

Supporting Information

Expanded-Graphite Embedded in Lithium Metal as Dendrite-Free Anode of Lithium Metal Batteries

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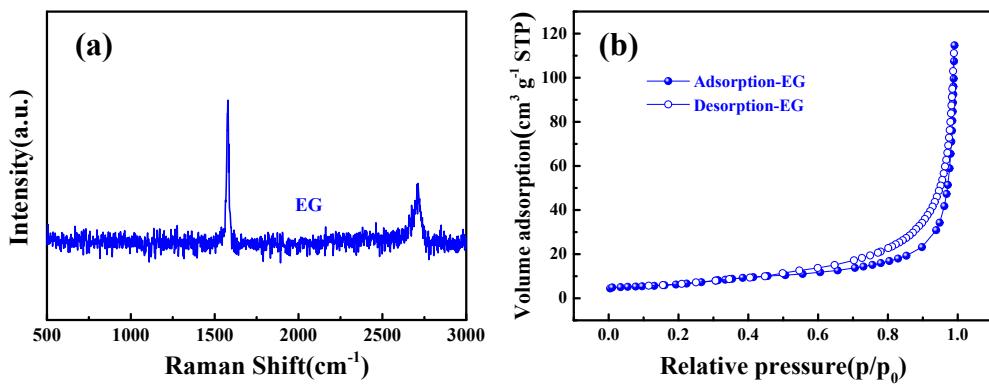


Fig. S1 Characterization of EG. (a) Raman spectra and (b) N_2 adsorption and desorption isotherms.

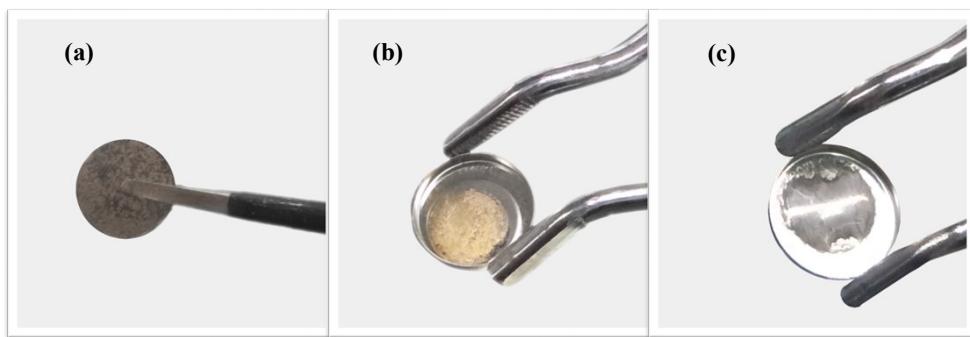


Fig. S2 Optical photographs of (a) Li-EG after pressing, (b) Li-EG after heating at 200 °C and (c) Li foil after heating at 200 °C.

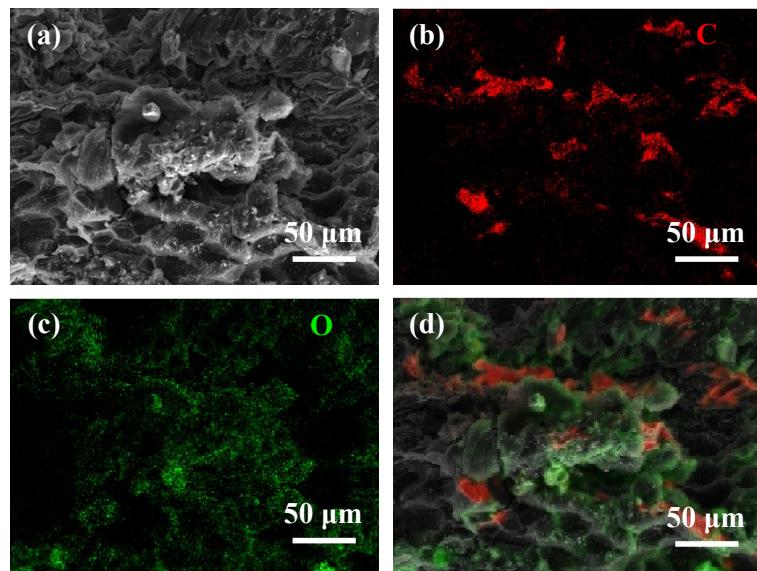


Fig. S3 SEM image of cross-section of the Li-EG anode (a), corresponding EDS mapping images of C (b), O (c) and overlapped elemental (d).

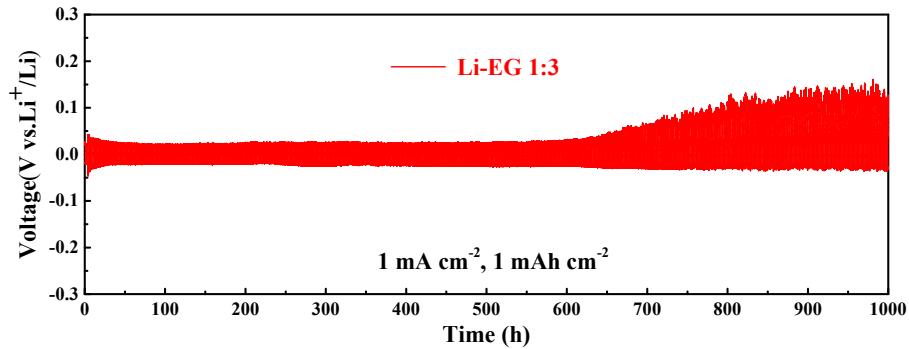


Fig. S4 Galvanostatic stripping/plating voltage profile of Li-EG/Li half-cell using Li-EG with the mass ratio of 1:3 (EG : Li) at 1 mA cm^{-2} with a stripping/plating capacity of 1 mAh cm^{-2} .

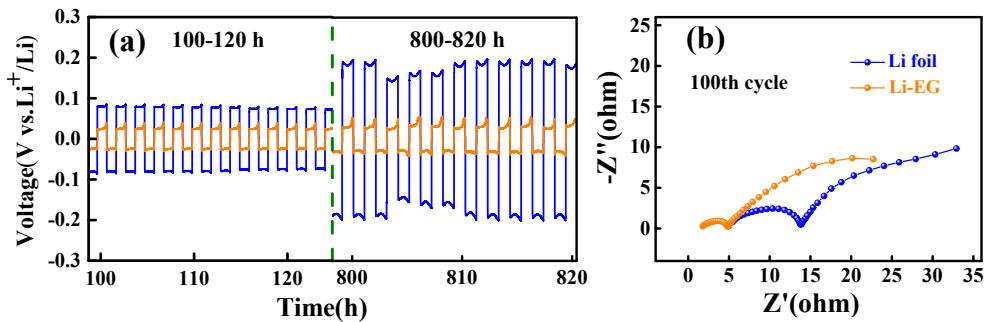


Fig. S5 (a) The enlarged voltage profiles of the 100–120 h and 800–820 h of Fig. 3a. (b) The EIS of half-cells after 100 cycles at 1 mA cm^{-2} and 1 mAh cm^{-2} .

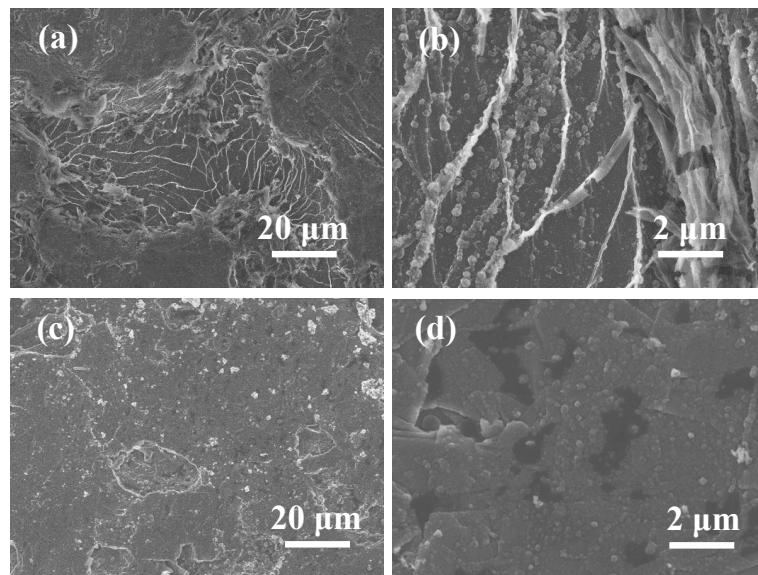


Fig. S6 Morphology of anodes after stripping for 10 h at a current density of 1 mA cm^{-2} : (a, b) Li foil and (c, d) Li-EG.

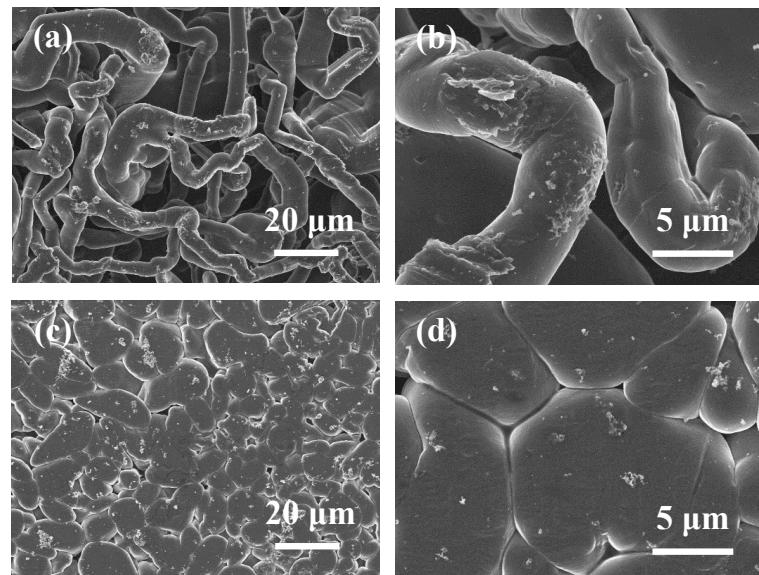


Fig. S7 SEM images of Li foil (a, b) and Li-EG (c, d) after the first stripping and plating for 20 h at a current density of 1 mA cm^{-2} .

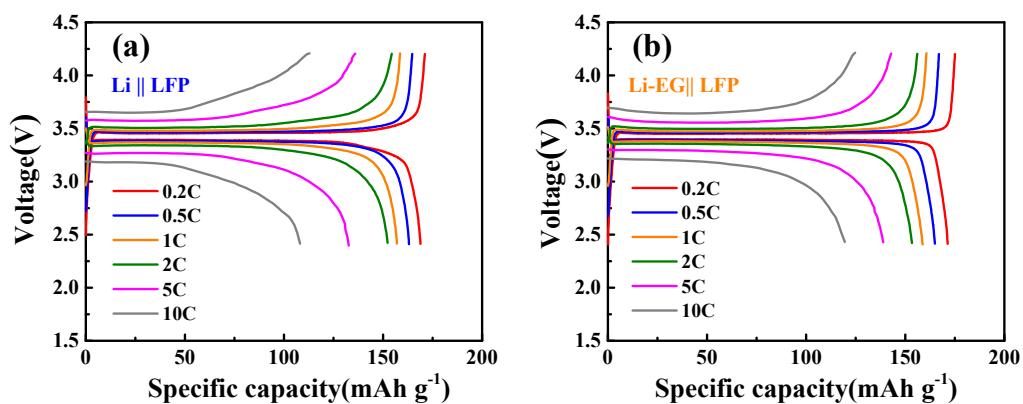


Fig. S8 Charge-discharge voltage profiles at different rates of (a) $\text{Li} \parallel \text{LFP}$ and (b) $\text{Li-EG} \parallel \text{LFP}$ full cells.

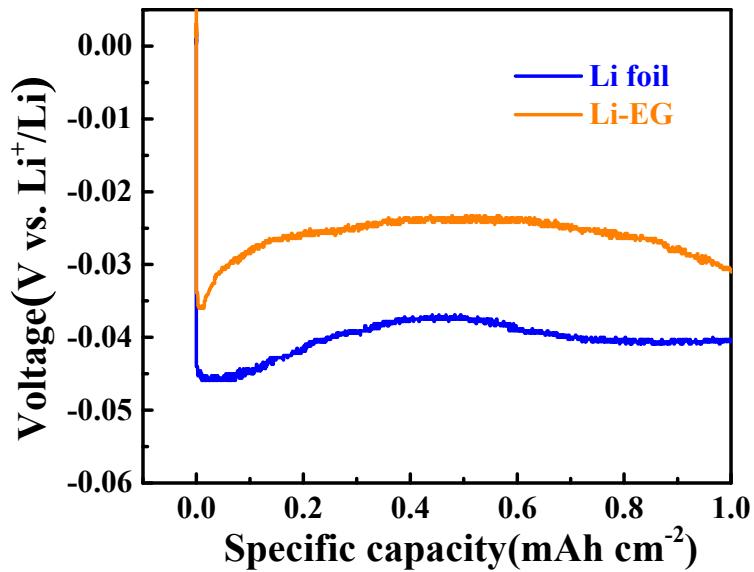


Fig. S9 Voltage profiles of the first plating for the Li foil and Li-EG half-cell.

Table S1. Summary of cycling performance of Li-C anodes in previous results and this work.

Sample	Test condition (mA cm ⁻² / mAh cm ⁻²)	Cycling time (h)	Reference
Li-EG	1/1	1000	This work
	1/3	800	
	10/1	300	
Lithium-graphite hybrid	1/1.5	600	1
	5/1.5	60	
ZnO/carbon framework	1/1	400	2
	10/1	40	
	1/5	400	
OPA-Li-CNT anode	1/0.5	200	3
	3/0.5	200	
Li/CF composite anode	1/1	1000	4
	5/5	90	
3D G/Li anode	5/1	200 cycles	5
	10/1	70 cycles	
Li@3D-AGBN composite anode	0.5/1	400	6
	5/1	120	
	40/1	50	

	1/1	1200	
3D-HCFs@Li	2/1	600	7
	2/2	300	
	0.5/1	200	
Straw-brick-like CFC/Li composite electrode	1/1	200	8
	3/1	100	
	0.5/0.5	500	
Li-CNT-AB	3/1	100	9
	1/2	800	
Three-dimensional nitrogen-doped graphene foam	0.5/1	1000	10

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