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MDPI

Supplementary Materials

Flexible Carbon Nanotubes Confined Yolk-Shelled Silicon-Based Anode with Superior Conductivity for Lithium Storage

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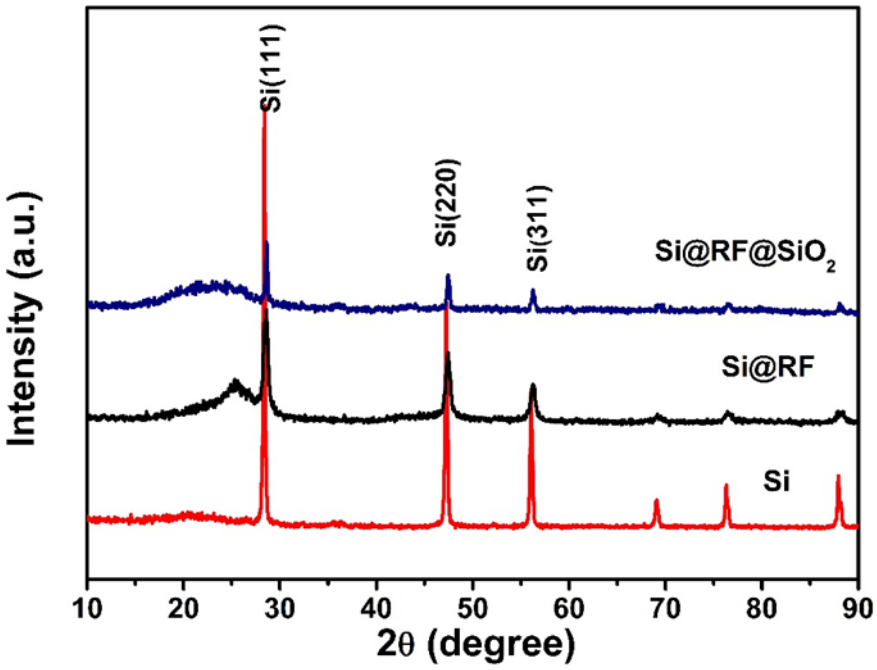

Figure S1. XRD patterns of reduced Si NPs in the MR process, Si@RF, and Si@RF@SiO_2.

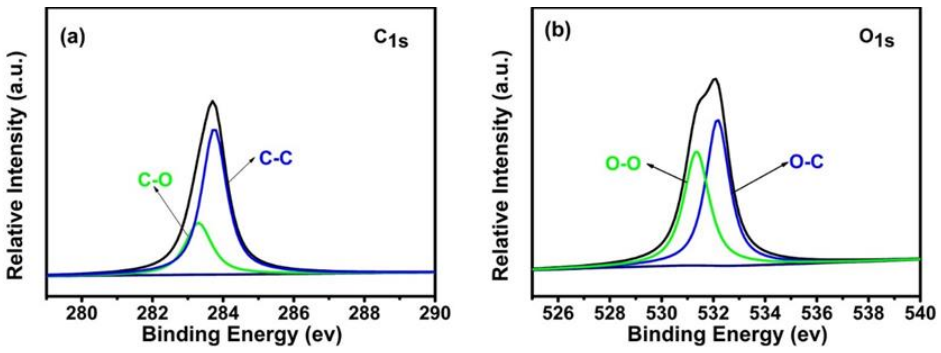

Figure S2. XPS spectrum of C_{1s} (a) and O_{1s} (b) of Si@C@v@CNTs.

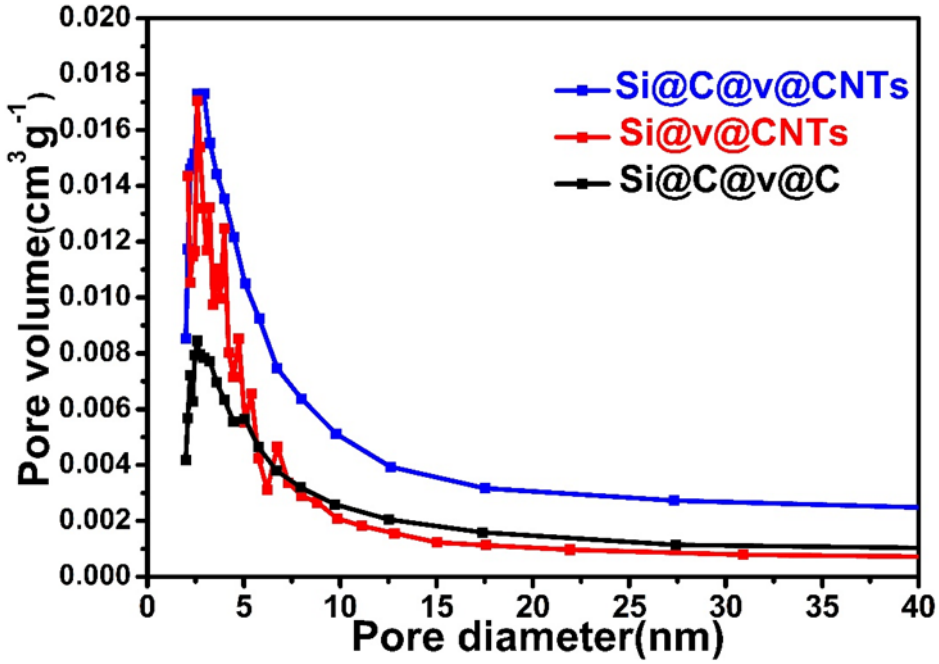

Figure S3. The pore size distribution curve of Si@C@v@C, Si@v@CNTs, and Si@C@v@CNTs.

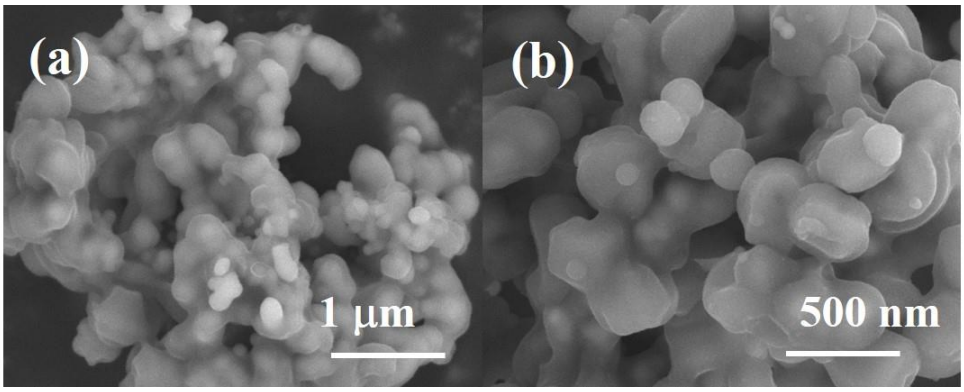

Figure S4. SEM images of Si@C@v@C (**a, b**).

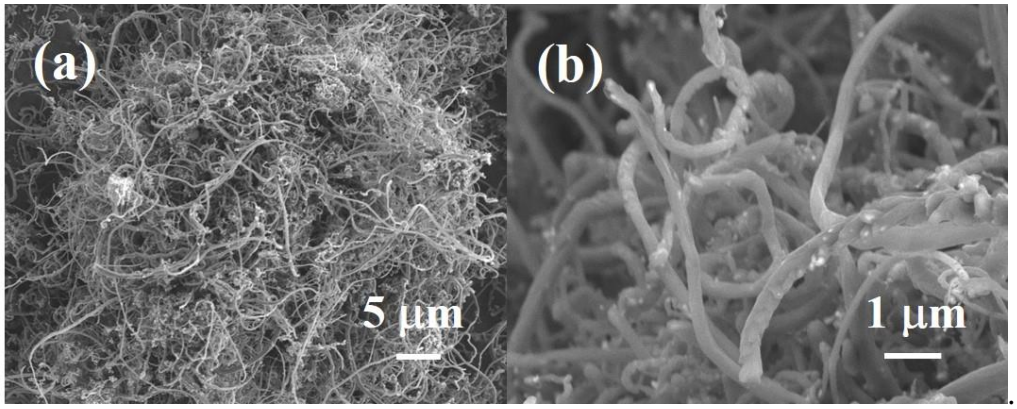

Figure S5. SEM images of Si@v@CNTs (**a, b**).

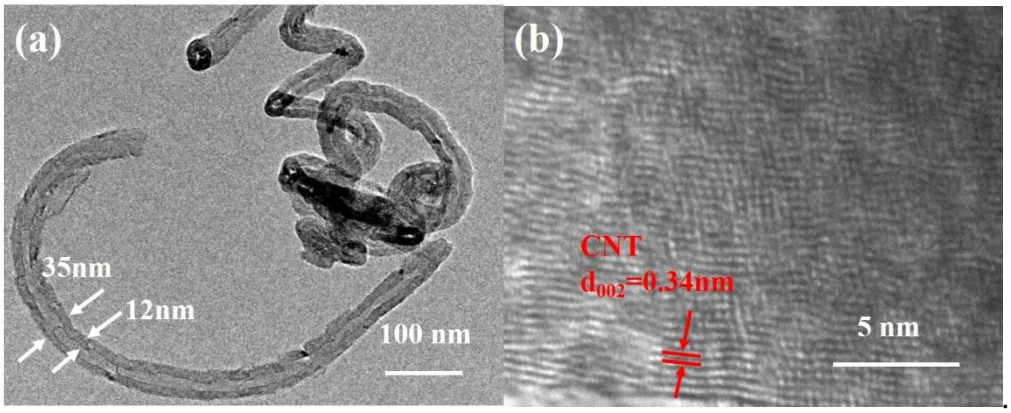

Figure S6. TEM images of a single CNT.

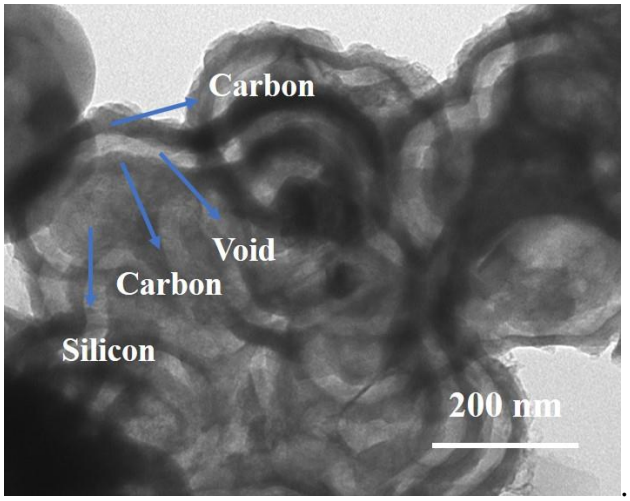

Figure S7. TEM images of Si@C@v@C.

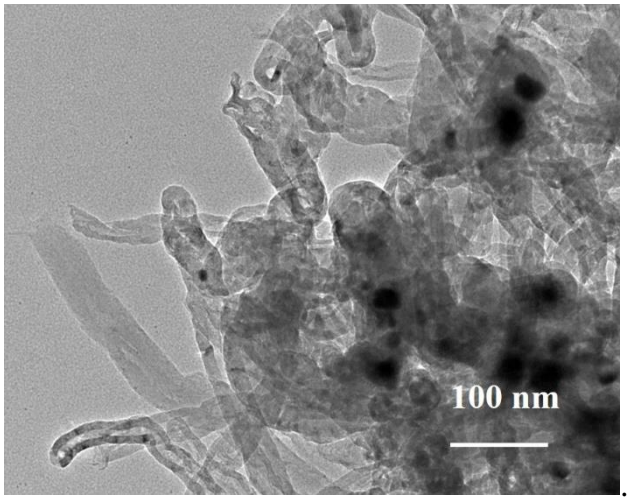

Figure S8. TEM images of Si@v@CNTs.

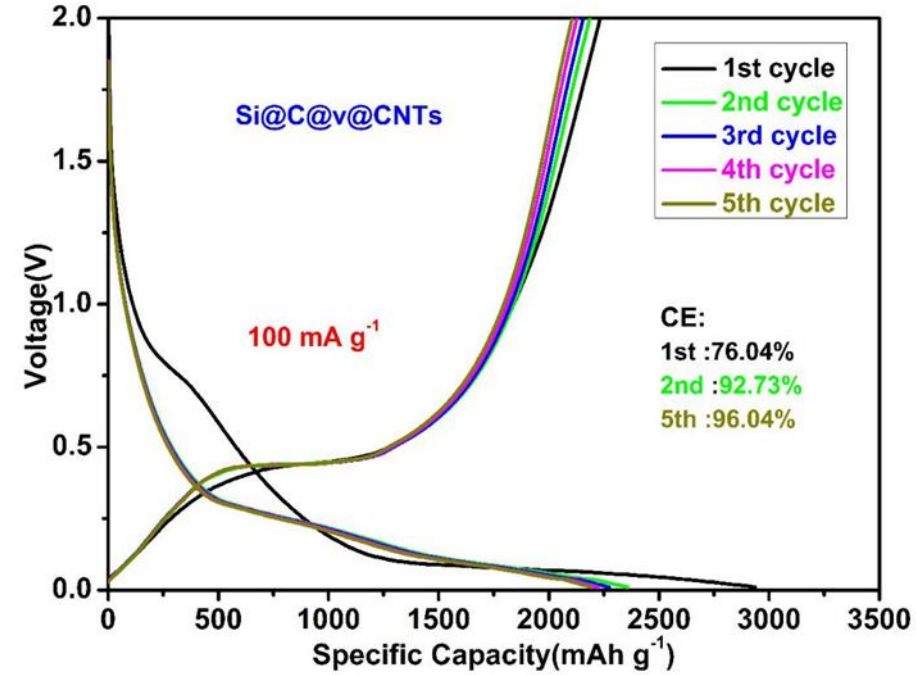

Figure S9. The first five discharge-charge curves of Si@C@v@CNTs at current density of 100 mA g^{-1}.

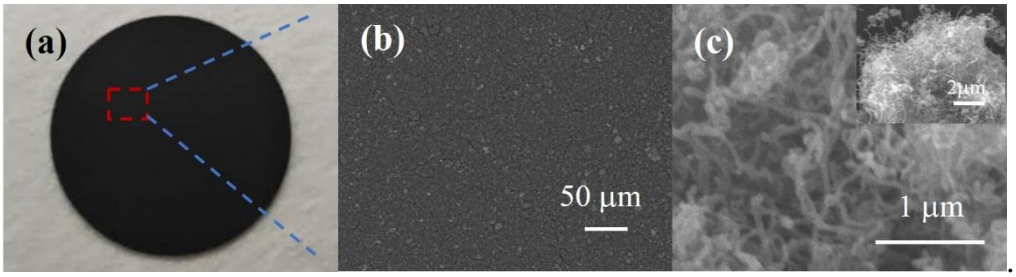

Figure S10. (**a**) Digital photograph, (**b, c)** SEM image of Si@C@v@CNTs after the cycling test at 1.0 A g^{-1}.

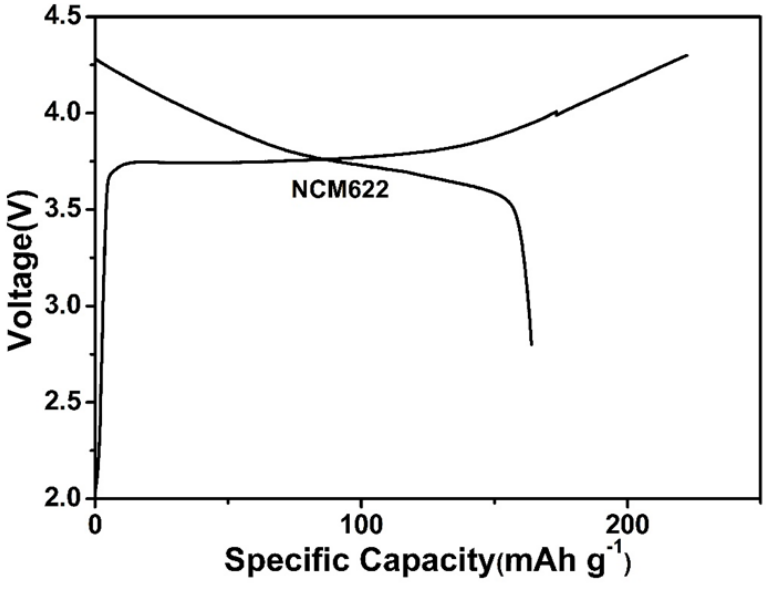

Figure S11. Charge/discharge profiles of NCM626 between 2.0–4.3 V.

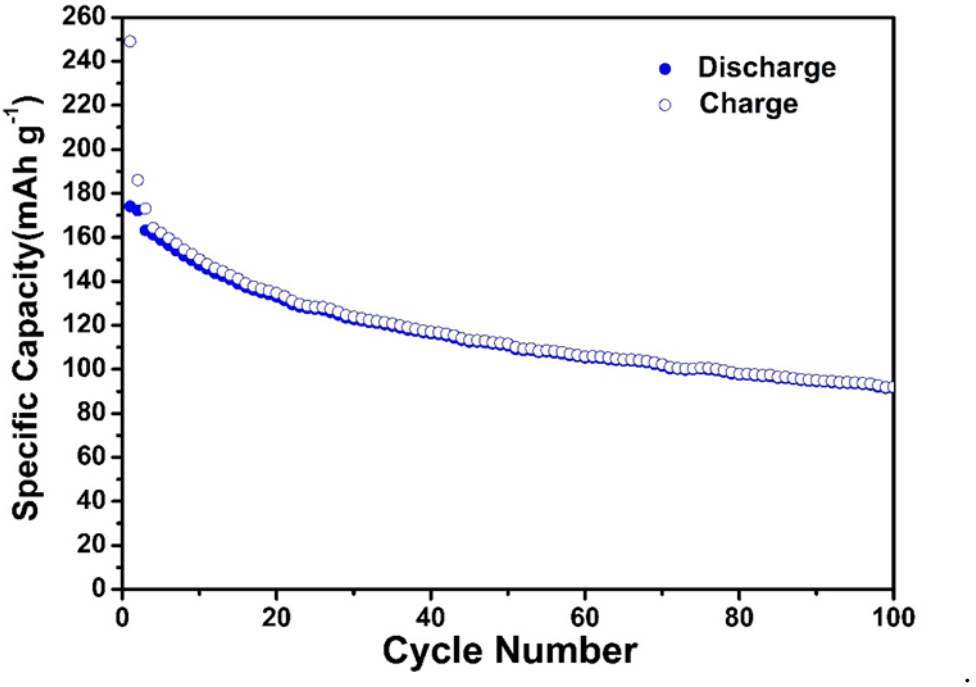

Figure S12. The electrochemical performance of the full cell using Si@C@v@CNTs as anode and $LiNi_{0.6}Co_{0.2}Mn_{0.2}O_2$ (NCM622) as cathode at the current density of 100 mA g^{-1}.

Table S1. The Brunauer-Emmett-Teller (BET) surface area, pore volume and average pore size of the samples.

Sample	Si@C@v@C	Si@v@CNT	Si@C@v@CNT
Surface area (m^2 g^{-1})	57.92	68.22	106.98
Pore volume (cm^3 g^{-1})	0.2127	0.1056	0.3212
Average pore size (nm)	24.5750	18.6534	21.0691