

Supporting Information

Nanostructured Titanium Phosphates Prepared via Hydrothermal Reaction and Their Electrochemical Li- and Na-ion Intercalation Properties

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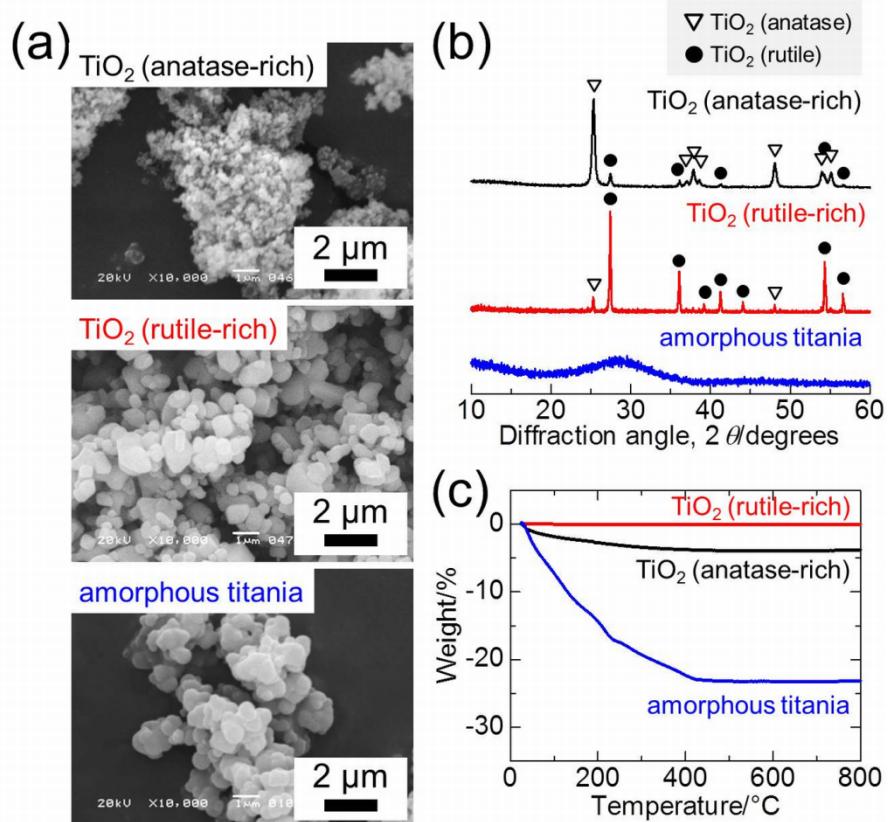


Figure S1 (a) SEM images, (b) XRD patterns and (c) TG curves of the titanium source employed in this study: commercially available TiO_2 (anatase-rich), TiO_2 rutile-rich) and “amorphous titania” particles.

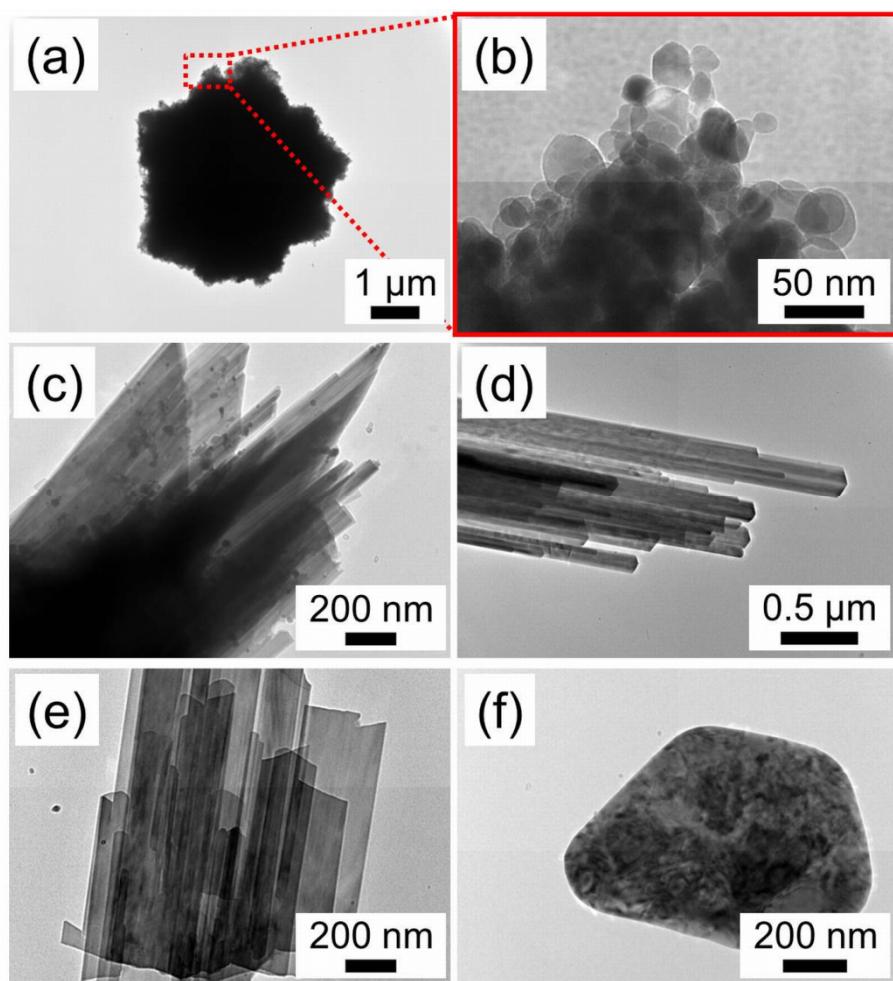


Figure S2 TEM images of (a,b) A-0.5-180, (c) A-1-150, (d) A-1-180, (e) A-2-180 and (f) A-5-180.

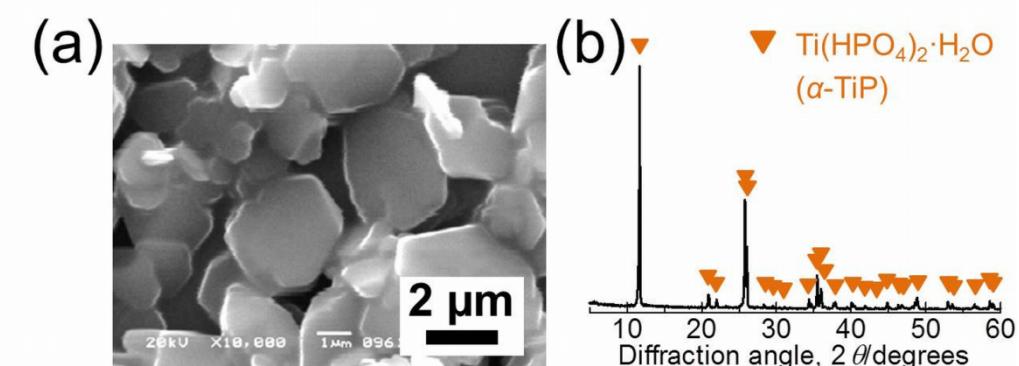


Figure S3 (a) SEM image and (b) XRD pattern of A-5-180.

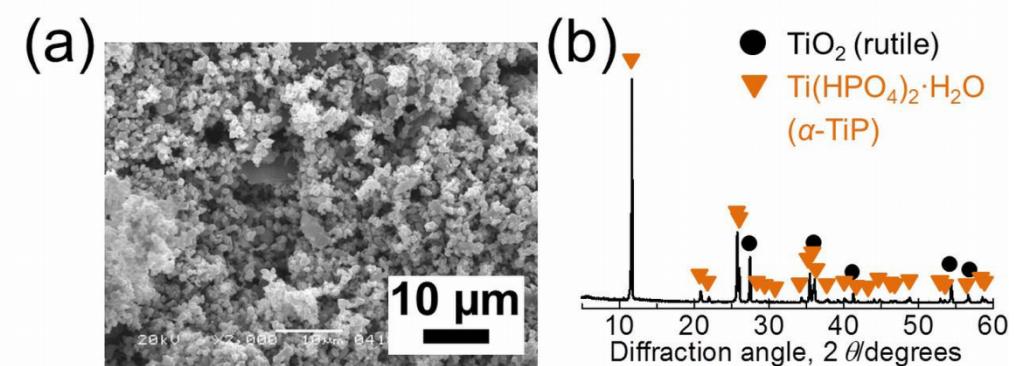


Figure S4 (a) SEM image and (b) XRD pattern of Ru-5-180-24.

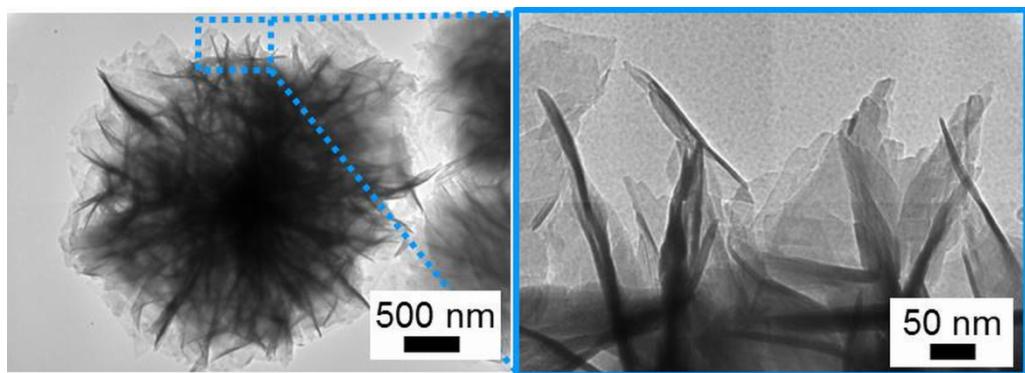


Figure S5 TEM image of Am-03-100.

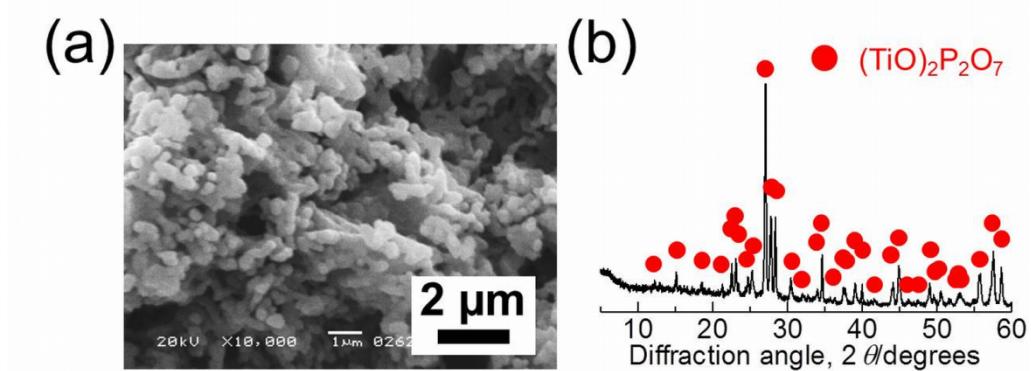


Figure S6 (a) SEM image and (b) XRD pattern of Am-0.3-180-1000.

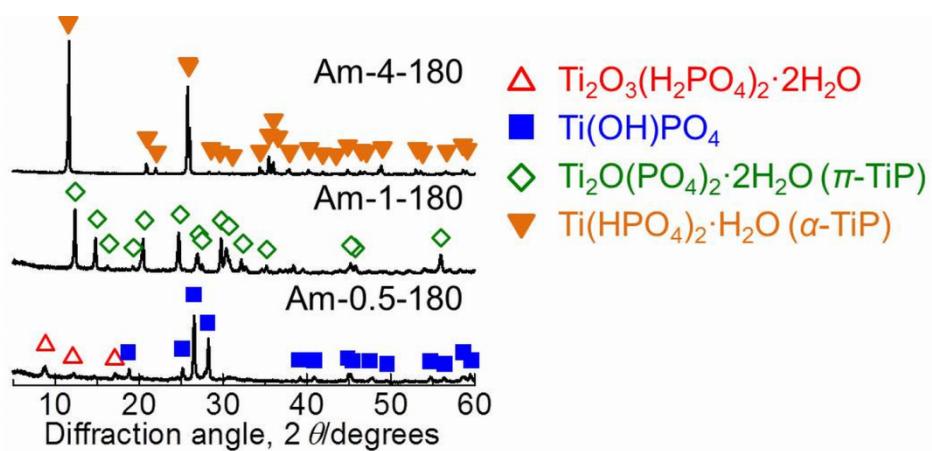


Figure S7 XRD patterns of the TiP samples prepared from amorphous titania: Am-0.5-180, Am-1-180 and Am-4-180.

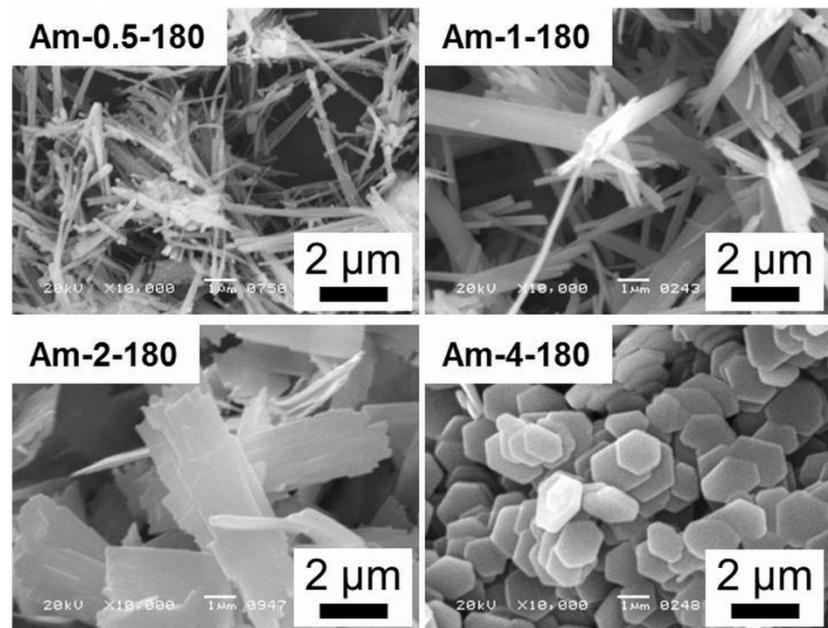


Figure S8 SEM images of the TiP samples prepared from amorphous titania: Am-0.5-180, Am-1-180, A-2-180 and Am-4-180.

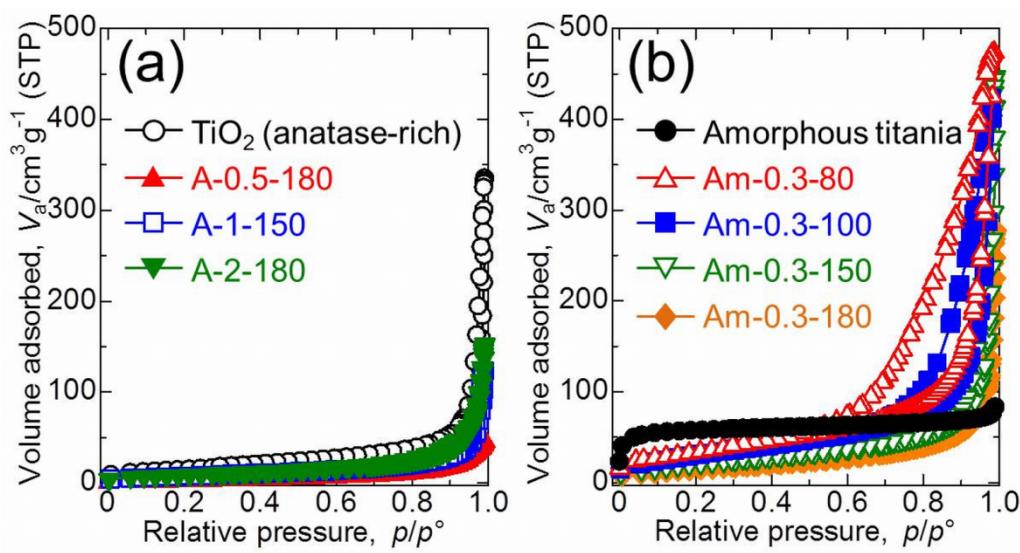


Figure S9 N_2 adsorption-desorption isotherms: (a) TiO_2 (anatase-rich), A-0.5-180, A-1-150, and A-2-180 and (b) amorphous titania, Am-0.3-80, A-0.3-100, A-0.3-150, and A-0.3-180.

Table S1 Pore characteristics of TiP samples prepared with different conditions.

	S_{BET}^a $/\text{m}^2 \text{g}^{-1}$	V_p^b $/\text{cm}^3 \text{g}^{-1}$
TiO_2 (anatase-rich)	54	0.39
A-0.5-180	11	0.07
A-1-150	25	0.19
A-2-180	31	0.22
amorphous titania	220	0.13
Am-0.3-80	124	0.69
Am-0.3-100	115	0.63
Am-0.3-150	79	0.66
Am-0.3-180	55	0.40

^a specific surface area obtained by the BET method. ^b micro- and mesopore volume obtained by N_2 adsorption isotherms at $p/p^\circ = 0.99$.

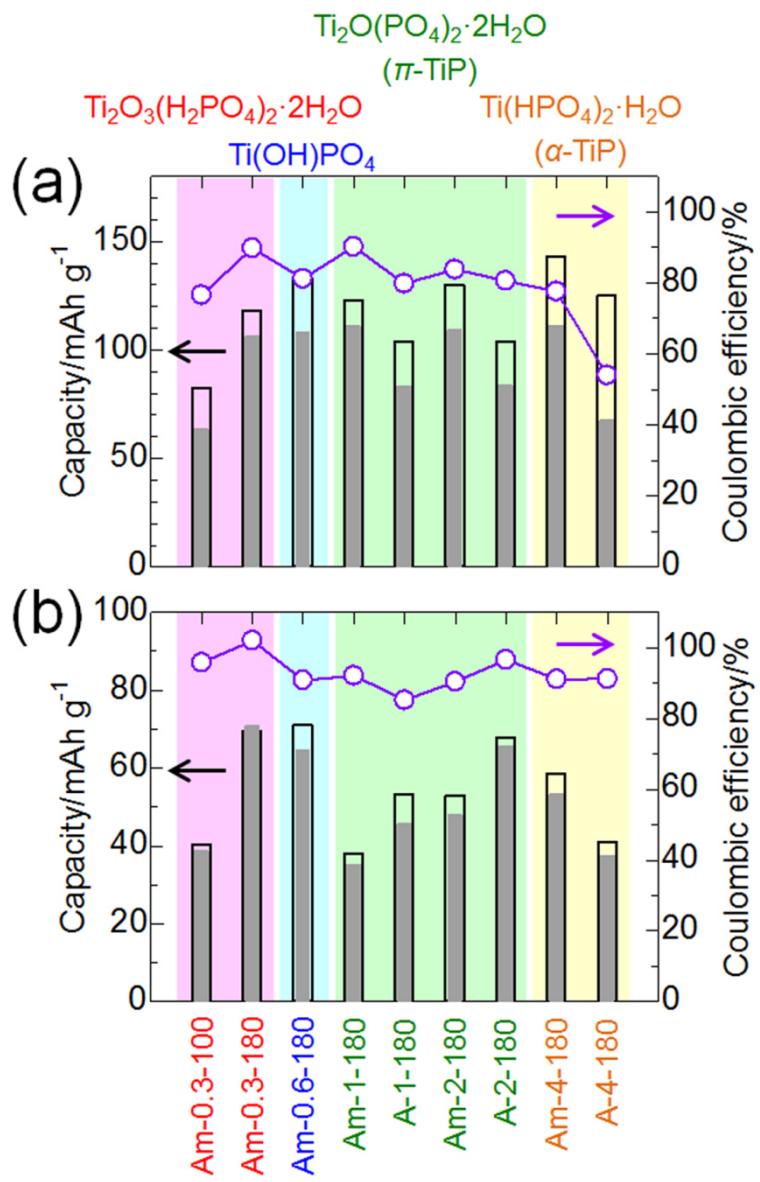


Figure S10 Summary of the initial electrochemical cation insertion/extraction capabilities of a series of TiPs at 10 mA g^{-1} : (a) Li-ion storage and (b) Na-ion storage. The open and grey columns show the ion insertion and extraction capacities in the first cycle, respectively. The open circles show the initial coulombic efficiencies.