Supporting Information For

Polypyrrole/cellulose nanofibers aerogel as supercapacitors electrode material

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Characterization of cellulose nanofiers

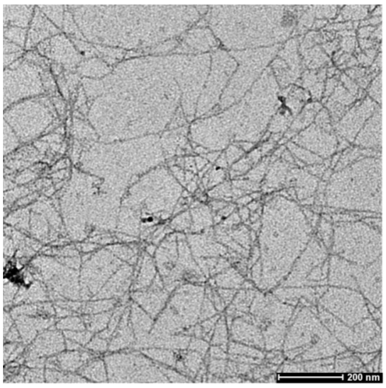

Fig.S1 TEM image of cellulose nanofiber samples

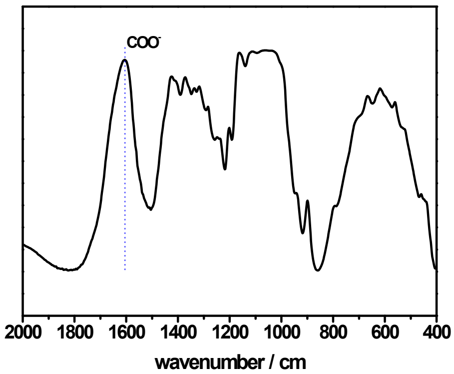

Fig.S2 FT-IR spectra of cellulose nanofiber samples

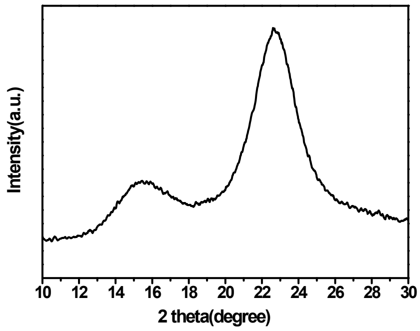

Fig.S3 XRD spectra of cellulose nanofiber samples

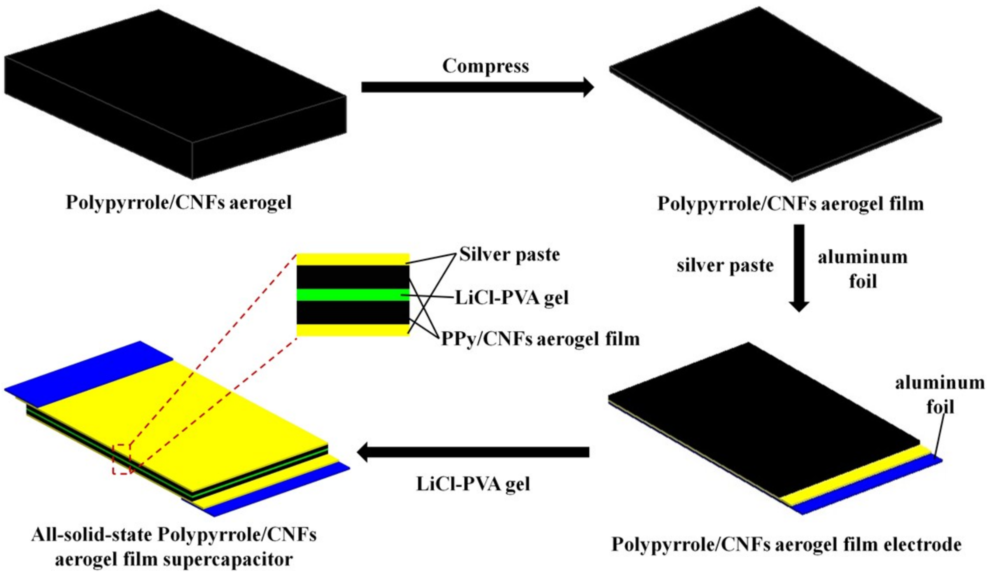

Fig.S4 Schematic diagram for the preparation of all solid-state supercapacitors.

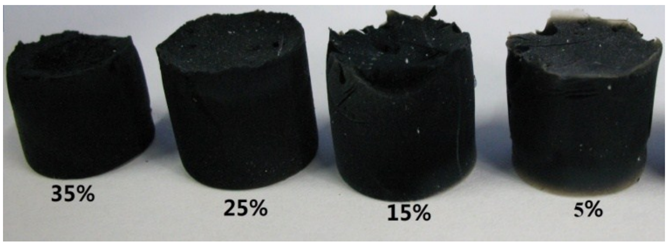

Fig.S5 Photograph of Polypyrrole/CNFs aerogel

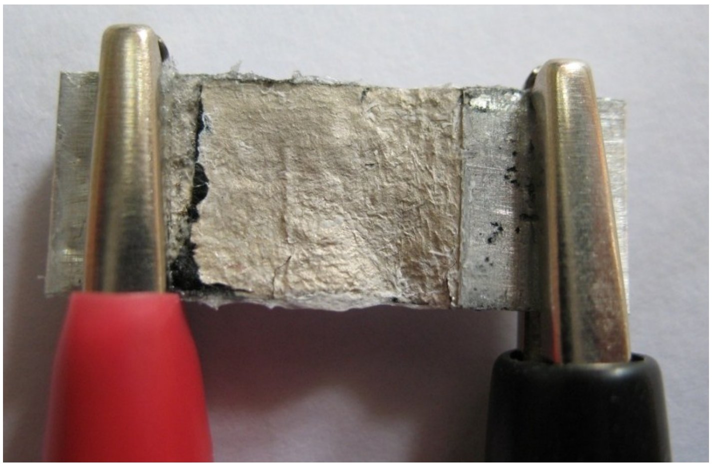

Fig.S6 Photograph of F-SC-25%

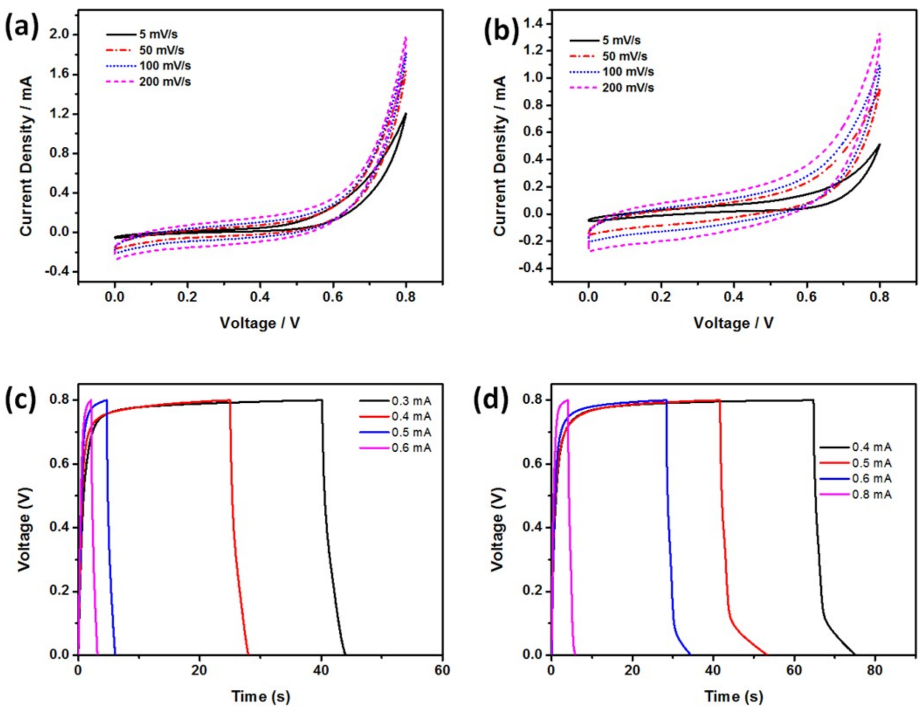

Fig. S7 CV curves of F-SC-5% (a), F-SC-15% (b) device at different scan rates. Galvanostatic charge-discharge curves of F-SC-5% (c), and F-SC-15%(c) at different current densities.

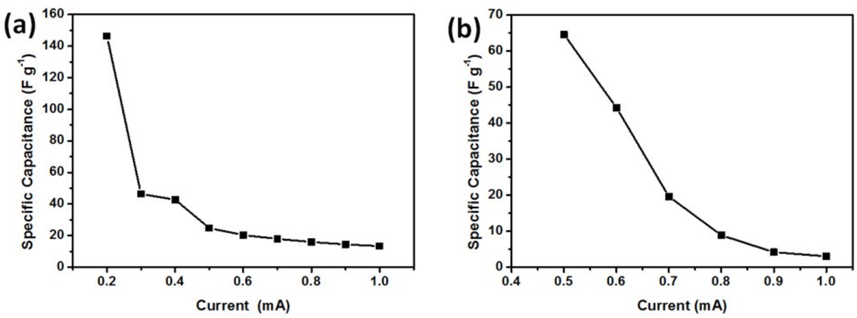

Fig. S8 The Specific capacitance of F-SC-5% (a), F-SC-15% (b) at different current.

The CV curves of F-SC-5% and F-SC-15% at different scan rates are shown in the Fig. S7a and S7b. It can be clearly seen that all the CV curves of F-SC-5%, and F-SC-15% exhibit a relatively large deformation. Furthermore, Galvanostatic charging and discharging curves of F-SC-5% and F-SC-15% at differently current densities are shown in the Fig. S7c and S7d. All charging and discharging curves show a severely deformed triangle, indicating not well capacitive behavior of F-SC-5% and F-SC-15%. This may be because the poor electrical conductivity of PPy/CNFs aerogel film (5%, and 15%) due to the lower PPy content. The maximum specific capacitance of F-SC-5%, and F-SC-5%, which can be measured by us, are about 146 F g^{-1} (0.2 mA), and 65 F g^{-1} (0.5 mA) (Fig. S8), respectively. So, The electrochemical performance of F-SC-5% and F-SC-15% is obviously inferior to that of F-SC-25% and F-SC-35%. Therefore, The next research will focus on the electrochemical properties of F-SC-25% and F-SC-35%.

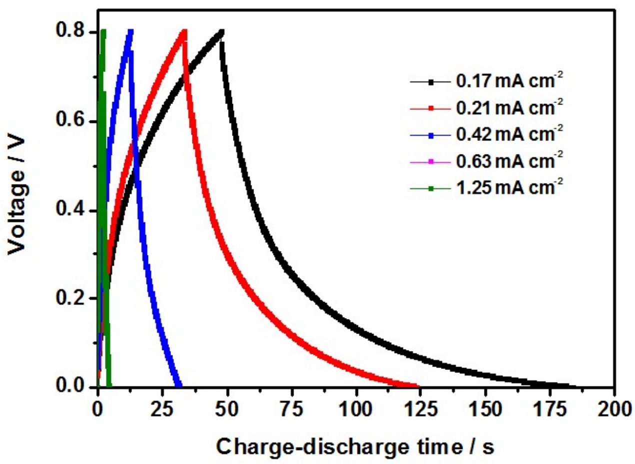

Fig.S9 Typical galvanostatic charge-discharge curves of F-SC-25% at different current densities.

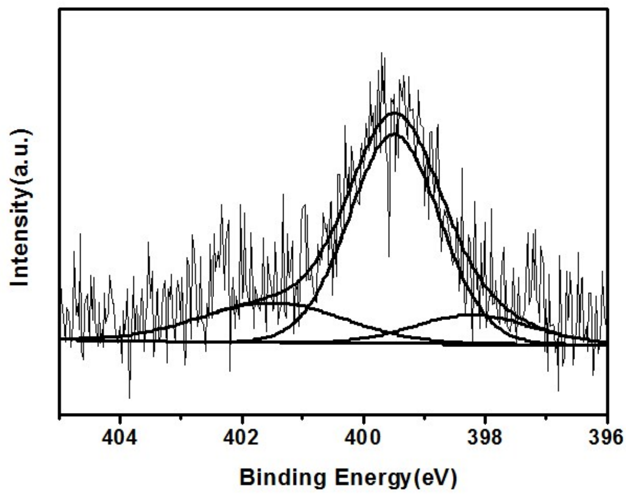

Fig.S10 N 1s XPS spectrum of PPy/CNFs (35%) aerogel

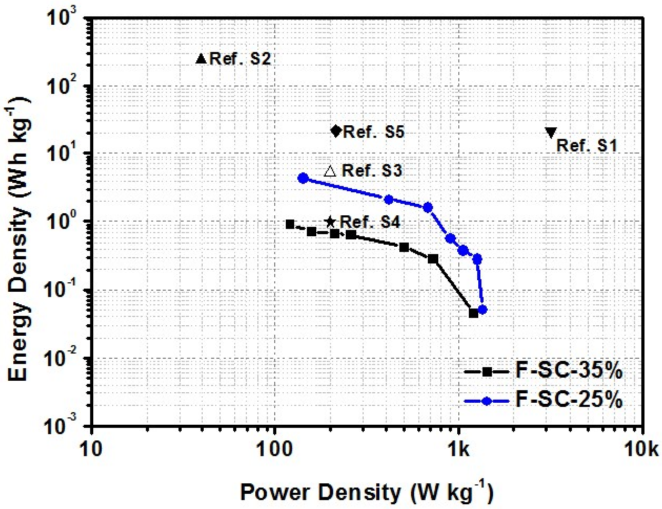

Fig.S11 Ragone plots of the F-SC-25%, and the F-SC-35% in comparison with some reported supercapacitors.

References

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