

**Electronic Supplementary Information (ESI)**

**Electrospun Nanofibers with Dual Plasmonic –Enhanced Luminescent Solar  
Concentrator Effects for High-Performance Organic Photovoltaic Cells**

Jung-Yao Chen, <sup>a</sup> Yu-Cheng Chiu, <sup>a</sup> Chien-Chung Shih, <sup>a</sup> Wen-Chung Wu, <sup>b</sup> and Wen-Chang Chen\*, <sup>a</sup>

<sup>a</sup> Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan  
10617

Tel: 886-2-23628398, Fax: 886-2-23623040

E-mail: chenwc@ntu.edu.tw

<sup>b</sup> Department of Chemical Engineering, National Cheng Kung University  
Tainan, Taiwan 70101

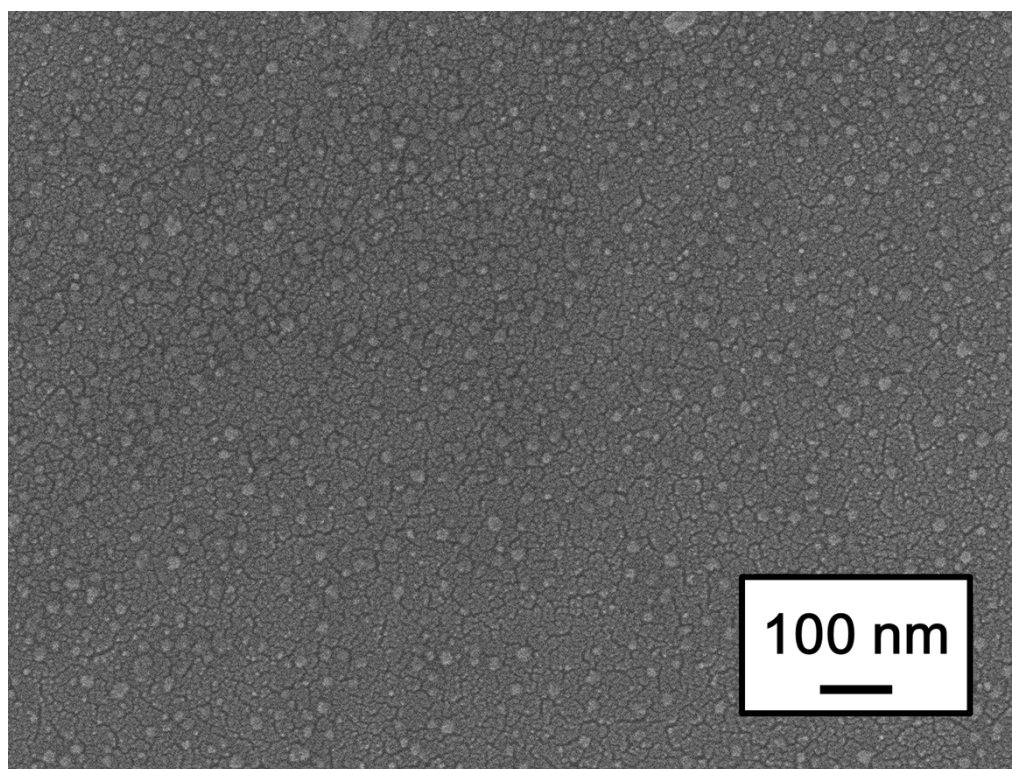
Tel: 886-6-2757575, Fax: 886-6-2344496

E-mail: wcwu@mail.ncku.edu.tw

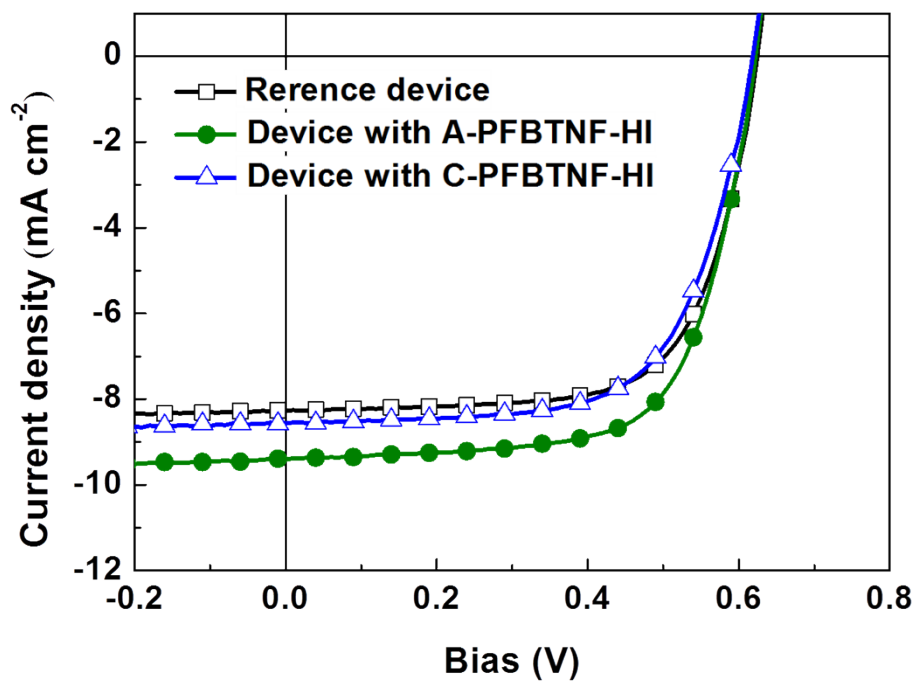
**Table S1.** OPV characteristics without or with the different patterned LSC ES nanofibers.

| Device                   | $V_{oc}$<br>(V) | $J_{sc}$<br>(mA cm <sup>-2</sup> ) | FF<br>(-) | PCE <sup>a)</sup><br>(%) | $R_S$ <sup>b)</sup><br>( $\Omega$ cm <sup>2</sup> ) | $R_{SH}$ <sup>c)</sup><br>(k $\Omega$ cm <sup>2</sup> ) |
|--------------------------|-----------------|------------------------------------|-----------|--------------------------|---|---|
| P3HT:PC <sub>61</sub> BM |                 |                                    |           |                          |   |   |
| Reference                | 0.63            | 8.21                               | 0.675     | 3.49                     | 7.26  | 1.14  |
| A-PFBT NF-HI             | 0.63            | 9.40                               | 0.668     | 3.96                     | 7.22  | 1.55  |
| C-PFBT NF-HI             | 0.63            | 8.57                               | 0.656     | 3.54                     | 8.37  | 2.77  |

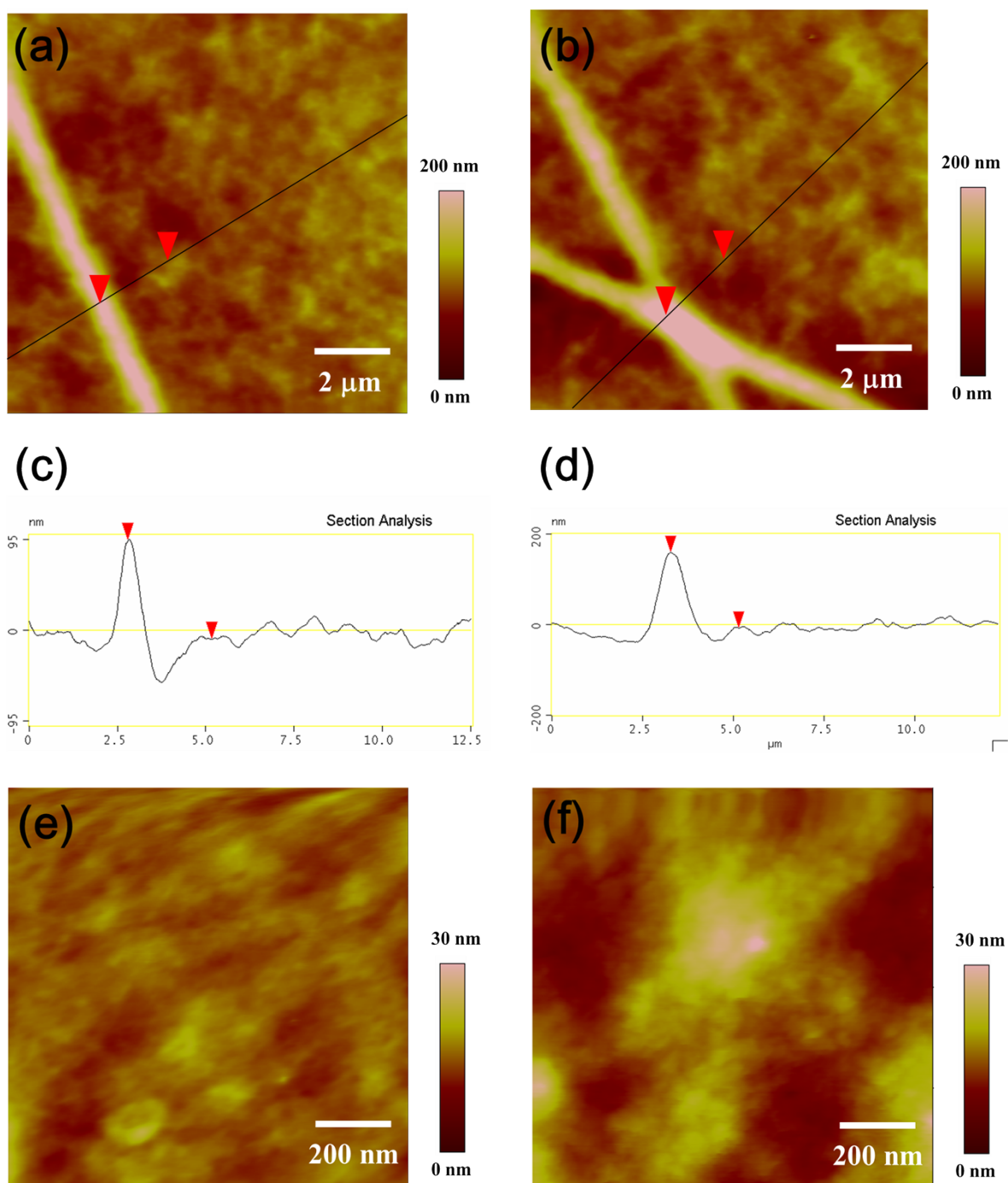
<sup>a)</sup> The average value of PCE is calculated from at least 10 cells. <sup>b)</sup>  $R_S$  is derived from the slope of the I – V curves at 1 V. <sup>c)</sup>  $R_{SH}$  is derived from the slope of the I – V curves at 0 V.



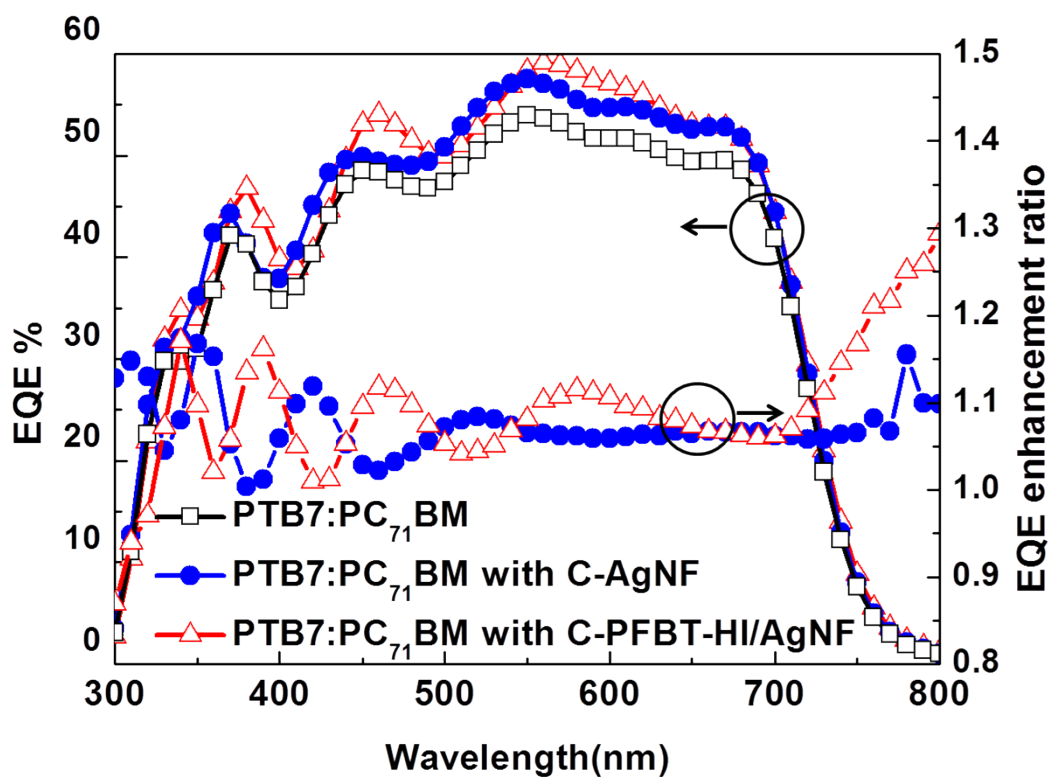
**Fig. S1** SEM image of PFBT nanoparticles.



**Fig. S2**  $J$ - $V$  characteristic of P3HT:PC<sub>61</sub>BM OPV device with A-PFBT NF-HI or C-PFBT NF-HI.



**Fig. S3** Tapping mode AFM topographies of P3HT:PCBM layer (a) on single nanofiber, and (b) on fused nanofibers. The corresponding AFM cross-section analyses of (c) single nanofiber and (d) fused nanofibers. Tapping mode AFM topographies of P3HT:PCBM film near (e) single nanofiber and (f) fused nanofibers.



**Figure S4.** EQE of PTB7:PC<sub>71</sub>BM, PTB7:PC<sub>71</sub>BM with C-AgNF and C-PFBT-HI/AgNF.