Electronic Supplementary Information for

Facile synthesis of hierarchical fern leaf-like Sb and its application as additive-free anode for fast reversible Na-ion storage

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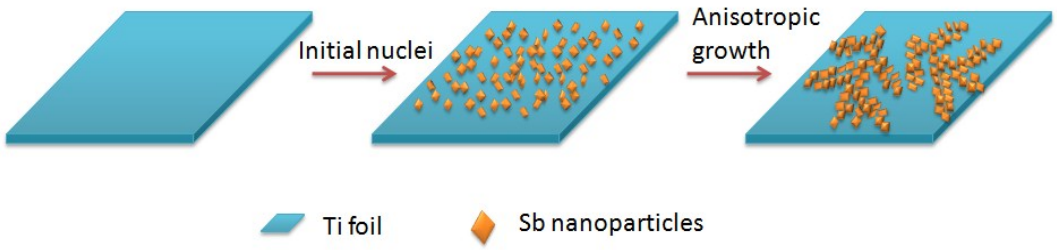

Fig. S1 Scheme illustration of the formation of fern leaf-like Sb on Ti foil.

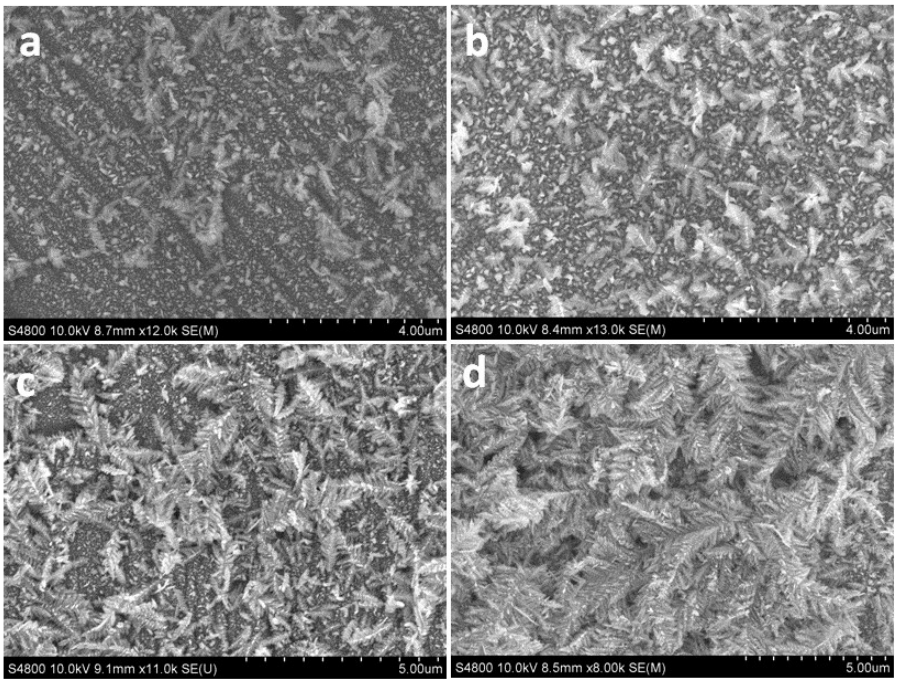

Fig. S2 Fern leaf-like Sb prepared in different electrodeposition time: (a) 3 min, (b) 5 min, (c) 10 min, (d) 15 min.

Table S1 Cycling performance comparison of the as-prepared fern leaf-like Sb with some previously reported Sb-based anodes.

Materials	Current density	Reversible Capacity (mAh g^{-1})		Capacity retention
	(A g^{-1})	2nd cycle	150th cycle	
$Bi_{0.36}Sb_{0.64}$-C[1]	0.2	~494	~320	~64.8%
Sb/C fibers[2]	0.1	~422	~380	~90%
rGO/nano Sb composite[3]	0.328	~590	~528	~89.5%
Sb/MWCNT nanocomposite[4]	0.2	~502	~382 (120th)	~76.1%
Porous Sb/Cu_2Sb[5]	0.066	~616	~485 (120th)	~78.7%
Bulk Sb[6]	0.33	~540	~570	~105.6%
Sb@C coaxial nanotubes[7]	0.1	~500	~410	~82%
Nanoporous Sb[8]	0.1	~630	~600	~95.2%
Sb-NiSb-Ni heterostructures[9]	0.066	~500	~450	~90%
Rod-like Sb-C composite[10]	0.05	~560	~450 (110th)	~80.4%
Sb porous hollow microspheres[11]	0.66	~575	~502	~87.4%
Sb/graphene[12]	0.328	~600	~530	~88.3%
Sb nanocrystals[13]	0.66	~600	~580 (100th)	~96.7%
Fern leaf-like Sb	0.5	~612	~589	~96.2%

References

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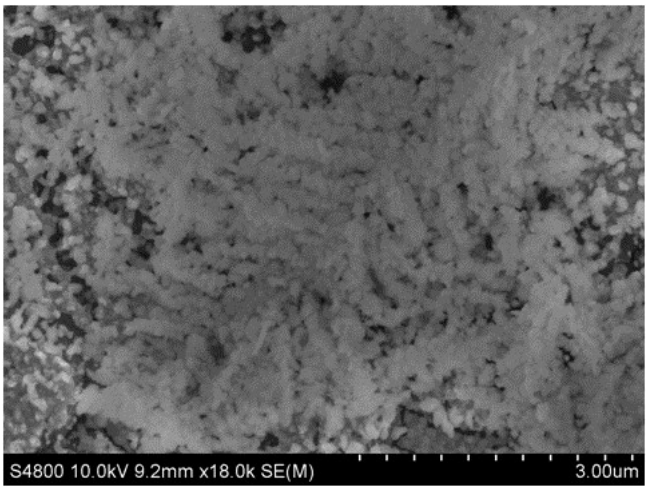

Fig. S3 SEM image of fern leaf-like Sb after 100 cycles at 0.5 A g^{-1}.

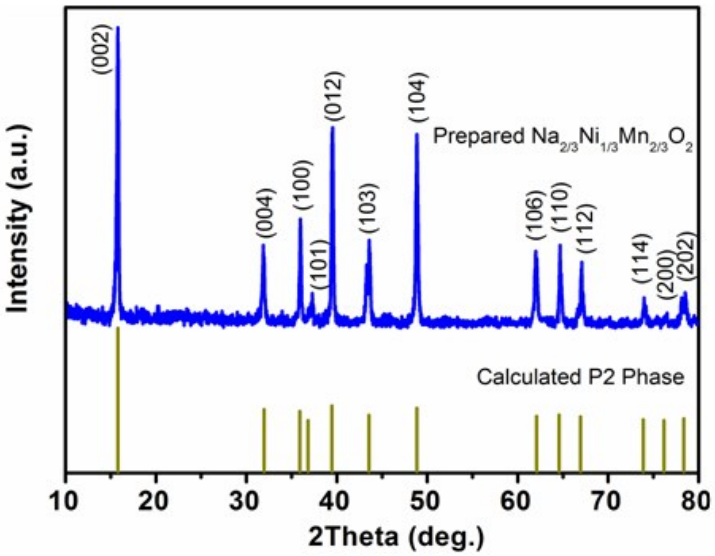

Fig. S4 XRD pattern of layered P2-$Na_{2/3}Ni_{1/3}Mn_{2/3}O_2$.

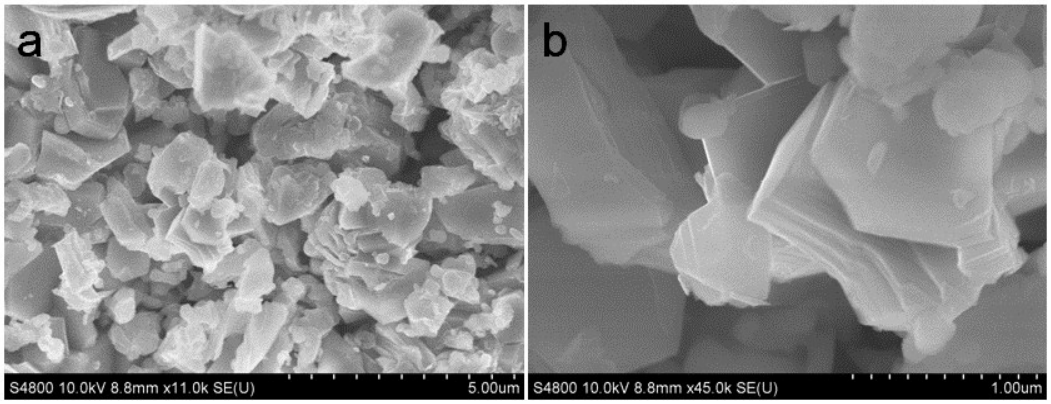

Fig. S5 SEM images of layered P2-$Na_{2/3}Ni_{1/3}Mn_{2/3}O_2$.

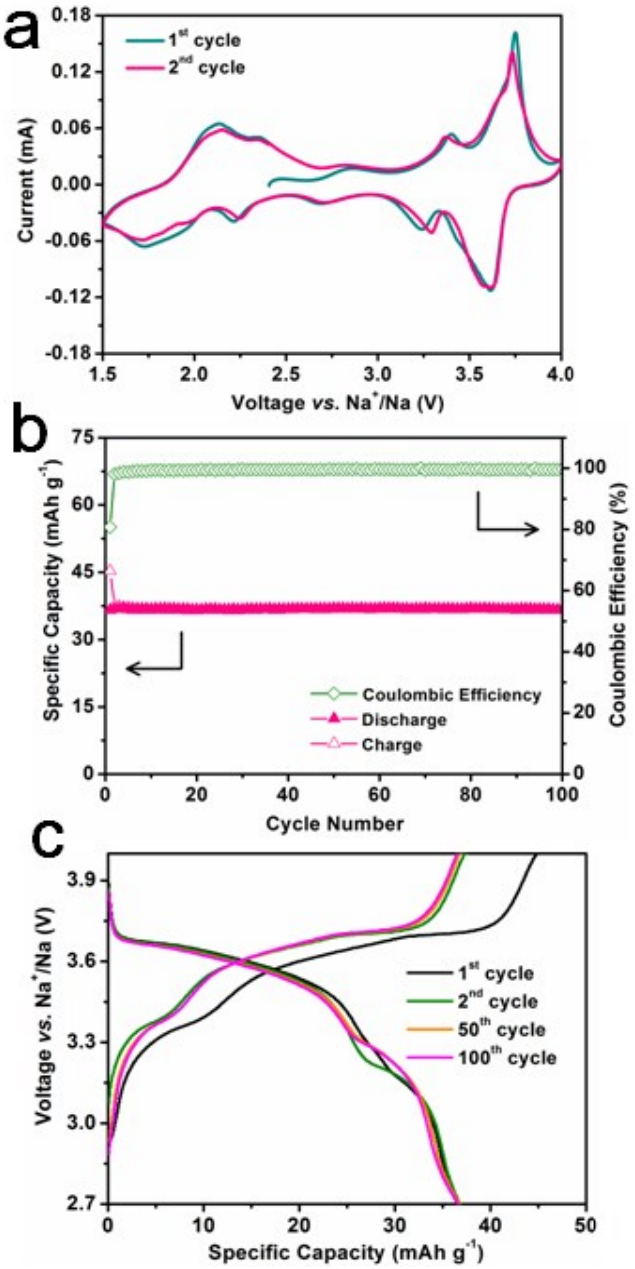

Fig. S6 Electrochemical performance of layered P2-$Na_{2/3}Ni_{1/3}Mn_{2/3}O_2$ in a Na cell. (a) Cyclic voltammetry at a scan rate of 0.1 mV s^{-1} between 1.5 to 4.0 V (*vs.* Na^+/Na). (b) Cycling performance at a current density of 30 mA g^{-1}, and (c) Galvanostatic voltage profiles in different cycles between 2.7 to 4.0 V (*vs.* Na^+/Na).

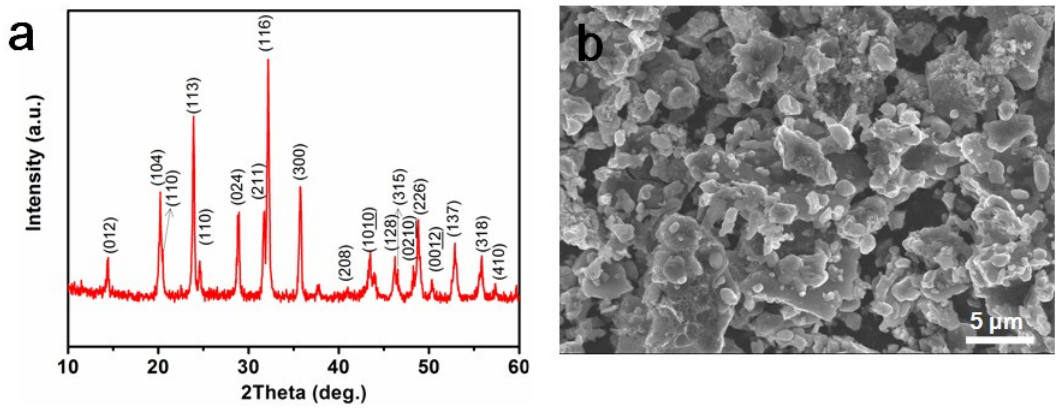

Fig. S7 (a) XRD pattern and (b) SEM image of $Na_3V_2(PO_4)_3$/C.

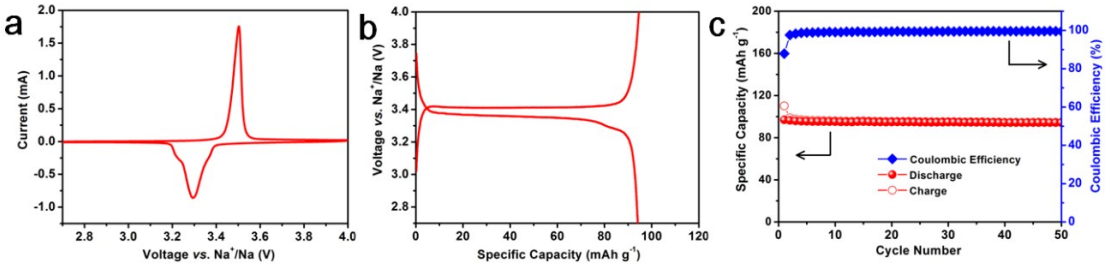

Fig. S8 Electrochemical performance of $Na_3V_2(PO_4)_3$/C cathode. (a) Cyclic voltammetry at a scan rate of 0.1 mV s^{-1} between 1.7 to 4.0 V (*vs.* Na^+/Na). (b) Galvanostatic charge/discharge voltage profile, and (c) cycling performance at a current density of 80 mA g^{-1} between 2.7 to 4.0 V (*vs.* Na^+/Na).

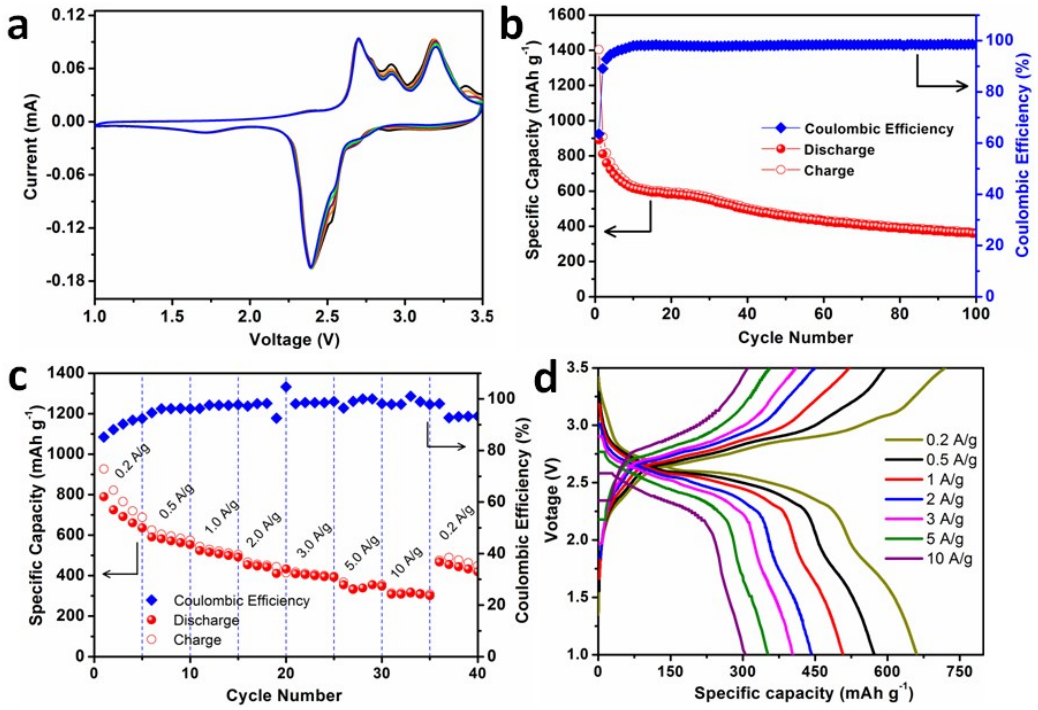

Fig. S9 Electrochemical performance of fern leaf-like Sb//$Na_3V_2(PO_4)_3$/C full cell. (a) CV curves at a scan rate of 0.3 mV s^{-1}. (b) Cycling performance at a current density of 0.5 A g^{-1} (with respect to the anode weight). (c) Rate capability (with respect to the anode weight) at various current densities from 0.2 to 10 A g^{-1}. (d) Charge/discharge voltage profiles at various current densities from 0.2 to 10 A g^{-1}.