Supporting Information

A novel metal-free ternary core-shell carbon sphere/C_3N_4/PPy nanocomposite for high-performance supercapacitor

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Electrochemical measurements

The electrochemical measurements were tested by using an electrochemical workstation (CHI660E, CH Instruments, Shanghai, China) in 6.0 M KOH aqueous solution at room temperature.

The working electrode was prepared by mixing the electroactive material, carbon black (super-P-Li) and polymer binder (polyvinylidene difluoride, PTFE) in a weight ratio of 80:10:10. The slurry was pressed onto Ni foam and dried at 120°C for 10 h. The loading mass of electrode material is about 1-3 mg, and the loading amount was confirmed by elaborately weighing the changed weight of Ni foam. The electrochemical measurements were performed by using three electrodes assemble. In the three-electrode cell, the active material elec trodes were used as the working electrode, with Pt plate and silver/silver chloride (Ag/AgCl) as the counter and the reference electrode,respectively.

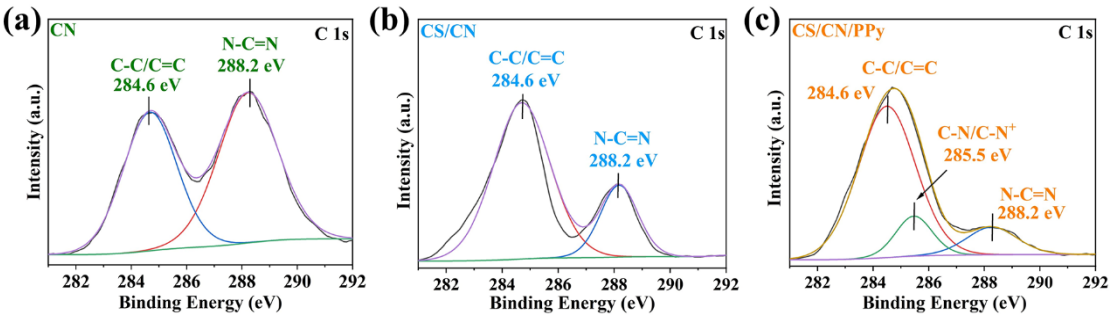

Fig. S1 C 1s XPS spectra of (a) CN, (b) CS/CN and (c) CS/CN/PPy.

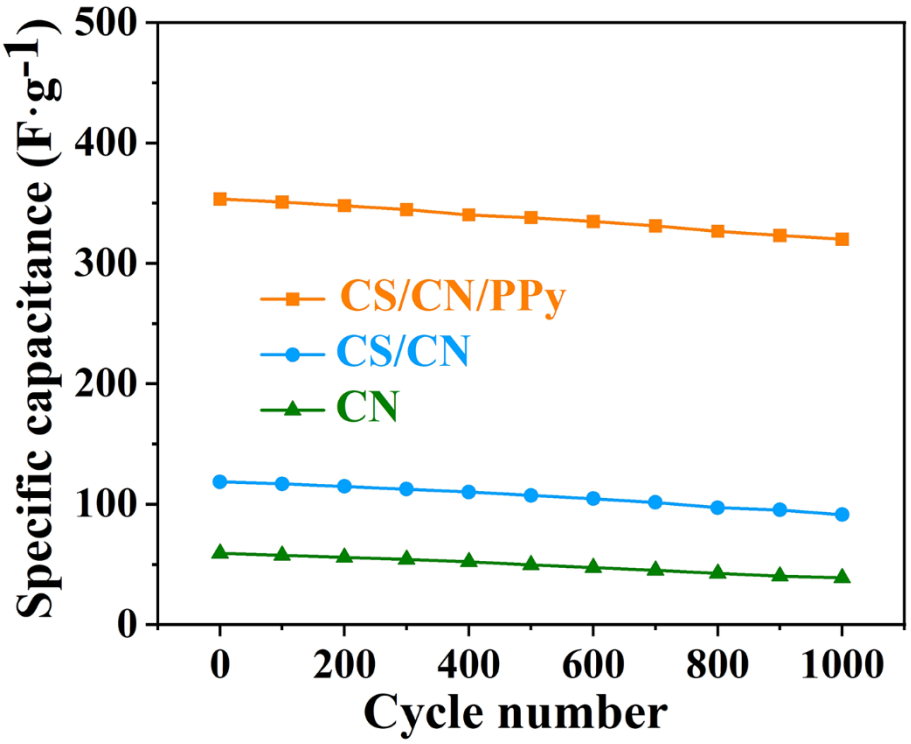

Fig. S2 The specific capacitance vs cycle number at current density of 1 $A \cdot g^{-1}$ of CN, CS/CN and CS/CN/PPy.

Table S1 The capacitance comparison of different g-C_3N_4 or PPy-based electrodes composite materials.

Samples	**Current density ($A \cdot g^{-1}$)**	**C_{sp} ($F \cdot g^{-1}$)**	**Ref**
CS/CN/PPy	1	353.4	This
MnO_2/g-C_3N_4@PPy	2	274	1
PCN@PPy-C-900	5	350	2
g-C_3N_4@G	1	264	3
Exfoliated bare C_3N_4	1	113.7	4
g-C_3N_4/PPy	1	471	5
GO/PPy	1	303	6
CNTs/PPy	1	282	7

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