**Fig. S1** The interaction between PEDOT and PSS and the chain arrangement in doped and undoped PEDOT/PSS. (a) Columbic interaction between PEDOT/PSS and changes in chains upon doping with DMSO. (b) Van Der Waals interaction between PSSH and DMSO.

**Fig. S2** Chemical interaction/bonding between PEDOT/PSS and PES fabric.

**Fig. S3** Illustration of PEDOT: PSS grains formation upon doping with DMSO; (a) Segregation of PSS shells, (b) cohesion between PEDOT grains and (c) coil to linear formation of PEDOT/PSS chains.

**Table S1** Conductivity values of PEDOT/PSS/DMSO in 30 washing cycles

|  |  |
| --- | --- |
| **Washing cycle** | **Conductivity (S cm−1)** |
| 0 | 8.44 ± 0.21 × 10−3 |
| 1 | 8.14 ± 0.18 × 10−3 |
| 2 | 6.70 ± 0.21 × 10−3 |
| 3 | 3.09 ± 0.04 × 10−3 |
| 4 | 1.33 ± 0.22 × 10−3 |
| 5 | 8.21 ± 0.02 × 10−4 |
| 6 | 7.62 ± 0.04 × 10−4 |
| 7 | 7.34 ± 0.22 × 10−4 |
| 8 | 6.93± 0.12 × 10−4 |
| 9 | 6.22± 0.21 × 10−4 |
| 10 | 6.76± 0.21 × 10−4 |
| 11 | 6.32 ± 0.18 × 10−4 |
| 12 | 6.31 ± 0.19 × 10−4 |
| 13 | 6.24 ± 0.05 × 10−4 |
| 14 | 6.01 ± 0.05 × 10−4 |
| 15 | 6.10 ± 0.05 × 10−4 |
| 16 | 5.90 ± 0.06 × 10−4 |
| 17 | 5.92 ± 0.05 × 10−4 |
| 18 | 5.88 ± 0.05 × 10−4 |
| 19 | 5.81 ± 0.05 × 10−4 |
| 20 | 5.79 ± 0.05 × 10−4 |
| 21 | 5.77 ± 0.04 × 10−4 |
| 22 | 5.78 ± 0.05 × 10−4 |
| 23 | 5.51 ± 0.05 × 10−4 |
| 24 | 5.67 ± 0.05 × 10−4 |
| 25 | 5.66 ± 0.05 × 10−4 |
| 26 | 5.66 ± 0.01 × 10−4 |
| 27 | 5.65 ± 0.01 × 10−4 |
| 28 | 5.65 ± 0.03 × 10−4 |
| 29 | 5.64 ± 0.01 × 10−4 |
| 30 | 5.65 ± 0.01 × 10−4 |