

Supporting Information

Long-Cycle and High-Rate Si/SiO_x/Nitrogen-Doped Carbon Composite as an anode material for Lithium-Ion Batteries

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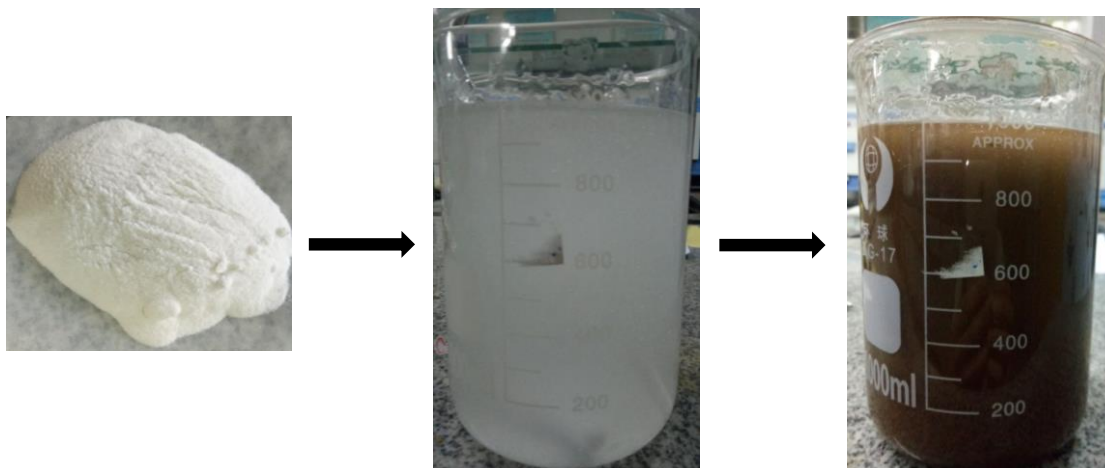


Figure S1. Photographs of the preparation process of the Si/PVP/KF colloidal solution.

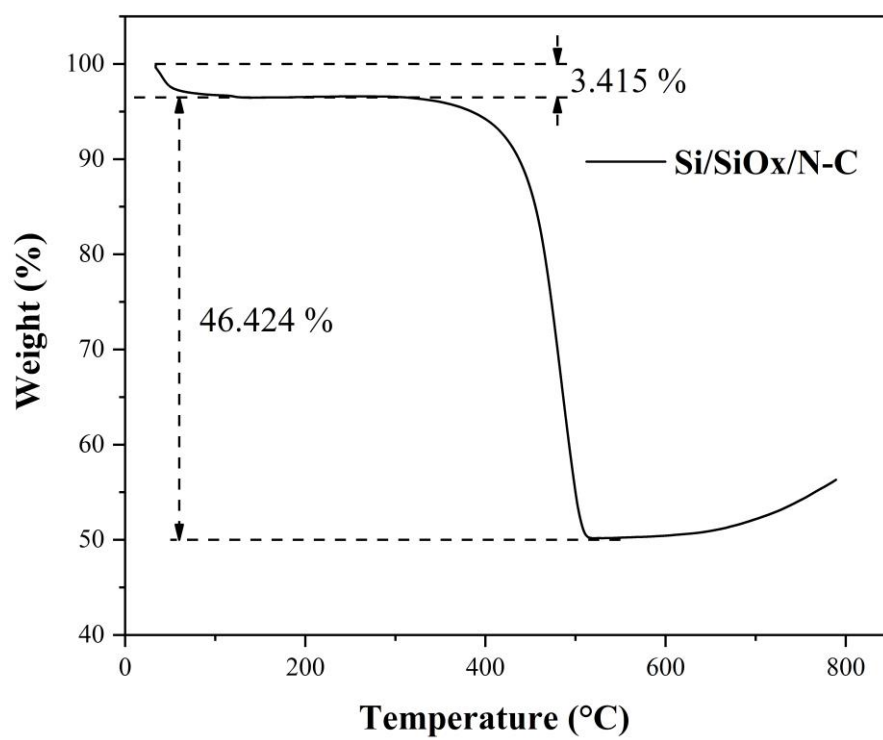


Figure S2. TGA curve of the Si/SiO_x/N-C

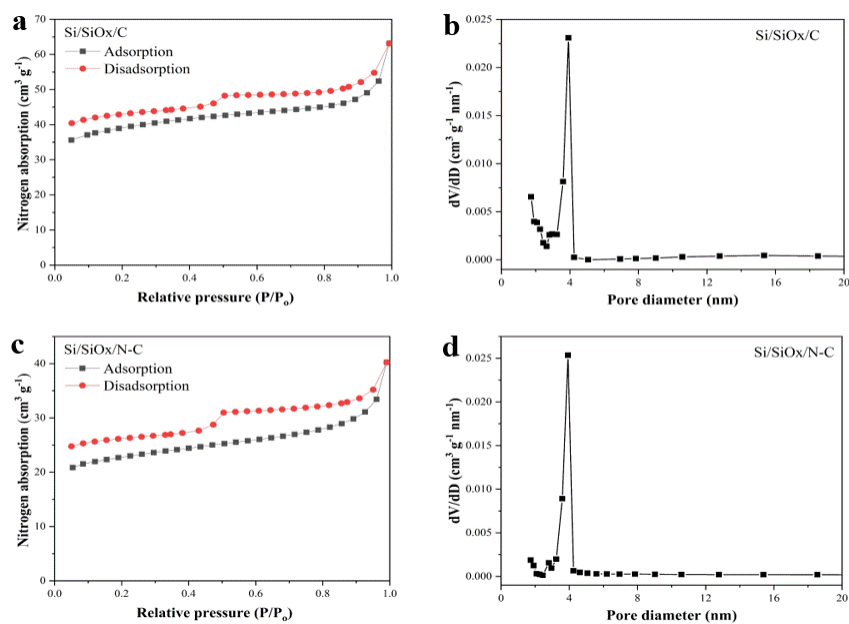


Figure S3. N₂ adsorption/desorption isotherms of (a) Si/SiOx/C and (c) Si/SiOx/N-C and the pore size distribution (b) Si/SiOx/C and (d) Si/SiOx/N-C.

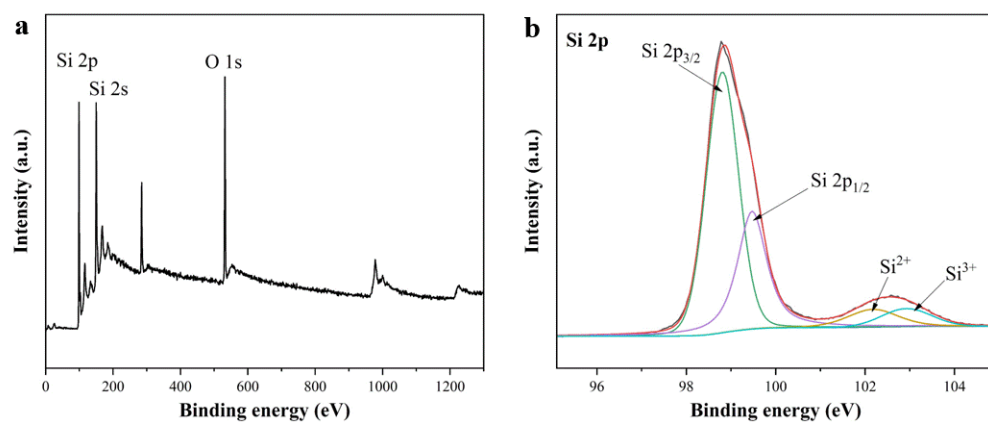


Figure S4. XPS survey spectrum (a) and Si 2p High-resolution XPS spectra (b) with Gaussian fitting of the pure Si.

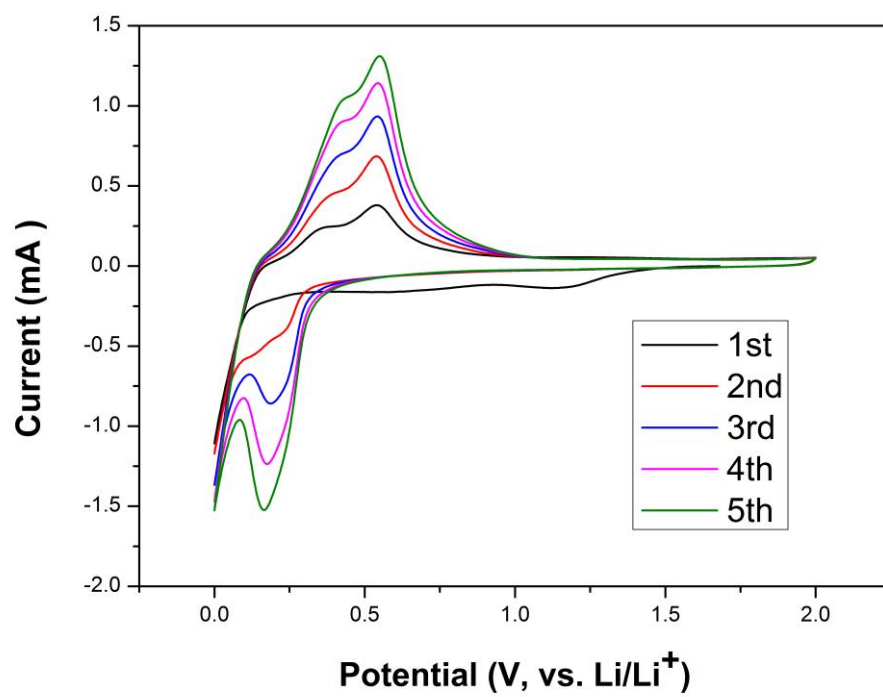


Figure S5. CV curves of the Si electrode at the scan rate of 0.2 mV s⁻¹.

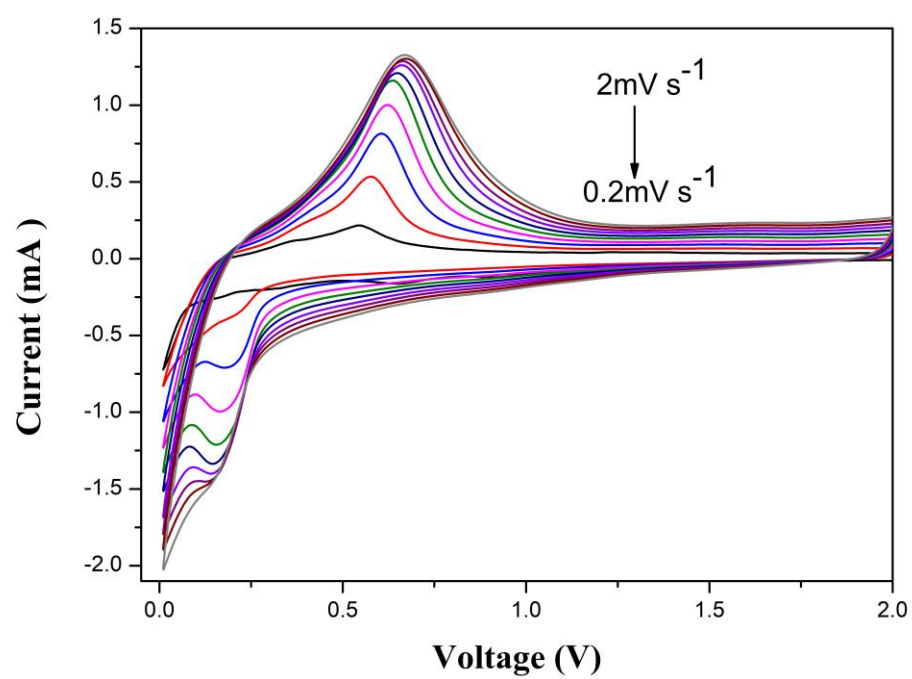


Figure S6. CV curves of the Si electrode at various scan rates of 0.2-2 mV s⁻¹.

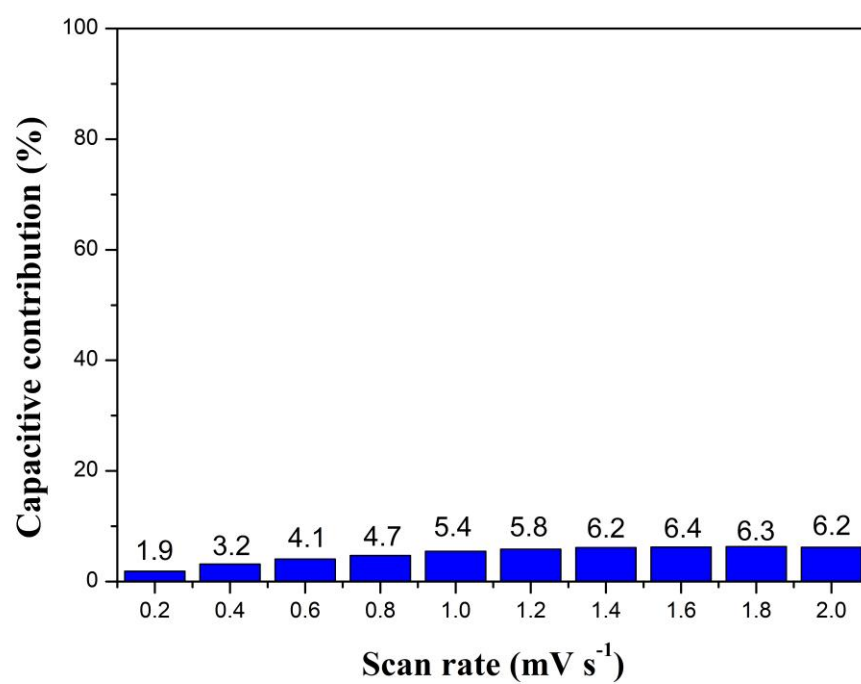


Figure S7. Contribution ratio of the capacitance in the Si electrode at various scan rates.

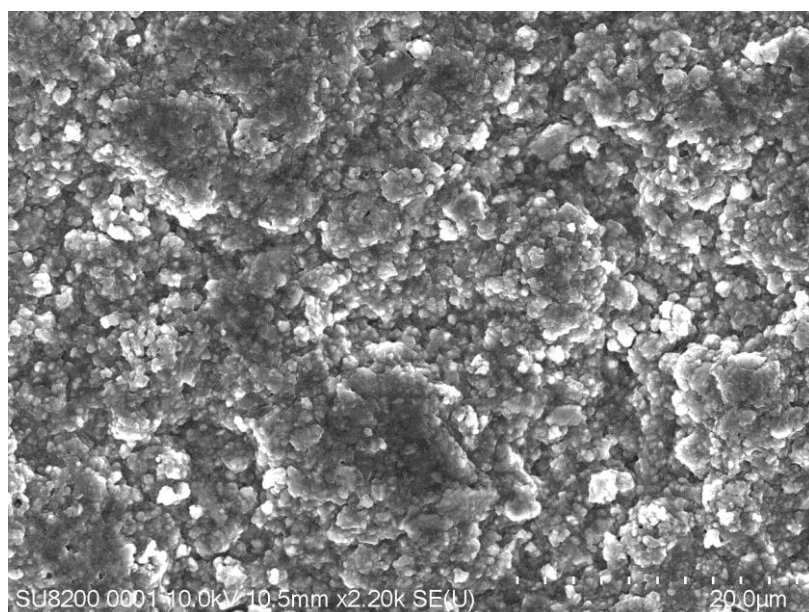


Figure S8. SEM image of the Si/SiO_x/N-C after 20 repeated cycles

Table S1. Impedance parameters of the Si/SiO_x/N-C, Si/SiO_x/ C and Si electrodes.

Samples	R _s (Ω)	R _{ct} (Ω)
Si/SiO _x /N-C (0th)	4.93	62.6
Si/SiO _x /N-C (100th)	5.13	75.9
Si/SiO _x / C (0th)	4.89	112.1
Si/SiO _x / C (100th)	5.67	121.4
Si (0th)	4.33	148.6
Si (100th)	5.17	434.2