Supporting Information

Photovoltaic Devices with an Active Layer from a Stamping Transfer Technique: Single Layer Versus Double Layer

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**Supplementary Figures**

**Figure S1.** Surface profile data of (a) a spin-coated active layer with a P3HT:PCBM blending ratio of 1:0.6 at 900 rpm for 5 s (before stamping); (b) a stamping-transferred active layer with a P3HT:PCBM blending ratio of 1:0.6 at 900 rpm for 5 s (after stamping). The results confirm that after the application of the stamping transfer technique the transferred BHJ layer perfectly retains the original spin-coated thickness of 220nm.
Figure S2. X-ray diffraction data of (a) a spin-coated active layer with a P3HT:PCBM blending ratio of 1:0.6; (b) an imprinted transferred active layer with a P3HT:PCBM blending ratio of 1:0.6. The annealed spin-coated active layer has a single peak at $2\theta = 5.45^\circ$ and a corresponding lattice constant of $d = 1.62$ nm. The annealed stamping-transferred active layer has a similar single peak at $2\theta = 5.32^\circ$ and a corresponding lattice constant of $d = 1.66$ nm. The results confirm that after the application of the stamping transfer technique the annealed printed active layer retains most of the ordering of the polymer chains and has similar crystalline structures.
**Figure S3.** The images of contact angle measurement of PDMS stamp and UV-cured PC-film. (a) The PDMS stamp showed the contact angle of $39^\circ$ when the BHJ active layer was dropped in the surface of PDMS stamp (b) The UV-cured PC-film showed the contact angle of $21^\circ$ when the BHJ active layer was dropped in the surface of the UV-PC film. The UV-cured PC-film has a better organic solvent wettability compared to the PDMS stamp.
Figure S4. Surface profile data of (a) a stamping-transferred active layer with a approximately 110 nm P3HT-rich (6:4, 7:3, 8:2, 9:1) (b) a stamping-transferred active layer with a approximately 110 nm PCBM-rich (4:6, 3:7, 2:8, 1:9) (c) a stamping-transferred active layer with a approximately 220nm of P3HT-rich/PCBM-rich, FIB (Focused Ion Beam) 52° tilted image of  (d) a stamping-transferred 220nm active layer with a P3HT-rich(8:2) / PCBM-rich(2:8).
Figure S5. (a) UV-cured resin coated polycarbonate film based on a 4-inch wafer substrate (b) Stamping transferred BHJ active layer with the large area of 6.25cm² after detaching the same size of the UV-PC film with BHJ active layer on ITO / PEDOT:PSS substrate.
Figure S6. The average device efficiencies with stamping transferred P3HT-rich (6:4, 7:3, 8:2, 9:1) and PCBM-rich (6:4, 7:3, 8:2, 9:1) active layer with TiO$_x$. The maximum average conversion efficiency values are 3.18% for an optimized double active layer transferred device with P3HT-rich (8:2) and PCBM-rich (8:2) with TiO$_x$ from the error bar data.