

## Supporting information

### Putting Nano Armors on Yolk-Shell Si@C Nanoparticles: A Reliable Engineering Way to Build Better Si-based Anodes for Li-Ion Batteries

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**Page S-1: Front Cover.**

**Page S-2: Figure S1. Raman spectrum of Y-S Si@C⊂Ni electrode samples.**

**Figure S2. TG curve of hybrid powder samples (after acid wash) in air atmospheres.**

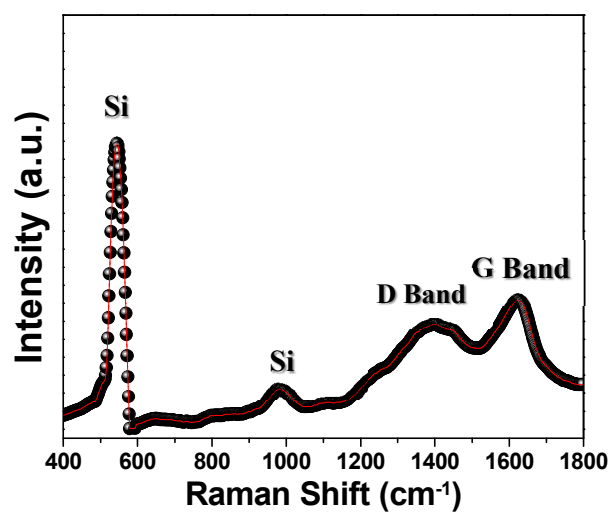
**Page S-3: Figure S3. The cyclic CE plot of Y-S Si@C⊂Ni, Y-S Si@C and bare Si electrodes.**

**Figure S4. EIS plots of distinct anodes before and after 600 cycles.**

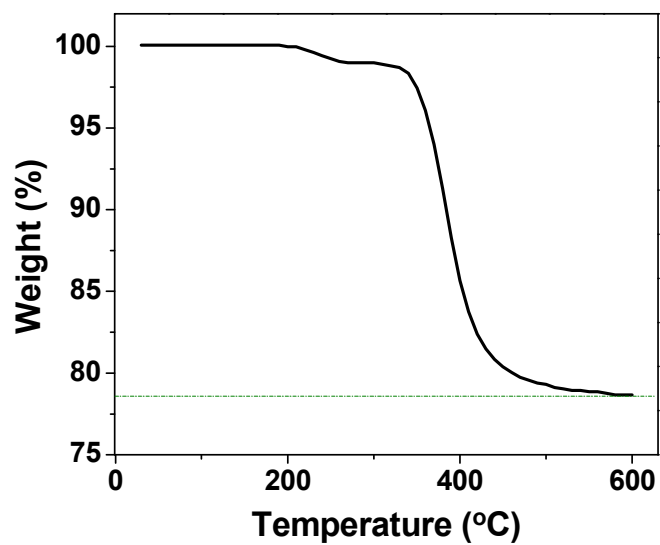
**Page S-4: Figure S5. Additional SEM observations of Si@C⊂Ni electrode after 600 cycles.**

**Figure S6. SEM observations of Si@C hybrid electrodes after 600 cycles.**

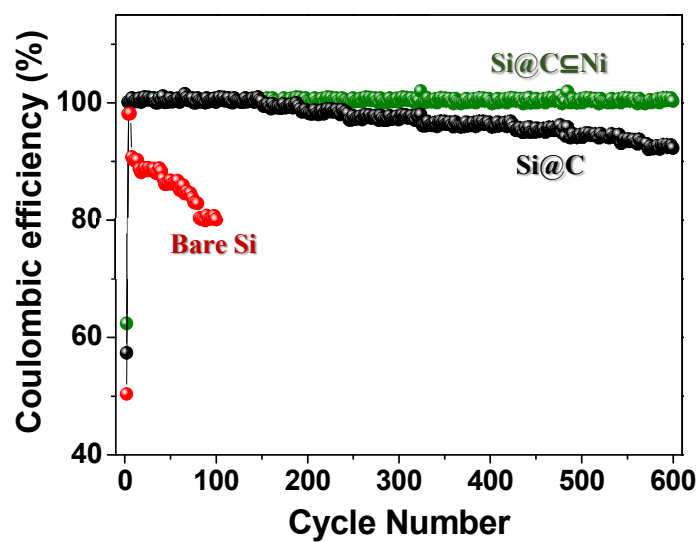
**Page S-5: Figure S7. TEM image of Si@C⊂Ni electrode after 600 cycles.**



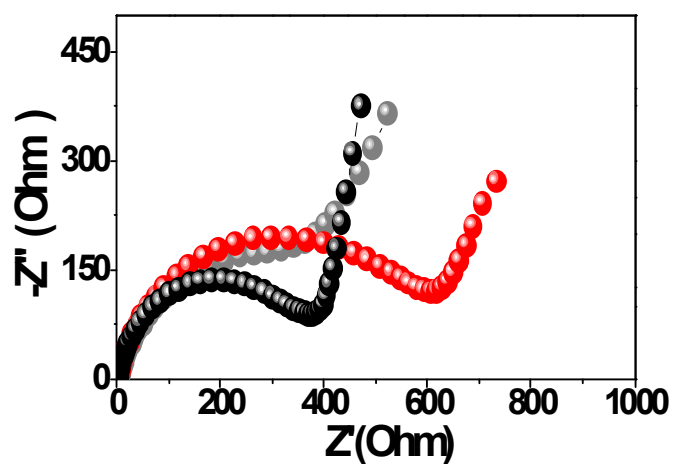
**Figure S1.** Raman spectrum of Si@C⊆Ni hybrid products.



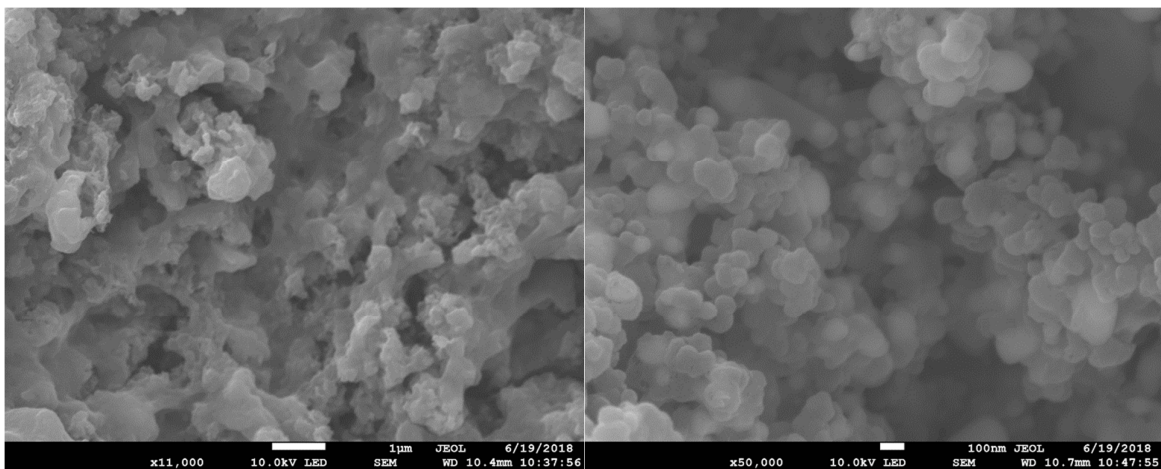
**Figure S2.** TG curve of hybrid powder samples (after acid wash) in air atmospheres.



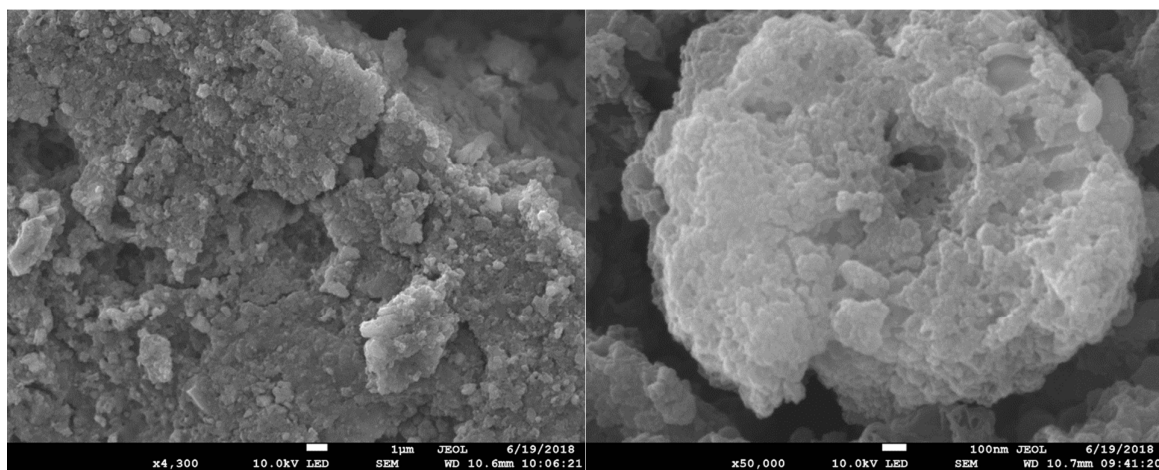
**Figure S3.** The cyclic CE of Y-S Si@C⊃Ni, Y-S Si@C and bare Si electrodes.



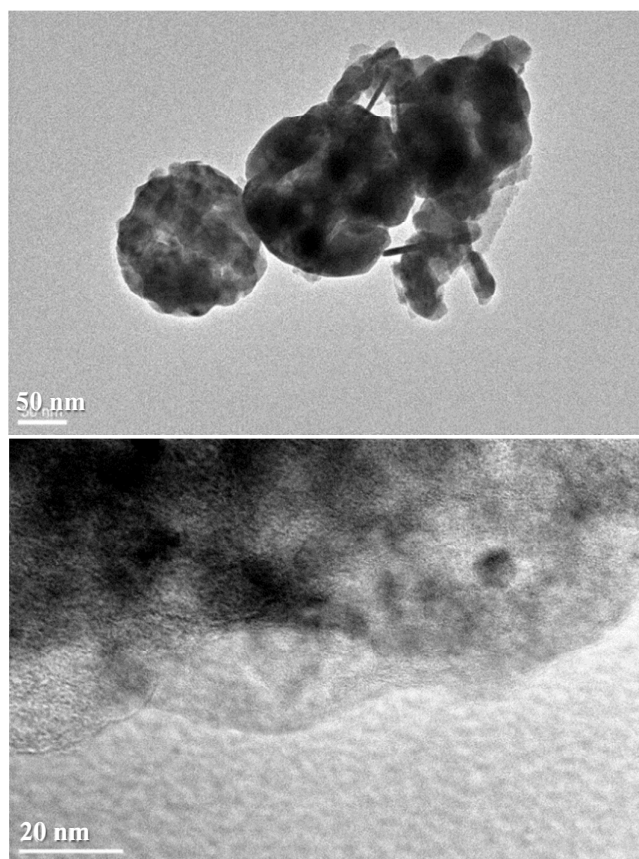
**Figure S4.** EIS plots of distinct anodes (black: Si@C⊃Ni; gray: Si@C; red: pure Si nanoparticles) before and after 600 cycles.



**Figure S5.** Additional SEM images of Si@C⊂Ni electrode after 600 cycles.



**Figure S6.** SEM observations of Si@C hybrid electrodes after 600 cycles.



**Figure S7.** TEM observations on cycled Y-S Si@C/Ni anodes after 600 cycles.