Supporting Information

In-situ catalytic formation of graphene-like graphitic layer decoration on $Na_3V_{2-x}Ga_x(PO_4)_3$ ($0 \leq x \leq 0.6$) for ultrafast and high energy sodium storage

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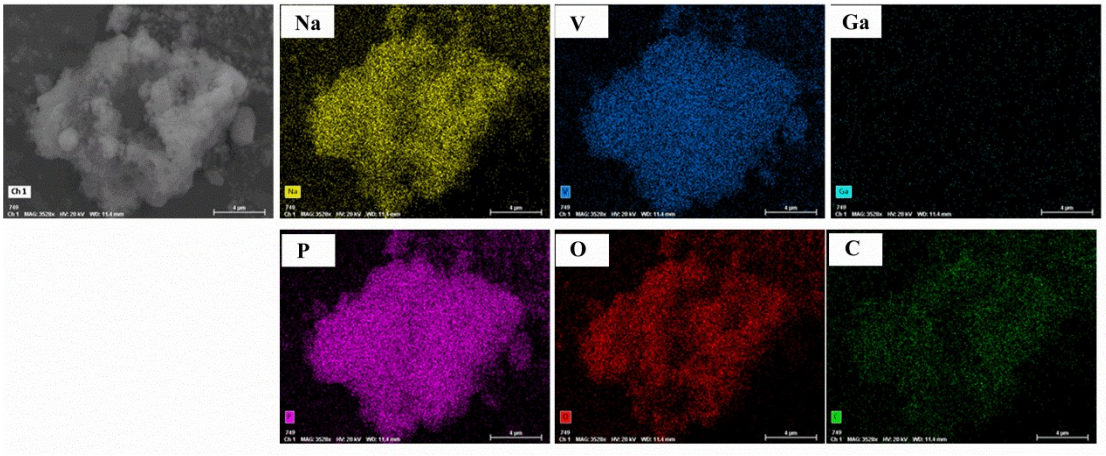

Fig. S1 Typical SEM image of $Na_3V_2(PO_4)_3$ and corresponding elemental mapping of sodium (yellow), vanadium (blue), gallium (cyan), phosphorous (plum), oxygen (red), and carbon (green) (i).

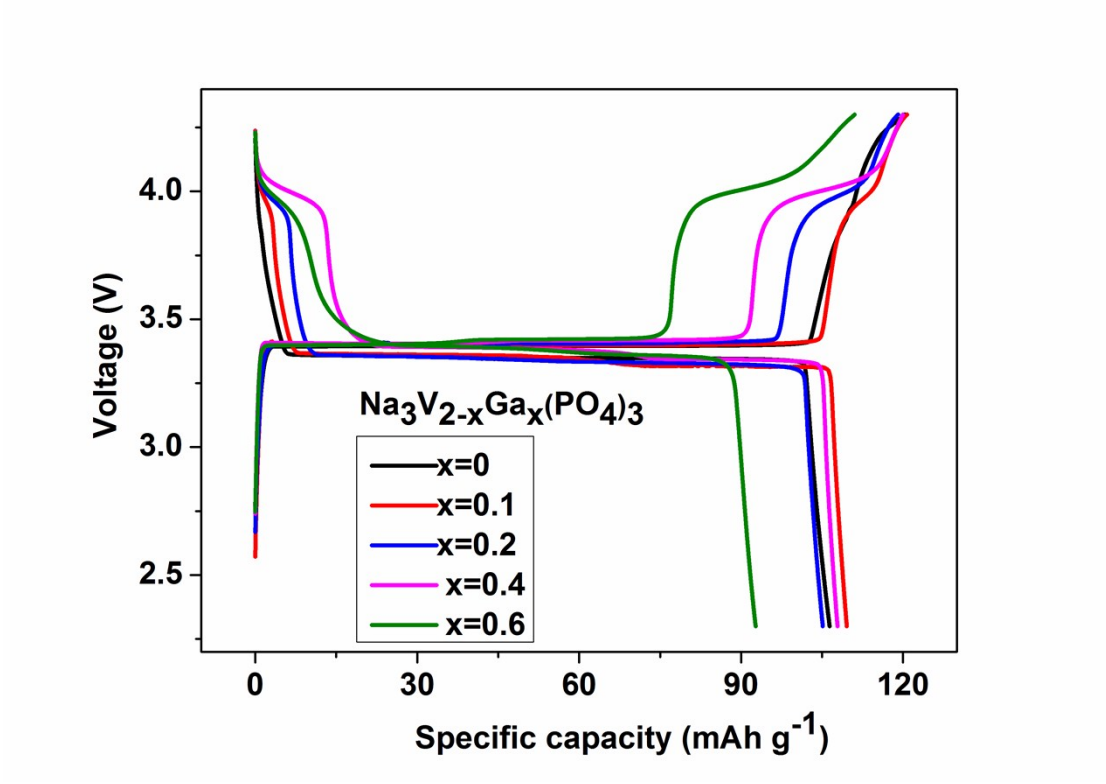

Fig. S2 The initial charge-discharge curves in the voltage range of 2.3-4.3 V for $Na_3V_{2-x}Ga_x(PO_4)_3$ (x= 0, 0.1, 0.2, 0.4 and 0.6) at 0.1 C.

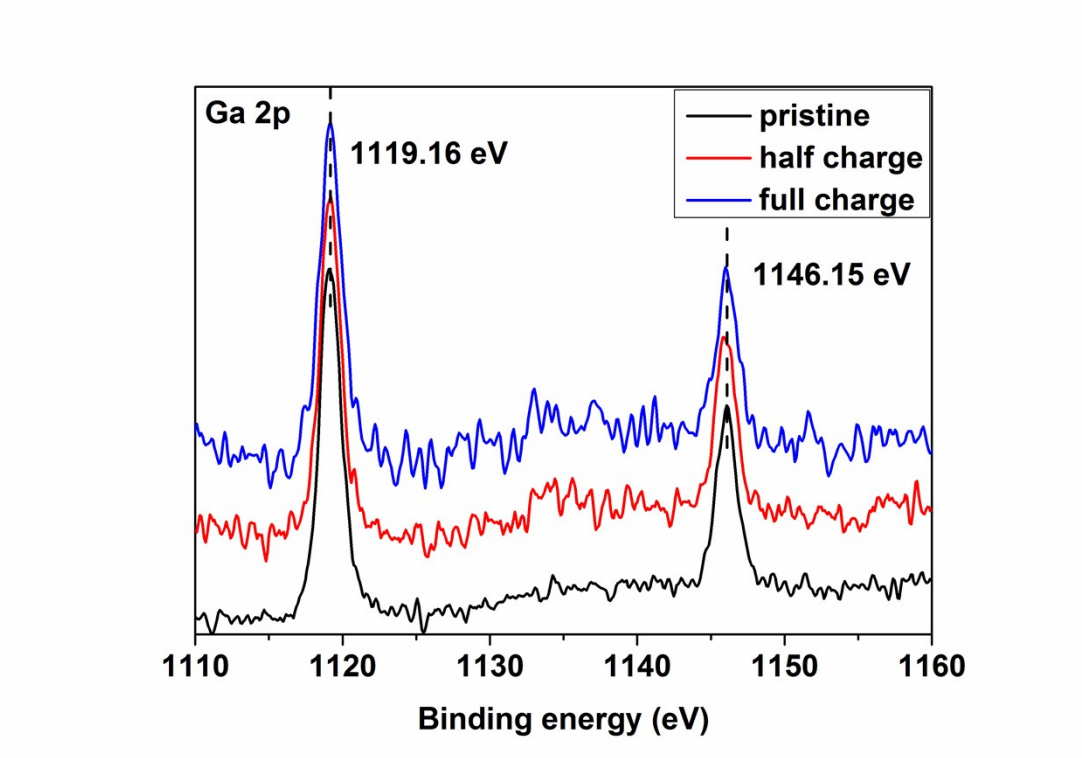

Fig. S3 Ex-situ XPS of $Na_3V_{1.6}Ga_{0.4}(PO_4)_3$ at different charge states.

Table S1 ICP-AES results of $Na_3V_2(PO_4)_3$ and $Na_3V_{1.6}Ga_{0.4}(PO_4)_3$ samples.

Samples	Na	V	Ga	P
$Na_3V_2(PO_4)_3$	3.02	2.0	0	3.0
$Na_3V_{1.6}Ga_{0.4}(PO_4)_3$	3.02	1.6	0.42	3.06

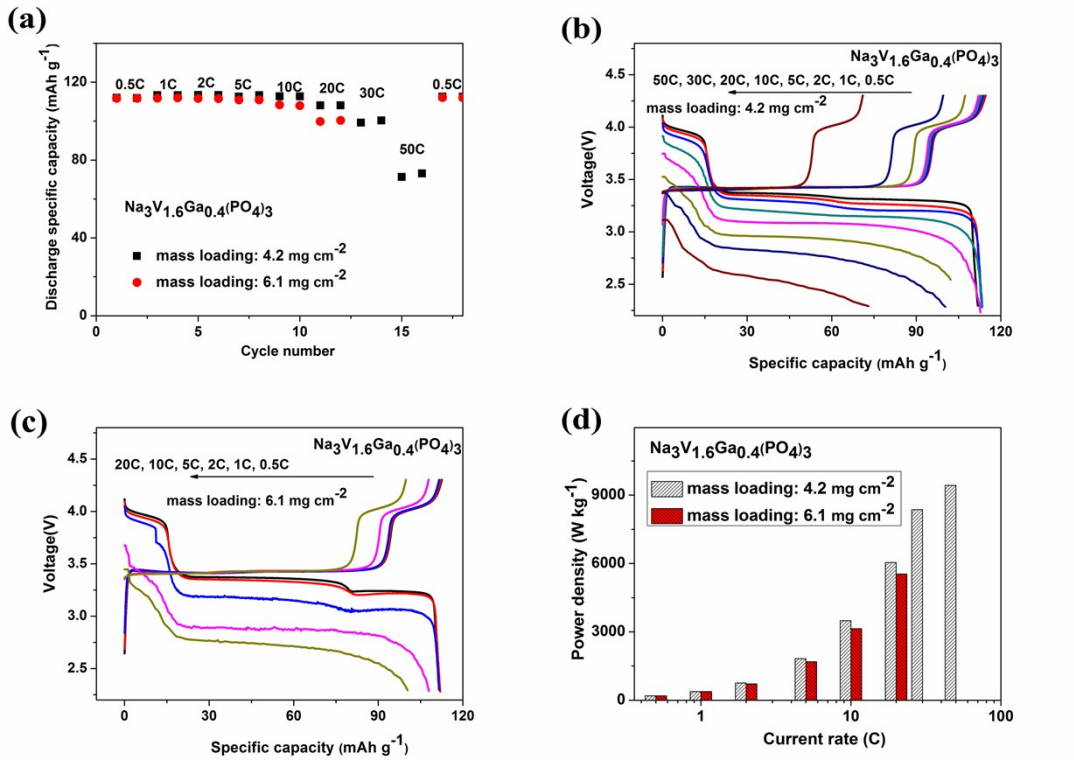

Fig. S4 The rate performances of $Na_3V_{1.6}Ga_{0.4}(PO_4)_3$ with higher mass loadings in the voltage of 2.3-4.3 V (a). The charge-discharge curves of $Na_3V_{1.6}Ga_{0.4}(PO_4)_3$ at different current rates (b, c). The comparison of power density (d) with higher mass loadings (4.2 and 6.1 mg cm^{-2}) at different current rates.