

Supporting information

Patching defects of the active layer for large-area organic solar cells

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Figure S1. Contact angle: a) PEI solution in isopropanol (100 mg/ml) on top of P3HT:ICBA film; b) PVA in water (50 mg/ml) with PEG-TmDD (to 40 mg/ml) added; c) PMMA in acetone (0.5 g/ml) on top of PBDB-T:ITIC films.

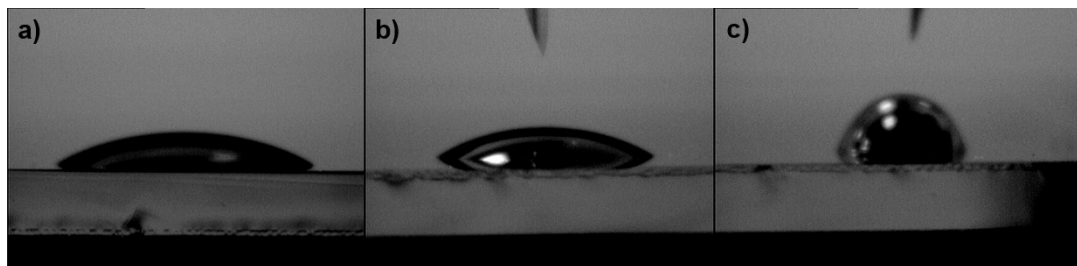


Figure S2. J - V characteristics in the dark of three types of organic solar cells with structure of Glass/ITO/PEI/P3HT:ICBA/MoO₃/Ag and the area of 50 mm²: one comprises a 5 mm² artificial defect, the other one comprises a defect with the same area but patched up by writing PEI, and the third one is the reference cell without defects.

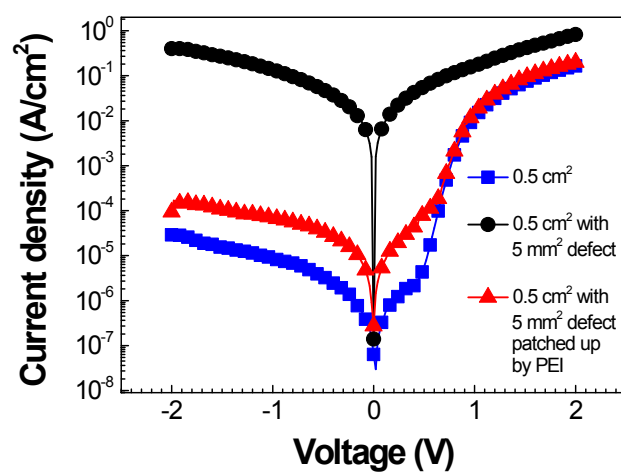


Figure S3. a) Picture of a s active layer film (P3HT:ICBA) with three “comet tail” shaped defects in the active area (1.6 cm²). b) J - V characteristics under illumination and in the dark of the completed device patched up by PEI.

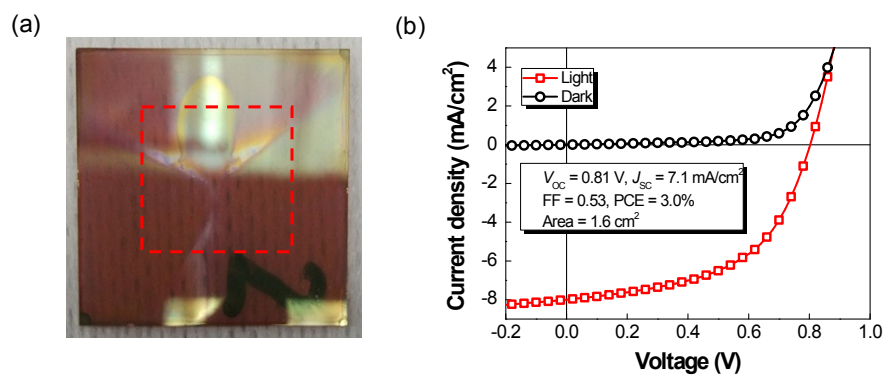


Figure S4. J - V characteristics of OSCs with device area of 50 mm² and the device structure of Glass/ITO/ZnO/PBDB-T:ITIC/MoO₃/Ag.

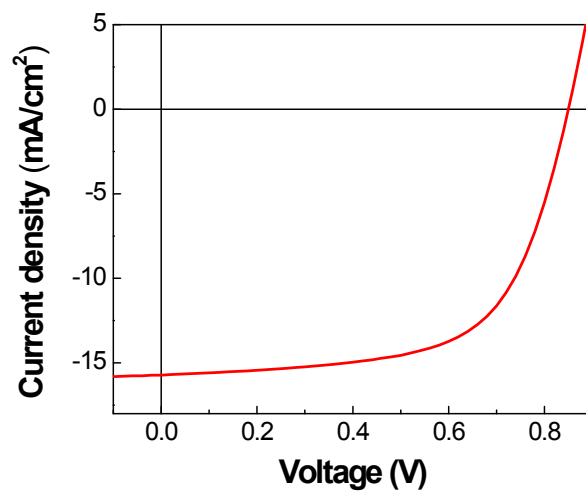


Figure S5. J - V characteristics in the dark of four types of OSCs with structure of Glass/ITO/ZnO/PBDB-T:ITIC/MoO₃/Ag. One comprising a 5 mm² artificial defect, the other two comprising a defect with the same area but patched by writing PEI or PVA, and the fourth one as the reference without defects. The device area of 50 mm².

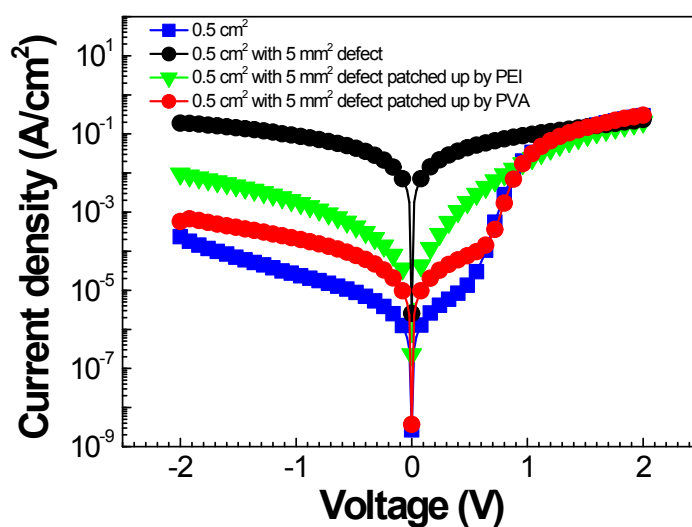


Figure S6. Patching trace of PVA on deliberately created defects (WNLO shape) on the PBDB-T:ITIC films (the left is patched, and the right is not patched).



Figure S7. a) Pictures and J - V characteristics b) under illumination and in dark of 21 cm², 5-subcells solar module.

