

## Designing high-performance anode composed of carbon nanotubes and Fe-Fe<sub>3</sub>C nanoparticles for quasi-solid-state fibrous Ni/Fe batteries

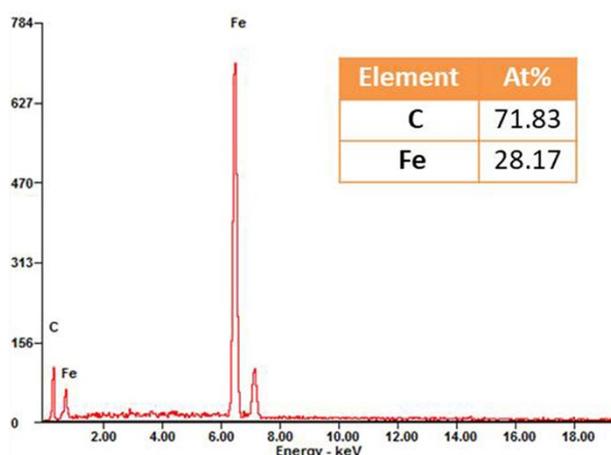
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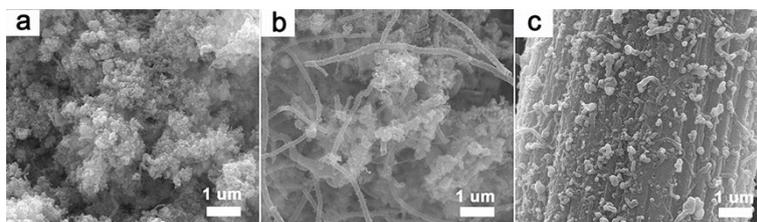
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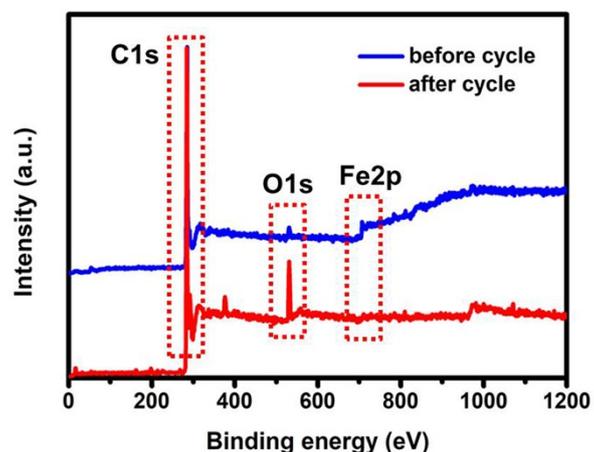
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**Fig. S1.** The EDS spectrum of GE@CNT-Fe-Fe<sub>3</sub>C/CF for 3 min treatment and the corresponding elements content (the inset table).



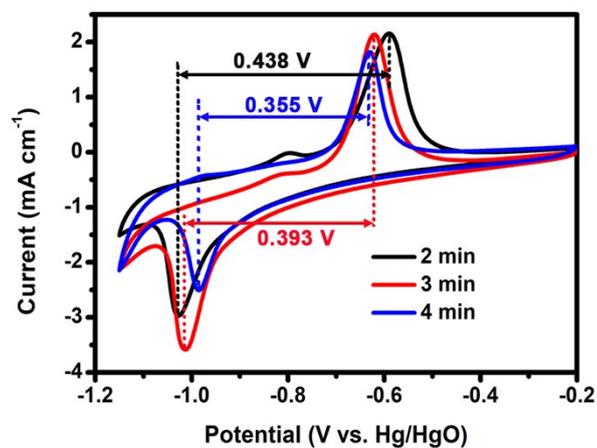
**Fig. S2.** The FESEM images of anodes with different microwave-assisted treatment time, (a) 2 min, (b) 3 min, and (c) 4 min.



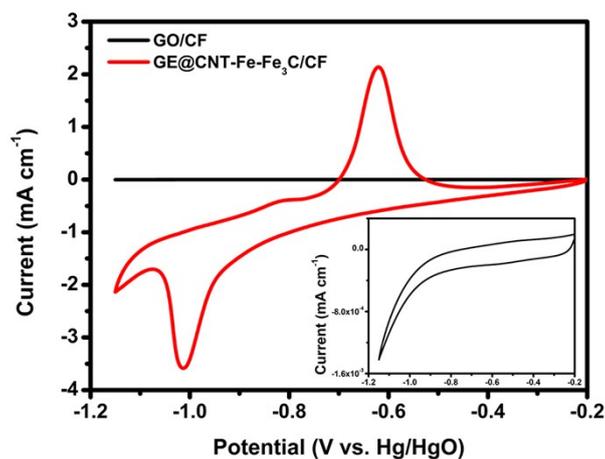
**Fig. S3.** XPS survey spectra of GE@CNT-Fe-Fe<sub>3</sub>C/CF before and after cyclic stability measurement.

**Table S1.** The element contents of GE@CNT-Fe-Fe<sub>3</sub>C/CF before and after cyclic stability measurement from XPS measurements.

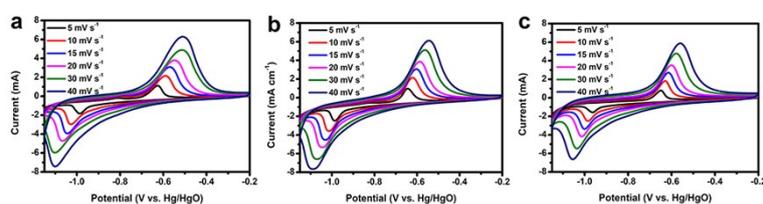
	C	Fe	O
before	95.85	1.17	2.98
after	89.01	0.47	10.52



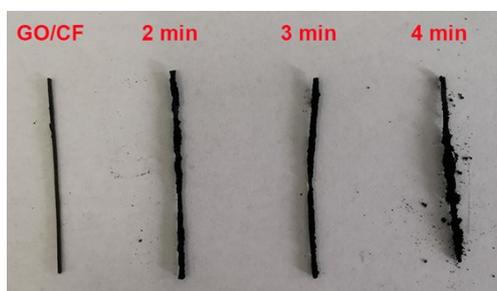
**Fig. S4.** The CV curves of anodes at 10 mV s<sup>-1</sup>.



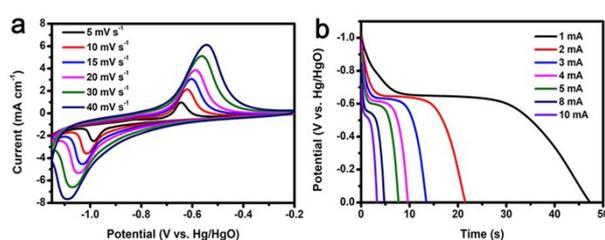
**Fig. S5.** The CV curves of GO/CF and GE@CNT-Fe-Fe<sub>3</sub>C/CF with 3 min microwave-assisted treatment time at 10 mV s<sup>-1</sup>.



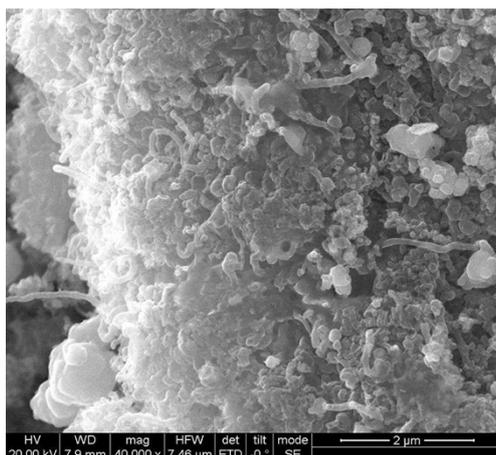
**Fig. S6.** The CV curves of GE@CNT-Fe-Fe<sub>3</sub>C/C anodes with different microwave-assisted treatment time at different scan rates from 5 mV s<sup>-1</sup> to 40 mV s<sup>-1</sup>, (a) 2 min, (b) 3 min, and (c) 4 min.



**Fig. S7.** The photographs of GO/CF and anodes with different microwave-assisted treatment time.



**Fig. S8.** The CV (a) and GCD (b) curves of GE@CNT-Fe-Fe<sub>3</sub>C/CF-3 anode with the microwave-assisted treatment for 3 min.

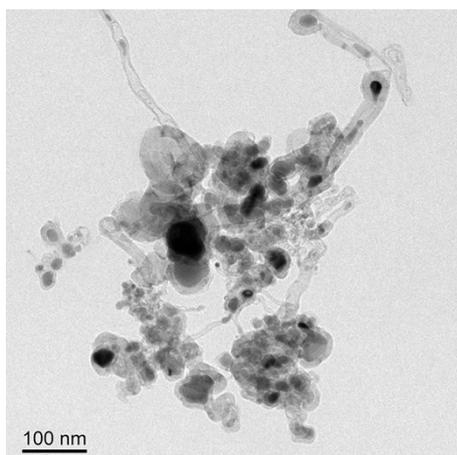


**Fig. S9.** The FESEM of GE@CNT-Fe-Fe<sub>3</sub>C/CF anode after electrochemical measurement.

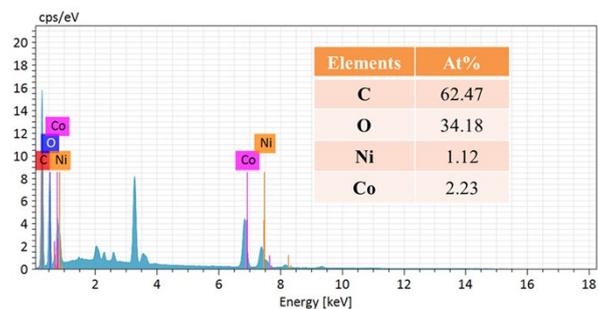


Video S1-1.mp4

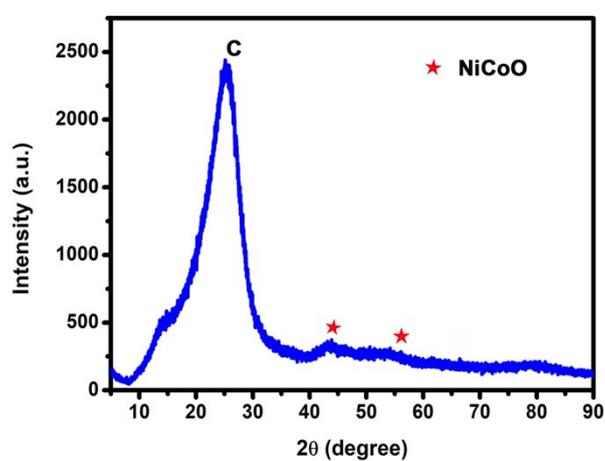
Video S1. The state of anode after being fell heavily and bended. We can see that there are little active materials fall on the write paper.



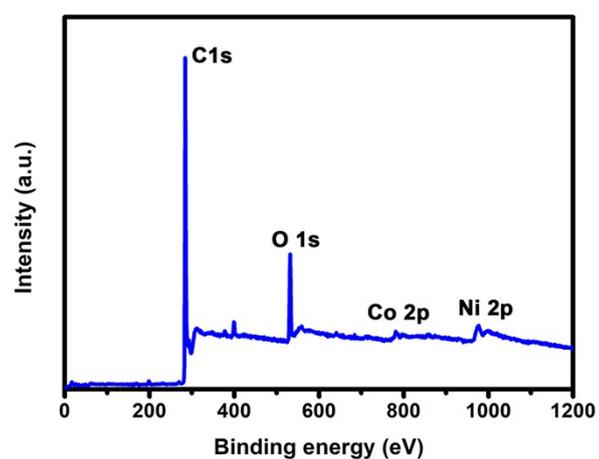
**Fig. S10.** The TEM of GE@CNT-Fe-Fe<sub>3</sub>C/CF anode after electrochemical measurement. We can see the mixed structure with nanotubes and nanoparticles, and the well-maintained core-shell structure also can be observed after long-term measurement.



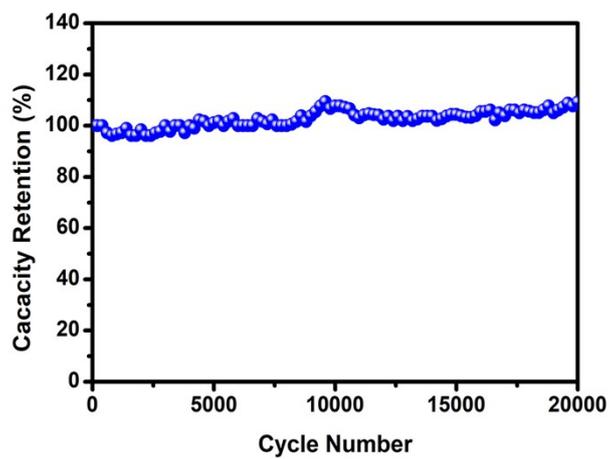
**Fig. S11.** The EDS spectrum of GE@NiCoO/CF cathode and the content of the corresponding element (the inset table).



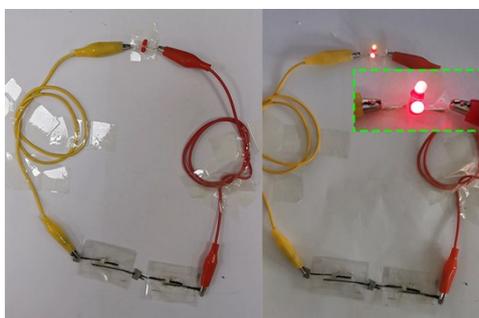
**Fig. S12.** XRD pattern of GE@NiCoO/CF.



**Fig. S13.** XPS survey spectrum of GE@NiCoO/CF.



**Fig. S14.** The cyclic stability at  $5 \text{ mA cm}^{-1}$  of GE@NiCoO/CF cathode.



**Fig. S15.** The photographs of two red LEDs in series (left), and lit up by two charged Ni/Fe battery.