Supporting Information for

3D interconnected $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@C nanocomposite with superior sodium storage properties

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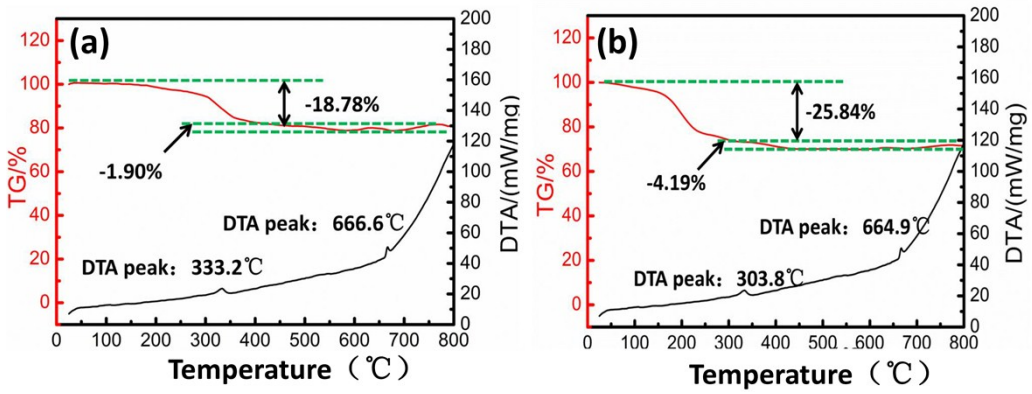

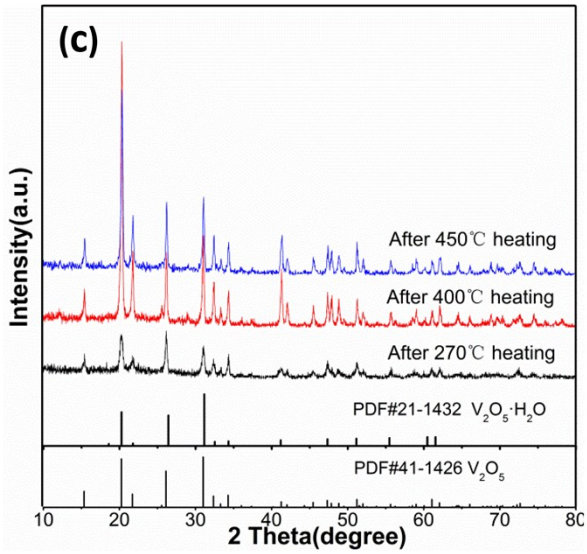

Fig.S1.DSC/TG curves of as-prepared samples: (a) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@0.5wt%C, (b) and $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@1.0wt%C; (c) ex situ XRD tests after the thermal analysis process

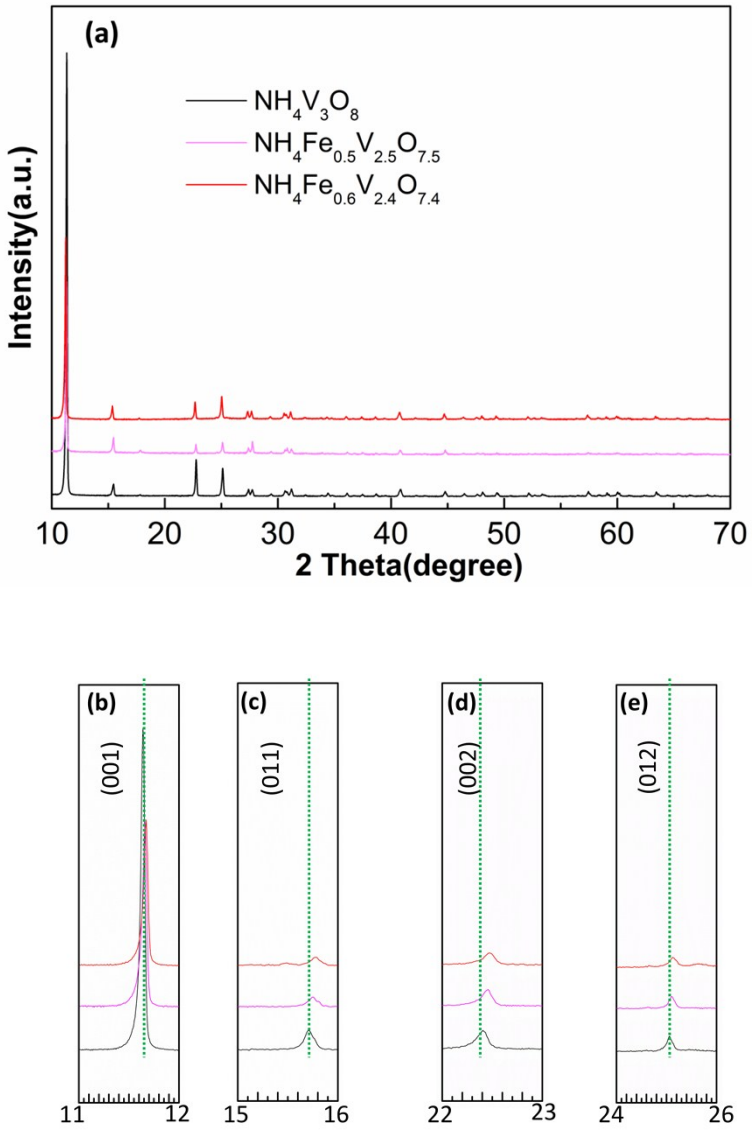

Fig.S2. (a) XRD patterns of $NH_4Fe_xV_{3-x}O_{8-x}$ (x=0.0, 0.5, 0.6); (b - e) Enlarged XRD patterns indicating the right shift of (001), (011), (002) and (012) peaks along with the content of doped Fe^{3+} increasing.

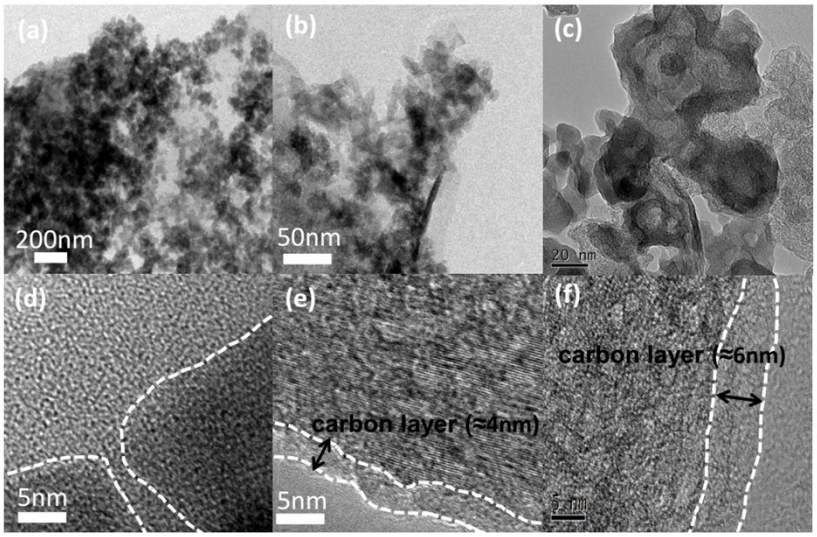

Fig.S3. TEM images and corresponding high-resolution TEM images of (a & d) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$, (b & e) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@0.5wt%C, (c & d) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@1.0wt%C.

Table1 Nominal and ICP-AES measured results of cation mole ratios in the products

Sample	Fe : V	
	Nominal tatio	ICP-AES result
bare $NH_4V_3O_8$	0	0
$NH_4Fe_{0.5}V_{2.5}O_{7.5}$	0.2	0.1764
$NH_4Fe_{0.6}V_{2.4}O_{7.4}$	0.25	0.2226
$NH_4Fe_{0.75}V_{2.25}O_{7.25}$	0.33	0.3658
$NH_4Fe_{0.6}V_{2.4}O_{7.4}$@0.5wt%C	0.25	0.2642
$NH_4Fe_{0.6}V_{2.4}O_{7.4}$@1.0wt%C	0.25	0.2299

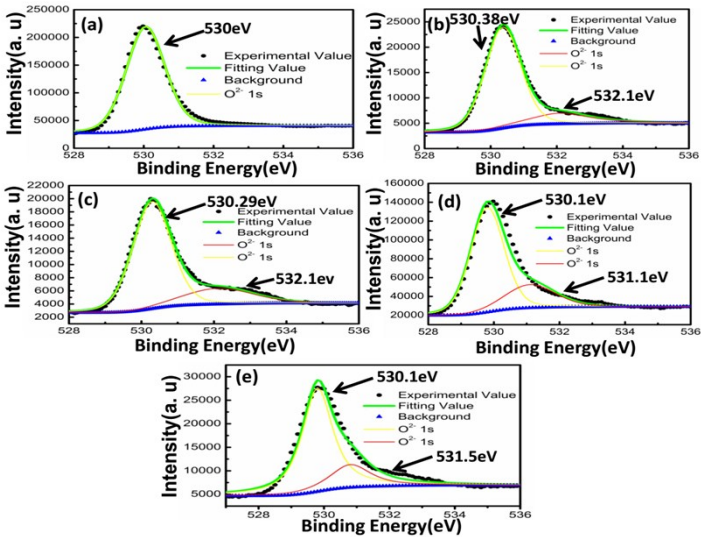

Fig.S4.X-ray photoelectron spectroscopy of (a), (b), (c), (d) and (e) O1s in $NH_4Fe_xV_{3-x}O_{8-x}$ (x=0, 0.5, 0.6) and $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@ywt% C(y=0.5, 1.0) samples

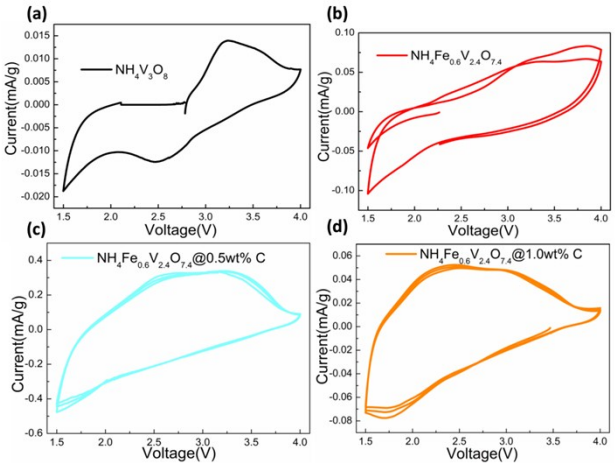

Fig.S5. CV curves of (a) bare $NH_4V_3O_8$, (b) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$, (c) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$ @0.5wt%C and (d) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@1.0wt%C samples.

Table 2

The BET surface areas (m^2/g) of (a): bare $NH_4V_3O_8$; (b) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$; (c)$NH_4Fe_{0.6}V_{2.4}O_{7.4}$@0.5wt%C ; (d) $NH_4Fe_{0.6}V_{2.4}O_{7.4}$@1.0wt%C.

	(a)	(b)	(c)	(d)
BET surface areas (m^2/g)	**2.08**	**12.64**	**33.48**	**15.40**