Supporting Information

3D nitrogen-doped graphene foams embedding ultrafine TiO_2 nanoparticles for high-performance lithium-ion batteries

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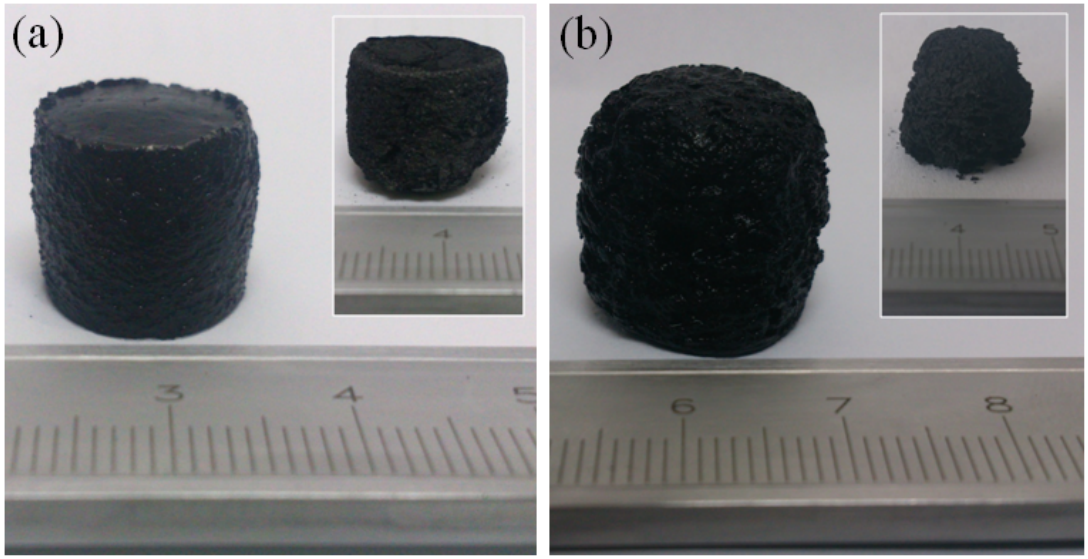

Fig. S1. (a) Photographs of UTO/GH before freeze drying and UTO/GF after freeze drying (Inset);

(b) Photographs of UTO/NGH and UTO/NGF after freeze drying (Inset).

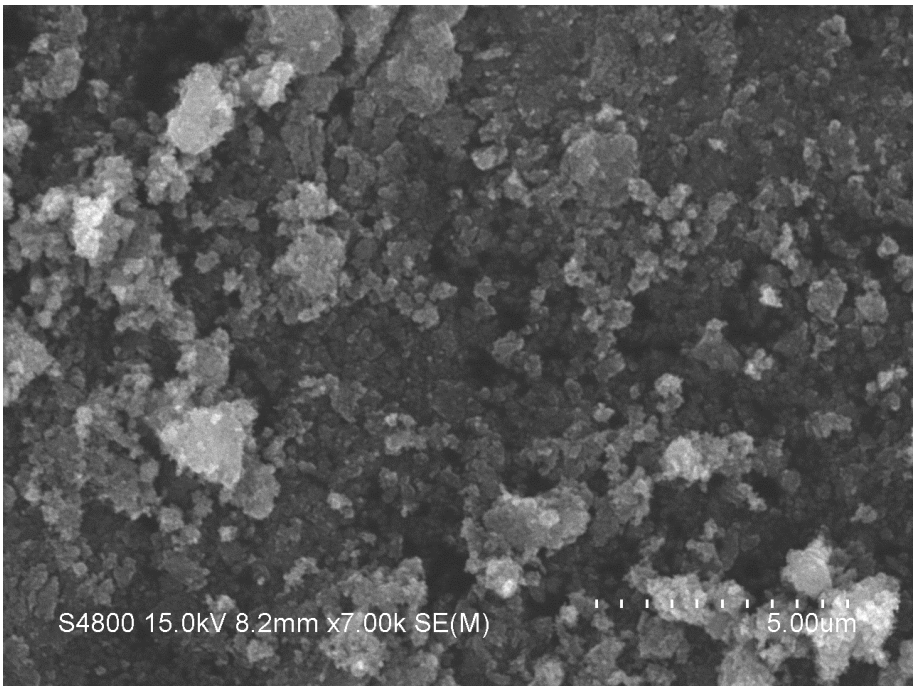

Fig. S2. SEM image of UTO

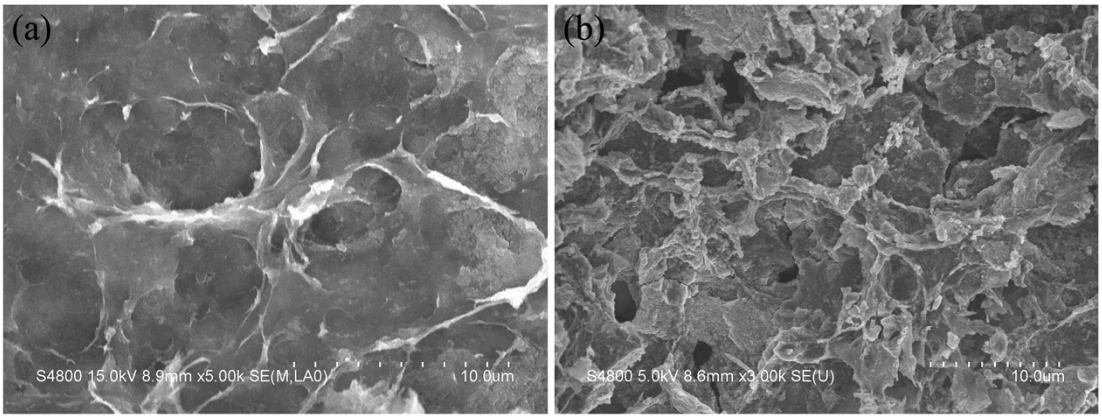

Fig. S3. Low-magnification SEM images of the cross section of UTO/NGF with 0.5 mL (a) and 1.0 mL (b) of tetrabutyl titanate as the starting materials, respectively.

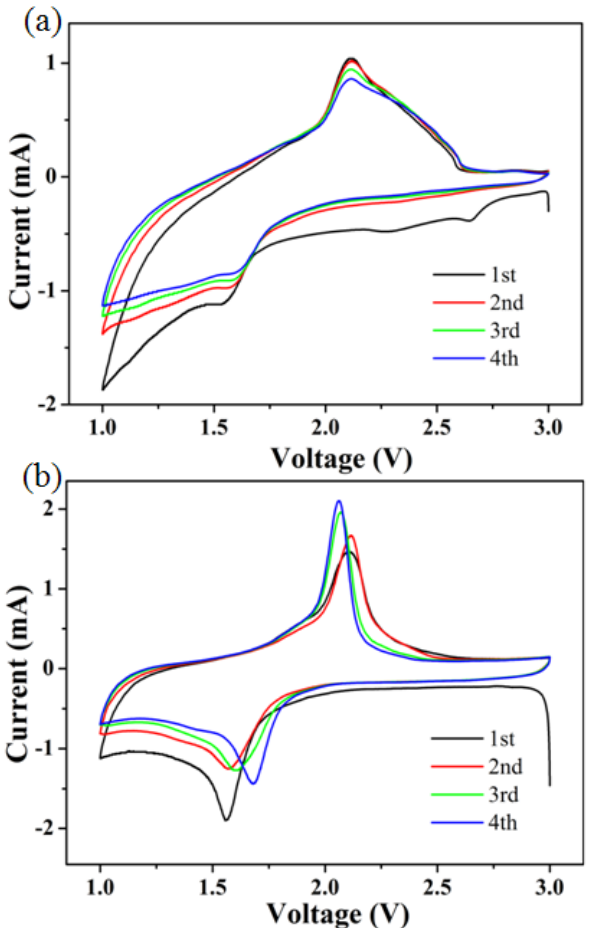

Fig. S4. Cyclic voltammograms of (a) UTO and (b) UTO/GF electrode between 1.0 and 3.0 V at a scan rate of 0.5 mV s^{-1} for the first four cycles.

Fig. S4 showed the representative cyclic voltammograms of UTO and UTO/GF electrode in the voltage range of 1.0-3.0 V. Only one pair of cathodic/anodic peaks (located at ~1.55, 2.11 V for UTO and ~1.56 V, 2.12 V for UTO/GF electrode) could be clearly identified, which could be regarded as the signature of the lithium insertion/deinsertion processes in the anatase framework. For UTO electrode, there was a slight decrease in the peak current during the subsequent cycles, indicating the existence of irreversible reactions (see Fig. S4(a)). Meanwhile, for UTO/GF electrode, small deviations in the peak positions in the subsequent cycles were noted, possibly due to structural rearrangement of TiO_2 crystal lattice (see Fig. S4(b)).[64]