

Supplementary Information

Tuning the morphology and optoelectronic properties of AgBiI₄ film through isopropanol treatment

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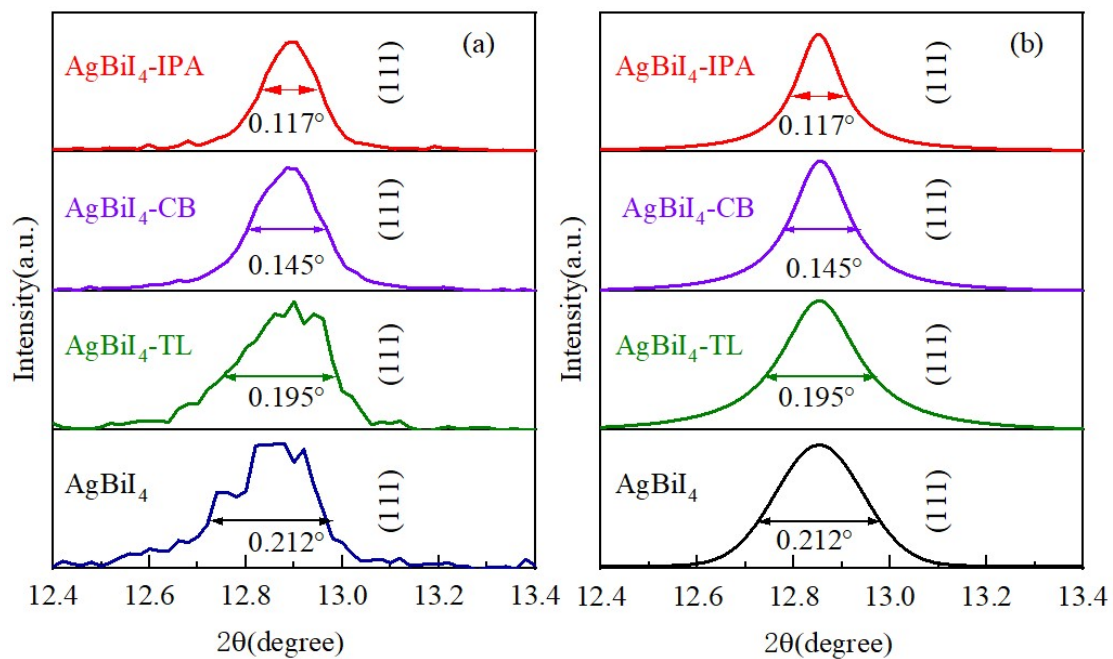


Figure S1 FWHM of the (111) peak of different AgBiI_4 films. (a) original, and (b) fitted curve.

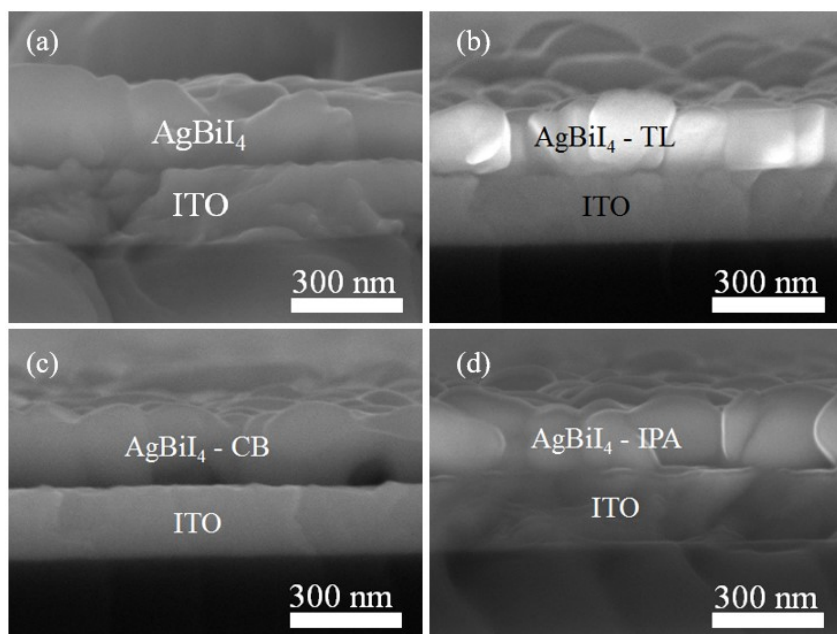


Figure S2 Cross section SEM images of the AgBiI_4 films fabricated (a) without the antisolvent treatment and (b-d) with the antisolvent treatments of toluene, chlorobenzene, and isopropanol respectively.

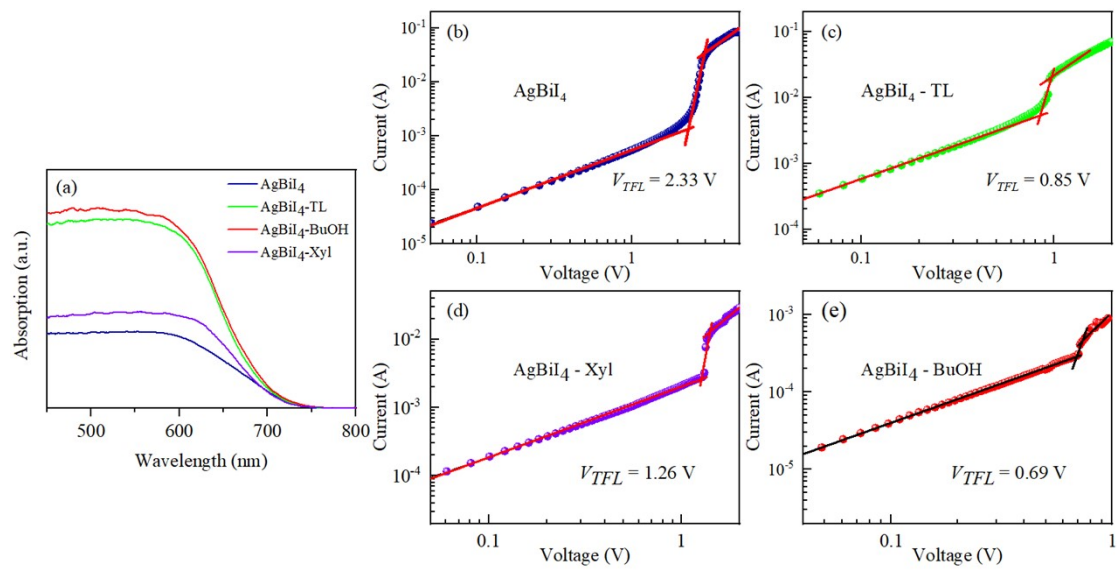


Figure S3 (a) Optical absorption spectra of AgBiI₄ films without and with the different antisolvent treatments. (b)-(e) The dark J-V curves of the ITO/AgBiI₄/Au devices, with the AgBiI₄ films fabricated without antisolvent treatment, and with toluene, m-xylene, and n-butyl alcohol treatment respectively.

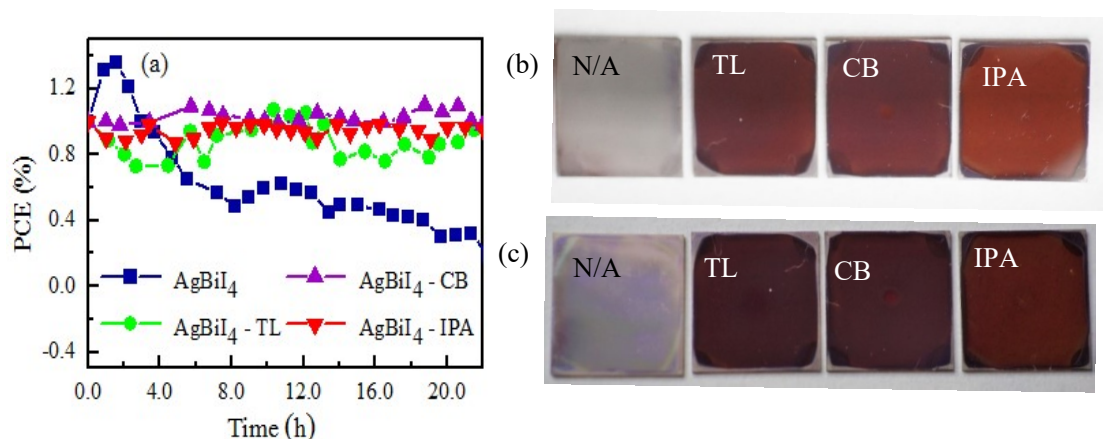


Figure S4 (a) PCE stability of AgBiI₄ devices measured under continuous illumination by white light-emitting-diode (LED) in air environment. (b) The pictures of AgBiI₄ films without and with antisolvents treatments. (c) The pictures of AgBiI₄ films they are placed in the air a week later, with 25°C, 40±10% R.H.

The stability of AgBiI₄ film and device:

For evaluating the stability of the AgBiI₄ solar cells, we remeasure them and find that the PCE of them does not obviously decay after keeping in vacuum for more than three months. In order to further confirm the stability of devices, we test the PCE of the different solar cells under continuous white-LED illumination with 100 mWcm⁻² in the air (25°C, 40±10% R.H.). As shown in Figure S4(a), the PCE of the device without antisolvent treatment seriously decays after 22 h, while that of the antisolvent-treated devices does not obviously decay. This indicates that the IPA-treated solar cell is more stable than the non-treated one. Besides, Figure S4(b) shows the pictures of the freshly prepared AgBiI₄ films and Figure S4(c) is the pictures of them after they are placed in the air a week later. It can be seen that the color of all antisolvent-treated films does not obviously change, suggesting that all the antisolvent-treated films have good stability.