

Supporting information

Direct plasma deposition of amorphous Si/C nanocomposites as high performance anode for lithium ion batteries

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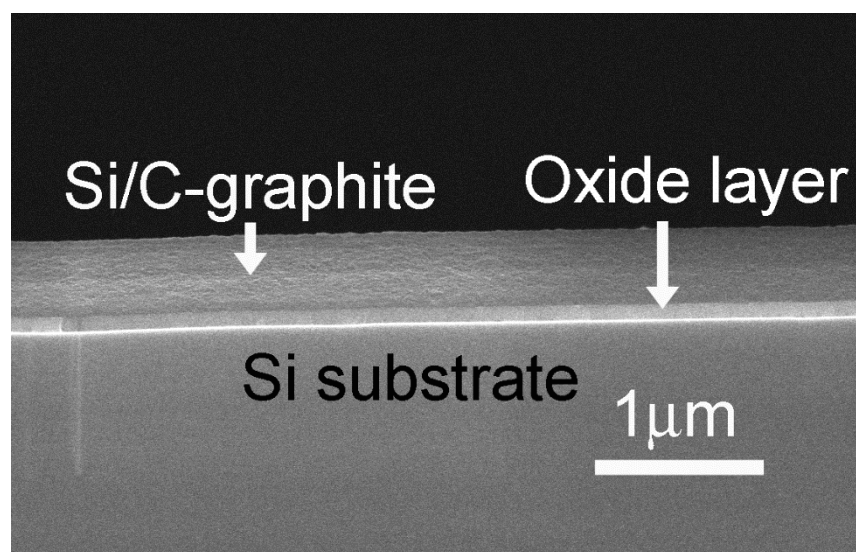


Figure S1 A cross section SEM image of the Si/C-graphite sample deposited on a Si (001) wafer with 100 nm oxide layer

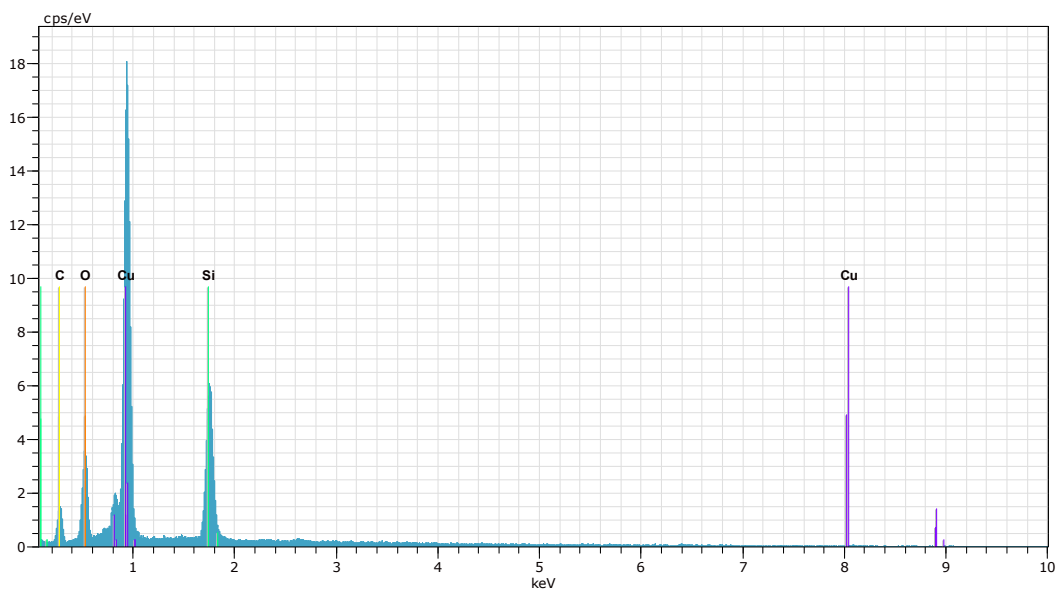


Figure S2 EDS spectrum of the Si/C-graphite sample deposited on a copper foil

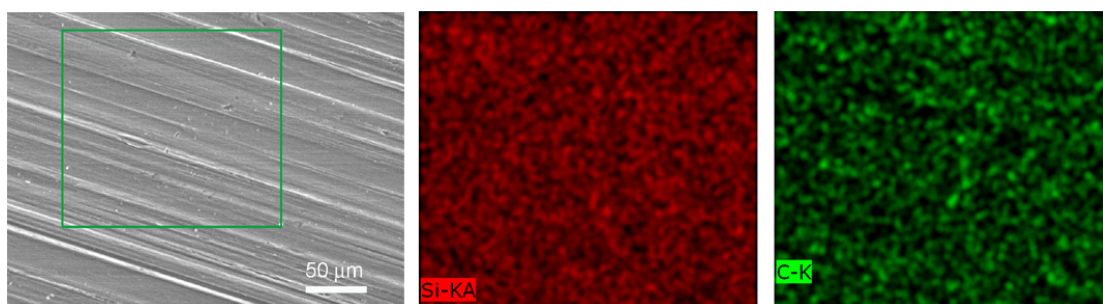


Figure S3 EDS elemental mapping of the Si/C-CH₄ sample in SEM.

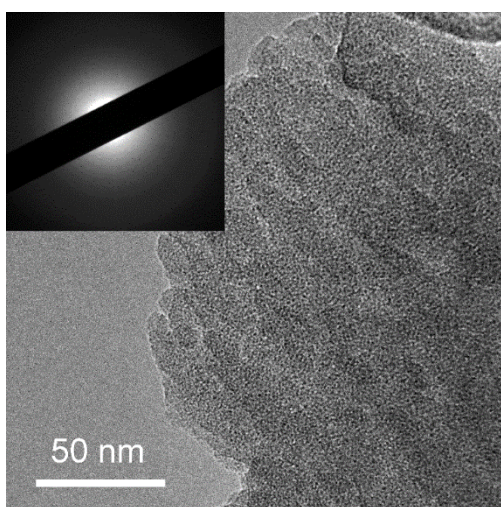


Figure S4 A TEM image of the Si/C-CH₄ sample. The inset is the corresponding electron diffraction pattern.

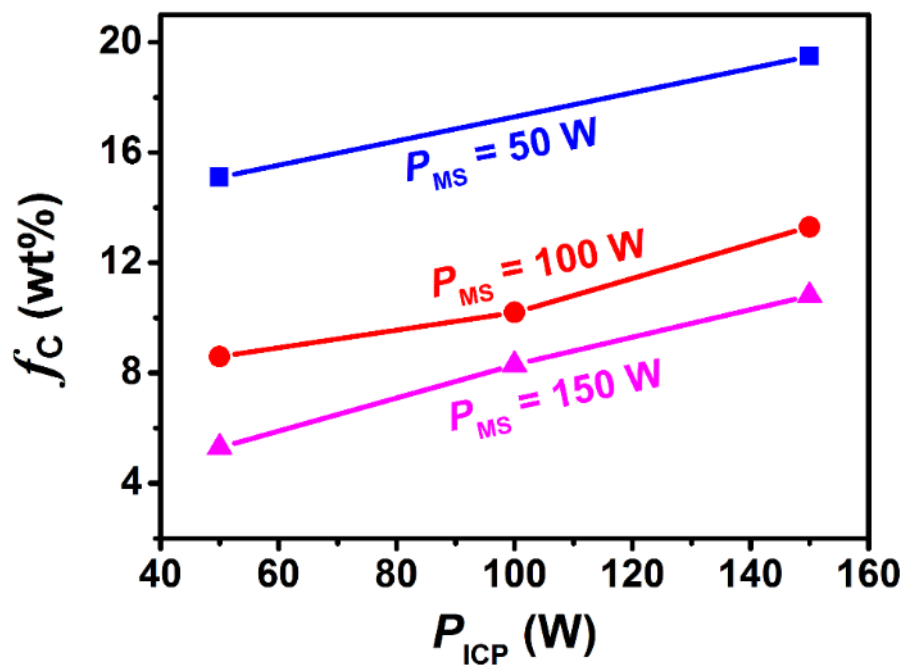


Figure S5 Variation of the carbon fraction (f_C , in wt%) with the power of the two plasma sources

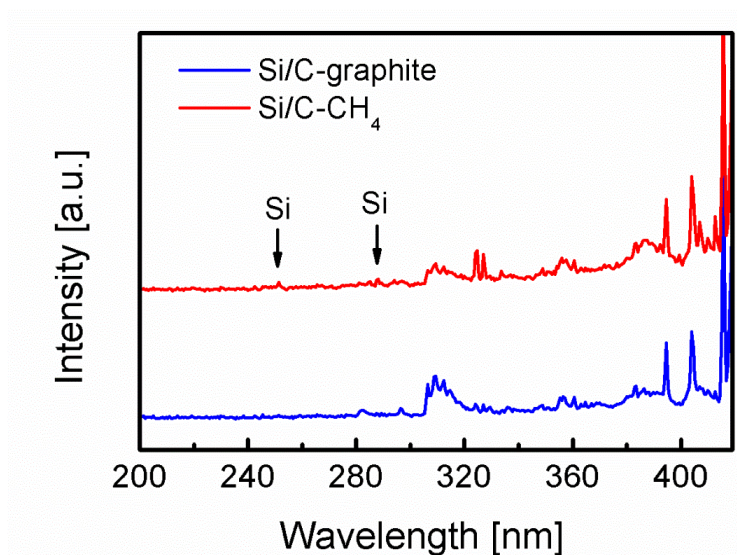


Figure S6 *In situ* optical emission spectra during the preparation of the composites. The emission line from atomic Si is shown by the black arrows in the figure.

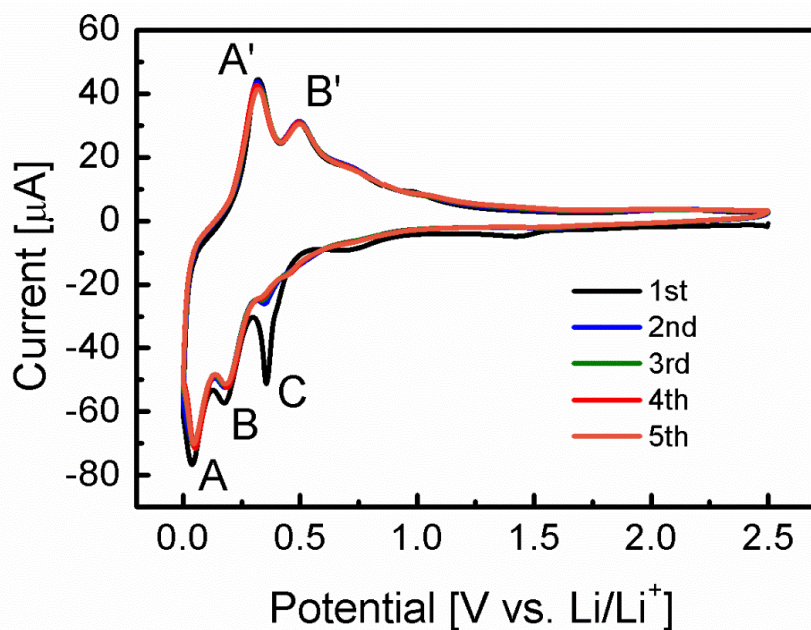


Figure S7 Cyclic voltammetry curve of the first 5 cycles of the Si/C-graphite sample. The C peak in the first cycle is corresponding to the formation of the solid electrolyte interface (SEI) layer. The pairs of peaks A-A' and B-B' are corresponding to the stepwise lithiation/delithiation reactions of Si.

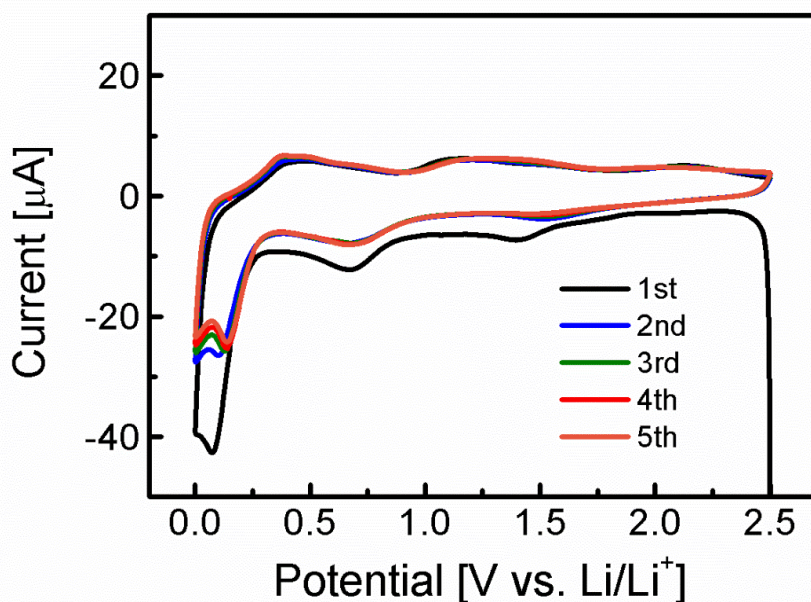


Figure S8 Cyclic voltammetry curve of the first 5 cycles of the Si/C-CH₄ sample.

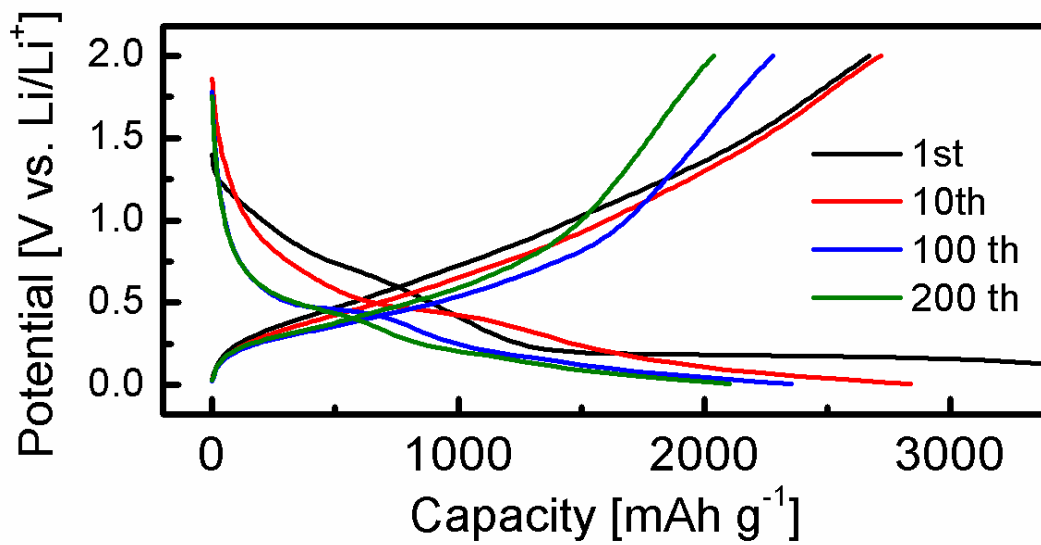


Figure S9 Voltage-capacity curves at different cycle number of the Si/C-graphite sample. The charge/discharge current is 0.40 A·g⁻¹.