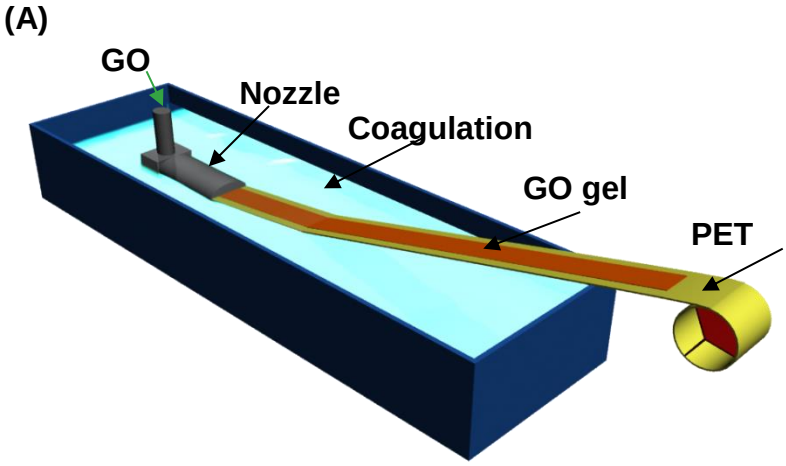
Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Wet-spun, Porous, Orientational Graphene Hydrogel Films for High-performance Supercapacitor Electrodes

Liang Kou,[a,b] Zheng Liu,[a] Tieqi Huang,[a] Bingna Zheng,[a] Zhanyuan Tian,[b] Zengshe Deng[b] and Chao Gao*[a]

Figure S1 The schematic diagram for fabricating graphene oxide hydrogel film (A) and digital photo of line-shape flat nozzle (B).



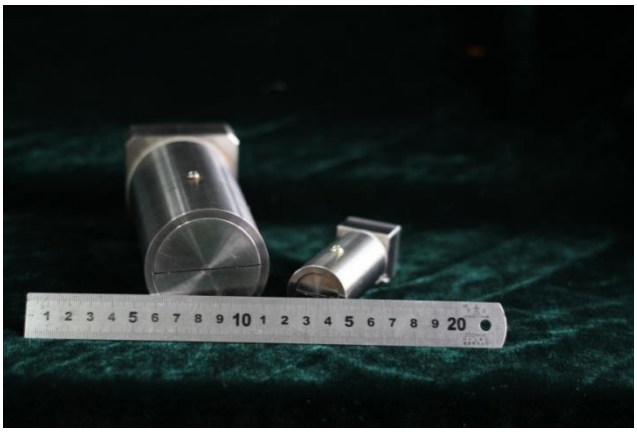


Figure S2 The digital photo of the test device for two-electrode system.

Figure S3 Typical stress-strain curves of GHF-HT, GHF-HZ and GHF-HI.

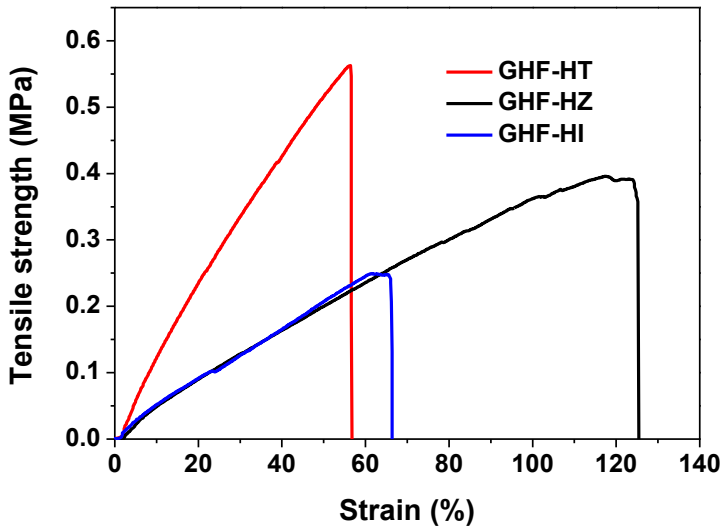


Figure S4 TGA curves of GHF-HT, GHF-HZ and GHF-HI.

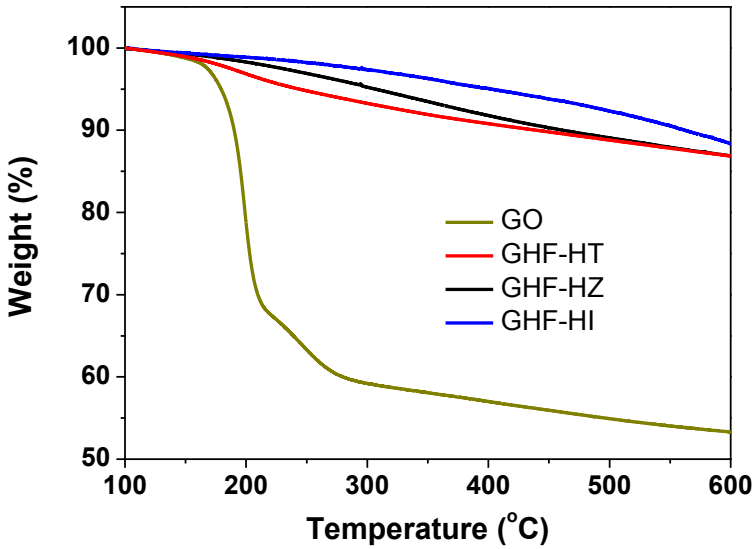


Table S1 Comparison of electrochemical performance of our GHF-HZ supercapacitors (yellow column) with supercapacitors using graphene hydrogel electrodes.

Preparation method	Current density (A/g)	Specific capacitance (F/g) of literature		GHF-HZ in this work (F/g)
GO, L-glutathione, 95°C [1]	1	157.7		203
	10	92		188
GO, ascorbic acid, 180 °C [2]	1	186		203
	20	152		176
GO, 180 °C [3]	10 mV/s	175		226
	20 mV/s	152		215
GO, ethylene diamine, hydrazine, 90 °C [4]	1	144, 191, 232		203
GO, 180 °C, followed by hydrazine reduction [5]	1	205		203
GO, ethylene diamine, 180 °C [6]	20	120		176
GO, hydroquinone 100 °C[7]	1	441, 211（without hydroquinone）		203
GO，hydrazine，NH_3, 95 °C[8]	1	215		203

Reference

[1] H. Gao, F. Xiao, C. B. Ching, H. Duan, *ACS Applied Materials & Interfaces* **2012**, *4*, 2801-2810.

[2] Y. Xu, Z. Lin, X. Huang, Y. Liu, Y. Huang, X. Duan, *ACS Nano* **2013**, *7*, 4042-4049.

[3] Y. Xu, K. Sheng, C. Li, G. Shi, *ACS Nano* **2010**, *4*, 4324-4330.

[4] V. H. Luan, H. N. Tien, L. T. Hoa, N. T. M. Hien, E.-S. Oh, J. Chung, E. J. Kim, W. M. Choi, B.-S. Kong, S. H. Hur, *Journal of Materials Chemistry A* **2013**, *1*, 208-211.

[5] L. Zhang, G. Shi, *The Journal of Physical Chemistry C* **2011**, *115*, 17206-17212.

[6] P. Chen, J.-J. Yang, S.-S. Li, Z. Wang, T.-Y. Xiao, Y.-H. Qian, S.-H. Yu, *Nano Energy* **2013**, *2*, 249-256.

[7] Y. Xu , Z. Y. Lin , X. Q. Huang , Y. Wang , Y. Huang , X. F. Duan , *Advanced Materials* **2013**, *25*, 5779-5784.

[8] X. W. Yang , J.W. Zhu , L. Qiu , D. Li, *Advanced Materials* **2011**, 23, 2833-2838.