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Supporting Information

A facile process to produce highly conductive poly(3,4-ethylenedioxythiophene) films for ITO-free flexible OLED devices

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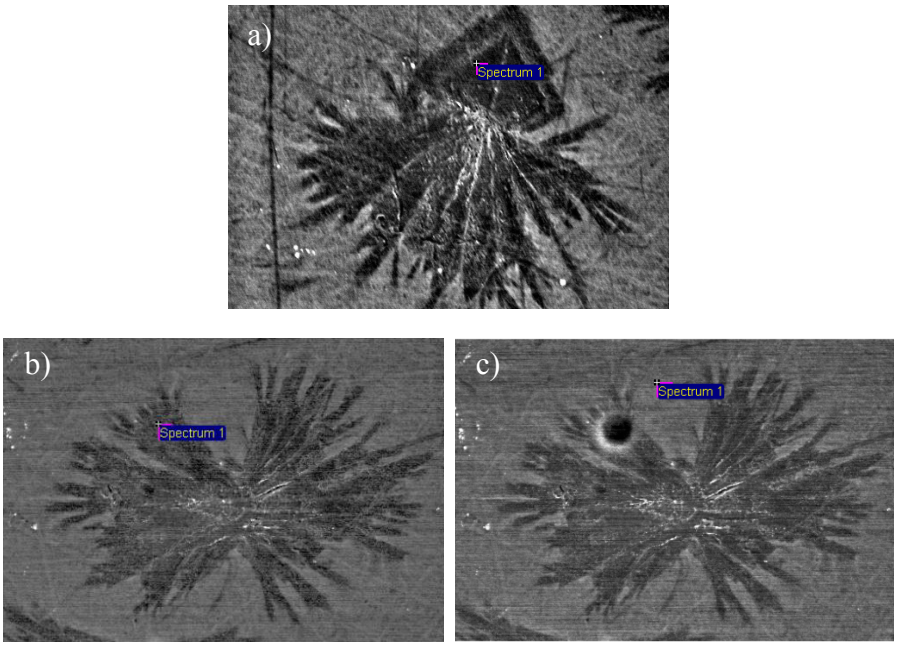

Figure S1. EDX measurements of the area of three kinds of morphology. a) Square-like. b) Flower-like. c) Flat.

Table S1. Element percentage of three kinds of morphology.

	C (Atomic%)	O (Atomic%)	S (Atomic%)	Cl (Atomic%)	Fe (Atomic%)
Square-like	58.51	39.18	1.03	0.70	0.59
Flower-like	53.99	41.47	2.24	1.41	0.89
Flat	50.00	42.00	3.99	2.75	1.26

The resistance of the films is achieved by semiconductor characterization system that using two microprobes to measure the voltage and current between two measuring points (as shown in Figure S2). The measuring model can be simulated to a rectangle as shown in Scheme S1. As a result, the conductivity can be calculated by Formula S(1).

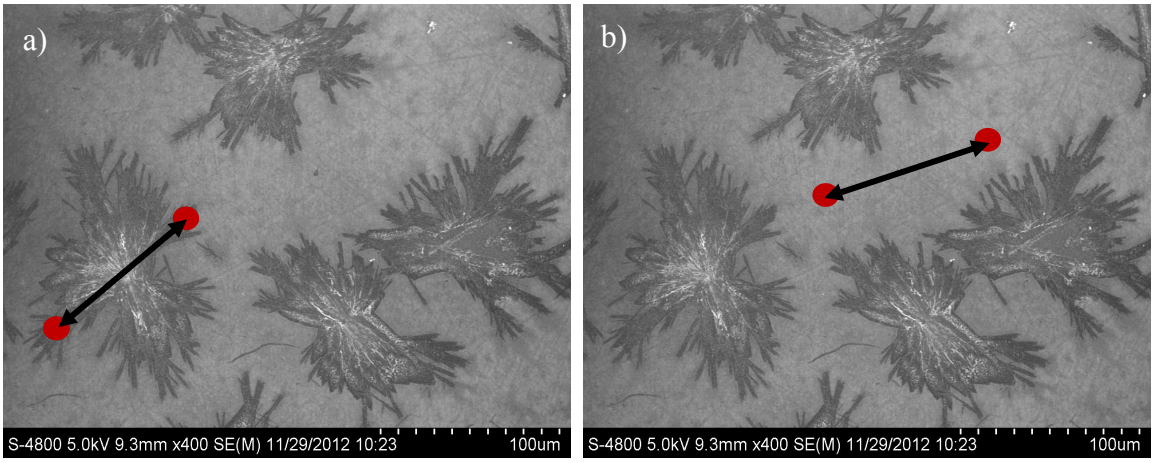

Figure S2. Resistance measurements of a) the flower-like region and b) the flat region of the VPP-PEDOT film.

Scheme S1. Simulative rectangal model of the resistance measurement.

The relationship between conductivity, resistance, film thickness, the length and width of the measuring area is given by:

$$\sigma = \frac{L}{RtW} \times 10^7 \qquad \text{S(1)}$$

where σ is the conductivity in S cm^{-1}, R is the sheet resistance in Ω, t is the film thickness in

nm, L and W are the length and width of the measuring area in μm, respectively. As for flower-like regions, L=80 μm, R=484 Ω, t=40 nm and W=10 μm. Thus an average conductivity of ca. 4130 S cm^{-1} can be achieved according to Formula S(1). Similarly, for the flat regions, L=80 μm, R=694 Ω, t=90 nm and W=10 μm. The calculated conductivity is ca. 1280 S cm^{-1}.

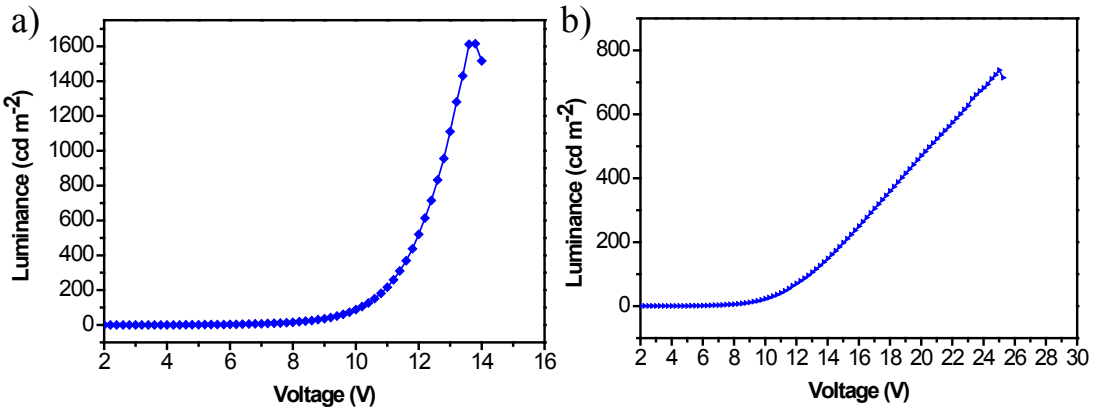

Figure S3. Luminance results of a) OLED device using ITO as the anode and b) OLED device after 100 small-angle bending.