

Supporting Information

~~Green~~ Silicon Carbide (SiC) Derived from Agricultural Wastes Potentially Competitive with Silicon Anodes

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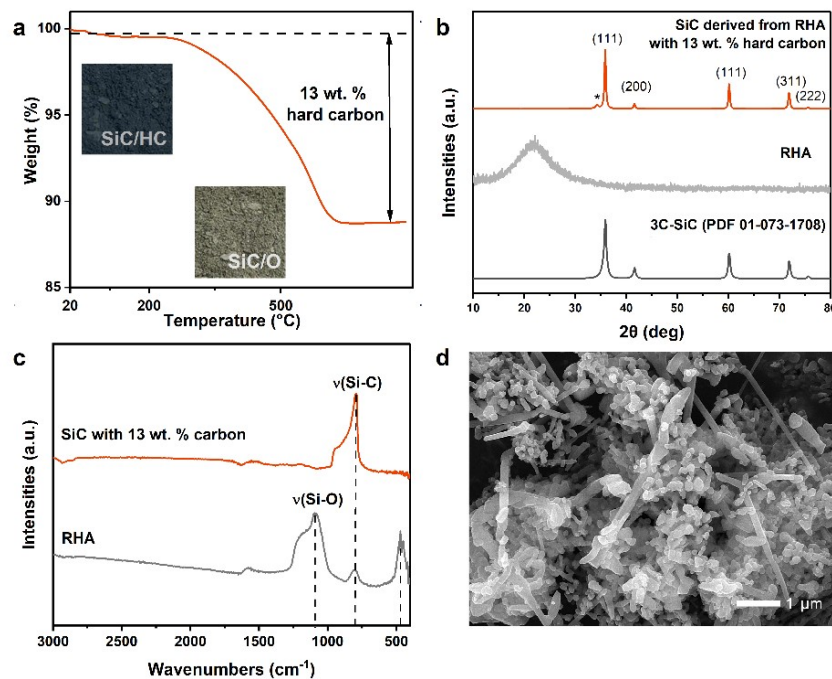


Figure S 1. **a.** TGA of 3C-SiC obtained on heating SDRHA (60 wt. % SiO₂, SSA ~360 m²/g) at 1450 °C/8 h/Ar at 500 °C/1 h/O₂ (inset: optical image of SiC/HC and SiC/O), **b.** XRD, **c.** FTIR, and **d.** SEM image of SiC/HC.

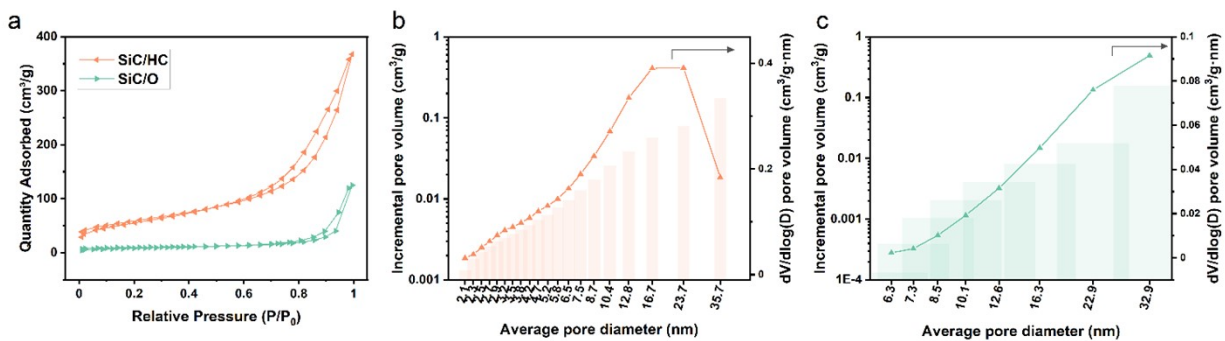


Figure S 2. a. N₂ adsorption/desorption isotherms for SiC/HC and SiC/O, and pore size distribution of b. SiC/HC, c. SiC/O (carbon oxidatively removed).

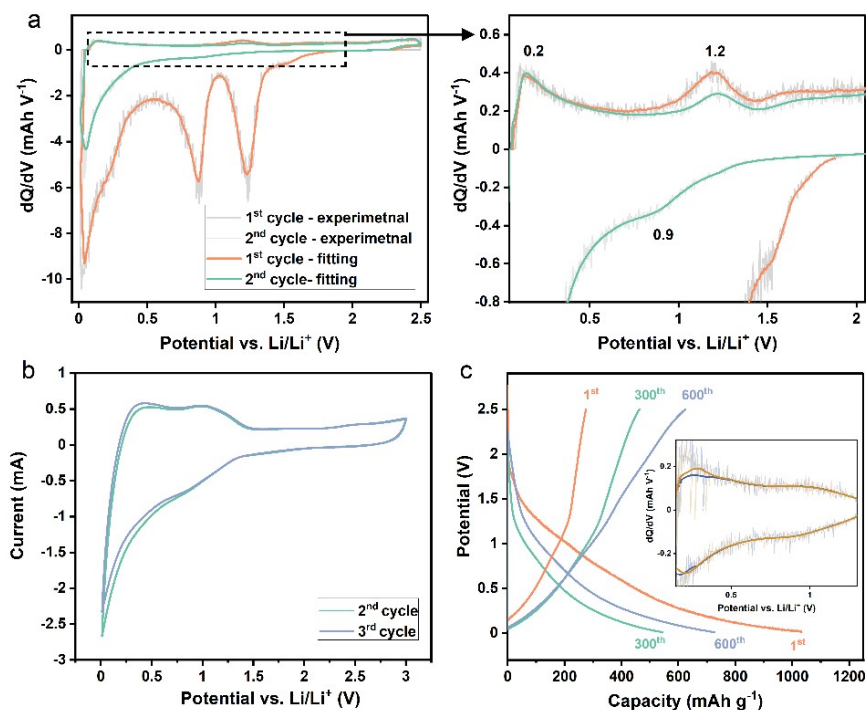


Figure S 3. a. Differential capacity analyses of SiC/HC, b. CV scanning curves, and c. charge/discharge curves (inset: differential capacity analyses) of SiC/O.

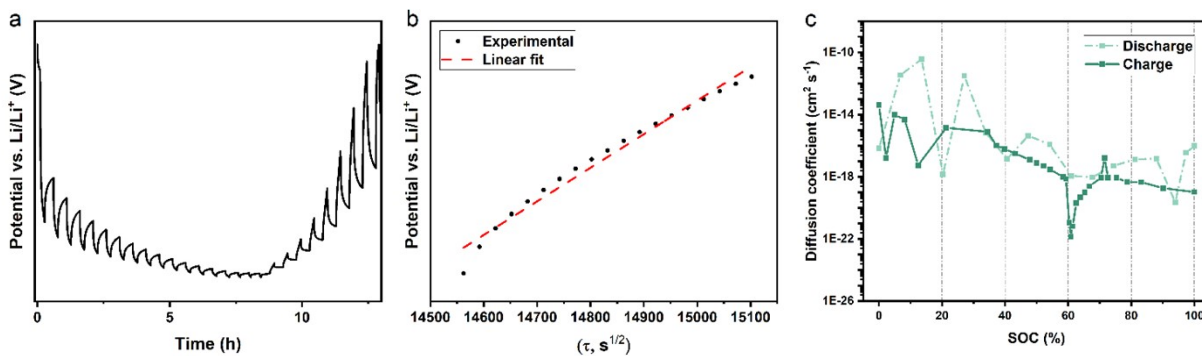


Figure S 4. **a.** GITT charge/discharge profiles of SiC half cell, and **b.** the linear fit of cell voltage against $\tau^{1/2}$ during a single titration step, and **c.** calculated Li⁺ diffusion coefficients (D) of SiC in half-cell from GITT as a function of SOC

Table S 1. XPS quantitative analyses of SiC/HC and SiC electrodes before and after cycling.

Elements	Binding energy (eV)	SiC/HC electrode		SiC/O electrode	
		Before cycling (At. %)	After cycling (At.%)	Before cycling (At.%)	After cycling (At.%)
F 1s	687	2.0	8.4 F ₆	3.4	6.4
O 1s	528	4.7	23.2	17	31.7
C 1s	284	86.7	65.82	60.3	60
P 2p	137	-	2.6	-	1.9
Si 2p	98	6.6	-	19.3	-

Table S 2. Binding energy of C 1s peak for various bonds.

Bonds	C 1s Binding energy (eV)	Ref
C-Si	283	1,2
C=C	284-284.3	3
C-C	284.5-284.9	3
C-O/CH ₂	285.5-285.9	4
C-O-C	286.5-287.0	3
C=O	287.7-288.0	3
O-C=O	288.4-289.0	3
CF ₂	290	4

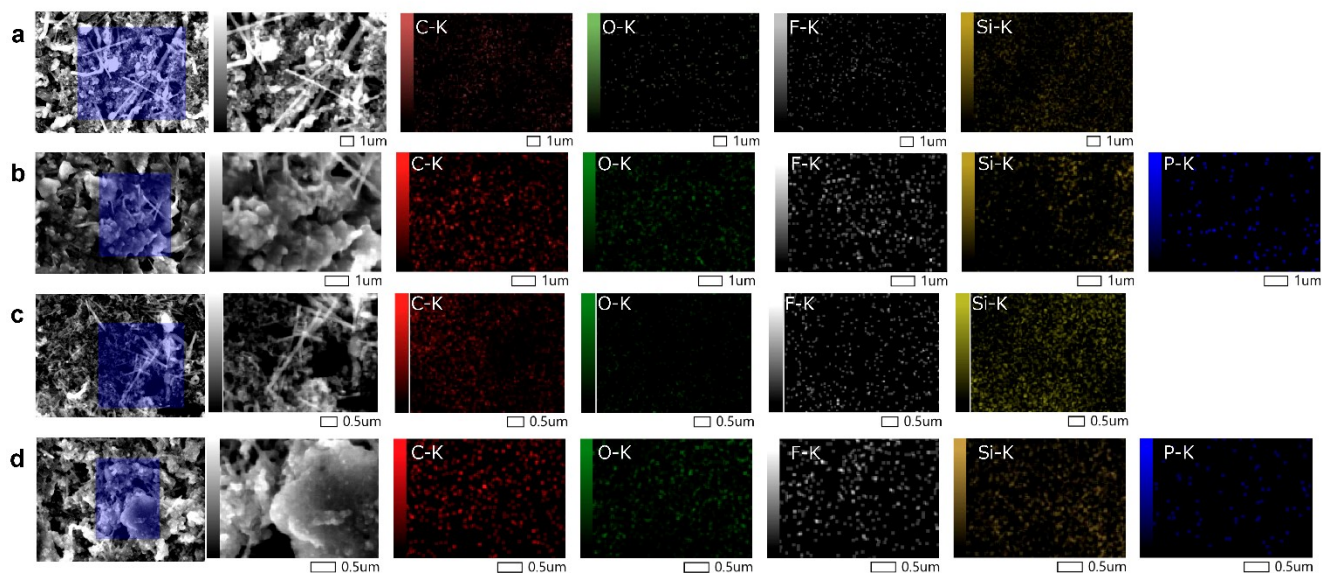


Figure S 5. a. EDX mapping of **a.** pristine, **b.** cycled SiC/HC electrodes, **c.** pristine, and **d.** cycled SiC/O electrodes.

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