

## Supporting Information

### **Needle-like CoO nanowires composite with NiO nanosheets on carbon cloth for hybrid flexible supercapacitors and overall water splitting electrodes**

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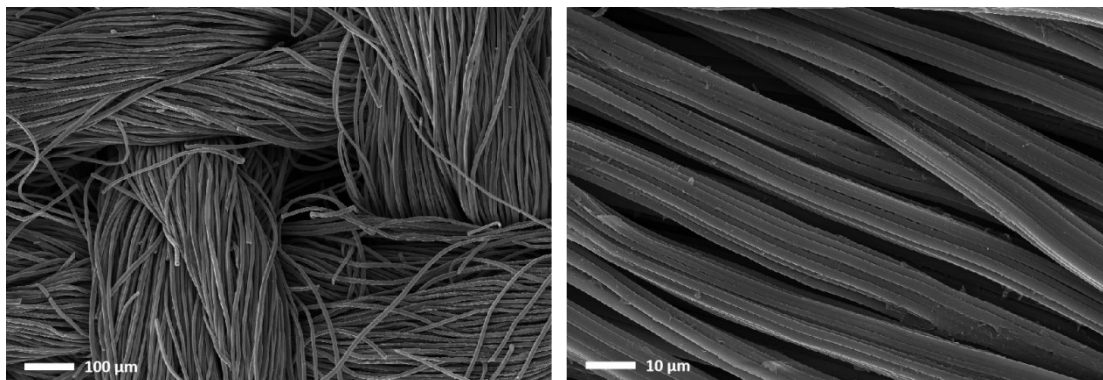


Fig. S1. SEM of carbon cloth.

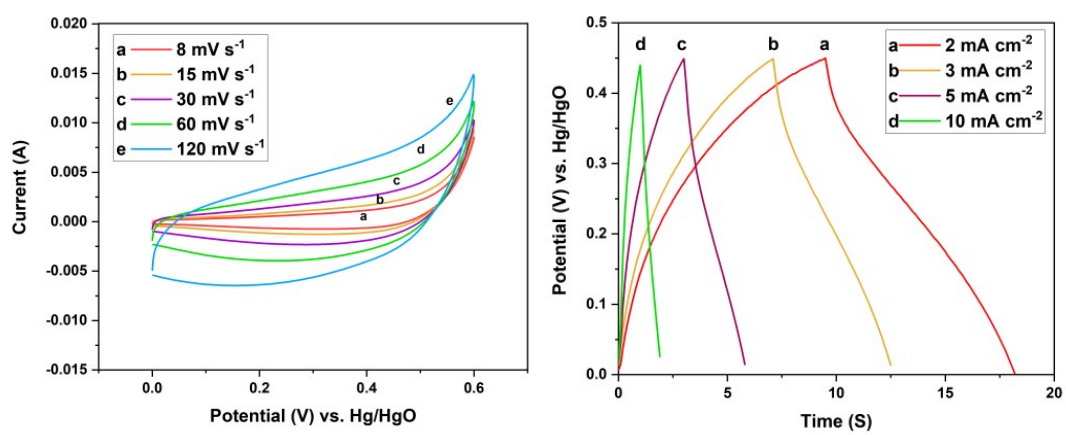


Fig. S2. CV (left) and GCD (right) plots of the CC electrode.

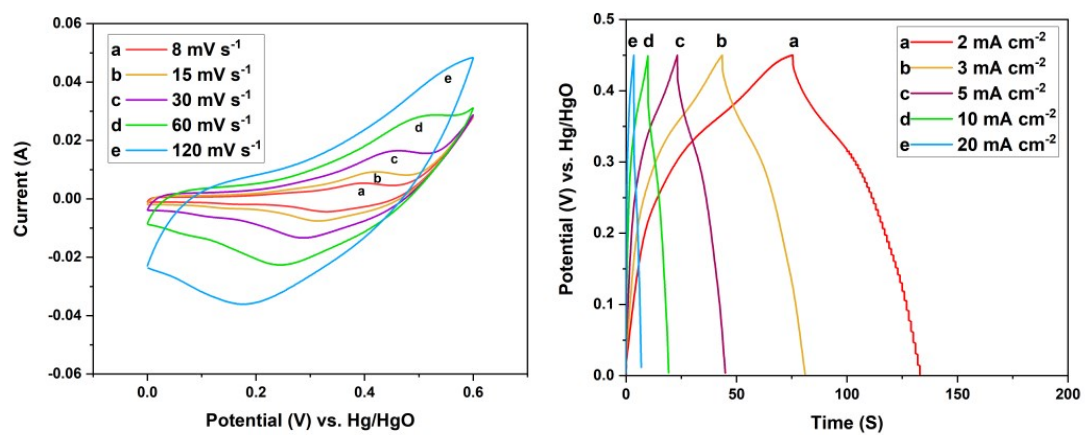


Fig. S3. CV (left) and GCD (right) plots of the CoO/CC electrode.

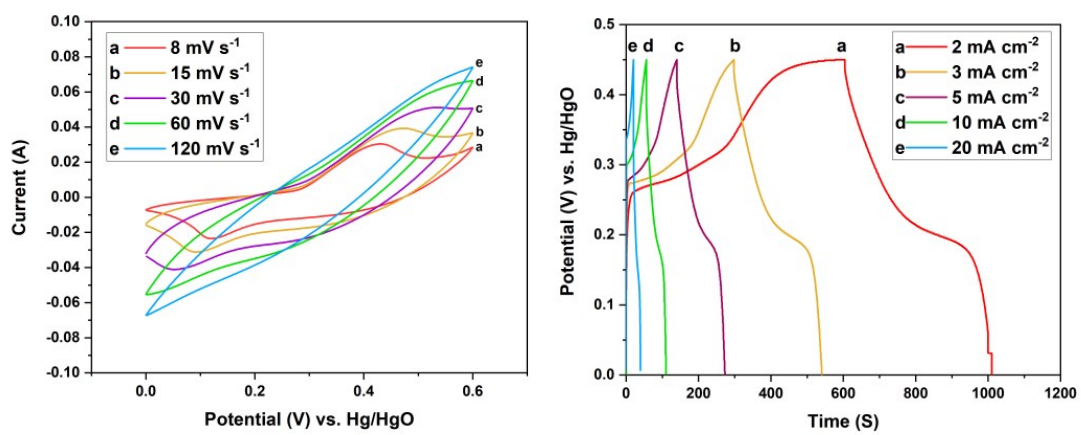


Fig. S4. CV (left) and GCD (right) plots of the NiO/CC electrode.

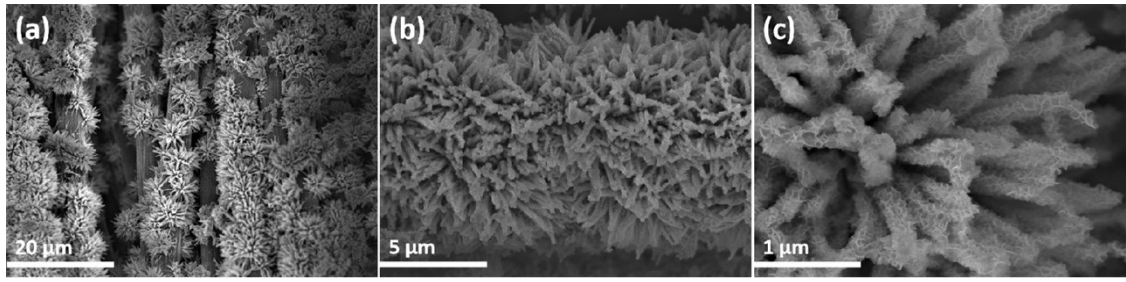


Fig. S5. SEM image of the NiO@CoO/CC electrode after long-term cycling.

Table. S1. Important EIS parameters of NiO@CoO/CC electrode (Sample 1 is the NiO@CoO/CC electrode before long-term cycling and sample 2 is the electrode after long-term cycling).

	$R_1$	$R_2$	$R_3$	$CPE_1-T$	$CPE_1-P$	$CPE_2-T$	$CPE_2-P$	$W_1-R$	$W_1-T$	$W_1-P$
1	1.025	31.35	0.67107	0.04523	0.47944	0.000325	1.015	-10.29	1.711	1.405
2	1.03	148.9	1.738	0.07728	0.50322	0.001725	0.79148	-2.87	1.457	1.481

Table. S2. Important EIS parameters of the NiO@CoO/CC supercapacitors (Sample 1 is the NiO@CoO/CC supercapacitor before long-term cycling and sample 2 is the supercapacitor after long-term cycling).

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	CPE <sub>1</sub> -T	CPE <sub>1</sub> -P	CPE <sub>2</sub> -T	CPE <sub>2</sub> -P	CPE <sub>3</sub> -T	CPE <sub>3</sub> -P
1	0.6593	0.1930	0.0085	0.8536	0.1176	0.0011	0.7761	1.3680	0.1790
2	0.6080	0.2270	0.2906	0.1877	0.2070	0.0064	0.5855	0.5309	0.2757



Table. S3. Important EIS parameters of different electrodes for water splitting.

	Electrode	$R_1$	$R_2$	$CPE_1-T$	$CPE_1-P$
1	CoO/CC	9.882	41.54	0.0054721	0.97719
2	NiO/CC	4.572	180.3	0.0043956	0.78428
3	NiO@CoO/CC	10.54	11	0.0033744	0.809939

Table S4. Power density and Energy density of the NiO@CoO/CC supercapacitors and the supercapacitors from other related studies.

	Materials	Electrolytes	Power density (W kg <sup>-1</sup> )	Energy density (Wh kg <sup>-1</sup> )	Refs.
1	NiO@CoO/CC	1M (KOH)	750	40.3	-
2	NiO/Graphite foam carbon nanotube	2M (KOH)	1060	23.4	1
3	S-Co <sub>3</sub> O <sub>4</sub> @CoO/CC	2M (KOH)	1000	33.06	2
4	CoO/C	6M (KOH)	398	30.9	3
5	Ni(OH) <sub>2</sub> @Co <sub>3</sub> O <sub>4</sub>	3M (KOH)	346.9	40	4
6	Ni(OH) <sub>2</sub> / Graphene oxide	6M (KOH)	467	44.1	5
7	NiO	2M (KOH)	600	13.74	6
8	CoMoO <sub>4</sub> @NiMoO <sub>4</sub> /N i foam	2M (KOH)	267	28.7	7
9	CoMoO <sub>4</sub> @Co <sub>3</sub> O <sub>4</sub> /carb on nanotubes	2M (KOH)	6400	37.0	8
10	Co <sub>3</sub> O <sub>4</sub> @NiMoO <sub>4</sub>	2M (KOH)	482	37.8	9
11	CoMoO <sub>4</sub> @Co <sub>3</sub> O <sub>4</sub> /OM EP	2M (KOH)	1647.5	45.98	10
12	CoMoO <sub>4</sub> @NiMoO <sub>4</sub> ·x H <sub>2</sub> O/Fe <sub>2</sub> O <sub>3</sub>	2M (KOH)	12000	26.7	11

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