Ration design of Mn/Si co-doped Na$_3$V$_2$(PO$_4$)$_3$ as cathode Na-ion Batteries

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Figure S1. (a) The survey XPS spectra of Na$_{3.5+x}$Mn$_{0.5}$V$_{1.5-3x}$(PO$_4$)$_{3-x}$(SiO$_4$)$_x$ (x = 0, 0.05, 0.1) cathodes, (b) Mn 2p, (c) V 2p and (d) Si 2p.
Figure S2. The Raman spectra of all samples.

Figure S3. The TGA curves of NMVP and NMVPS-0.05 cathodes.
Figure S4. The SEM images of NMVP sample.

Figure S5 Ex-XRD patterns of NVMP/C during galvanostatic charge/discharge
Figure S6. EIS results of NMVP, NMVPS-0.05 and NMVPS-0.1.

Table S1. Unit cell parameter table of all samples

<table>
<thead>
<tr>
<th>sample</th>
<th>a = b (Å)</th>
<th>c (Å)</th>
<th>Volume (Å³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMVP</td>
<td>8.837</td>
<td>21.705</td>
<td>1459.67</td>
</tr>
<tr>
<td>NMVPS-0.05</td>
<td>8.843</td>
<td>21.723</td>
<td>1464.78</td>
</tr>
<tr>
<td>NMVPS-0.1</td>
<td>8.850</td>
<td>21.736</td>
<td>1468.59</td>
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</tbody>
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