

Electronic supplementary information (ESI)

**Direct Interfacial Growth of MnO₂ Nanoparticles on Carbon
Nanofiber Surfaces for High-Performance Asymmetric
Supercapacitors**

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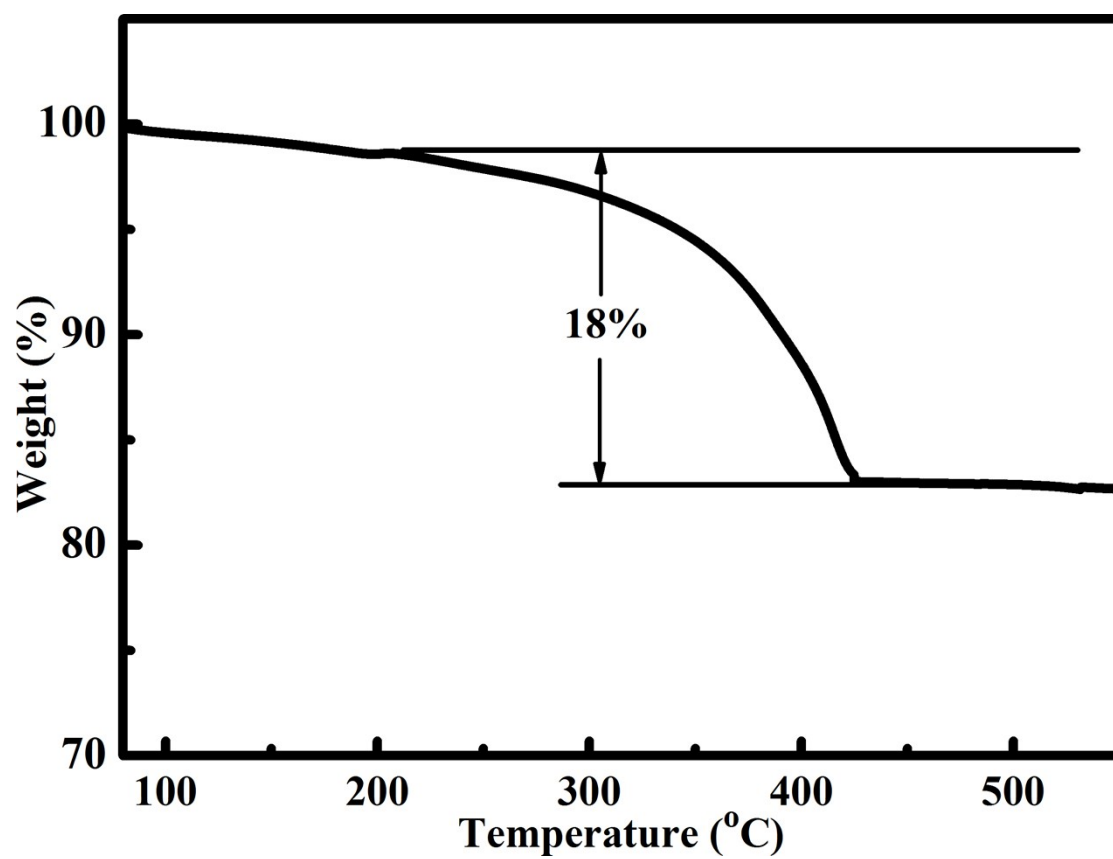


Fig. S1. Thermal gravimetric analysis of MnO₂/CNF composites.

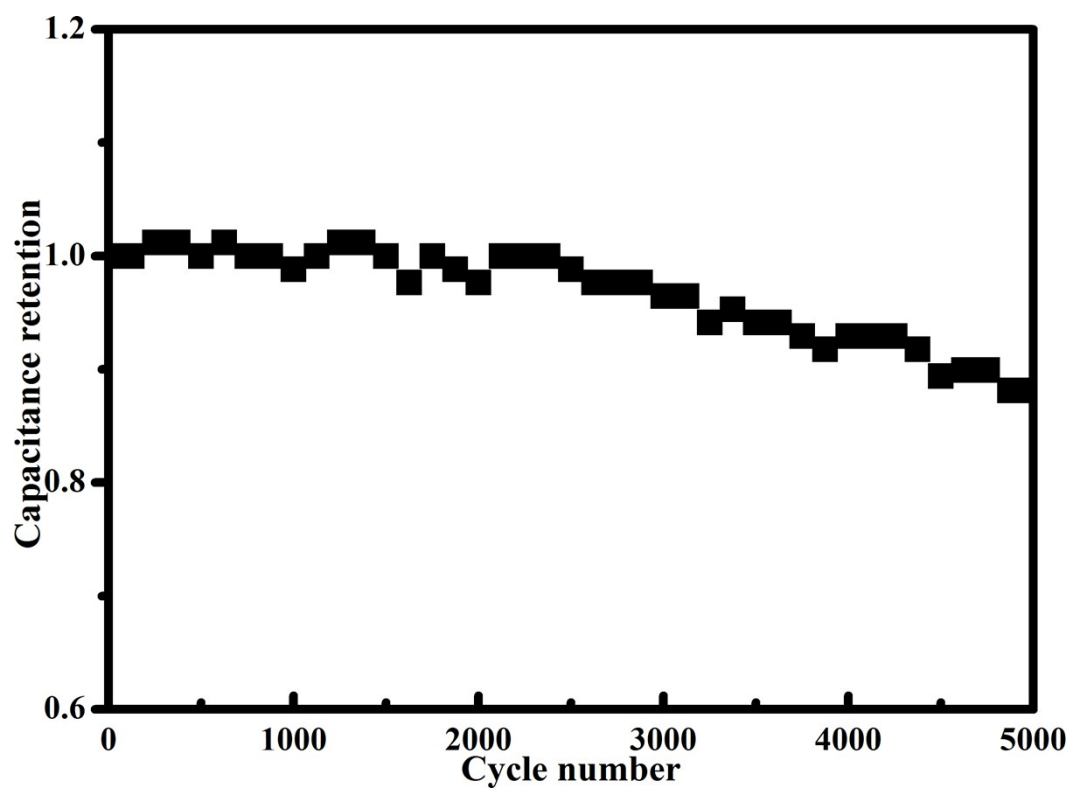


Fig. S2. The capacity retention of MnO₂/CNF//CNF during galvanostatic cycling at 5 A g⁻¹.

Table S1. Electrochemical performance of manganese oxide electrodes.

Materials	Potential range	Capacity (F g⁻¹)/	Capacity retention (%)/ cycles	Ref.
MnO ₂ /CNTs	0.1-0.8	117	94/500	S1
MnO ₂ -GO	0-1	197.2	84.2/1000	S2
MnO ₂ -Graphene	-0.1-0.9	310	78/500	S3
MnO ₂ submicrospheres	0-0.9	120	88/1000	S4
MnO ₂ -Graphene	0-0.8	380	95/3000	S5
CGNR/PANI/MnO ₂	-0.2-0.8	469	81.1/5000	S6
MnO ₂ /A-CNT	0.1-0.8	250	95/2000	S7
MnO ₂ /CNT	-0.1-0.8	162.2	90/2000	S8
MnO ₂ /CNT	0-0.9	205	-	S9
Au-MnO ₂ /CNT	0-0.7	68	-	S10
MnO ₂ /CNF	-0.2-0.8	335	91.4/1000	This work

Notes and references

- S1. F. Teng, S. Santhanagopalan and D. D. Meng, *Solid State Sci.*, 2010, **12**, 1677-1682.
- S2. S. Chen, J. Zhu, X. Wu, Q. Han and X. Wang, *ACS Nano*, 2010, **4**, 2822-2830.
- S3. Z. Fan, J. Yan, T. Wei, L. Zhi, G. Ning, T. Li and F. Wei, *Adv. Funct. Mater.*, 2011, **21**, 2366-2375.
- S4. L. Lian, J. Yang, P. Xiong, W. Zhang and M. Wei, *RSC Adv.*, 2014, **4**, 40753-40757.
- S5. G. Yu, L. Hu, N. Liu, H. Wang, M. Vosgueritchian, Y. Yang, Y. Cui and Z. Bao, *Nano Lett.*, 2011, **11**, 4438-4442.
- S6. Z. Yin, H. Zhou, C. Fu, N. Zhang, D. Liu and Y. Kuang, *RSC Adv.*, 2016, **6**, 41142-41150.
- S7. J. M. Ko, K. M. Kim, *Mater. Chem. Phys.*, 2009, **114**, 837-841.
- S8. H. J. Wang, C. Peng, F. Peng, H. Yu and J. Yang, *Mater. Sci. Eng., B*, 2011, **176**, 1073-1078.
- S9. H. Xia, Y. Wang, J. Y. Lin and L. Lu, *Nanoscale Res. Lett.*, 2012, **7**, 33.
- S10. A. L. M. Reddy, M. M. Shaijumon, S. R. Gowda and P. M. Ajayan, *J. Phys. Chem. C*, 2010, **114**, 658-663.