Electronic Supplementary Information

Indium tin oxide (ITO)-free, top-illuminated, flexible perovskite solar cells

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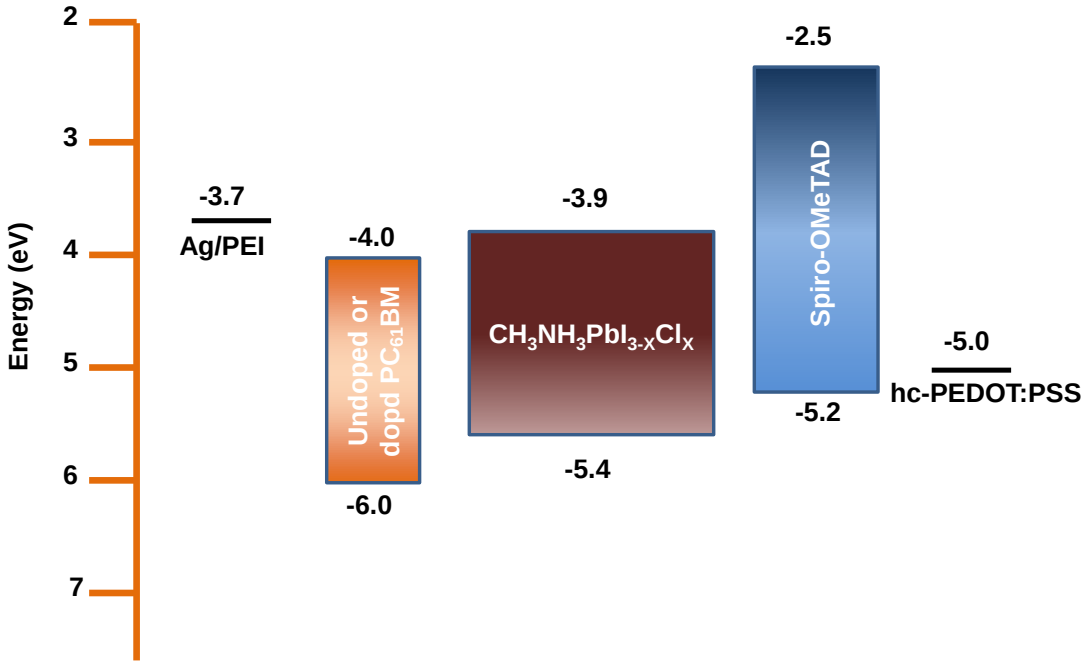

Fig. S1 The energy level diagram of the flexible perovskite solar cells.

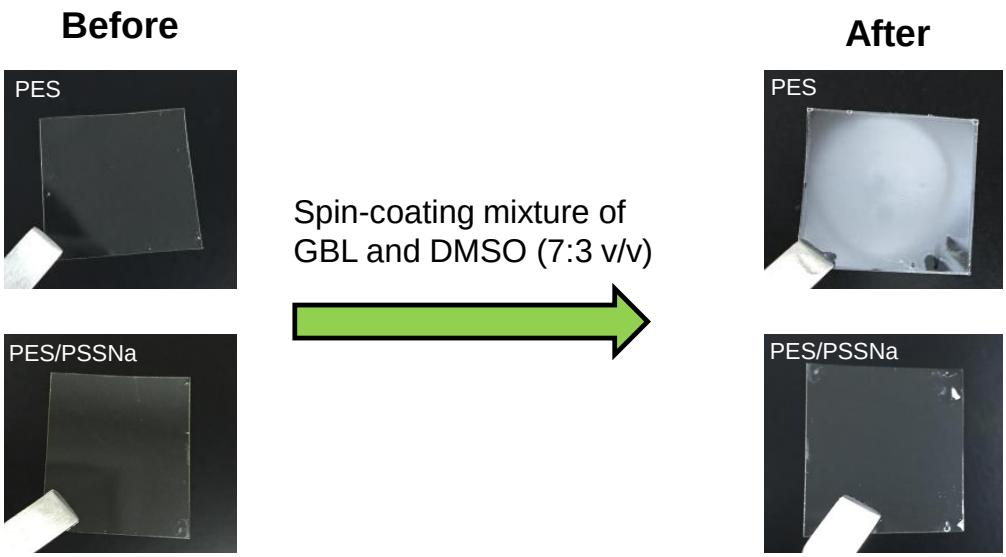

Fig. S2 Pictures of the PES and PES/PSSNa before and after spin coating the solvent mixture of GBL and DMSO (7:3, v/v).

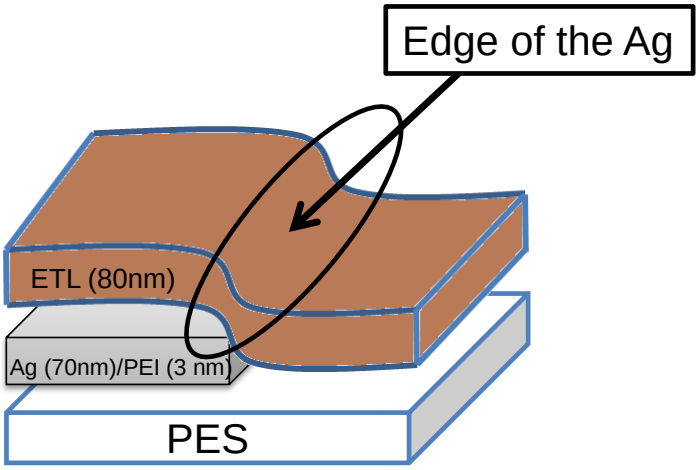

Fig. S3 The schematic diagram of the PES/Ag/ETL pattern.

As shown in Fig. S3, bottom silver electrodes were evaporated on half of the substrate with a thickness of 70 nm. And the thickness of the ETL (undoped or doped $PC_{61}BM$) films is similar to that of silver electrode. At the edge of the silver (marked ellipse area), the ETL films may be much thinner than the actual thickness on PES/Ag or PES parts. When spin-coating the perovskite solution, solvent would permeate the PES substrate at this marked area. The fabricated flexible perovskite solar cells showed low device performance and poor reproducibility. A layer of PSSNa film is deposited on top of PES substrates could protect the PES substrate from the damage by the processing solvents, and therefore enhancing the device performance and reproducibility.