Supporting Information

Phosphorus-doped Ni-Co sulfides connected by carbon nanotubes for flexible hybrid supercapacitor

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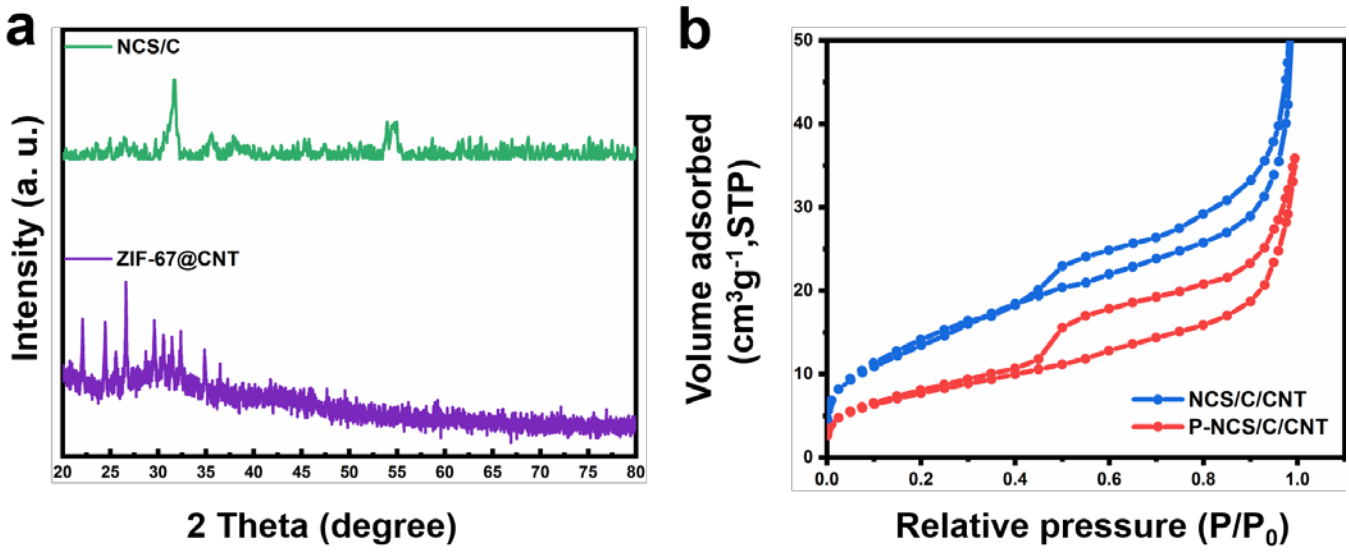

Figure S1 (a) XRD patterns of ZIF-67@CNT and NCS/C. (b) N_2 adsorption-desorption curves of NCS/C/CNT and P-NCS/C/CNT.

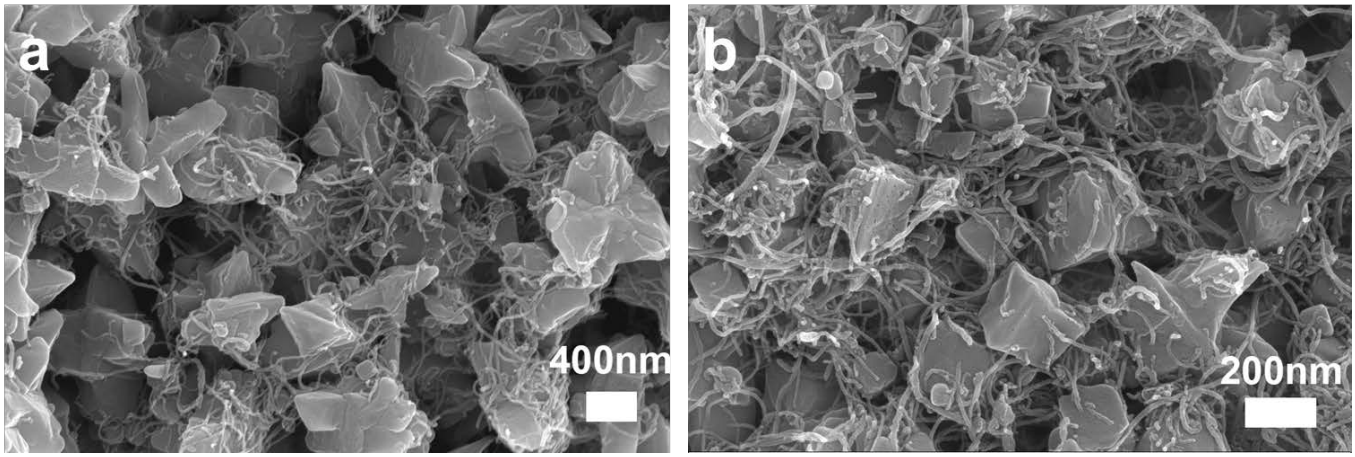

Figure S2 SEM images of (a) ZIF-67/15CNT, (b) ZIF-67/25CNT.

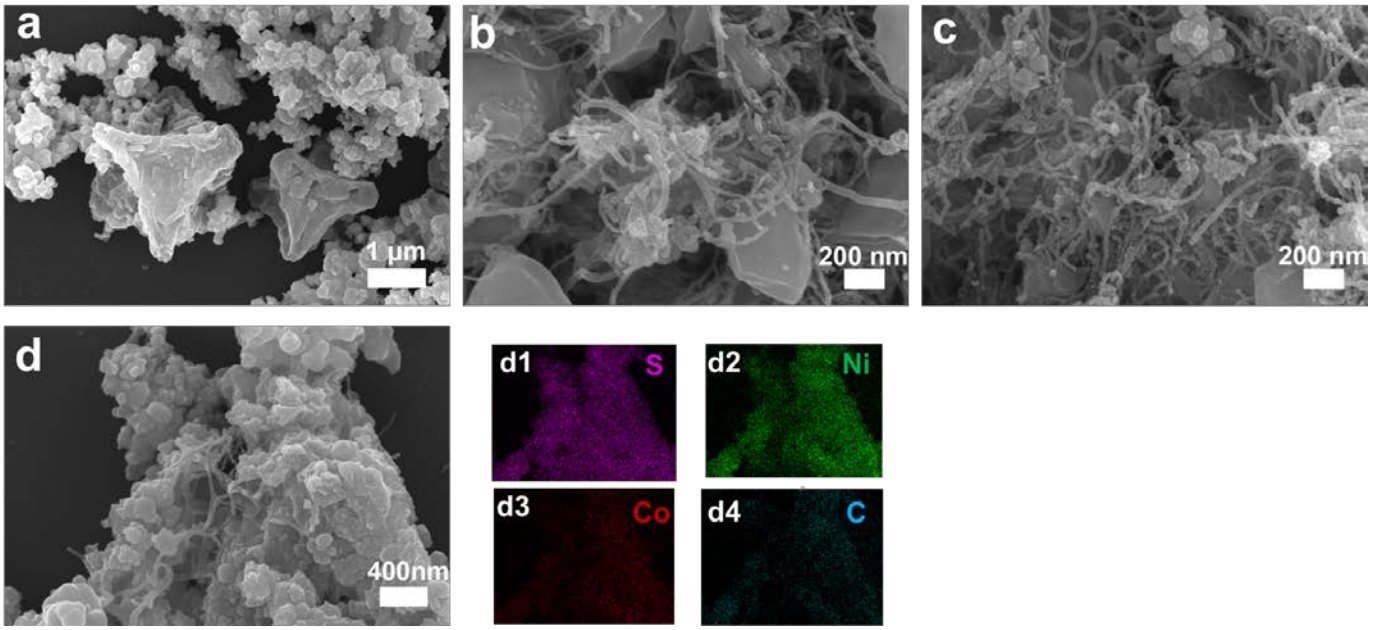

Figure S3 SEM images of (a) NCS/C, (b) NCS/C/15CNT, (c) NCS/C/25CNT, (d) NCS/C/CNT. Corresponding (d1) S, (d2) Ni, (d3) Co, and (d4) C elemental mapping of NCS/C/CNT.

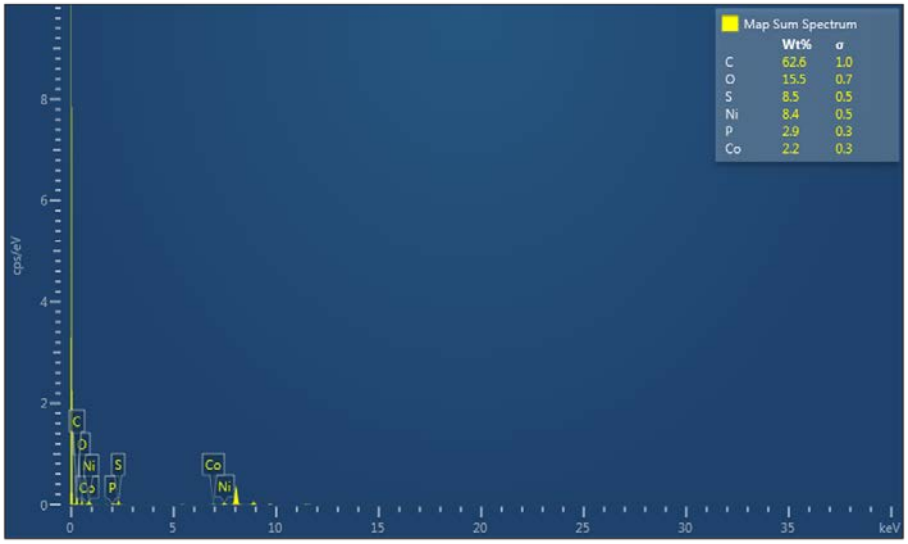

Figure S4 EDS spectrum and weight ratios of P-NCS/C/CNT.

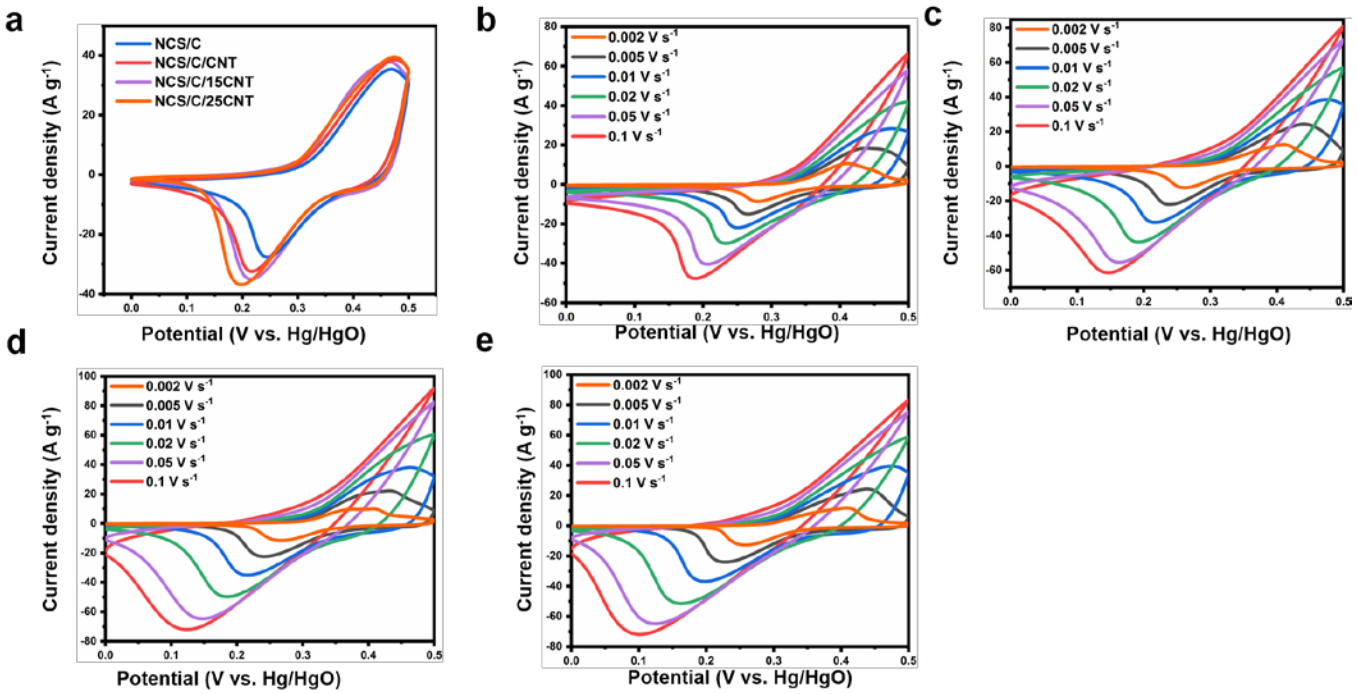

Figure S5 (a) CV curves at 10 mv s^{-1}, CV curves of (b) NCS/C, (c) NCS/C/CNT, (d) NCS/C/15CNT, and (e) NCS/C/25CNT at different scan rates.

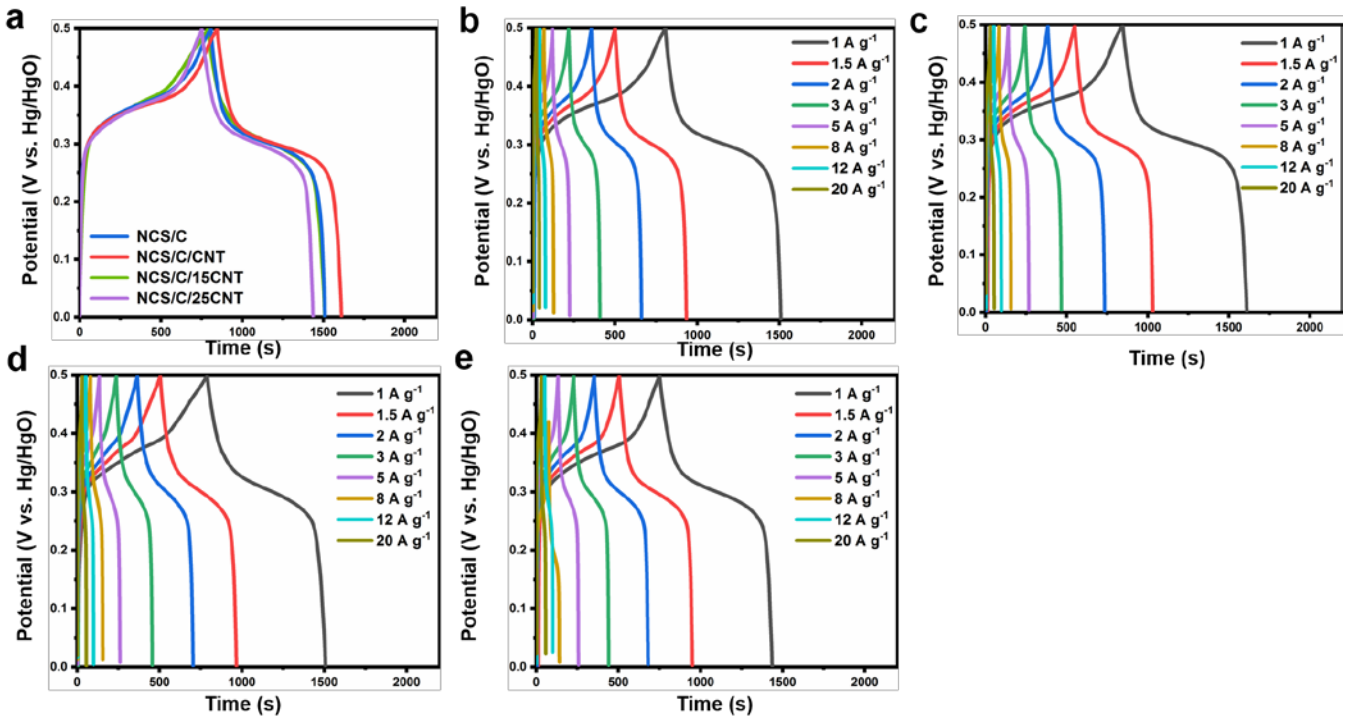

Figure S6 GCD curves at 1 A g^{-1}, GCD curves of (b) NCS/C, (c) NCS/C/CNT, (d) NCS/C/15CNT, and (e) NCS/C/25CNT at different current densities.

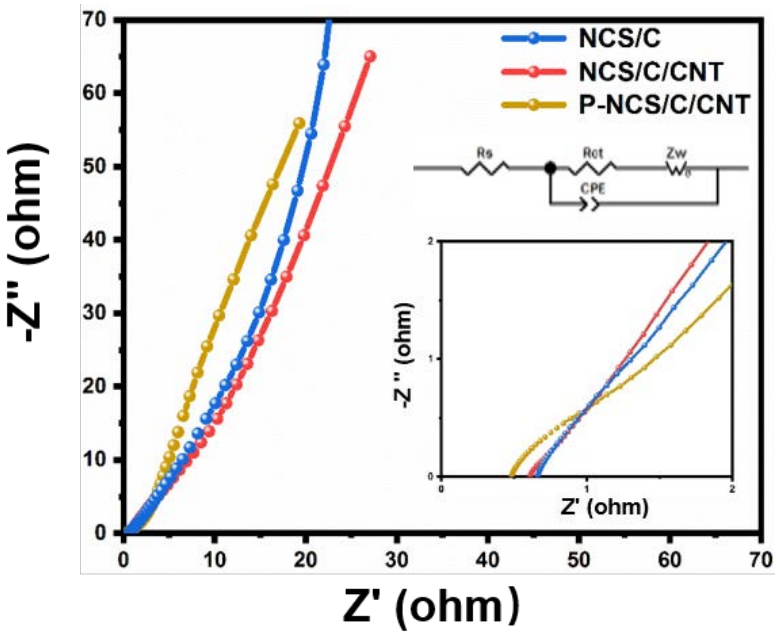

Figure S7 EIS spectra of NCS/C, NCS/C/CNT and P-NCS/C/CNT. (inset: equivalent circuit)

Table S1 Comparison of the specific capacities in this work and previously reported materials.

Name	Specific capacity at 1 A g^{-1} (C g^{-1})	Year	Reference
P-NCS/C/CNT	932.0	-	This work
NCPS@C@G	698.6	2021	Previous work (1)
NCS@MCMB	468	2019	(2)
C-$NiCo_2S_4$	688.8	2018	(3)
EC@$NiCo_2S_4$	627.5	2019	(4)
NiCoP/NiCo-OH			
30	550	2018	(5)
Ni−Co−S-n/NC	543.9	2019	(6)
O-NiCoP	621	2021	(7)
NiCoP	658.5	2021	(8)
Ni-Co-P	653	2020	(9)

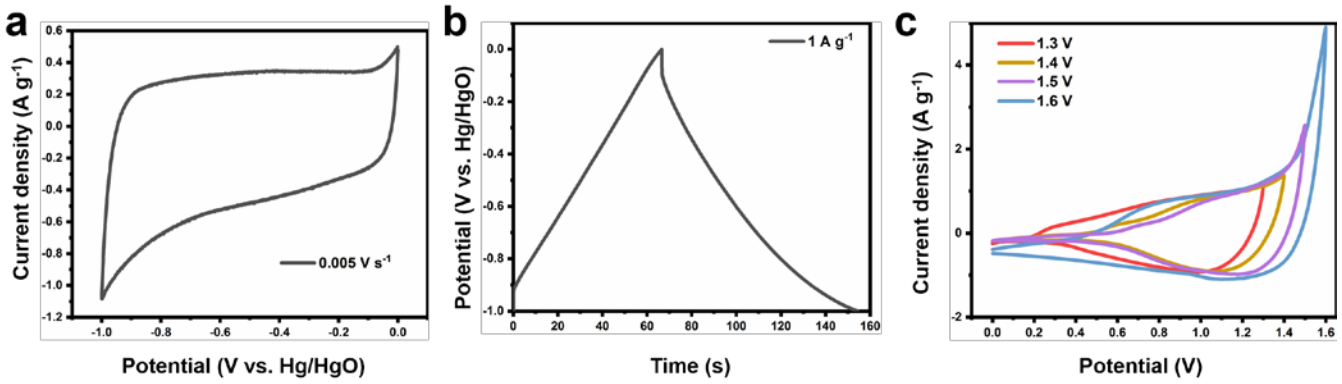

Figure S8 (a) CV and (b) GCD curves of active carbon. (c) CV curves of P-NCS/C/CNT//AC hybrid supercapacitor at different voltages at 10 mV s^{-1}.

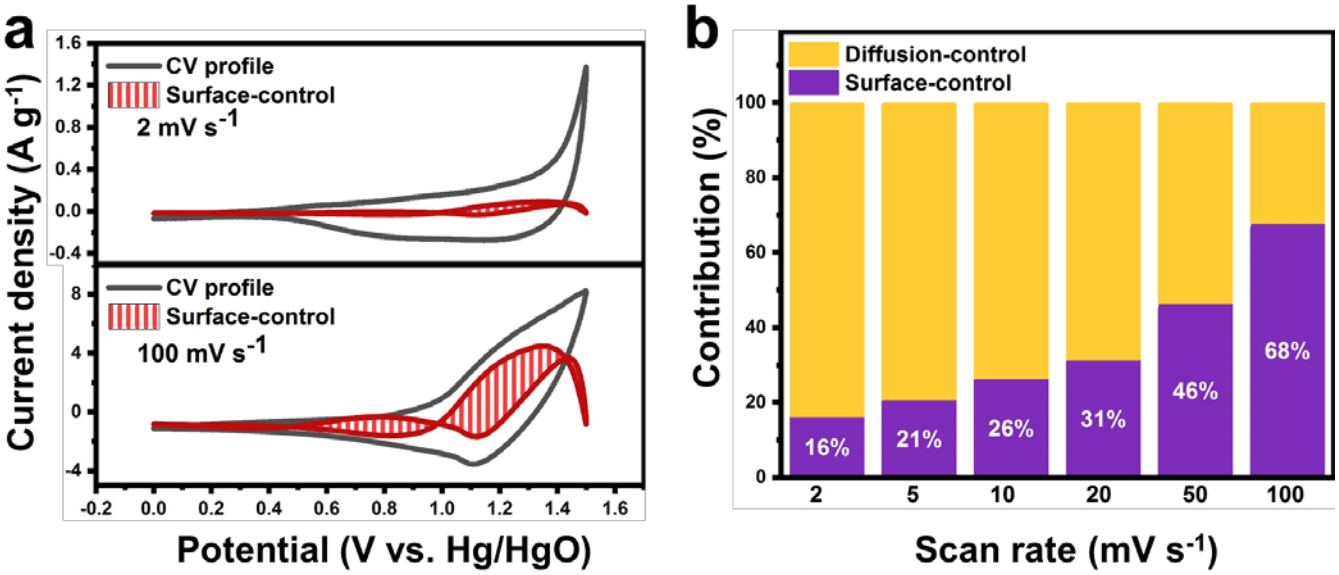

Figure S9 P-NCS/C/CNT//AC hybrid supercapacitor: (a) CV analysis showing the capacitive contribution, (b) Normalized contribution ratios of capacitive capacity at different scan rates.

References

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