Supporting Information

**Novel core/shell CoSe$_2$@PPy nanoflowers for high-performance fiber asymmetric supercapacitors**

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*Figure S1.(a-c) The diameters of CoSe$_2$@PPy-90, EACF and the as-fabricated ASC, respectively.*
There are two major peaks at binding energies of 779.92 and 795.3 eV with a spin-energy separation of 15.38 eV in the XPS spectra of Figure S1a. The two peaks could be assigned to Co 2p\(_{3/2}\) and Co 2p\(_{1/2}\), respectively, which demonstrates the presence of a Co\(_3\)O\(_4\) phase. Furthermore, the fitting peaks at 781.5 and 796.3 eV are indexed to Co\(^{2+}\), whereas the peaks at 779.9 and 794.9 eV correspond to Co\(^{3+}\).\(^{1-2}\) In the O1s XPS spectra (Figure S1b), the peaks with binding energies of 530.03 and 531.37 eV correspond to the lattice oxygen of spinel Co\(_3\)O\(_4\) and the OH species absorbed onto the surface of the obtained microstructure. The peak at 532.87 eV can be ascribed to multiplicity of physical absorbed and chemisorbed water near the surface.\(^1\)
Figure S4. Electrochemical properties of CoSe$_2$@PPy-n (n=30, 60, 150 and 200).

Figure S5. Electrochemical properties of CoSe$_2$/Ti fiber.

Figure S6. Electrochemical properties of PPy on Ti fiber when polymerization for 90 s.
Figure S7. The SEM images for CoSe$_2$@PPy-n (n=30, 150, 200), respectively.

Figure S8. Comparison of CV curves for CoSe$_2$, PPy-90 and CoSe$_2$@PPy-90 electrode at scan rate of 30 mV s$^{-1}$.

Figure S9. Cycle performance of CoSe$_2$@PPy electrode at current of 0.6 mA up to 6,000 cycles.
Figure S10. TEM image of pure CF.

Figure 11. N\textsubscript{2} adoption and desorption isotherms curves of (a) pure CF and (b) EACF.

Figure S12. Electrochemical properties of EACF electrodes in mixed HNO\textsubscript{3}:H\textsubscript{2}SO\textsubscript{4} (1:1) for 10 min under different potentials: (a-b) 2 V, (c-d) 3 V, (e-f) 3.5 V, (g-h) 4 V.

Figure S13. Electrochemical properties of EACF electrodes under 3.5 V for 10 min in different ratio of HNO\textsubscript{3}:H\textsubscript{2}SO\textsubscript{4}: (a-b) 1:2, (c-d) 1:1, (e-f) 2:1, (g-h) 3:1.
Figure S14. Electrochemical properties of EACF electrodes in mixed HNO₃:H₂SO₄ (2:1) for different time under 3.5 V: (a-b) 2 min, (c-d) 5 min, (e-f) 10 min, (g-h) 30 min.

Figure S15. XPS for CF activated in different conditions: (a) survey spectra, (b) O 1s core level spectra, (c) C 1s core level spectra.

Figure S16. EIS comparison for ASC and SSC device.
Figure S17. Electrochemical performance of CoSe$_2$@PPy-90 SSC: (a) CV curves, (b) galvanostatic charge/discharge curves.

Figure S18. (a) The ASC device bent for different angels. (b) GCD curves and (c) capacitance retention under different bending angles for ASC device.
Figure S19. CV curves of the ASC device connected in series and/or in parallel at scan rate of 30 mV s⁻¹.

<table>
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<tr>
<th>Sample/cm</th>
<th>EACF</th>
<th>Ti@CoSe₂</th>
<th>Ti@CoSe₂@PPy</th>
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<tr>
<td>Mass/g</td>
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<td>0.00344</td>
<td>0.00375</td>
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<tr>
<td>30 s</td>
<td>0.00381</td>
<td>0.00409</td>
<td>0.00431</td>
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<td>0.00381</td>
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Table S1. The mass of samples.

Reference