Supporting Information

Highly Reproducible Thermo-Controlled Electrospun Fibers Based Organic Photovoltaic Devices

Taehoon Kim, Seung Jae Yang, Sae Jin Sung, Yern Seung Kim, Mi Se Chang, Haesol Jung and Chong Rae Park*

Carbon Nanomaterials Design Laboratory, Global Research Laboratory, Research Institute of Advanced Materials, and Department of Materials Science and Engineering, Seoul National University, Seoul 151-744, Korea

Corresponding Author

*E-mail: crpark@snu.ac.kr

**Performance variation of bilayer device at different relative humidity**

As mentioned in the manuscript, the two bilayer-structured OPV devices prepared at 20% RH and 50% RH showed similar performance levels (Figure S1). This can be explained based on the previous reports. The performance decreases if aluminum electrode deposited-OPV devices are exposed to water vapor and oxygen. However, devices exposed during the fabrication process showed similar performance levels compared to devices prepared in an inert atmosphere. Such phenomenon is occurred as oxidative agents within the active layer decrease, which are induced by the reaction between oxidative agents and the electrode during thermal annealing after the electrode deposition. Therefore, though there may be some change in humidity during the fabrication process for general OPV devices, it does not affect the performance significantly.
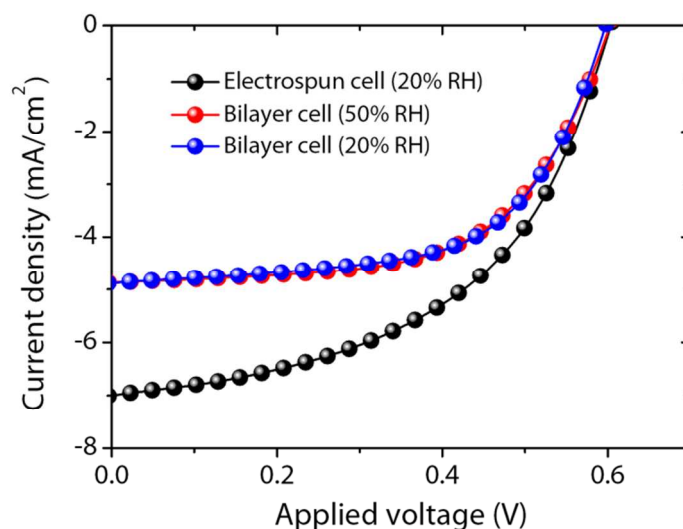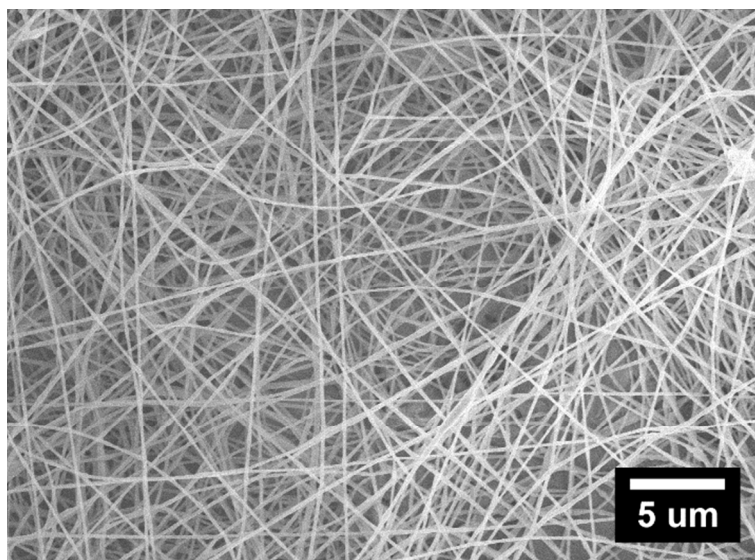

Figure S1. J-V curves obtained from the electrospun OPV device and bilayer cells fabricated at 20% RH and 50% RH.
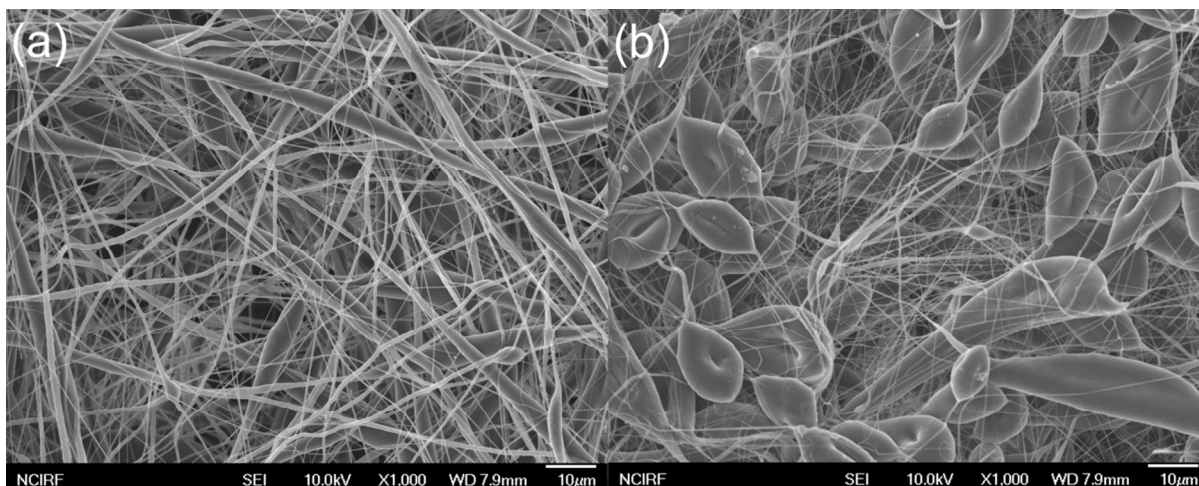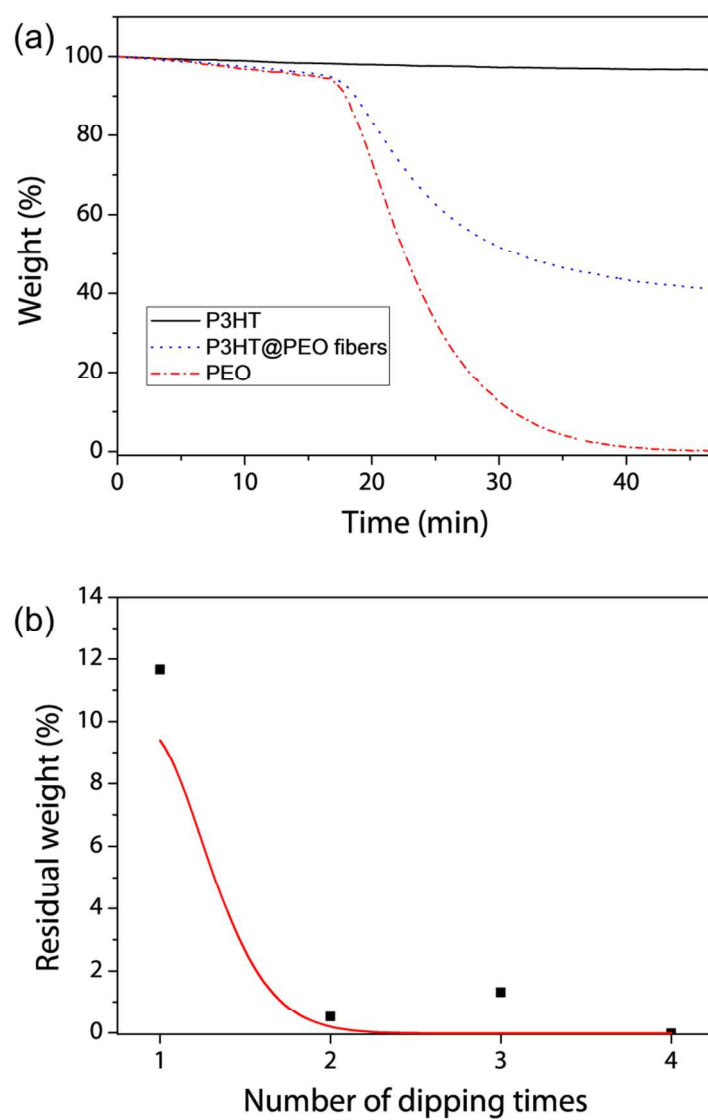
Figure S2. SEM images of electrospun P3HT@PCL composite fibers prepared at (a) 20%, and (b) 50% RH.
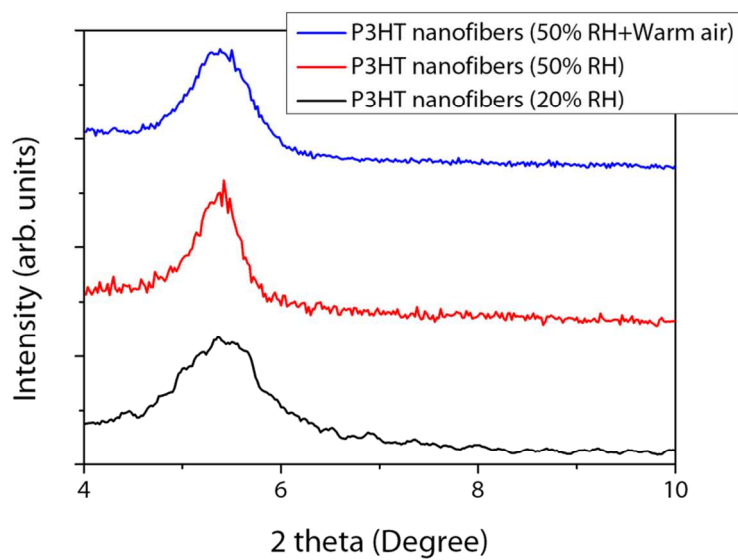
Figure S3. XRD data of relative humidity depended electrospun P3HT@PEO

Figure S4. SEM image of electrospin PEO fibers prepared from 0.5 wt% spinning dope solution

at 50% RH.

Figure S5. (a) Thermo-gravimetric thermograms of various samples under isothermal treatment at 370 °C. (b) Efficiency of PEO removal relative to the number of dipping.