**Supplementary Information**

Synthesis and Electrochemical Performance of Electrostatic Self-assembly Nano-Silicon@N-doped reduced graphene oxide/Carbon nanofibers Composite as Anode Material for Lithium-Ion Batteries

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**Figure S1**. Process for preparing the catalysts and the synthesis of carbon nanofibers.

EDX

**Figure S2.** The EDS mapping of the Si, N, C, O elements on the surface of the Si@N-doped rGO/CNF composite.

**Table S1.** Raman spectroscopy results of the GO, rGO, CNFs, Si/rGO, and Si/CNF/rGO samples (see Figure 4(b)).

|  |  |
| --- | --- |
| Sample | ID/IG |
| GO | 1.05 |
| rGO | 0.96 |
| CNF | 0.99 |
| Si@APTES/N-doped GO | 1.03 |
| Si/rGO | 1.02 |
| Si@N-doped rGO | 1.00 |
| Si@N-doped rGO/CNF | 1.00 |

**Table S2.** Discharge capacity, coulomb efficiency, and capacity retention rate of the Si/CNF/rGO, Si@N-doped rGO and Si@N-doped rGO/CNF composite electrodes.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Samples | Max. discharge  capacity  (mAh/g) | Discharge capacity (mAh/g) | | Coulomb efficiency (%) | | Capacity retention rate (%) | |
| **After 37 cycle** | **After 89 cycle** | **first cycle** | **37 cycle** | **After 37 cycle** | **After 89 cycle** |
| Si/CNF/rGO | 3434.9 | 1054.2 | 989.5 | 51.7 | 99.9 | 30.7 | 28.9 |
| Si@N-doped rGO | 3138.8 | 1140.2 | 1093.1 | 66.1 | 94.5 | 36.3 | 34.8 |
| Si@N-doped rGO/CNF | 2192.3 | 1418.8 | - | 71.5 | 99.7 | 64.7 | - |