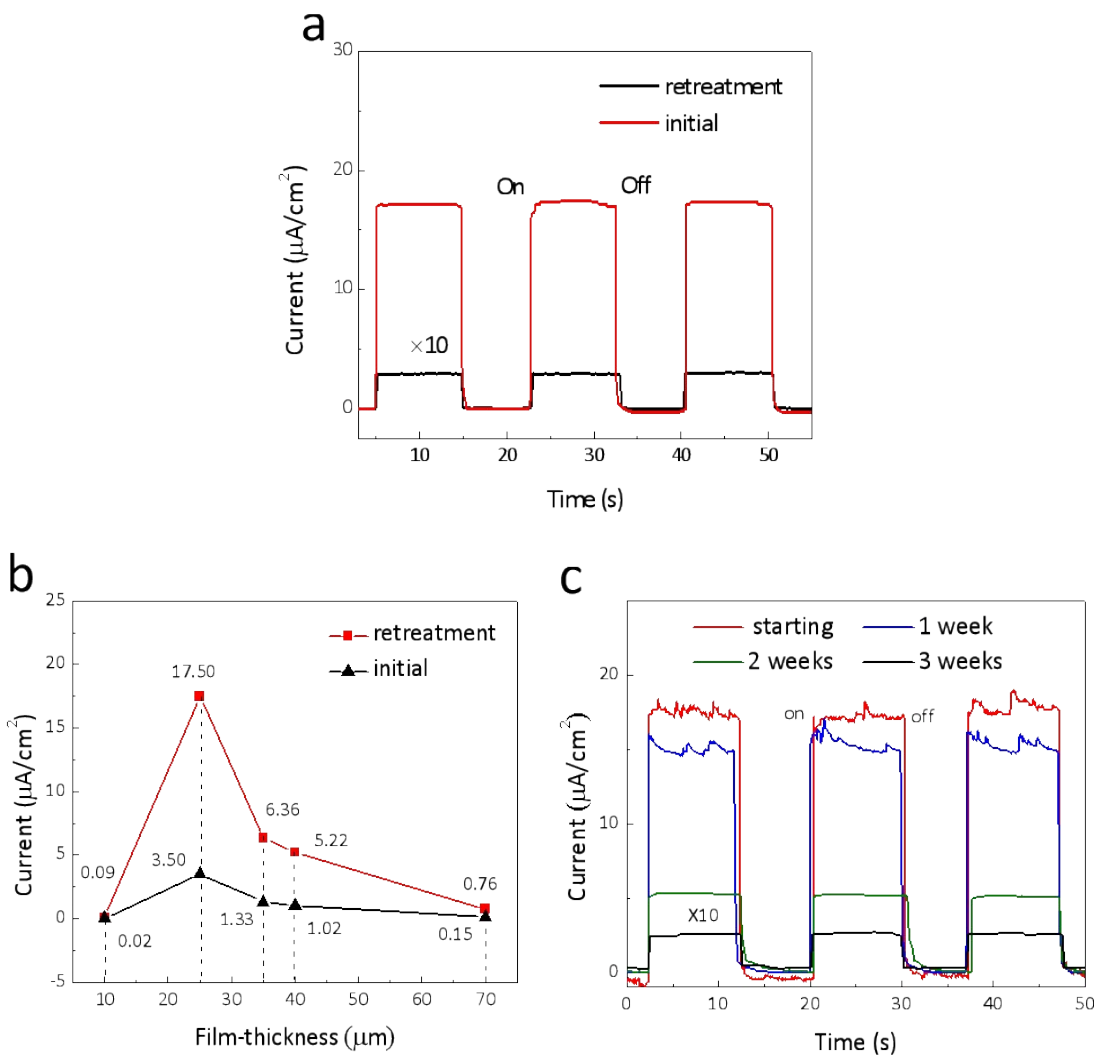


Figure S5. (a) *J*-t curves of the (HAD-BiI_5)-based solar device with a HAD-BiI_5 film thickness of 25 μm before and after hydrothermal retreatment for TiO_2 ETL. (b) The evolution of the photocurrent density of the (HAD-BiI_5)-based solar device with different HAD-BiI_5 film thicknesses before and after hydrothermal retreatment for TiO_2 ETL. (c) *J*-t curves of the (HAD-BiI_5)-based solar device after exposing to air for different time at zero bias voltage under on-off sunlight simulator illumination.

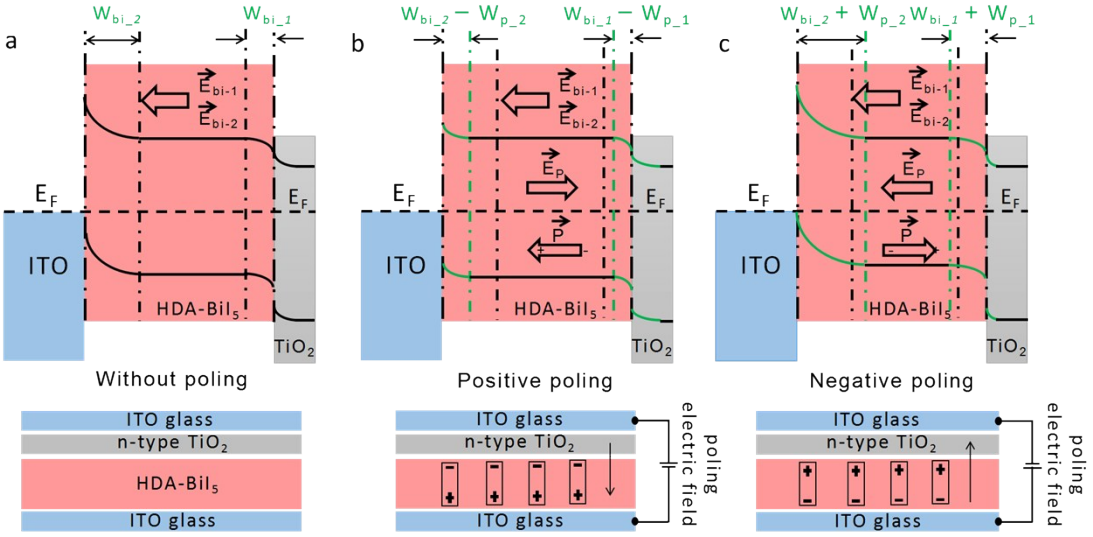


Figure S6. Schematic and band diagram of (HDA-BiI_5)-based ferroelectric solar cells under different poling conditions: (a) without poling, (b) Positive poling, and (c) Negative poling .