Supplementary material

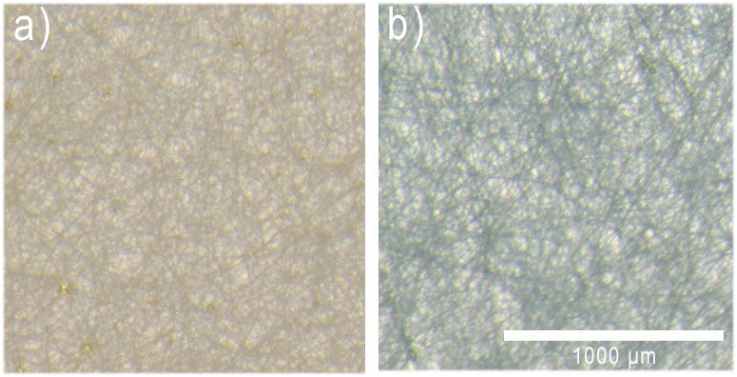

Figure S1. Optical images of electrospun fibers before (a) and after (b) vacuum vapor phase polymerization.

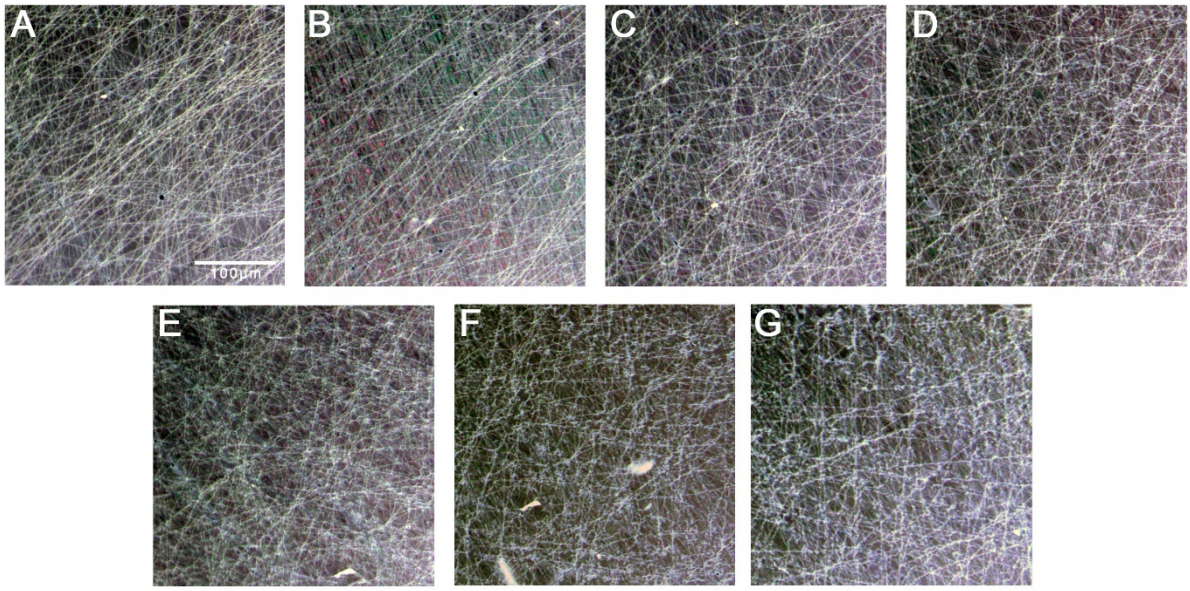

Figure S2. Optical pictures of electrospun fibers from Mixture B under different strains: 0% (A), 20% (B), 40% (C), 60% (D), 80% (E), 100% (F), and 120% (G).

Specific Capacitance (C_p) calculation

The specific capacitance was calculated from the voltammograms according to the following relationship: $C_p = \frac{A}{m.k.\Delta V}$, where A is the integrated area of the voltammogram, m is the mass of PEDOT:Tos fibers, k is the scan rate (20 mV/s), and ΔV is the potential window (1.2 V).

The mass (m) of the deposited fibers on the electrode was estimated as per the following:

1. The flow rate of electrospinning was fixed to 0.1 mL/h and the electrospinning duration was known (either 700, 1000 or 1500 sec), allowing to calculate the quantity of electrospun fibers: 22.9 mg, 31.9 mg and 49.2 mg according to the increasing electrospinning time.
2. This amount of fibers was assumed to be uniformly deposited on the cylindrical collector, for calculating the fiber density. The surface of the collector was 113.1 cm^2, giving surface densities of 2.02 x 10^{-4} g/cm^2, 2.82 x 10^{-4} g/cm^2, and 4.35 x 10^{-4} g/cm^2, respectively.
3. The active surface of the electrode was fixed to 25 mm^2, then the amount of fibers involved in the electrochemical reaction was 5.06 x 10^{-5} g, 7.04 x 10^{-5} g, and 1.09 x10^{-4} g, respectively.

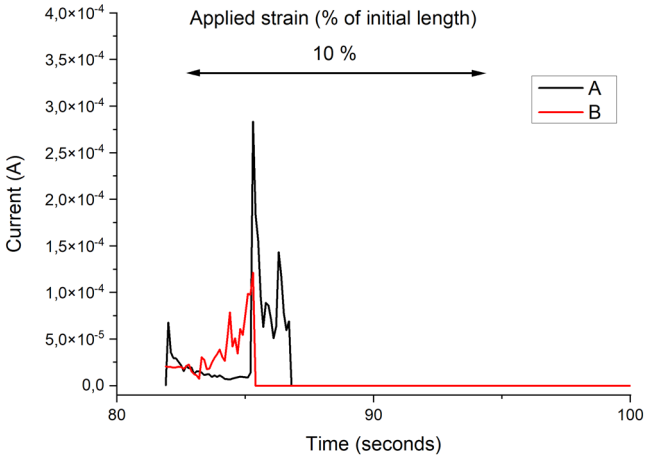

Figure S3. Current as a function of time for PEDOT :Tos spincoated films on PDMS for the Mixtures A (▬) and B (▬). The samples were stretched from 0 to 10% strain at 0.1 cm/s.

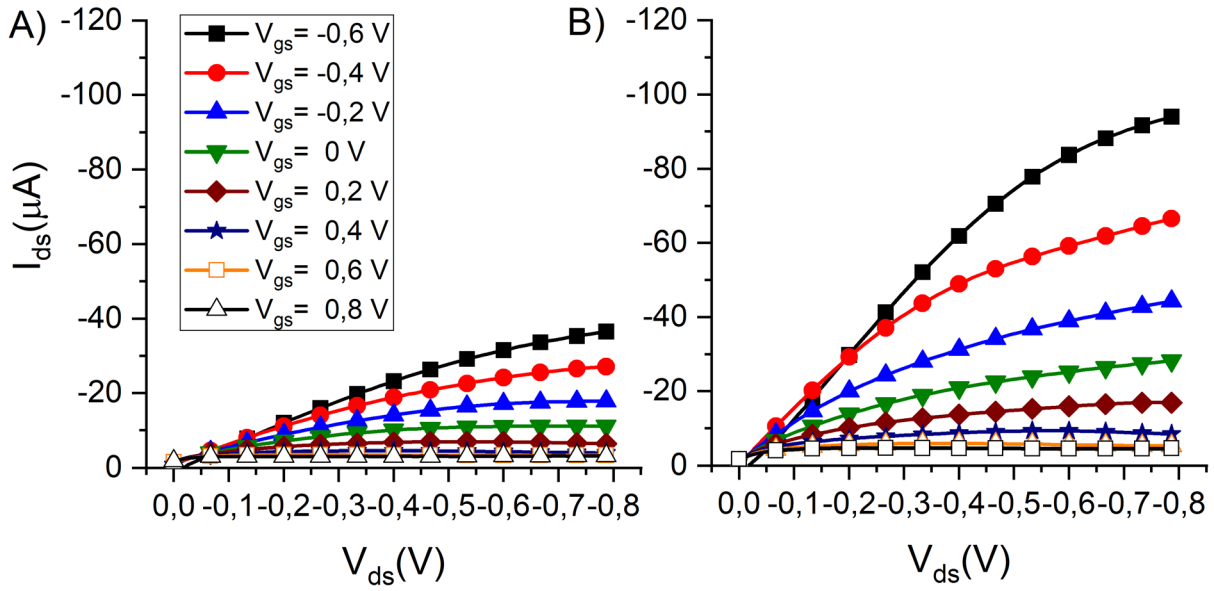

Figure S4. Output curves of the transistors prepared from Mixture A after 700 seconds (A) and 1000 seconds (B) of electrospinning.

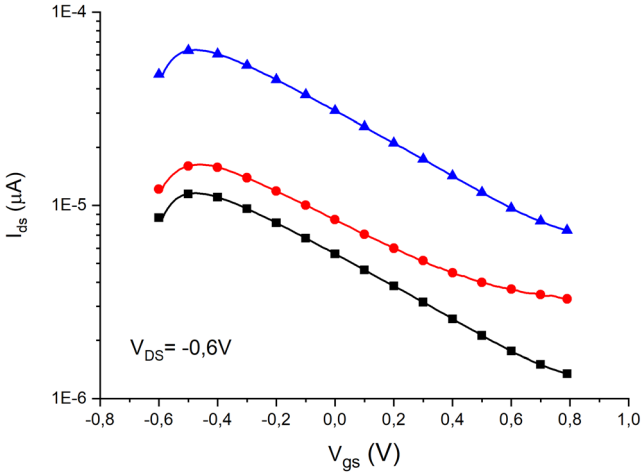

Figure S5. Transfer curves of the transistors prepared from Mixture A after 700 seconds (■), 1000 seconds (●), and 1500 seconds (▲) of electrospinning.

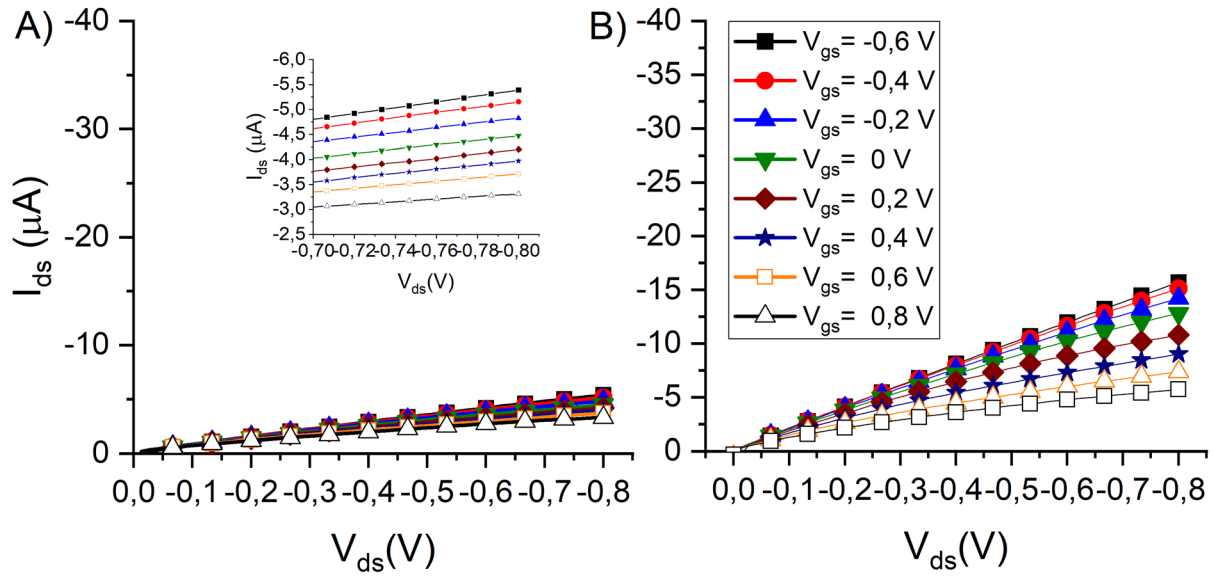

Figure S6. Output curves of the transistors prepared from Mixture B after 700 seconds (A) and 1000 seconds (B) of electrospinning.

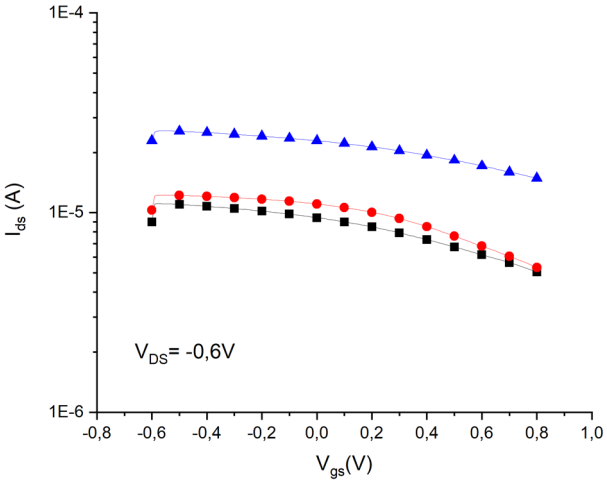

Figure S7. Transfer curves of the transistors prepared from Mixture B after (■), 1000 seconds (●), and 1500 seconds (▲) of electrospinning.

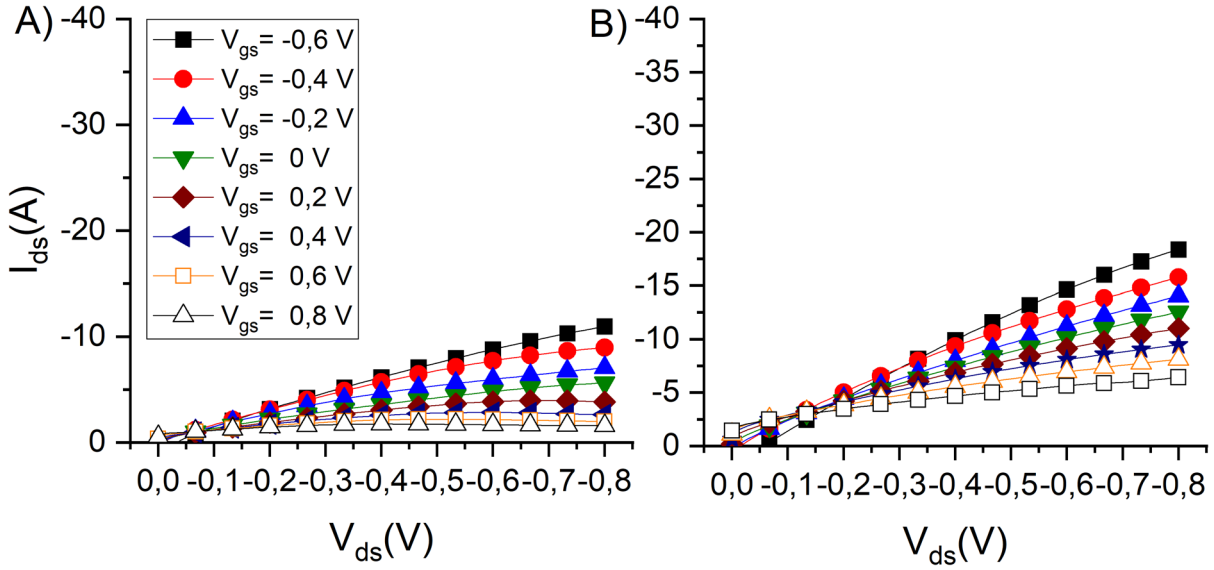

Figure S8. Output curves of the transistors prepared from Mixture C after 700 seconds (A) and 1000 seconds (B) of electrospinning.

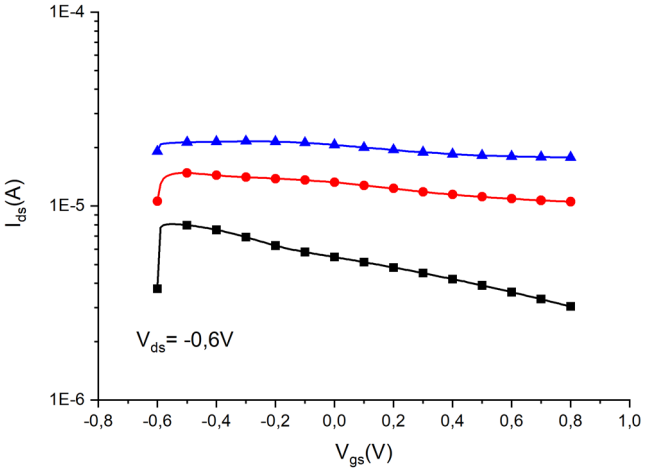

Figure S9. Transfer curves of the transistors prepared from Mixture C after (■), 1000 seconds (●), and 1500 seconds (▲) of electrospinning.

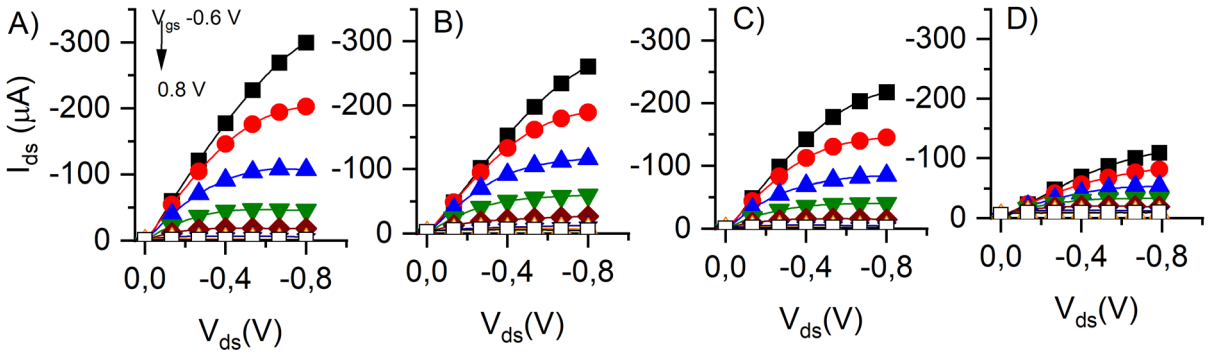

Figure S10. Output curves of the transistor prepared by electrospinning from Mixture A and stretched at 0% (A), 10% (B), 20% (C), and 30% (D) strain.

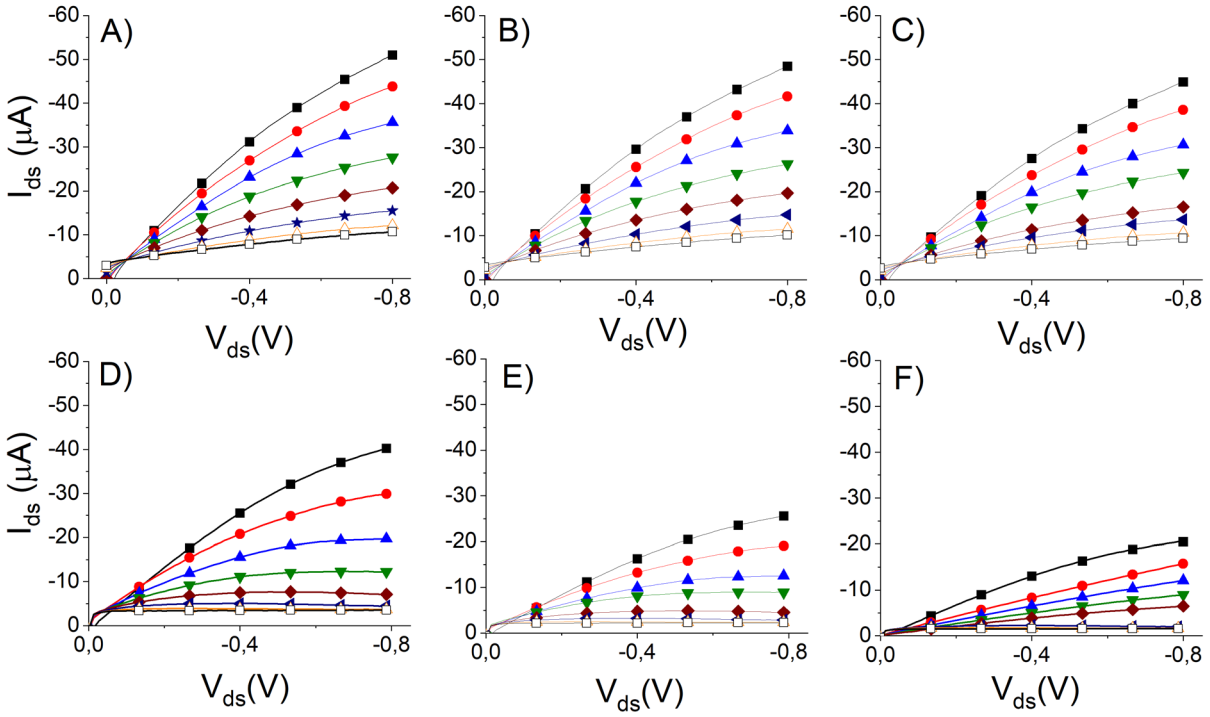

Figure S11. Output curves of the transistor prepared by electrospinning from Mixture B and stretched at 0% (A), 10% (B), 20% (C), 30% (D), 40% (E), and 50% (F) strain.