

## Facile synthesis of Si/Ge/graphite@C composite with improved tap density and electrochemical performances

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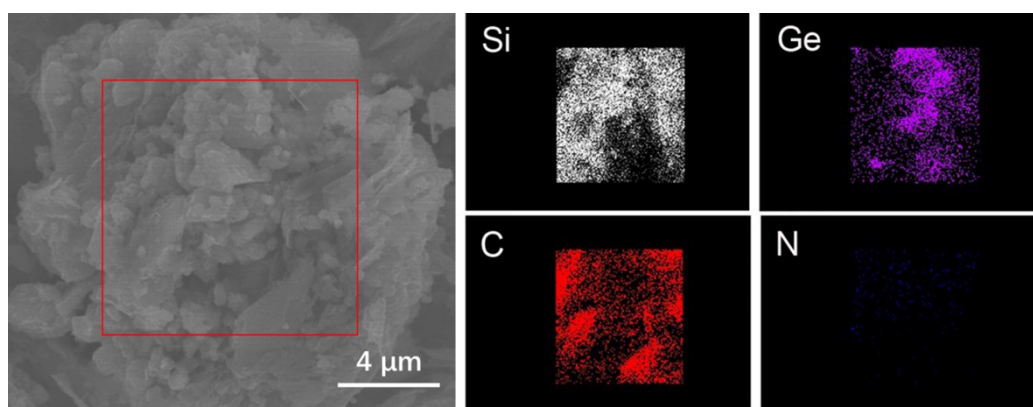


Fig. S1 Elemental mapping images of Si/Ge/G@C composite.

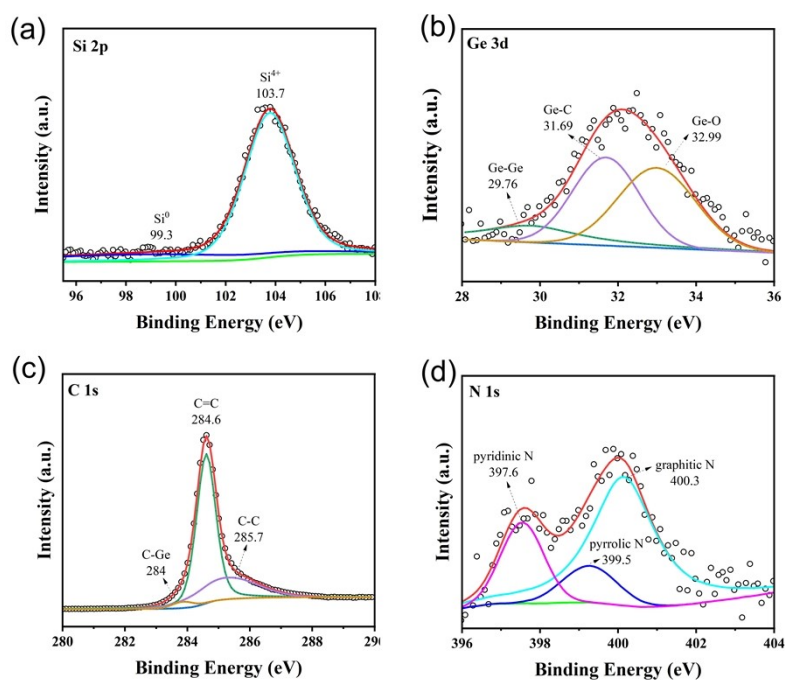


Fig. S2 High-resolution XPS spectra of (a) Si 2p, (b) Ge 3d, (c) C 1s and (d) N 1s for the Si/Ge/G@C composite.

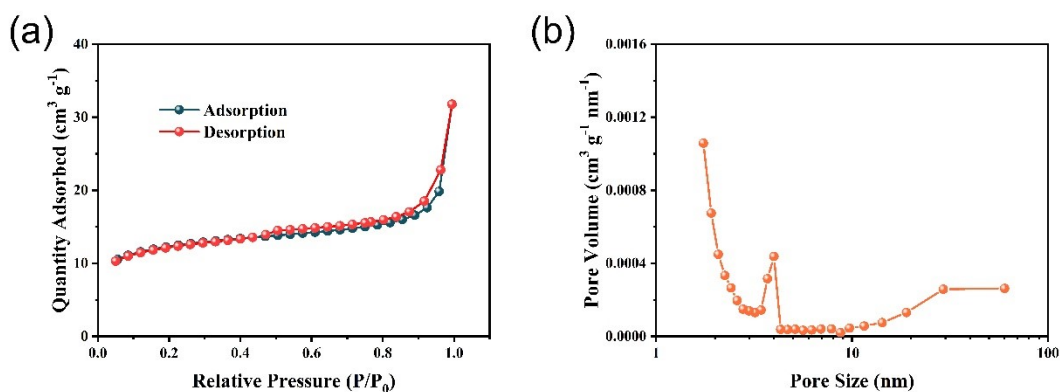


Fig. S3 Nitrogen adsorption-desorption isotherms (a) and pore-structure (b) of the Si/Ge/graphite@C composite.

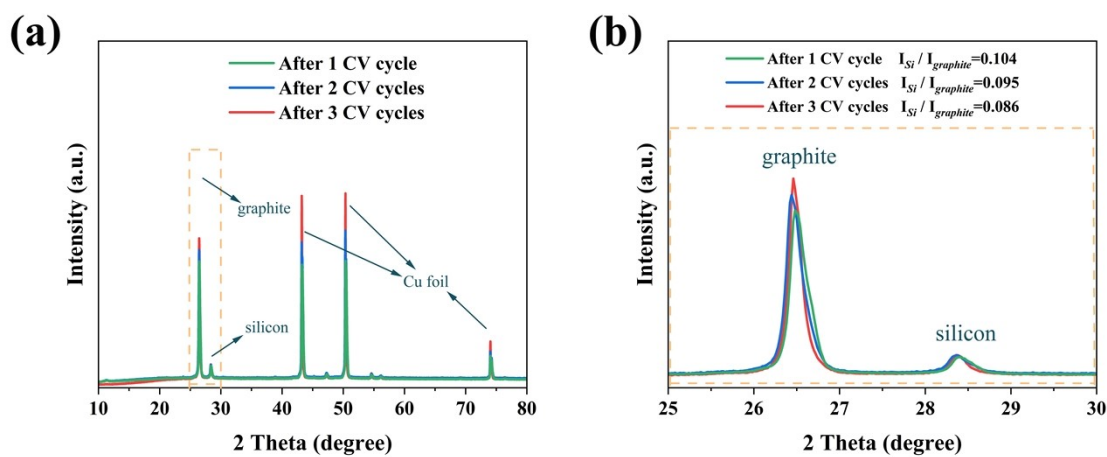


Fig. S4 (a) Ex-situ XRD of the Si/Ge/graphite@C electrodes after different CV cycles. (b) Magnified patterns of the dashed box in (a).

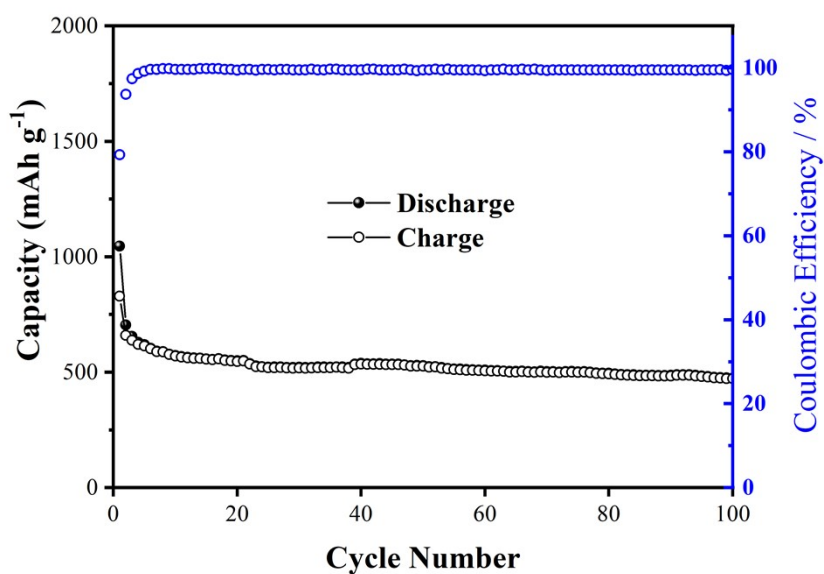


Fig. S5 Charge/discharge performance and coulombic efficiency of the Si/Ge/graphite@C composite at  $0.2 \text{ A g}^{-1}$ .

**Table S1** Comparison of electrochemical properties of Si-based anodes

Materials	Current density (mA g <sup>-1</sup> )	Cycle number	Discharge capacity (mAh g <sup>-1</sup> )	reference
T-SGT/Si@C	500	300	434.4	[1]
Si-C/G-A	500	200	435	[2]
Si/Graphite	1000	400	522.4	[3]
Si/Ge/G@C	100	100	706.0	[4]
Si@C@TiO <sub>2</sub>	350	420	393.8	[5]
nano-Si/G/C	1000	500	368	[6]
Si-C-NG	100	100	471.5	[7]
Si/Ge/graphite@C	200	100	474	This work

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