

Supplementary Information

Mass Production of a 3D Non-woven Nanofabric with Crystalline P3HT Nanofibrils for Organic Solar Cells

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Supporting information 1: Figure

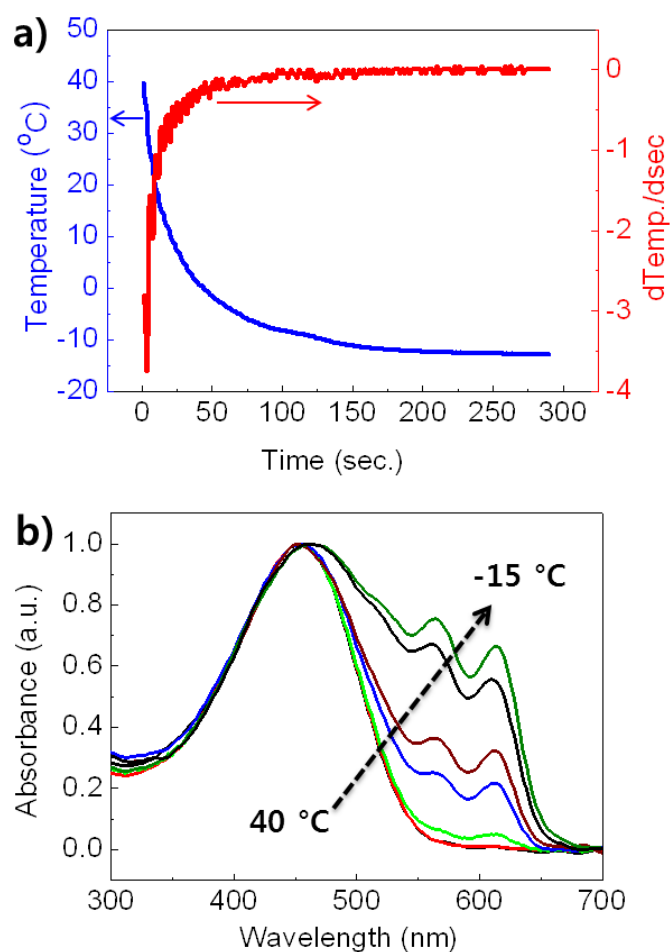


Fig. S1 a) *In-situ* change of the P3HT solution (0.25 wt% in *m*-xylene) temperature in the cooling zone (-15 °C) and differentiation value of the temperature change over time. b) The *in-situ* UV-vis absorption spectra of the P3HT solution while decreasing the temperature from 40 °C to -15 °C.

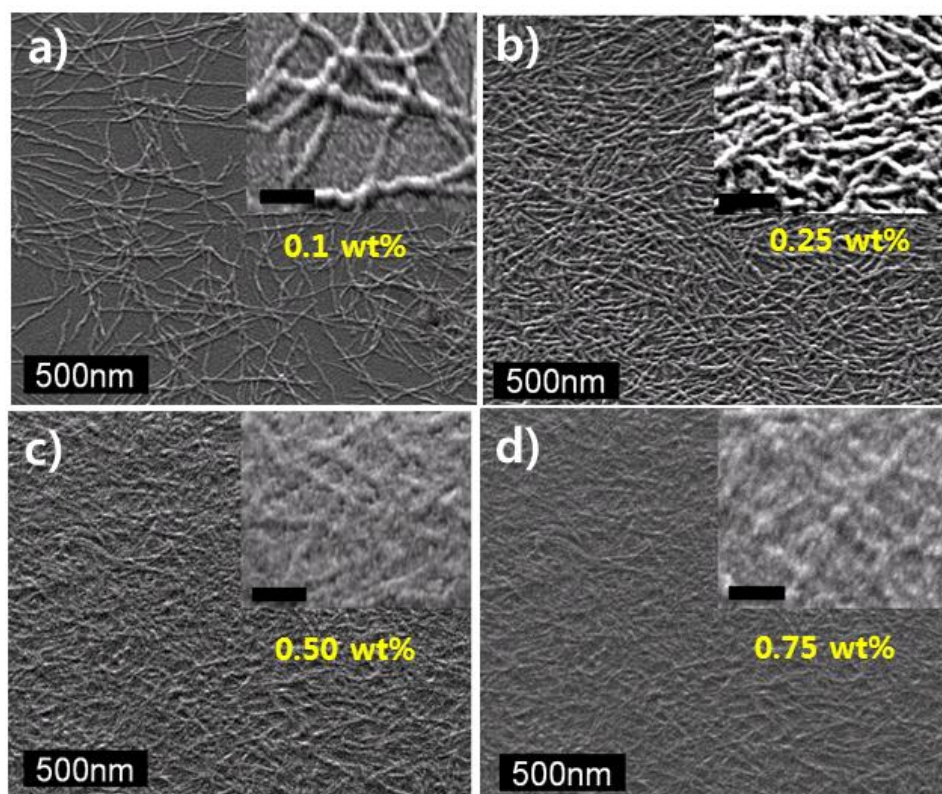


Fig. S2 SEM images that represent the density of P3HT nanofabric film depending on the concentration of the P3HT solution a) 0.1 wt%, b) 0.25 wt%, c) 0.5wt% and 0.75 wt%.

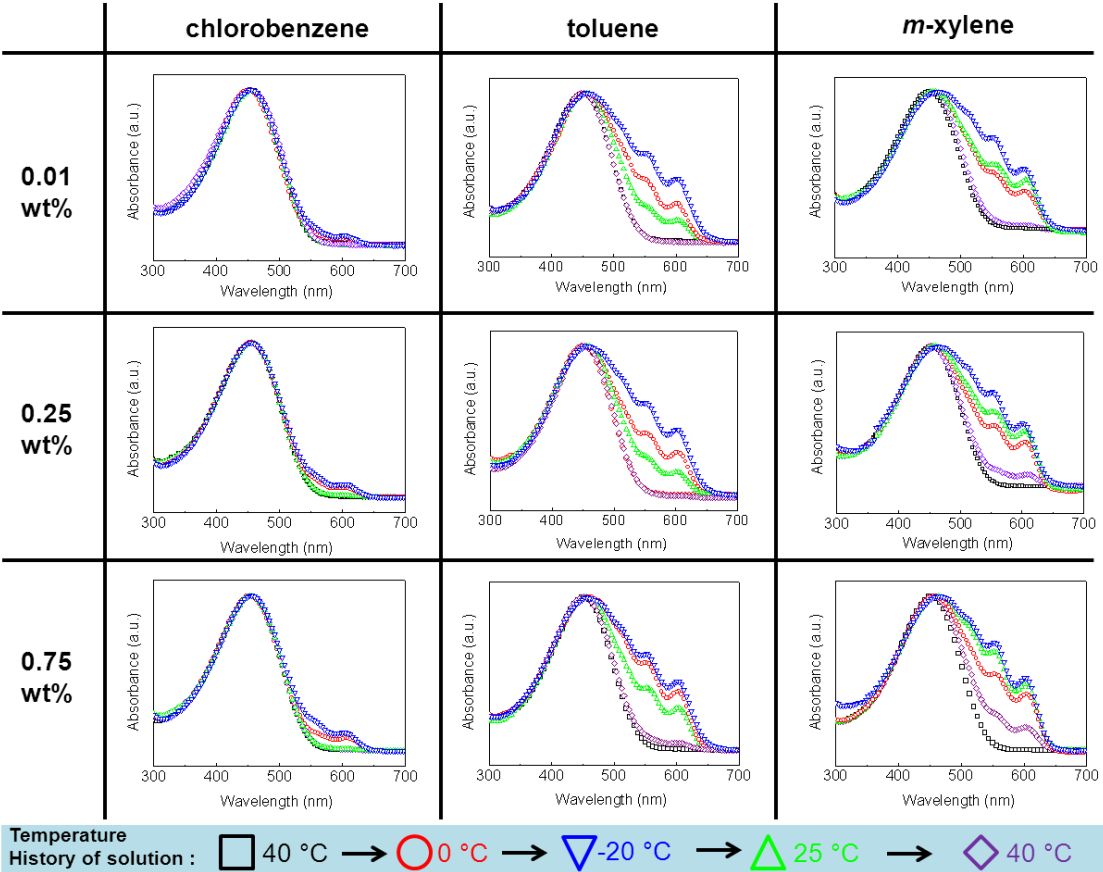


Fig. S3 UV-vis absorbance spectra depending on temperature history of solutions as function of solvent property and concentration of solution.

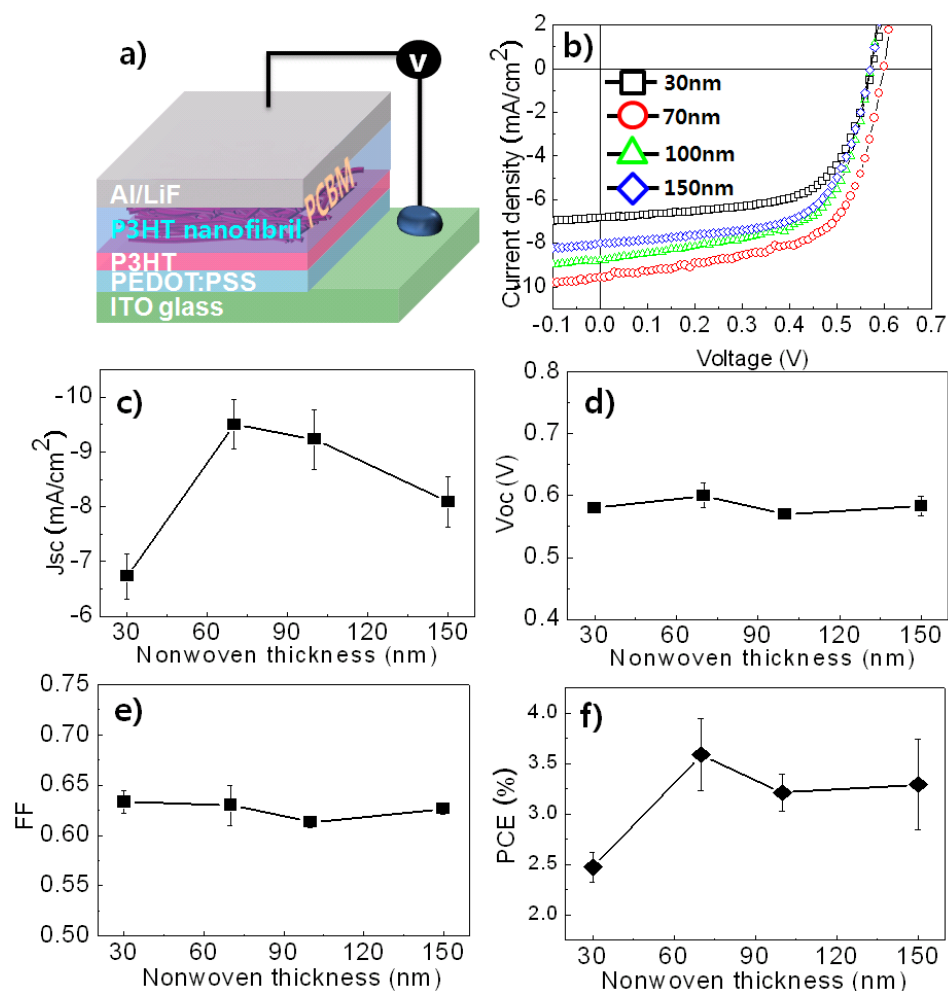


Fig. S4 The dependence of the thickness of the non-woven structure on the device performance: a) Structure of the 3D non-woven nanofabric-based organic solar cell. b) Representative $J-V$ curve depending on the thickness of nonwoven structure (the symbol values represents the P3HT thickness, thickness ratio of the P3HT and PCBM is 7:3). c) Influence of varying the thicknesses of the non-woven structure on c) J_{sc} , d) V_{oc} , e) FF and f) PCE values of the devices.

Supporting information Video S1: A video file related to the systematical spray deposition of the *in-situ* formed P3HT nanofibril via double-jacket cooling on the target substrate.