Supporting Information

**Cathodic polarization suppressed sodium-ion full cell with a 3.3 V high-voltage**

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**Fig. S1**. The mass production experiments of NVP-NP with a final product of about 53 g.

**Fig. S2**. SEM image of NVP-Bulk and the accompanying diagram is the corresponding EDS elemental mappings.

**Fig. S3**. SEM images of NVP-Bare and the accompanying diagram is the corresponding EDS elemental mappings.

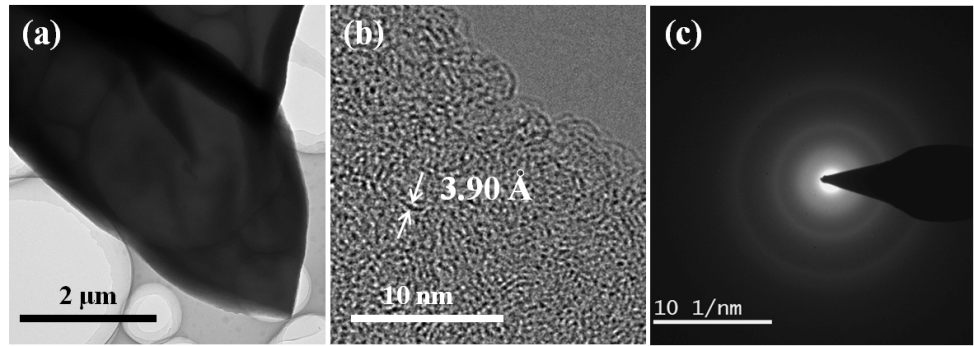
**Fig. S4**. SEM images of NVP-NP and the accompanying diagram is the corresponding EDS elemental mappings.

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**Fig. S5**. Raman spectrum of NVP-NP, NVP-Bulk and NVP-Bare.

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**Fig. S6**. Charge/discharge curves of the NVP-N cycled at 15 C rate.



**Fig. S7**. TEM (a), HRTEM (b) and SAED pattern (c) of the HC-1200.

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**Fig. S8**. Raman spectra of the HC-1200.

**Table S1**. The assembly illustrations of the representative full cells with respective to the mass of cathode. The capacity of cathode materials is set as 115 mAh g-1 to realize a capacity ratio of cathode/anode to about 1.05:1 before full cell fabrication.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cell Number | 115 mAh g-1 \* Mass (mg) = Capacity (μAh)  (cathode) | Specific Capacity (mAh g-1) \* Mass (mg) = Capacity (μAh)  (anode) | Calculated Capacity Ratio | Current Density |
| Full-1 | 115 \* 1.12 = 129.9 | 303 \* 0.40 = 121 | 1.07 | 0.2 C |
| Full-2 | 115 \* 1.19 = 135.7 | 298 \* 0.44 = 131.1 | 1.03 | 0.2 C |
| Full-3 | 115 \* 1.05 = 121.8 | 295 \* 0.40 = 118 | 1.03 | 0.2 C |
| Full-4 | 115 \* 0.98 = 111.7 | 207 \* 0.52 = 107.6 | 1.04 | 0.5 C |
| Full-5 | 115 \* 0.91 = 101.9 | 198 \* 0.50 = 99.0 | 1.03 | 0.5 C |
| Full-6 | 115 \* 1.12 = 128.8 | 210 \* 0.56 = 117.6 | 1.10 | 0.5 C |

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**Fig. S9**. The capacity-potential illustrations of the recently published sodium-ion full cells based on the mass of cathode.

The detailed calculation process is as follows:

E: Specific gravimetric energy.

Ca: Capacity of the cell.

V: Average operating voltage.

M0: Mass of active material.

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**Fig. S10.** Galvanostatic charge/discharge measurements of the full cell at 0.2 C. The full cell is cathode limited type and the mass ratio of cathode to anode is consistent with Table S1.