Electronic Supplementary Material (ESI) for CrystEngComm.

Supporting Information

Hollow Nanocubes Constructed by <001> Oriented Anatase TiO_2 Nanoarrays: Topotactic Conversion and Fast Lithium-Ion Storage

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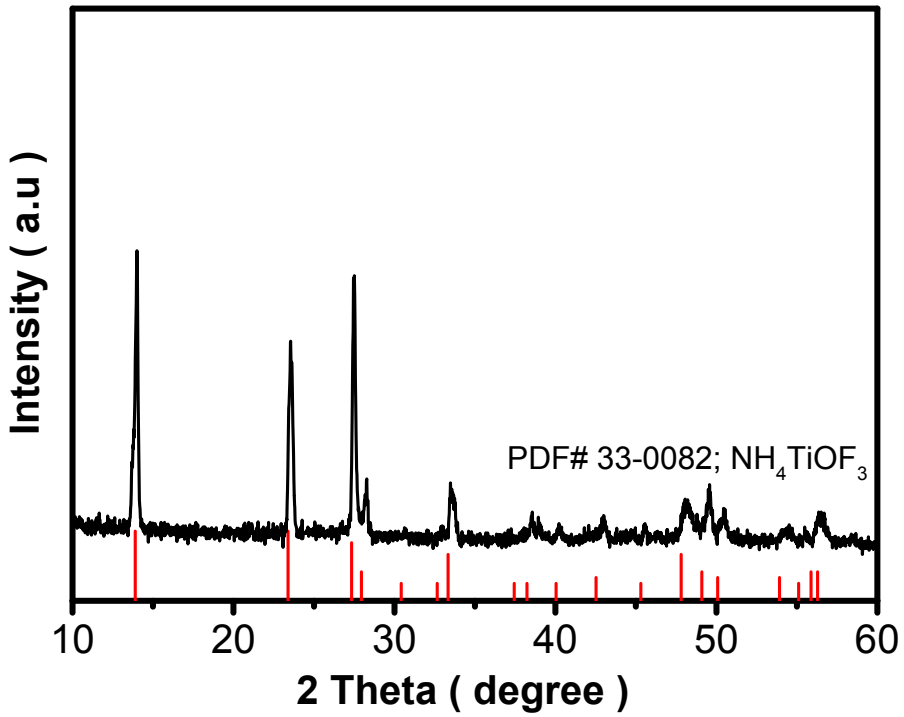

Figure S1 XRD pattern of the as-prepared NH_4TiOF_3 precursor.

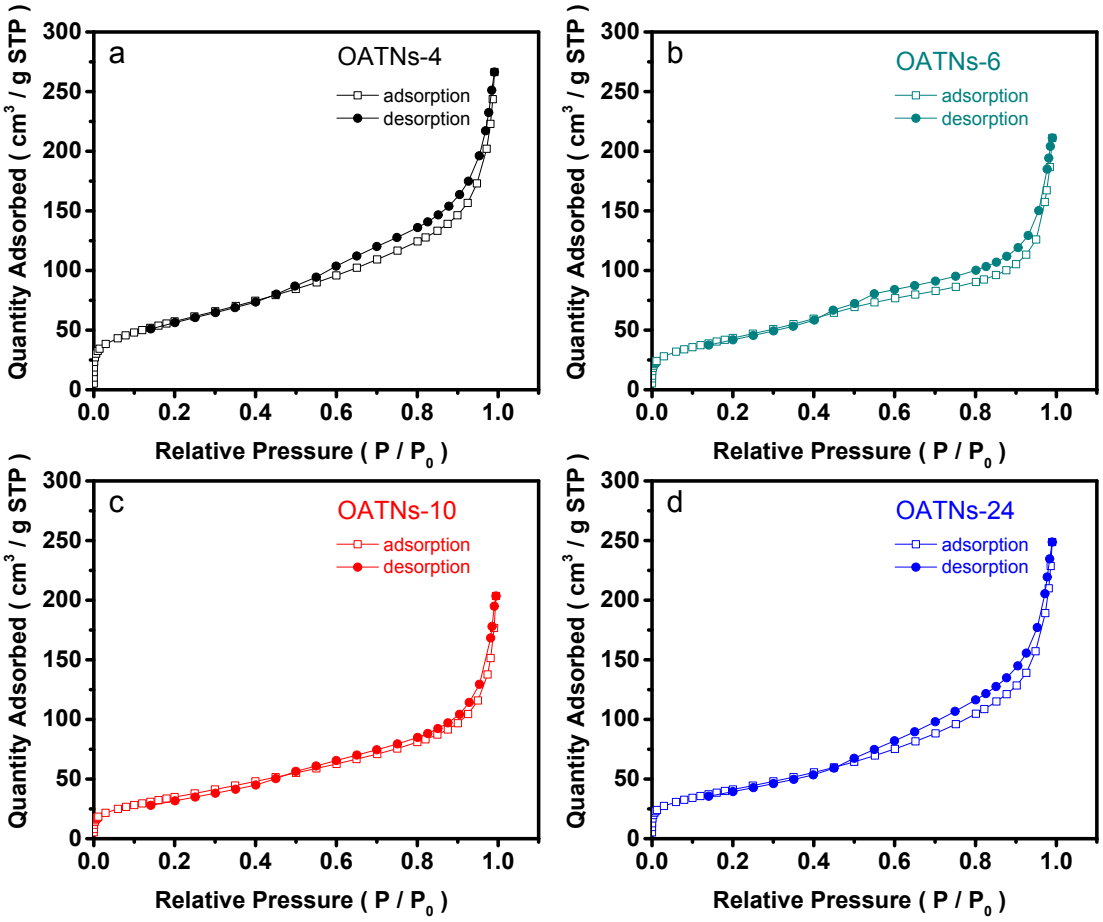

Figure S2 N_2 adsorption-desorption isotherms of (a) OATNs-4, (b) OATNs-6, (c) OATNs-10 and (d) OATNs-24. The square (□) is the adsorption process, while the circle (●) is the desorption process.

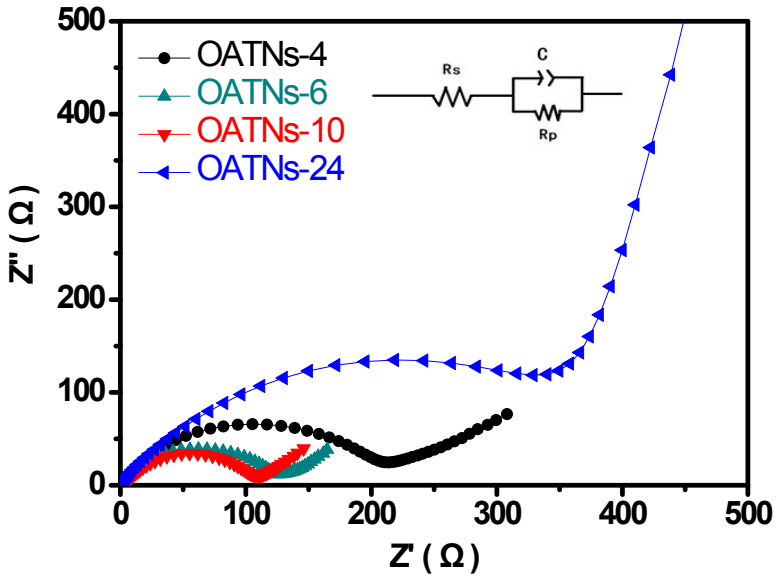

Figure S3 The electrochemical impendence spectroscopies (EIS) of OATNs-4, OATNs-6, OATNs-10, and OATNs-24 constructed systems; the inset is the equivalent circuit by ZView2 version according to the EIS results.

Table S1. Rp based on fitting the EIS results as shown in Figure S4.

Sample name	OATNs-4	OATNs-6	OATNs-10	OATNs-24
Rp / Ω	210	118	114	395

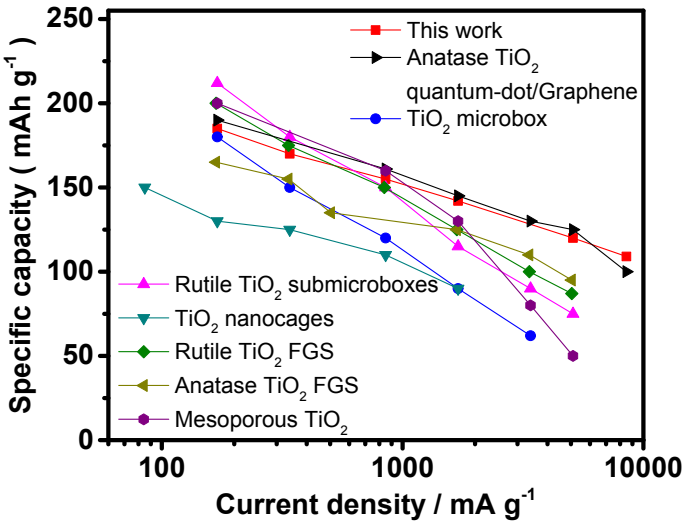

Figure S4 A comparison of current rate performances of OATNs-10 (this work) with previously reported ones. FGS in the figure represents for functionalized graphene sheets.

Figure S5 shows the comparison of current rate performances of OATNs-10 obtained in this work with those reported before. The electrode compositions of the previously reported results can be summarized in Table S2.

Table S2. The compositions of the electrode mentioned in Figure S5.

Sample name	Active material (wt%)	Carbon (wt%)	PVDF Binder (wt%)	Ref.
OATNs-10 (■)	70	20 (acetylene black)	10	This work
anatase TiO_2 quantum-dot/Graphene (►)	80	10 (Super P carbon black)	10	1
TiO_2 microbox (●)	70	20 (Super P carbon black)	10	2
Rutile TiO_2 submicroboxes (▲)	70	20 (Super P)	10	3
TiO_2 nanocages (▼)	70	20 (Super P)	10	4
Rutile TiO_2 FGS (◆)	80	10 (Super P carbon black)	10	5
Anatase TiO_2 FGS (◄)	80	10 (Super P carbon black)	10	5
Mesoporous TiO_2 (●)	80	10 (Super P carbon black)	10	6

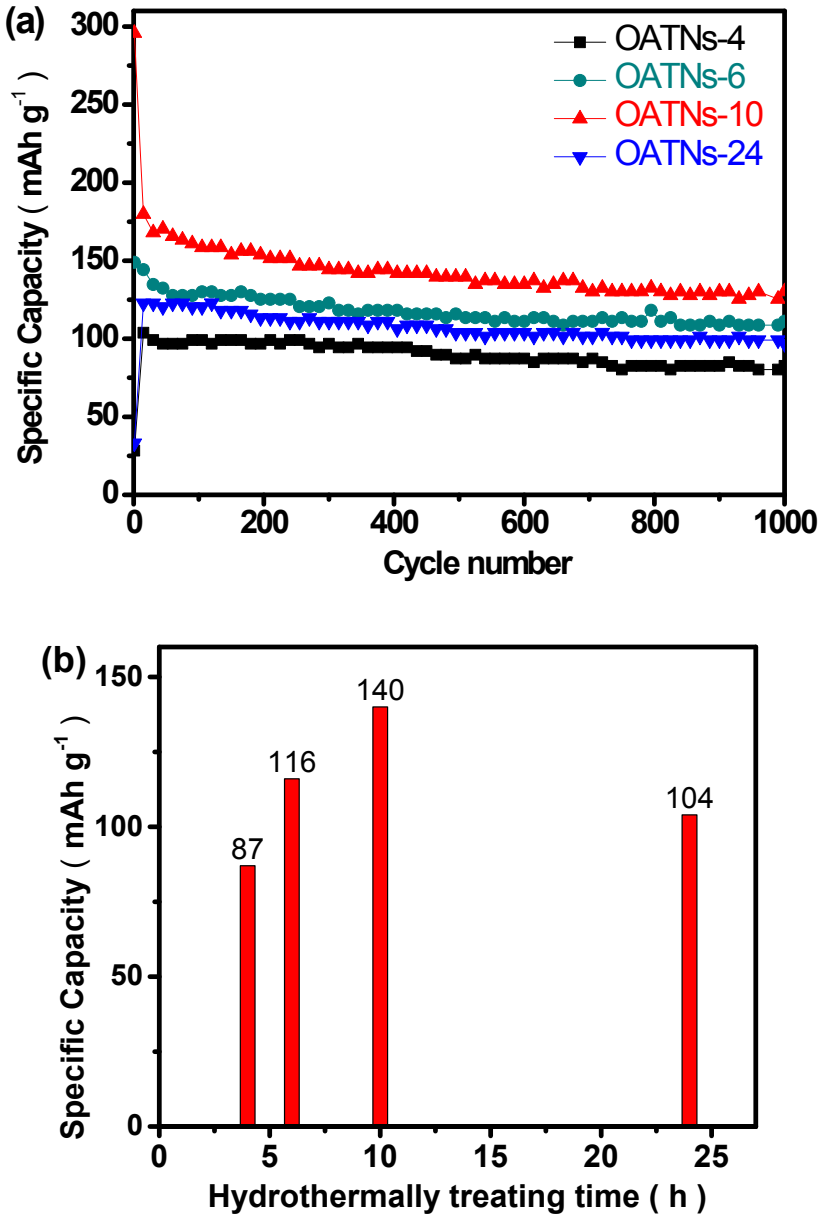

Figure S5 (a) The cycling number dependent specific capacities of OATNs-4, OATNs-6, OATNs-10 and OATNs-24 as indicated in the figure at current rate of 50 C. (b) The specific capacities of OATNs-4, OATNs-6, OATNs-10 and OATNs-24 at the 500th cycle as a function of hydrothermally treating time of NH4TiOF3 precursor in H3BO3 solution, summarized from Figure S6a.

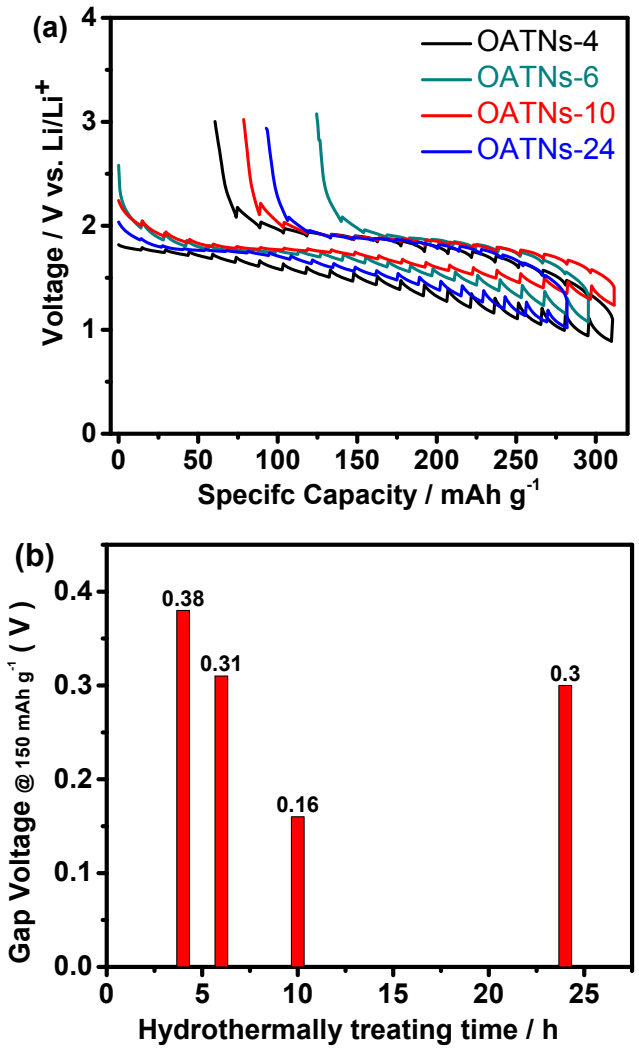

Figure S6 (a) Galvanostatic intermittent titration curves as a function of specific capacities observed on OATNs-4, OATNs-6, OATNs-10 and OATNs-24 constructed cells. The duration of the charge and discharge pulses have been calculated based on a 0.5 C. (b) The gap voltage between the discharge and recharge plateaus at specific capacity of 150 mAh g^{-1} shown in Figure S7a as a function of hydrothermally treating time.

Table S3. The diffusion coefficient (D) of the as-prepared materials estimated from the GITT results shown in Figure 6 and Figure S6.

Sample name	OATNs-4	OATNs-6	OATNs-10	OATNs-24
D×10^{-12} / cm^2 s^{-1}	1.3 ~ 11.6	1.3~13.7	2.4 ~ 56.5	1.1~12.1

References

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