Supporting information for

Two-dimensional Layered Lithium Lanthanum Titanium Oxide/Graphene-like Composites as Electrodes for Lithium-Ion Batteries

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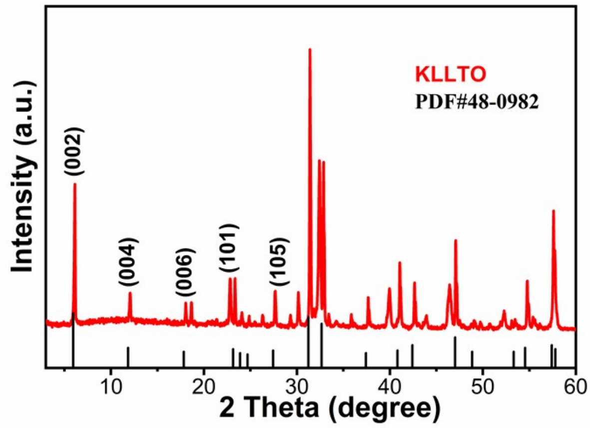

Fig. S1 XRD patterns of KLLTO

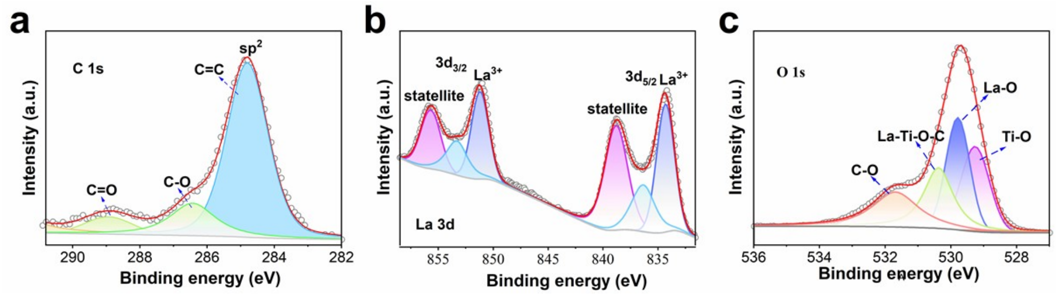

Fig. S2 a) C1s, b) O1s and c) La 3d XPS spectra for the LLTO@C-600.

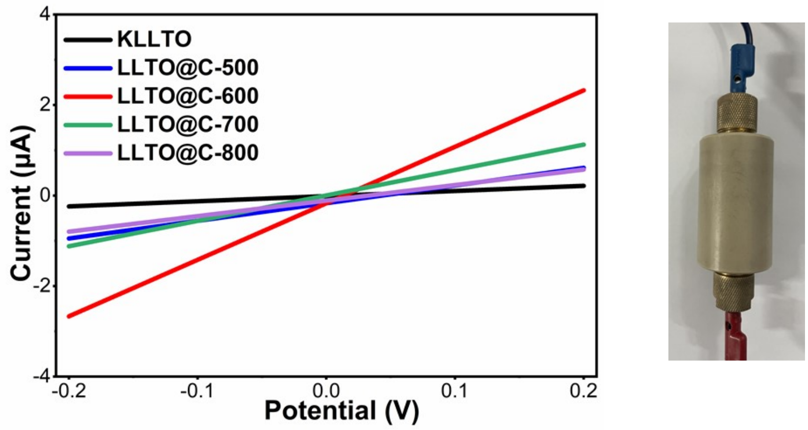

Fig. S3 electrical conductivity of KLLTO and LLTO@C.

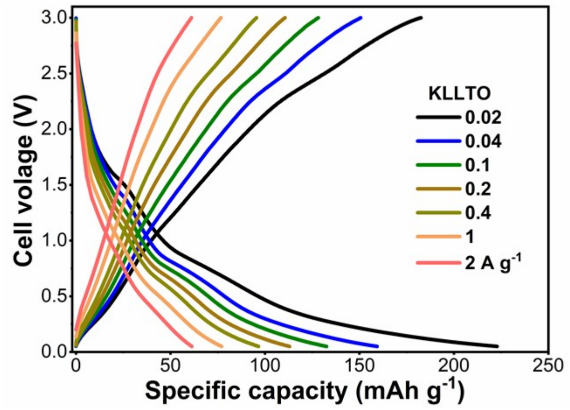

Fig. S4 different current densities of KLLTO

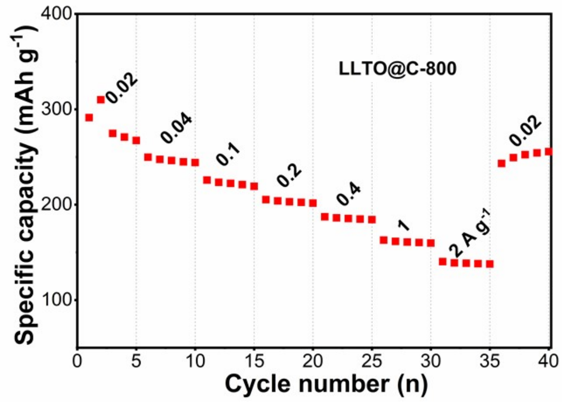

Fig. S5 rate capability of the LLTO@C-800 at various current densities.

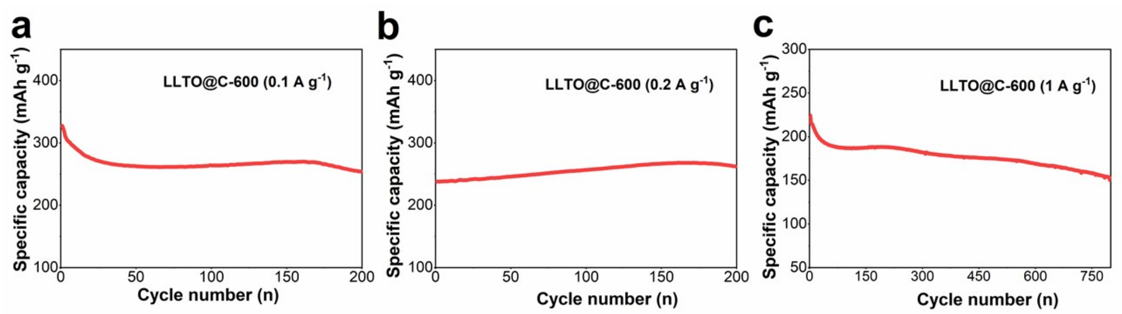

Fig. S6 Cycling performance of the coin cells with LLTO@C-600 at various currents.

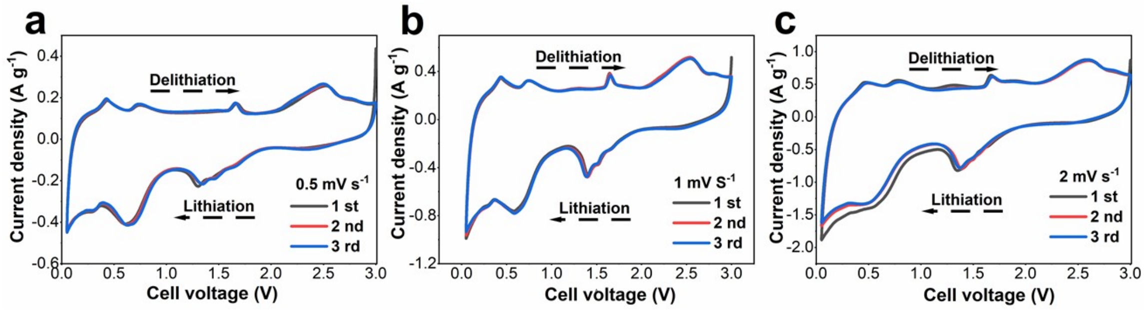

Fig. S7 Cyclic voltammetry curves of the LLTO@C-600 at a) 0.5 mV s^{-1}, b) 1 mV s^{-1}, c) 2 mV s^{-1}.

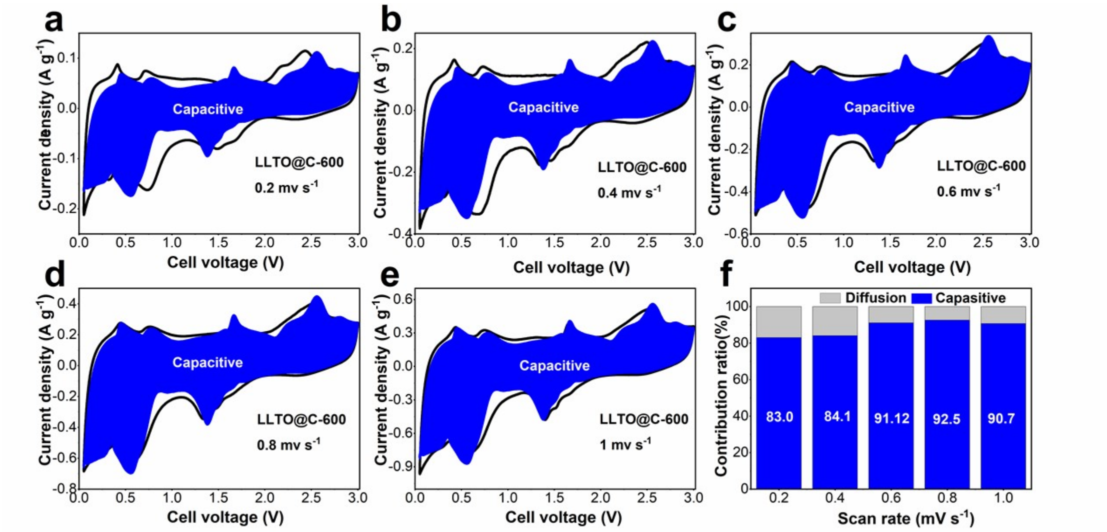

Fig. S8 Differential dQ/dV versus voltage plots of the LLTO@C-600 nanosheet composite at a)0.2 mV s^{-1}, b)0.4 mV s^{-1}, c)0.6 mV s^{-1}, d)0.8 mV s^{-1}, e)1 mV s^{-1}; f)contribution ratio of the capacitive and diffusion-controlled charge storage at different scan rates for the LLTO@C-600.

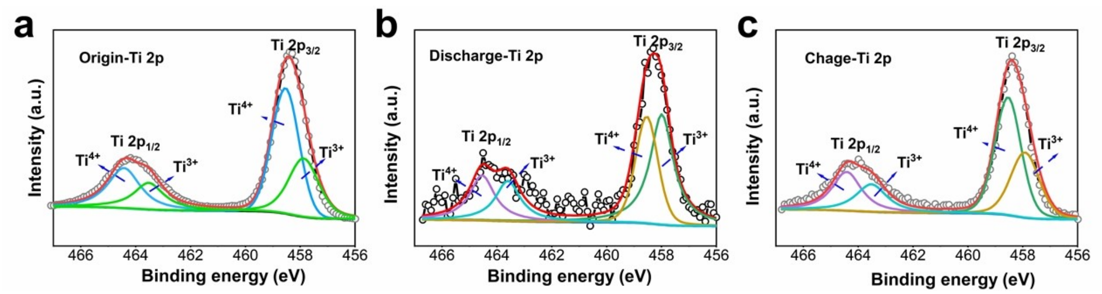

Fig. S9 a-c) the ex situ Ti 2p XPS spectra at different charge/discharge states of the LLTO@C-600.

Table S1. Electrochemical performance of lithium ion batteries with various TiO_2 based electrode

materials	Synthesis of LLTO	structure types of LLTO	current density	specific discharge capacity	Ref.
LLTO/C	sol–gel	Single Perovskite	0.05 mA cm^{-2}	145 mAh g^{-1}	1
P-LLTO/C	electro-spinning	Single Perovskite (Nanowires)	100 mA g^{-1}	210 mAh g^{-1}	2
LLTO/C@Au	electro-spinning	Single Perovskite (Nanowires)	2 mA cm^{-2}	10 mA h cm^{-2}	3
LLTO@C	sol–gel	Single Perovskite	100 mA g^{-1}	140 mAh g^{-1}	4
LLTO@C-600	high temperature solid-phase	Layered perovskite	100 mA g^{-1}	285 mAh g^{-1}	Our work

References:

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