

## A hybrid GaN/Ga<sub>2</sub>O<sub>3</sub> structure anchored on carbon cloth as high-performance electrode of supercapacitor

Yan-Ling Hu,<sup>\*a</sup> Zihan Wang,<sup>a</sup> Ronghuo Yuan,<sup>a</sup> Zhihan Xu,<sup>a</sup> Yan Dai,<sup>a</sup> Bing Wang,<sup>a</sup> Yao Fu,<sup>a</sup> Meidan Ye,<sup>b</sup> Yun Yang,<sup>b</sup> Zhimin Zou,<sup>a</sup> Chunhai Jiang<sup>\*a</sup>

a. Fujian Provincial Key Laboratory of Functional Materials and Applications, School of Materials Science and Engineering, Xiamen University of Technology, Xiamen, 361024, P.R. China

b. Research Institute for Biomimetics and Soft Matter, Fujian Provincial Key Laboratory for Soft Functional Materials Research, Department of Physics, Xiamen University, Xiamen 361005, China.

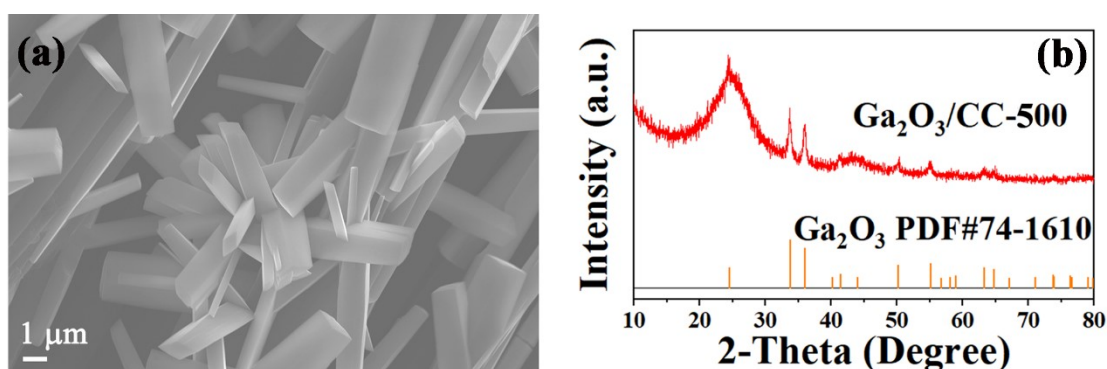


Fig. S1 (a) SEM image of Ga<sub>2</sub>O<sub>3</sub>/CC-500, (b) XRD patterns of Ga<sub>2</sub>O<sub>3</sub>/CC-500

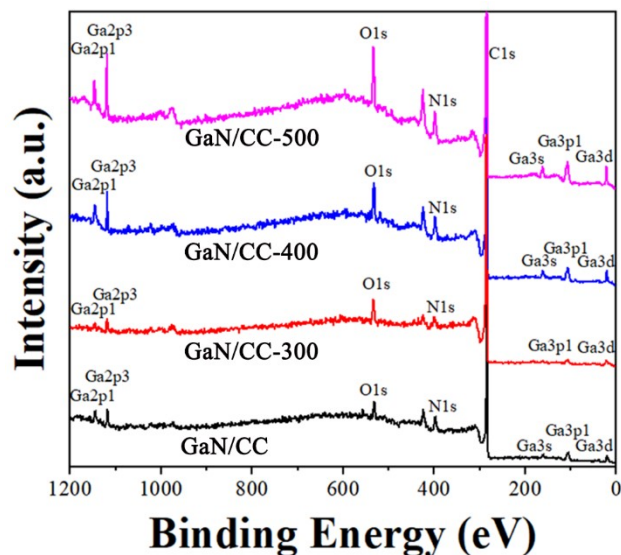
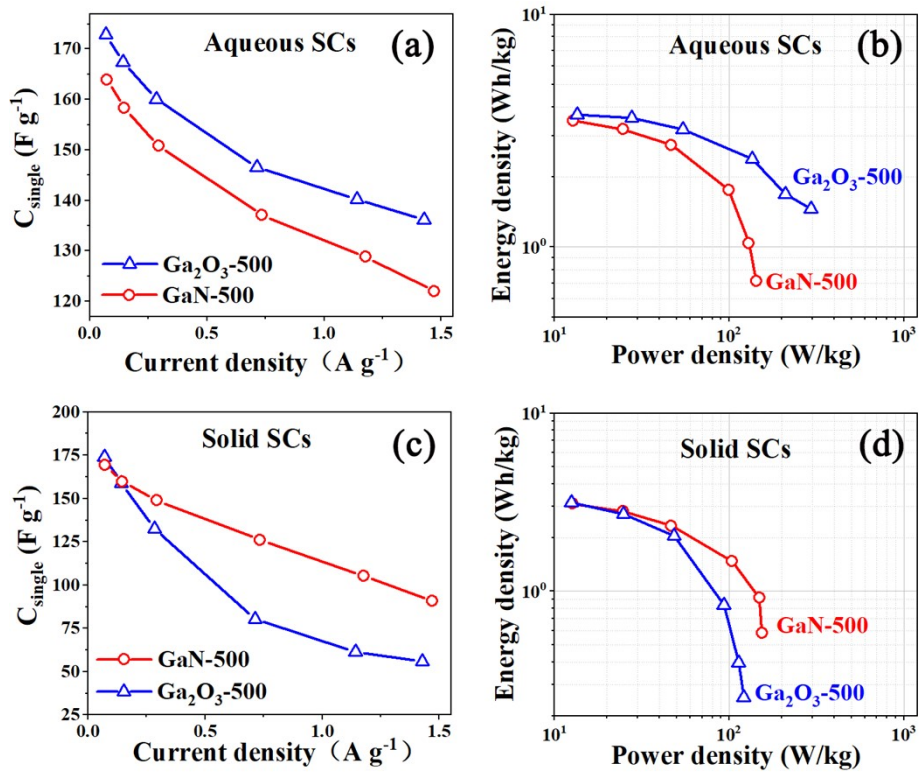
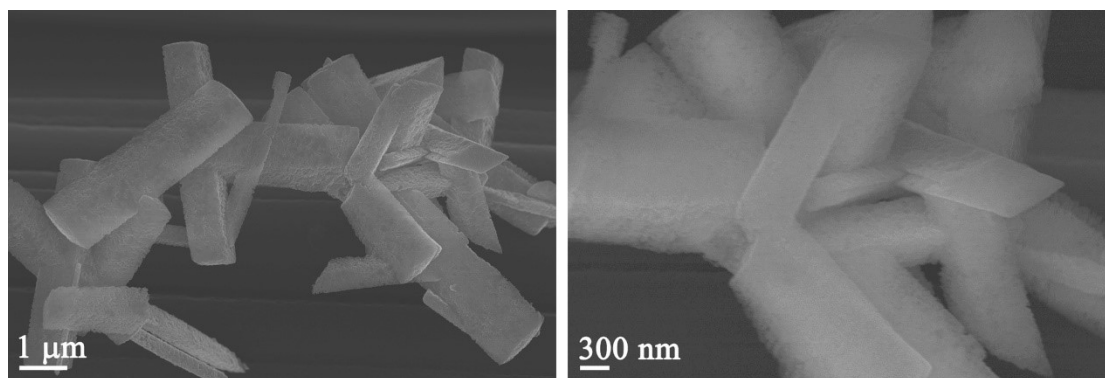


Fig. S2 Survey-scan XPS spectra of GaN/CC, GaN/CC-300, GaN/CC-400, and GaN/CC-500.



**Fig. S3** (a) Rate performances and (b) Ragone plots of the active materials in the symmetric SCs using 1 M  $\text{H}_2\text{SO}_4$  aqueous solution as electrolyte; (c) rate performances and (d) Ragone plots of the active materials in the symmetric SCs using the PVA- $\text{H}_2\text{SO}_4$  gel as electrolyte.



**Fig. S4** (a) SEM images of the GaN/CC-500 electrode after 20000 cycles of GCD in an aqueous symmetric SC under a current density of 10  $\text{mA cm}^{-2}$ .