Electronic Supplementary Information

A Facile Green One-pot Route Towards Three-Dimensional Graphene-Based micropores carbon composites Frameworks for High-Performance Electrochemical Capacitive Energy Storage

Zehui Zhang, Peiyi Wu *

State Key Laboratory of Molecular Engineering of Polymers and Department of Macromolecular Science and Laboratory of Advanced Materials, Fudan University, Shanghai 200433, P.R. China

E-mail: peiyiwu@fudan.edu.cn.

GA GA-AC-0.5 GA-AC GA-AC-1.5 NC

Figure S1. Digital photographs of the samples.

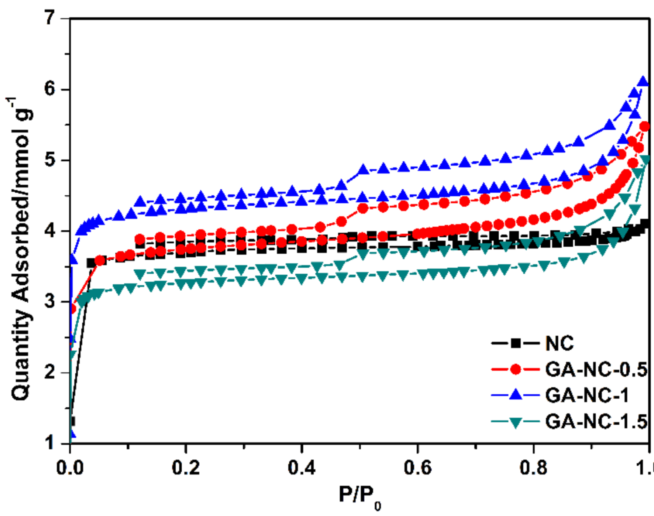

Figure S2. Isotherm plot of NC, GA-NC-0.5, GA-NC-1, GA-NC-1.5.

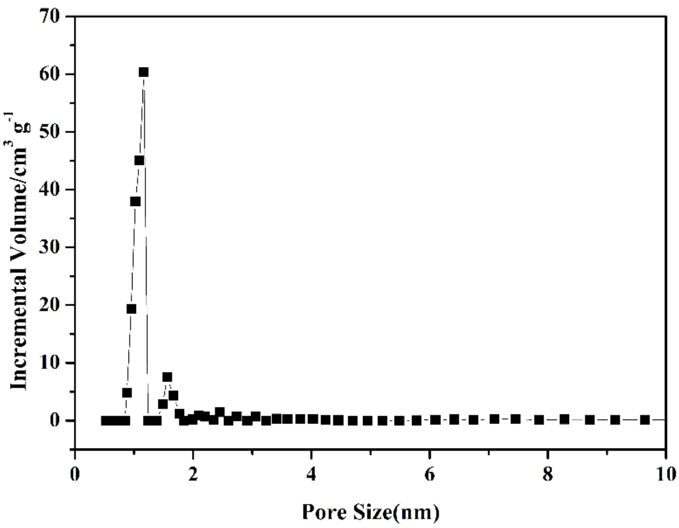

Figure S3. Pore size distribution plots obtained using the DFT method of the GA-NC-1.

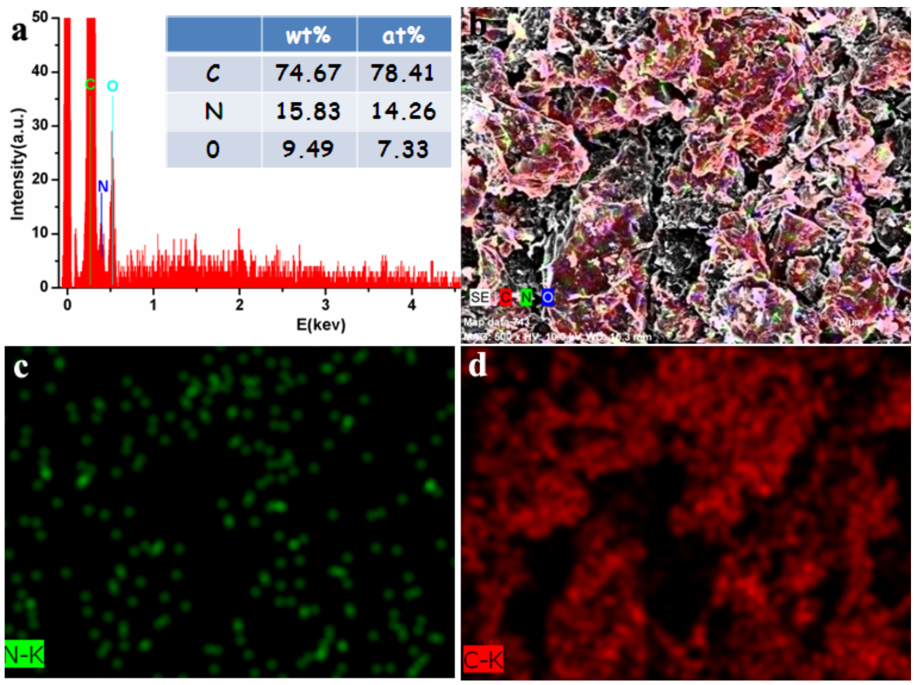

Figure S4. Elemental mapping images of GA-AC-1. (a) EDX spectrum suggest the homogeneous distribution of N and C in GA-AC-1. (b) Typical scanning electron microscopy image and corresponding elemental mapping images of (c) nitrogen and (d) carbon in the selected area.

Table S1. Element analysis of the chiotsan and GA-NC. The increase of carbon content indicates the sufficient carbonization during the high temperature treatment.

Sample	C (%)	H (%)	N (%)	O (Calculated) (%)

chiotsan	41.33	7.95	7.78	42.84
GA-NC	74.65	1.67	6.30	17.38

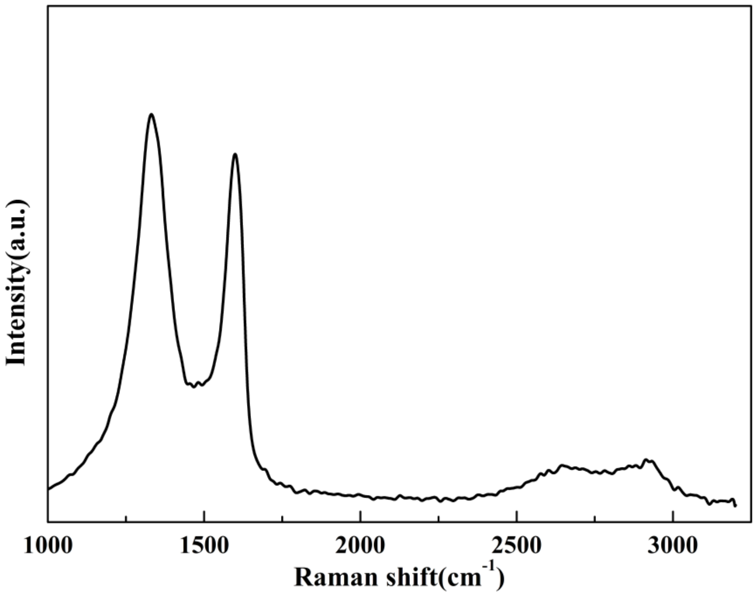

Figure S5. Raman spectra of GA-NC.

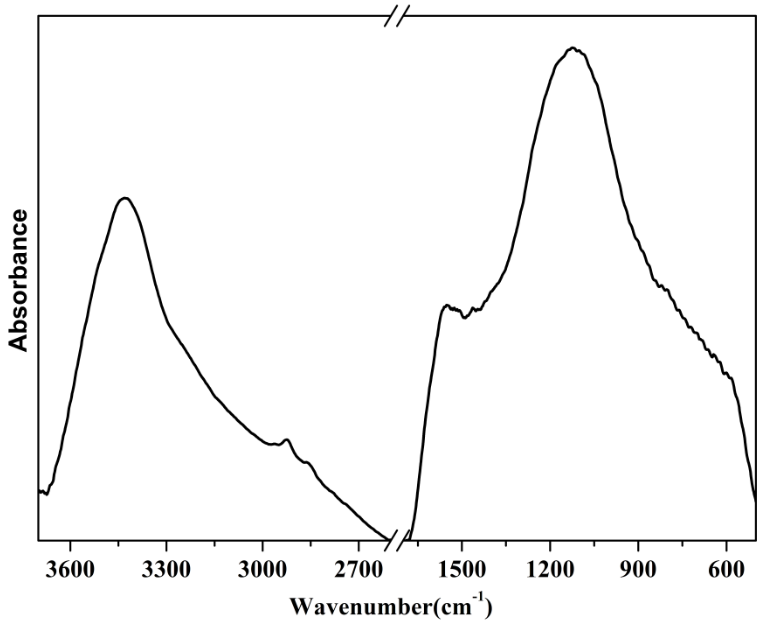

Figure S6. FTIR spectrum of GA-NC.

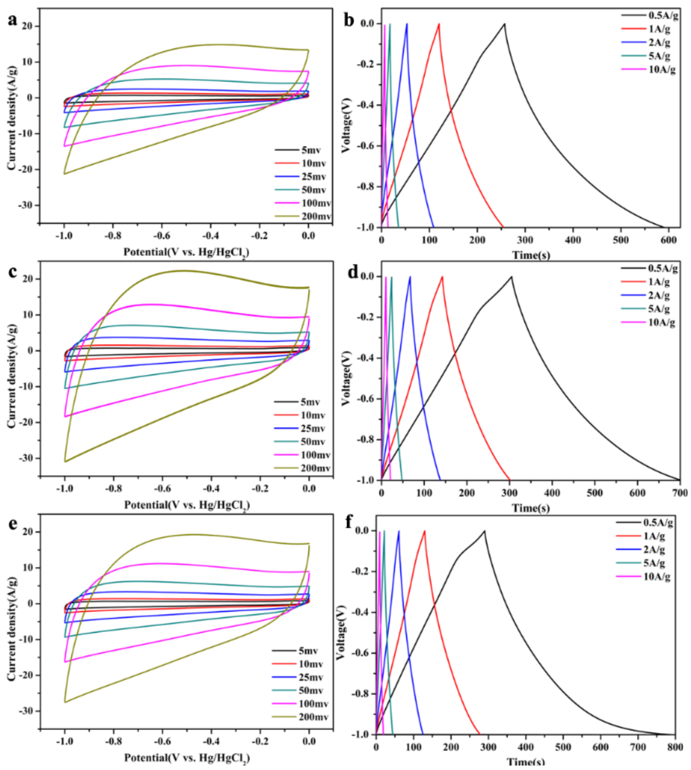

Figure S7. a)，c), e) Cyclic voltammetry curves obtained at different scan rates for NC, GA-NC-0.5, GA-NC-1.5, respectively. b), d), f) Galvanostatic charge/discharge curves of NC, GA-NC-0.5, GA-NC-1.5 supercapacitor under different constant currents, respectively.

Table S2. Comparison of properties of various carbon-based materials as supercapacitors electrode materials

Materials	Specific surface area (m^2g^{-1})	Specific capacity ($F\ g^{-1}$)
Activated carbons[1]	1000~2000	50~150
Porous carbon spheres[2]	757.3	260
Mesoporous Carbon[3]	185	70~110
N-carbon nanofiber[4]	312	~200
Hydrothermal carbon[5]	109	154
Various Pollens[6]	1600~3000	~190
Hydrothermal carbon[7]		300
N-graphene[8]		~100

References

(1) E. Frackowiak, F.Béguin, *Carbon* **2001,** *39*, 937-950.

(2) J. Wang, L. Shen, B.Ding, P. Nie, H. Deng, H. Dou,; X. Zhang, *RSC Adv.* **2014,** *4*, 7538-7544.

(3) D. Saha, Y. Li,; Z. Bi, J. Chen, J. K. Keum, D. K. Hensley, H. A. Grappe, H. M.Meyer, S. Dai,; M. P. Paranthaman, A. K. Naskar, *Langmuir* **2014,** *30*, 900-910.

(4) L.-F. Chen, Z.-H. Huang, H.-W. Liang, W.-T. Yao, Z.-Y. Yu, S.-H. Yu, *Energ. Environ. Sci.* **2013,** *6*, 3331-3338.

(5) W. Si, J. Zhou, S. Zhang, S. Li, W. Xing, S. Zhuo, *Electrochim. Acta* **2013,** *107*, 397-405.

(6) L. Zhang, F. Zhang, X. Yang, K. Leng, Y. Huang, Y. Chen, *Small* **2013,** *9*, 1342-1347.

(7) C. Falco, J. M. Sieben, N. Brun, M. Sevilla, T. van der Mauelen, E. Morallón, D. Cazorla-Amorós, M.-M. Titirici, *ChemSusChem* **2013,** *6*, 374-382.

(8) P. Chen, J.-J. Yang, S.-S. Li, Z. Wang, T.-Y. Xiao, Y.-H. Qian, S.-H. Yu, *Nano Energ.* **2013,** *2*, 249-256.