Supporting information

Flexible All-solid-state Ultrahigh-energy Asymmetric Supercapacitors Based on Tailored Morphology of $NiCoO_2/Ni(OH)_2/Co(OH)_2$ Electrodes

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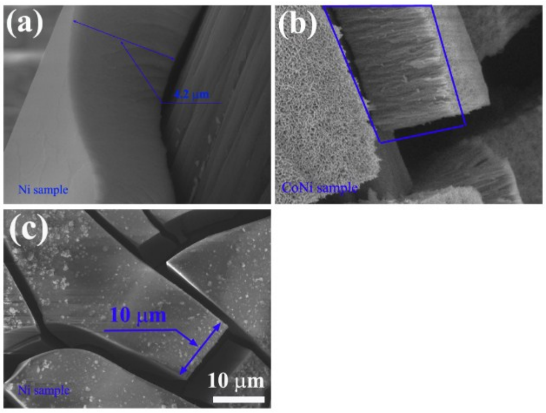

Fig. S1 (a) High and (c) low-magnification SEM images for Ni sample. (c) Enlarged-view SEM image of CoNi sample.

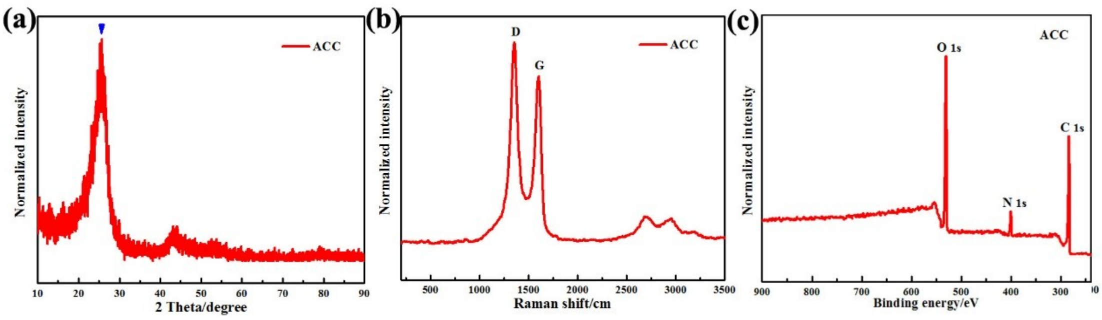

Fig. S2 (a) XRD pattern, (b) Raman spectrum and (c) XPS curve of active carbon cloth (ACC).

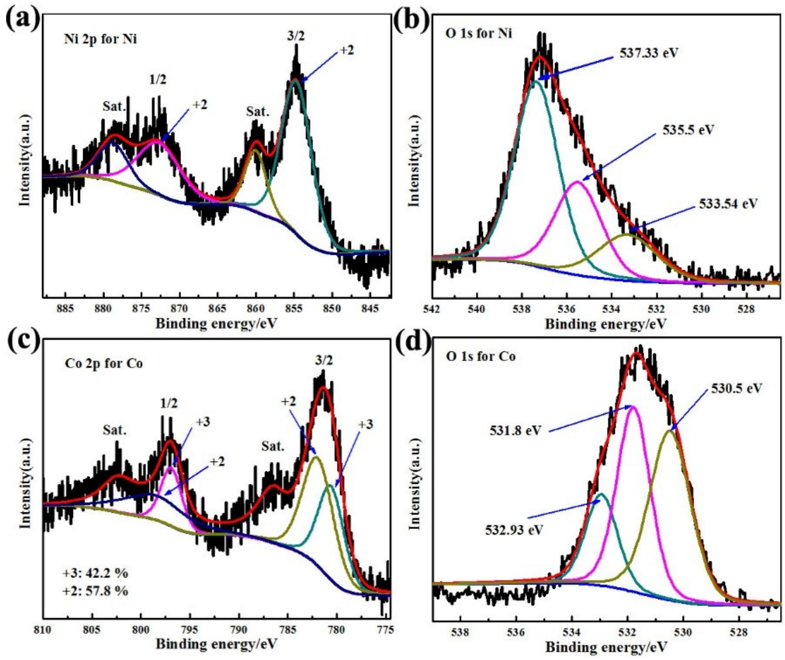

Fig. S3 (a) Ni 2p core-level spectrum and (b) O 1s core-level spectrum of sample Ni. (c) Co 2p core-level spectrum and (d) O 1s core-level spectrum of sample Co.

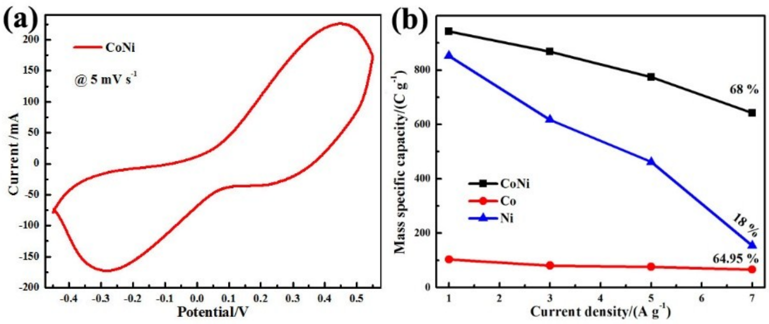

Fig. S4 (a) CV curve of sample CoNi at 5 mV s^{-1}. (b) Mass capacitance as a function of current density of different samples. Among various electrodes, CoNi electrode shows the best rate ability of ~ 68% compared to 18 % of Ni electrode and ~65 % of Co electrode.

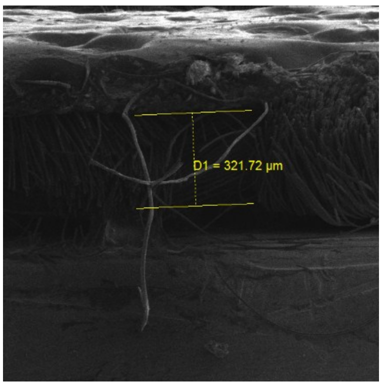

Fig. S5 Thickness of the as-prepared electrodes.

Table S1 Comparison of volumetric capacitance with reported literatures

Electrode materials	Volumetric capacitance/（F cm^{-3}）	Reference
Mxene/CNT paper	435	1
Graphene/porous carbon	376	2
T_3C_2Tx paper	442	3
MoS_2 nanosheet	700	4
$NiCoO_2/Ni(OH)_2/Co(OH)_2$	700	This work

Table S2 Resistances of different samples from EIS curves

	R_{SR}/Ω	R_{CT}/Ω	Angle at low frequency/°
Co sample	0.78	0.33	86
Ni sample	0.81	7.53	22
CoNi sample	1.02	0.32	66

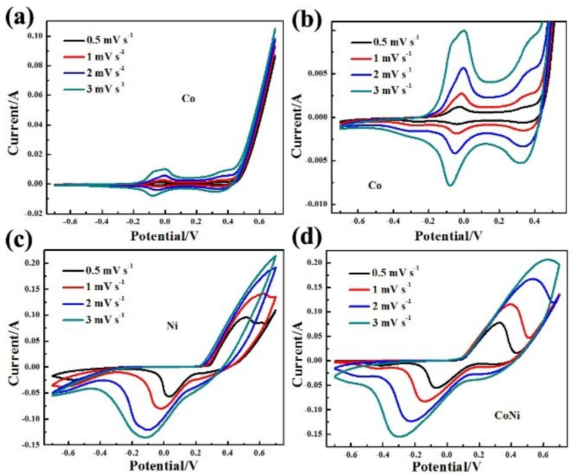

Fig. S6 CV curves of (a) and (b) sample Co, (c) sample Ni and (d) sample CoNi.

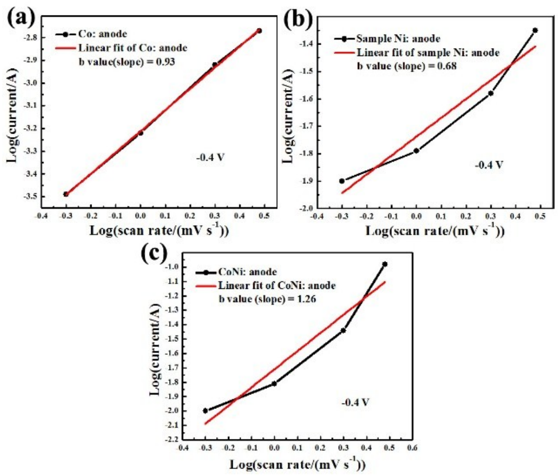

Fig.S7 The linear dependence of log current on log sweep rate (based on Equation (10)) for (a) sample Co, (b) sample Ni and (c) sample CoNi at -0.4 V during the correspondingly anodic CV processes.

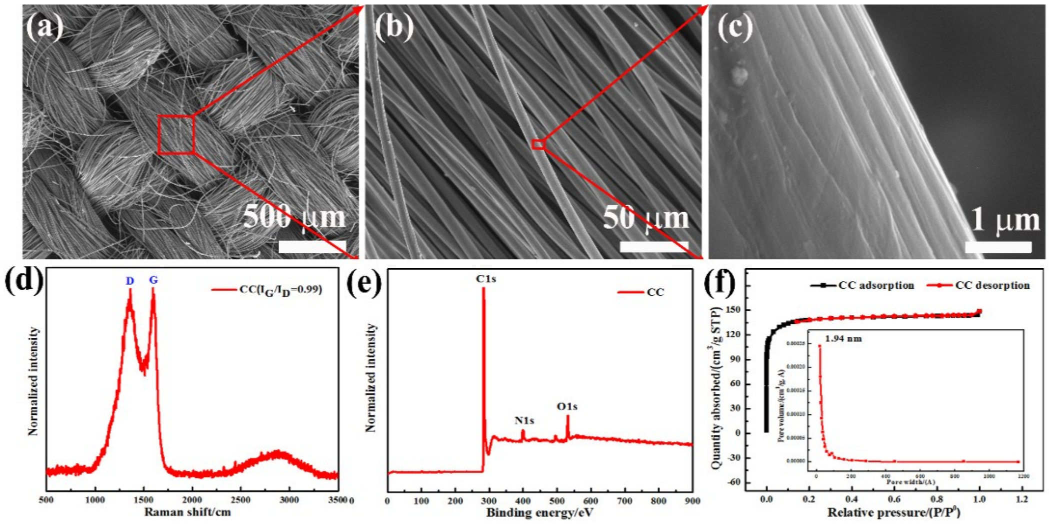

Fig. S6 (a-c) SEM images of carbon cloth with large surface area (CC). The corresponding (d) Raman spectrum, (e) XPS full pattern and (f) Nitrogen adsorption/desorption isotherm curve, inset: pore size distribution spectrum.

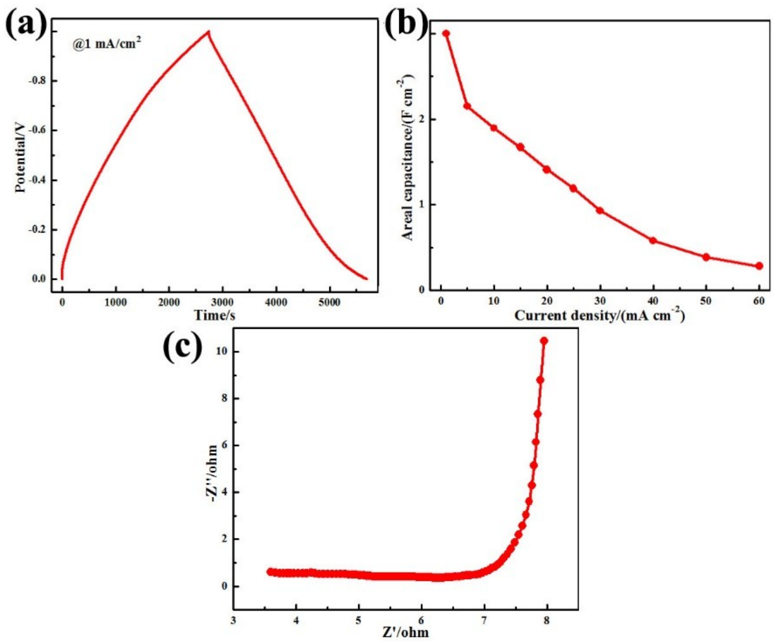

Fig. S7 (a) GCD curve, (b) rate ability and (c) Nyquist plots of CC as negative electrode.

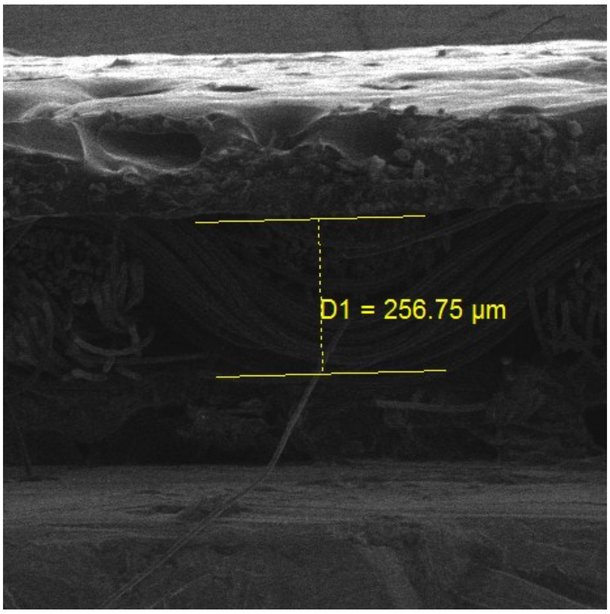

Figure S8. Thickness of CC negative electrode.

Table S3 Volumetric energy density vs the reported value in literatures

Supercapacitor	Energy density/(mWh cm^{-3})	Reference
CoNi//CC using 6 M KOH	37.41	This work
CoNi//CC using KOH/PVA	11.98	This work
MnO_2 MN//Co_3O_4	27	5
MnO_2/G//NF	0.27	6
MnO_2//Fe_2O_3	0.41	7
H-TiO_2@MnO_2//H-TiO_2@C	0.3	8
MnO_2/G//VOS@C	0.87	9
MnO_2@ZnO//rGO	0.234	10
ACC//ACC	9.4	11

Reference

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