Supporting Information

SnO_2@PANI Core-Shell Nanorod Arrays on 3D Graphite Foam: A High-Performance Integrated Electrode for Lithium-Ion Batteries

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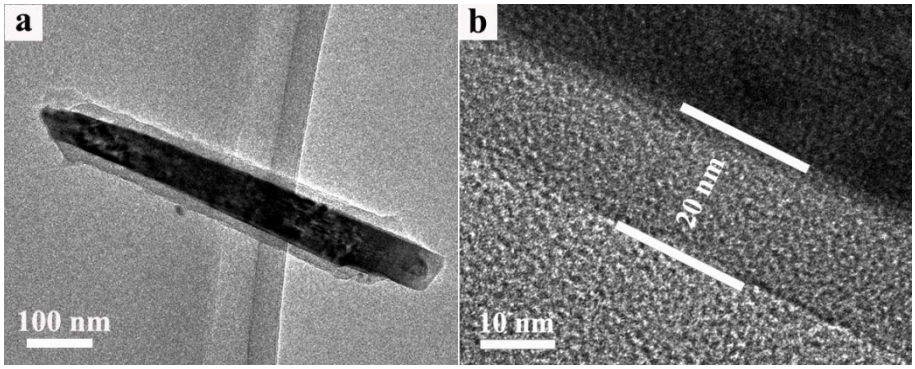

Figure S1. (a) TEM image of GF@SnO_2 NRAs@PANI-20 electrode. (b) Enlarged TEM image showing that the thickness of the PANI shell is ~ 20 nm.

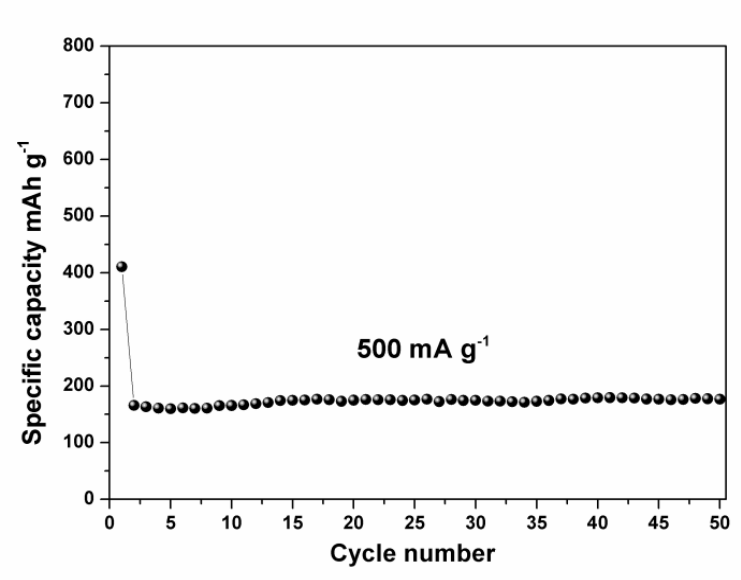

Figure S2. Cycling performance of GF at a current density of 500 mA g^{-1}.

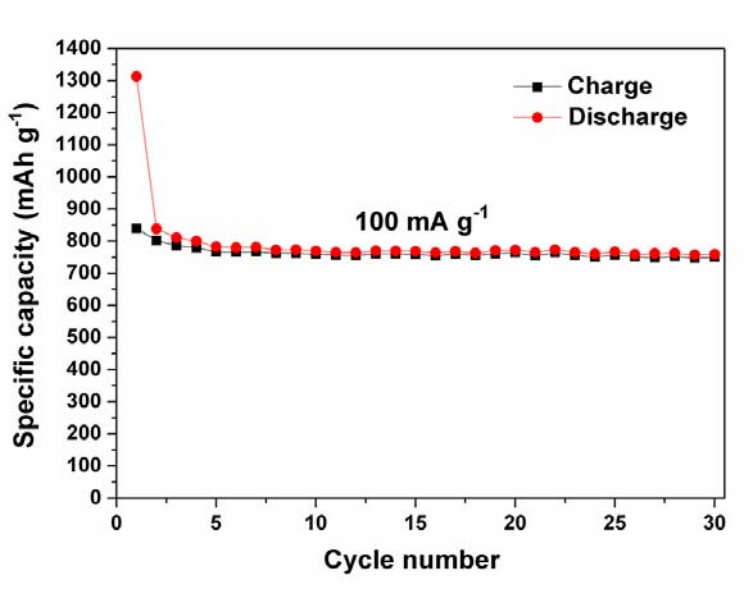

Figure S3. Cycling performance of GF@SnO_2 NRAs@PANI-40 at a current density of 100 mA g^{-1}.

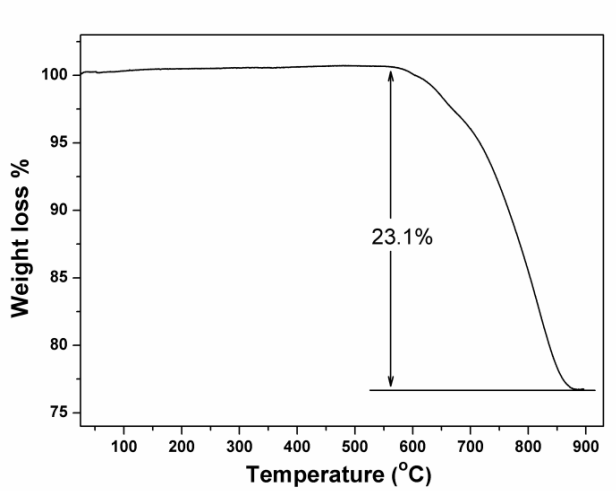

Figure S4. TGA curves of GF@SnO_2 NRAs.

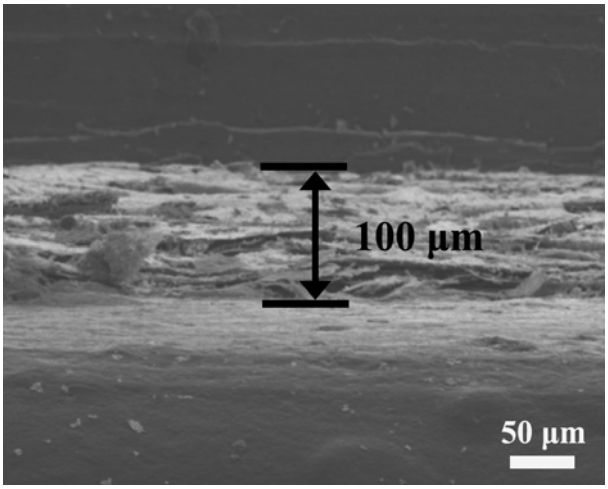

Figure S5. Cross-section SEM image of GF@SnO_2 NRAs@PANI-40 after being pressed.

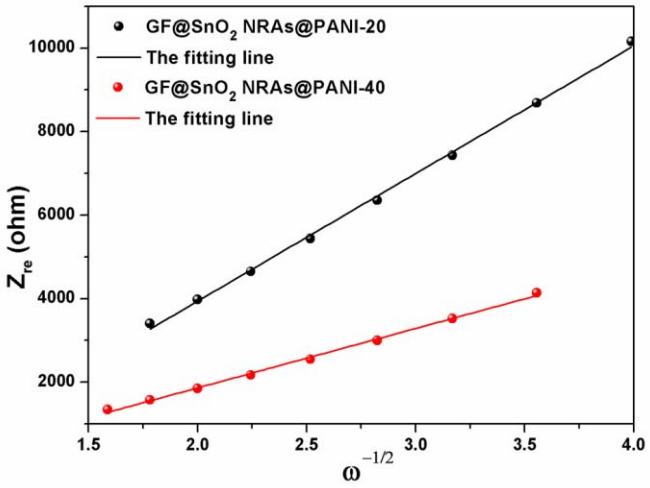

Figure S6. Variation of Z_{re} versus $\omega^{-1/2}$ in the low frequency region for GF@SnO_2 NRAs@PANI-20 and GF@SnO_2 NRAs@PANI-40.

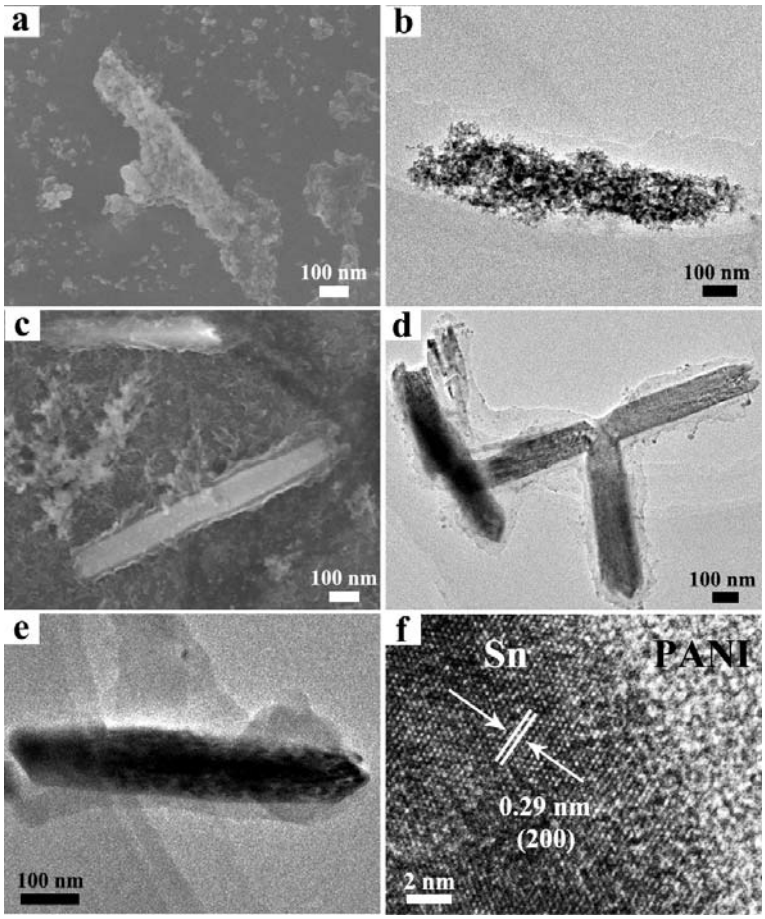

Figure S7. SEM (a,c), TEM (b,d,e), and HRTEM (f) images of different fully discharged electrodes after 50 charge-discharge cycles at a current density of 500 mA g^{-1}: a,b) GF@SnO_2 NRAs; c-f) GF@SnO_2 NRAs@PANI-40.

Table S1. Comparison of the rate capability of GF@SnO_2 NRAs@PANI-40 with other reported SnO_2-based integrated LIB anodes based on the total mass of the electrode.

Electrode description	Rate capability	Reference
SnO_2 nanocrystals on carbonized filter papers	1 A g^{-1}, 480 mAh g^{-1}	1
Carbon foam encapsulated SnO_2 nanocrystallites	2 A g^{-1}, 416 mAh g^{-1}	2
SnO_2-electrodeposited porous carbon nanofibers	0.8 A g^{-1}, 398 mAh g^{-1}	3
SnO_2 /N-doped carbon nanofiber films	3.2 A g^{-1}, 405 mAh g^{-1}	4
SnO_2-rGO composite	2 A g^{-1}, 470 mAh g^{-1}	5
SnO_2 nanoparticles@graphene hybrid paper	2 A g^{-1}, ~400 mAh g^{-1}	6
SnO_2-PANI nanorod arrays on nickel foam	2 A g^{-1}, 407 mAh g^{-1} 3 A g^{-1}, 312 mAh g^{-1}	7
GF@SnO_2 NRAs@PANI	1 A g^{-1}, 539 mAh g^{-1} 2 A g^{-1}, 476 mAh g^{-1} 3 A g^{-1}, 414 mAh g^{-1}	This work

References

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