Supporting Information

A novel catalyst derived from Co-ZIFs to grow N-doped Carbon nanotubes for all-solid-state supercapacitors with high performance

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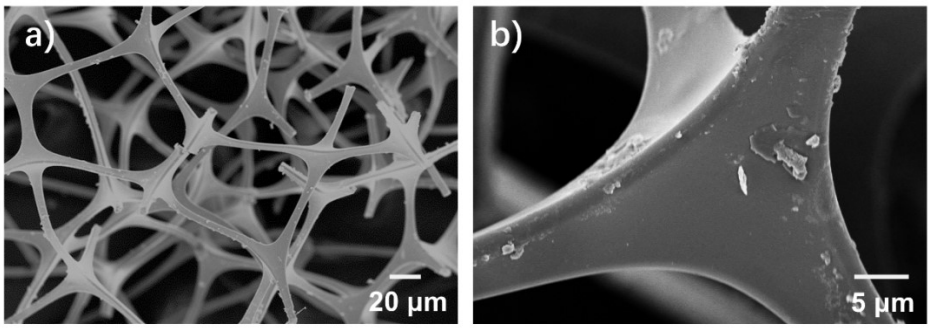

Fig. S1. FESEM images of MF with different magnifications.

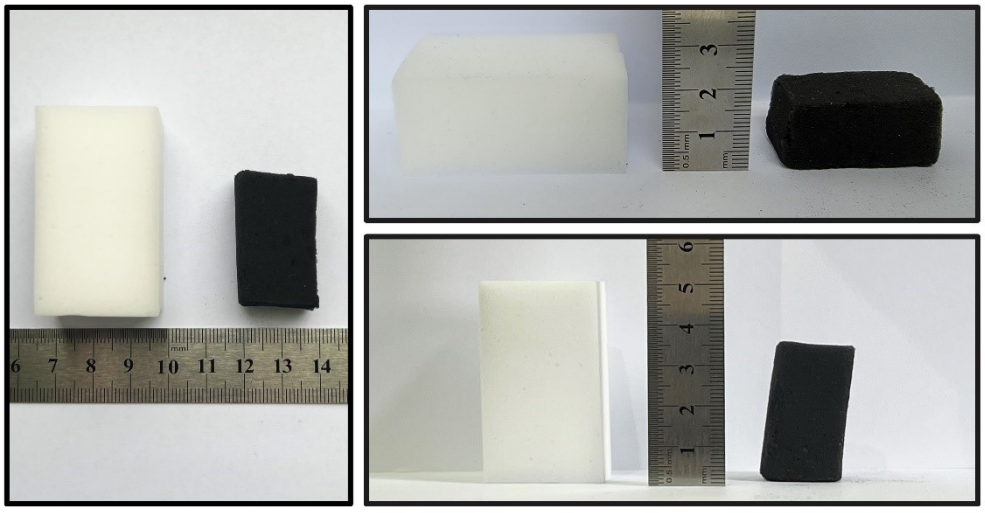

Fig. S2. Digital photographs of MF and CF from different views.

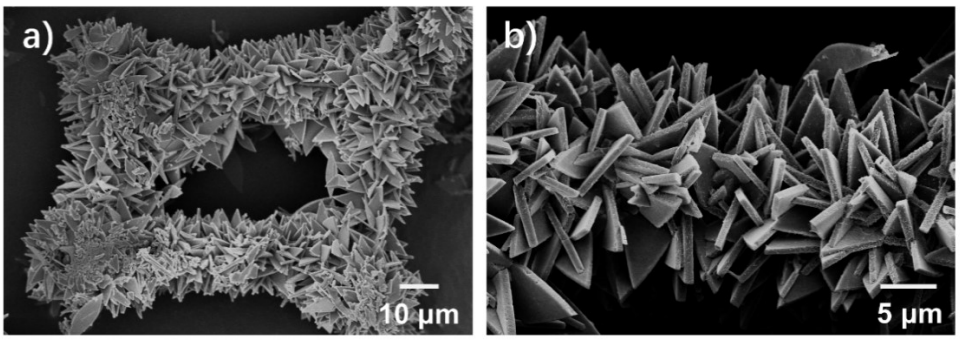

Fig. S3. FESEM images of ZIFs/CF hybrid with different magnifications.

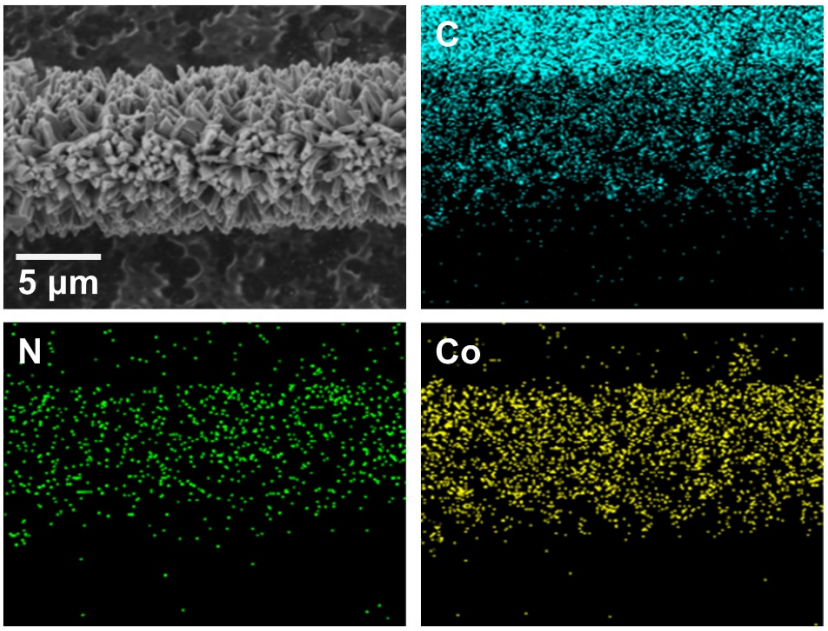

Fig. S4. EDX mapping of Co-ZIFs/CF hybrid.

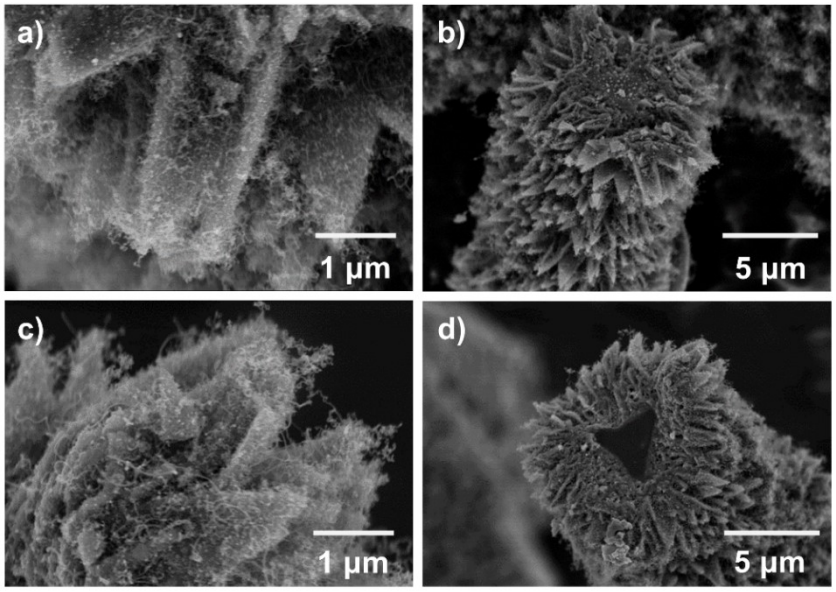

Fig. S5. FESEM images of CNTs/CF hybrids with different ratio of H_2 and C_2H_4. (a, b) 2:1 and (c, d) 1:1.

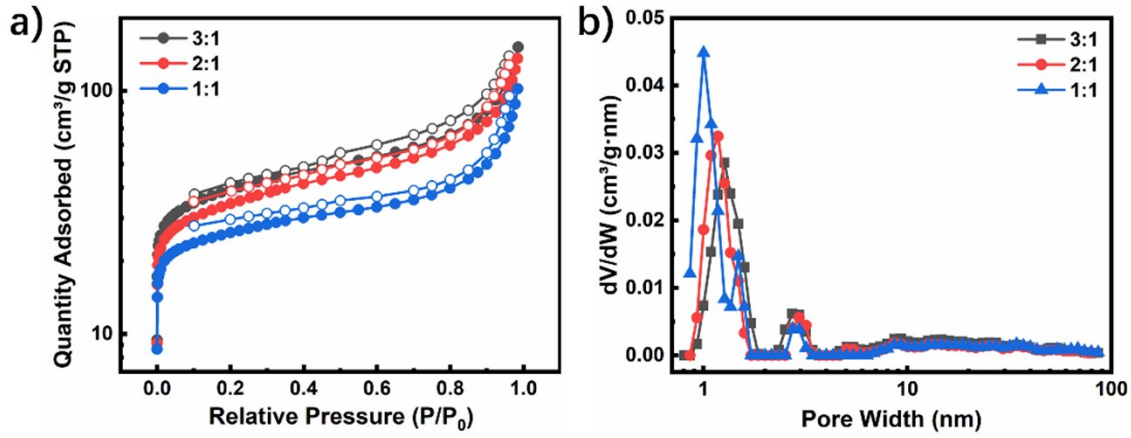

Fig. S6. (a) N_2 adsorption-desorption isotherm at 77 K and (b) pore size distribution of CNTs/CF hybrids with different ratio of H_2 and C_2H_4.

Table S1 Main Structural Properties Calculated from N_2 Adsorption-Desorption Analysis of CNTs/CF hybrids with different ratio of H_2 and C_2H_4.

Sample	S_{bet}（m^2/g）	Pore volume (cm^3/g)	Pore Size (nm)
3:1	141.1	0.208	9.97
2:1	122.4	0.189	9.70
1:1	94.7	0.135	12.51

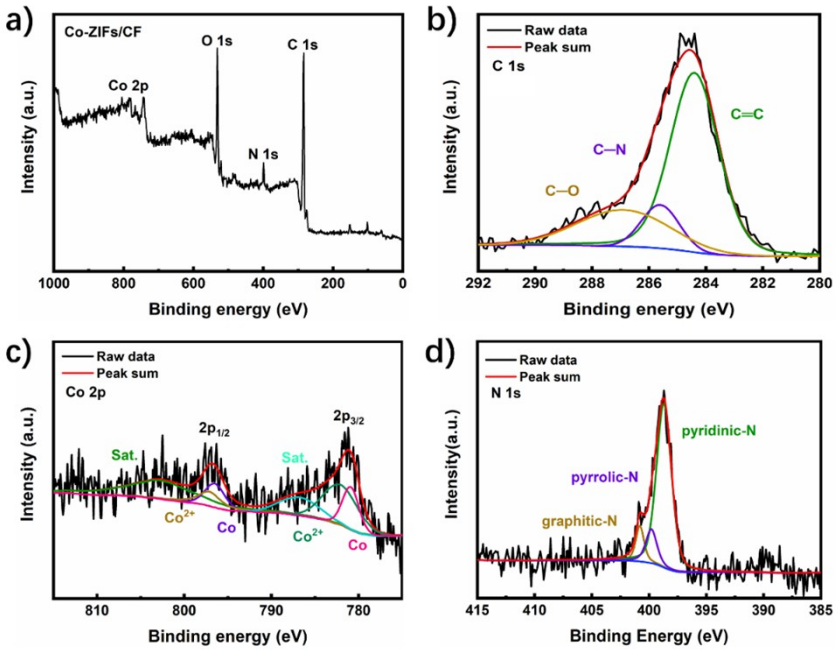

Fig. S7. (a) XPS and high-resolution (b) C 1s, (c) Co 2p and (d) N 1s of Co-ZIFs/CF hybrid.

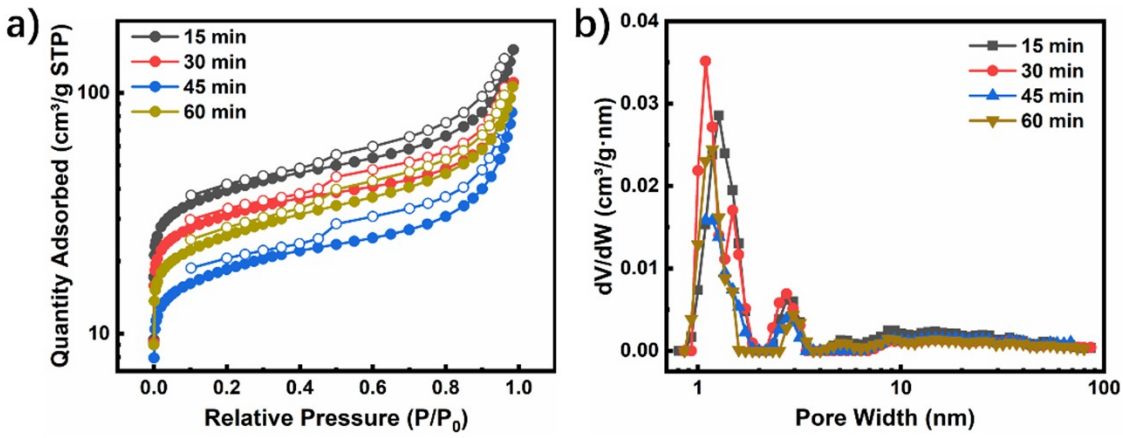

Fig. S8. (a) N_2 adsorption-desorption isotherm at 77 K and (b) pore size distribution of CNTs/CF hybrids with different growth time.

Table S2 Main Structural Properties Calculated from N_2 Adsorption-Desorption Analysis of CNTs/CF hybrids with different growth time.

Sample	S_{bet} (m^2/g)	Pore volume (cm^3/g)	Pore Size (nm)
15 min	141.1	0.208	9.97
30 min	111.6	0.148	9.77
45 min	66.3	0.117	11.59
60 min	102.1	0.150	9.63

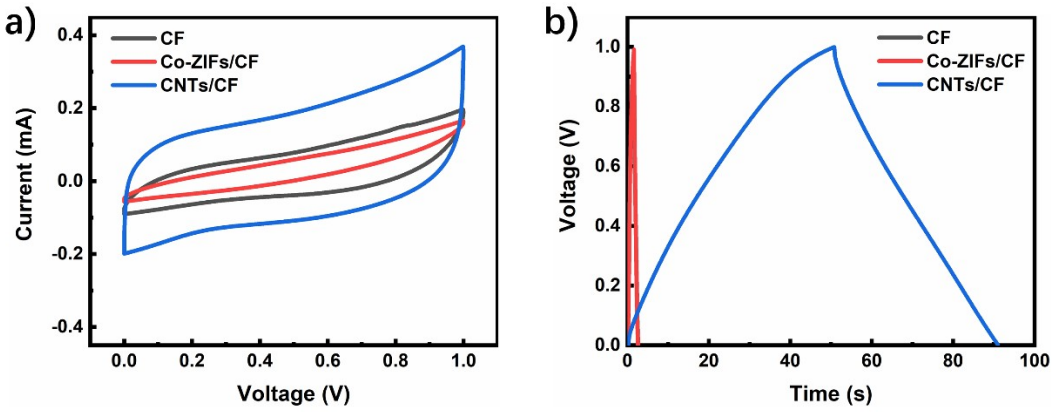

Fig. S9. (a) CV curves (at 20 mV/s) and (b) GCD curves (at a current density of 0.5 mA/cm^2) of the supercapacitors based on CF, Co-ZIFs/CF and CNTs/CF.

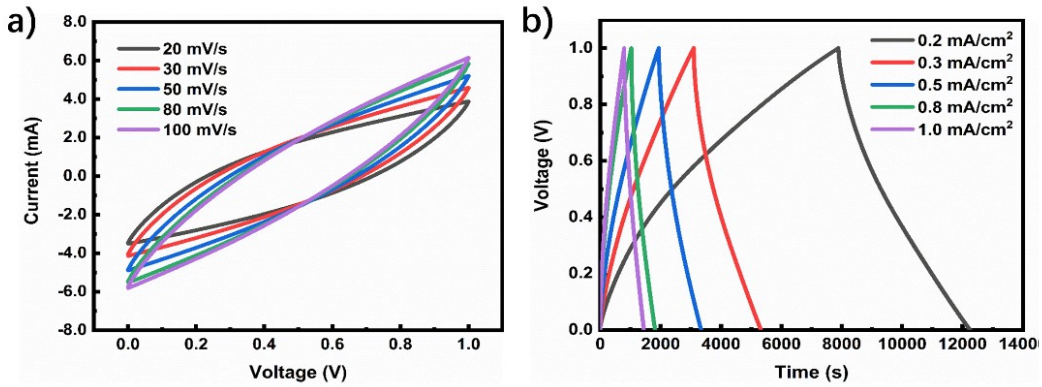

Fig. S10. (a) CV curves (at 20, 30, 50, 80 and 100 mV/s) and (b) GCD curves (at a current density of 0.2, 0.3, 0.5, 0.8 and 1.0 mA/cm^2) of the supercapacitor based on MnO_2/CNTs/CF hybrid with the MnO_2 deposition time for 35 min.

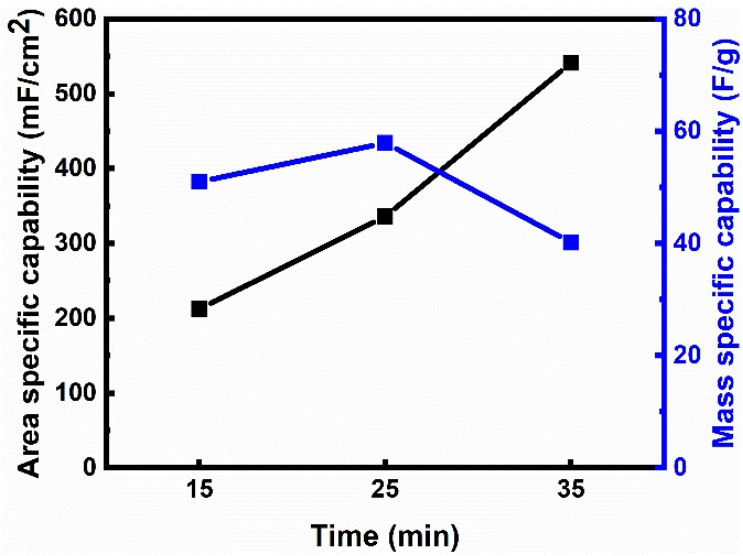

Fig. S11. Dependence of the specific capacitances of the supercapacitor based on MnO_2/CNTs/CF hybrid with different deposition time of MnO_2 at a charge-discharge current of 0.5 mA/cm^2.