Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supporting Information

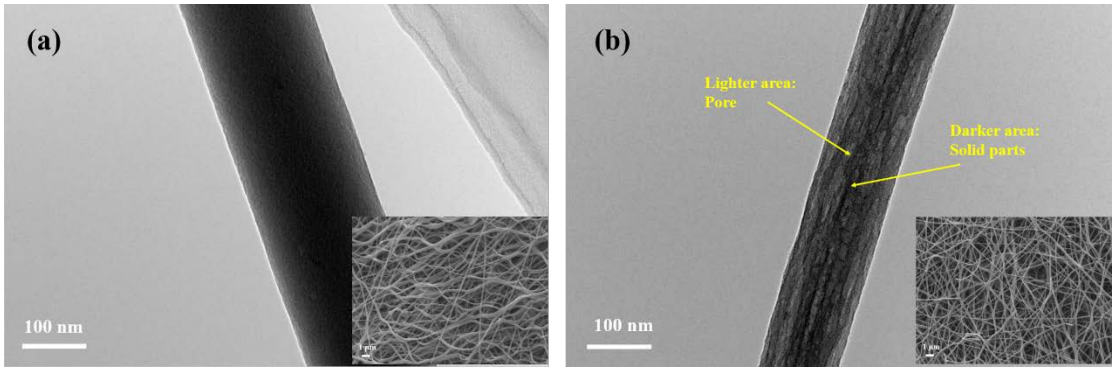

Fig. S1 (a) TEM and SEM (inset) images of neat non-porous carbon nanofibers (CNFs); and (b) TEM and SEM (inset) images of porous carbon nanofibers (PCNFs) after carbonization at 750 C for 2 h.

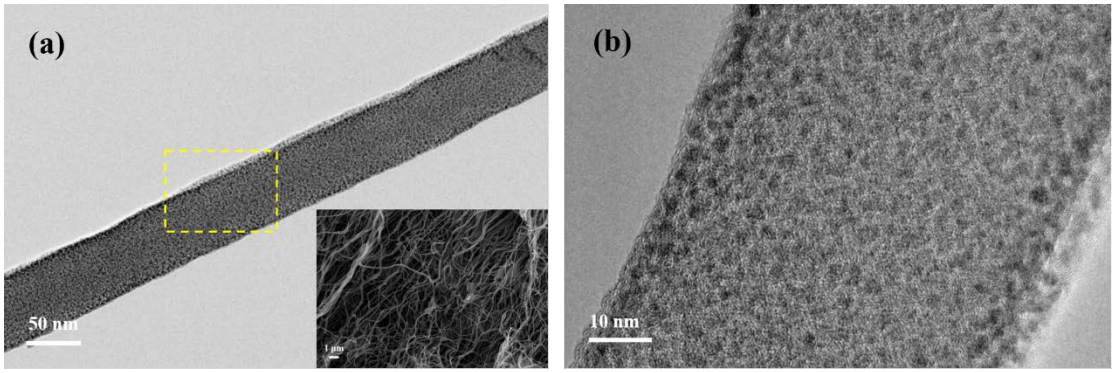

Fig. S2 (a) TEM and SEM (inset) images of 0.5-MoO_3/CNFs and (b) HRTEM images of 0.5-MoO_3/CNFs.

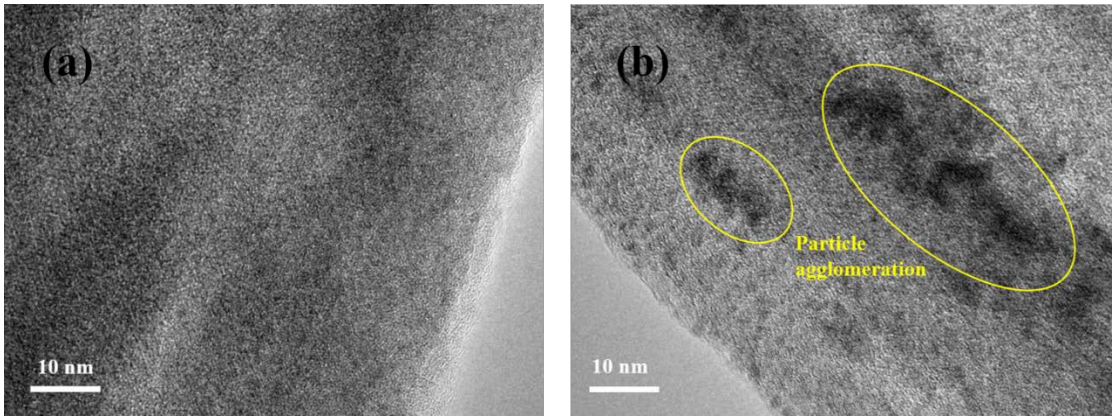

Fig. S3 (a) TEM images of 0.25-MoO_3/PCNFs and (b) 0.75-MoO_3/PCNFs.

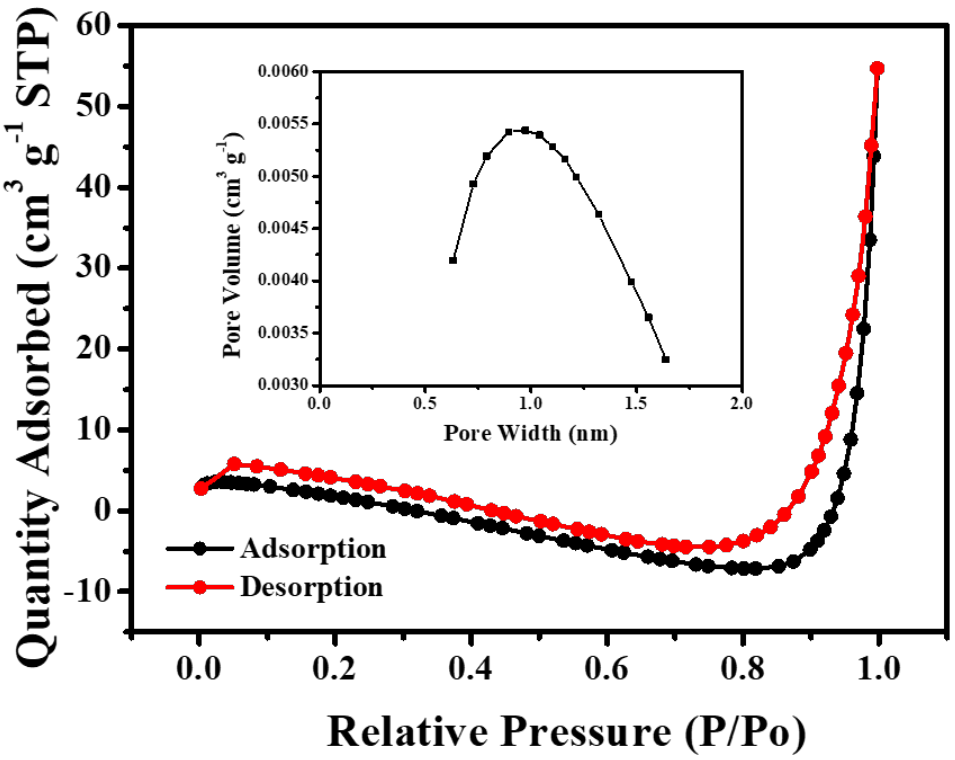

Fig. S4 Nitrogen adsorption–desorption isotherms and the pore size distribution of 0.5-MoO_3/PCNFs.

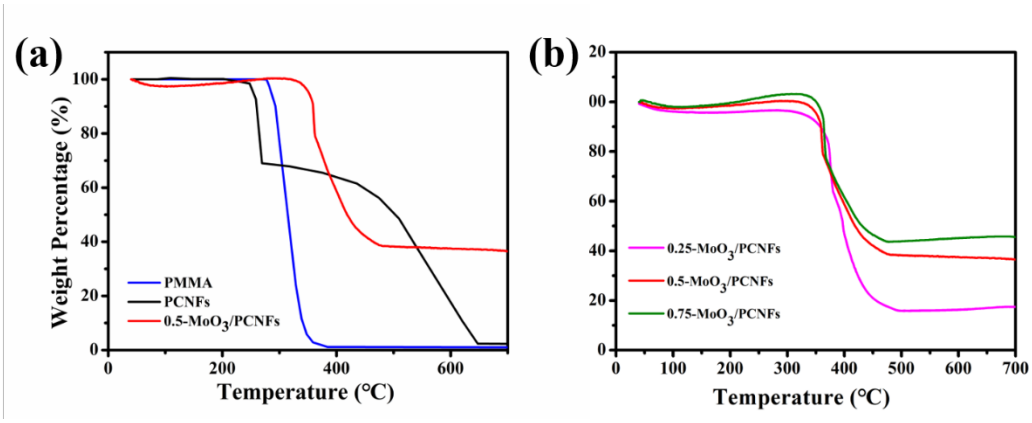

Fig. S5 TG patterns of (a)PMMA particles, PCNFs, 0.5-MoO_3/PCNFs and (b)MoO_3/PCNFs composite according to different precursor content.

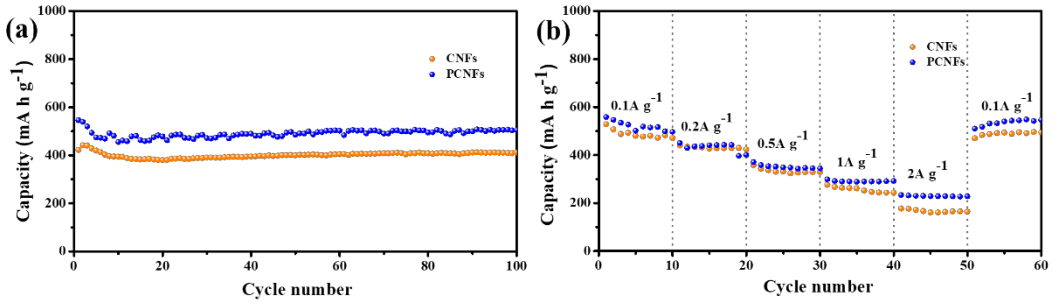

Fig. S6 cyclic performance at a current density of 0.2 A g^{-1} and (b) rate performance of 0.5-MoO_3/PCNFs and 0.5-MoO_3/CNFs electrodes.

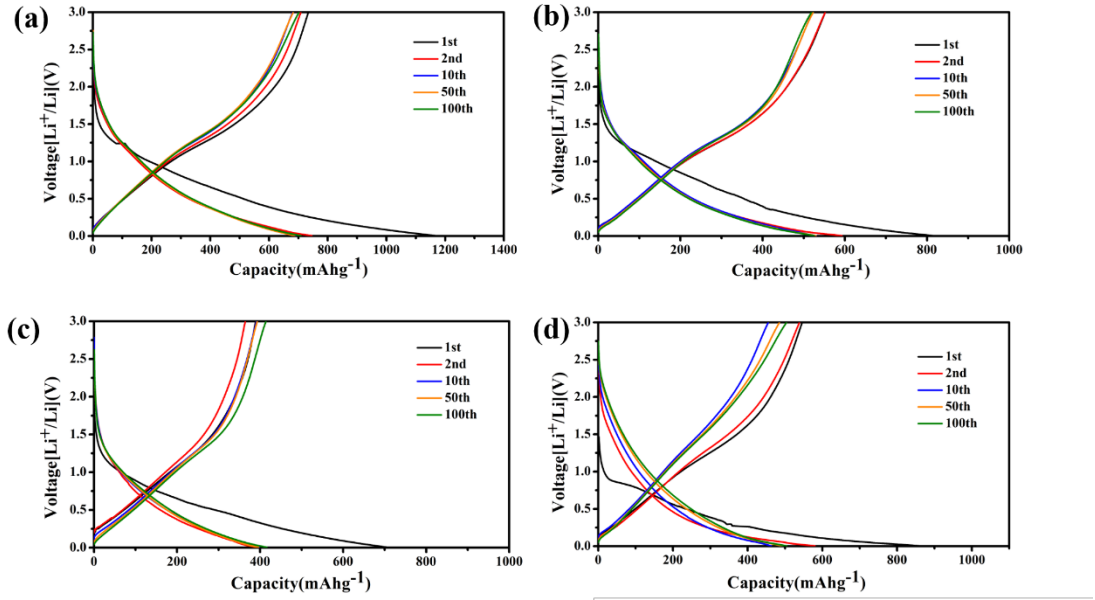

Fig. S7 Charge/discharge profiles of the (a) 0.25-MoO_3/PCNFs; (b) 0.75-MoO_3/PCNFs (c) 0.5-MoO_3/CNFs (d) PCNFs.

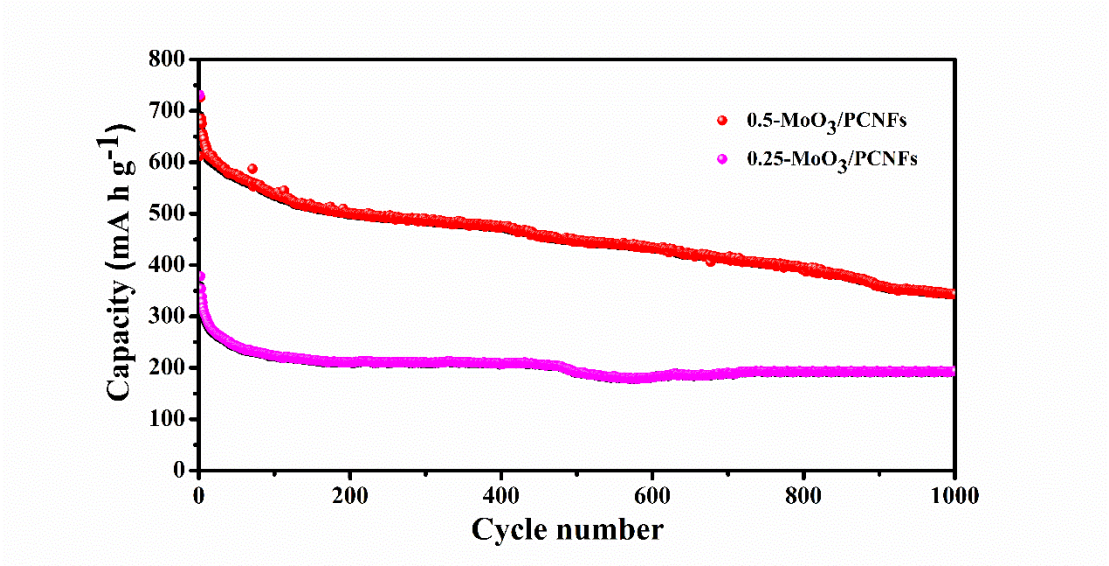

Fig. S8 cyclic performance at a current density of 1 A g^{-1} of 0.5-MoO_3/PCNFs and 0.25-MoO_3/PCNFs electrodes.

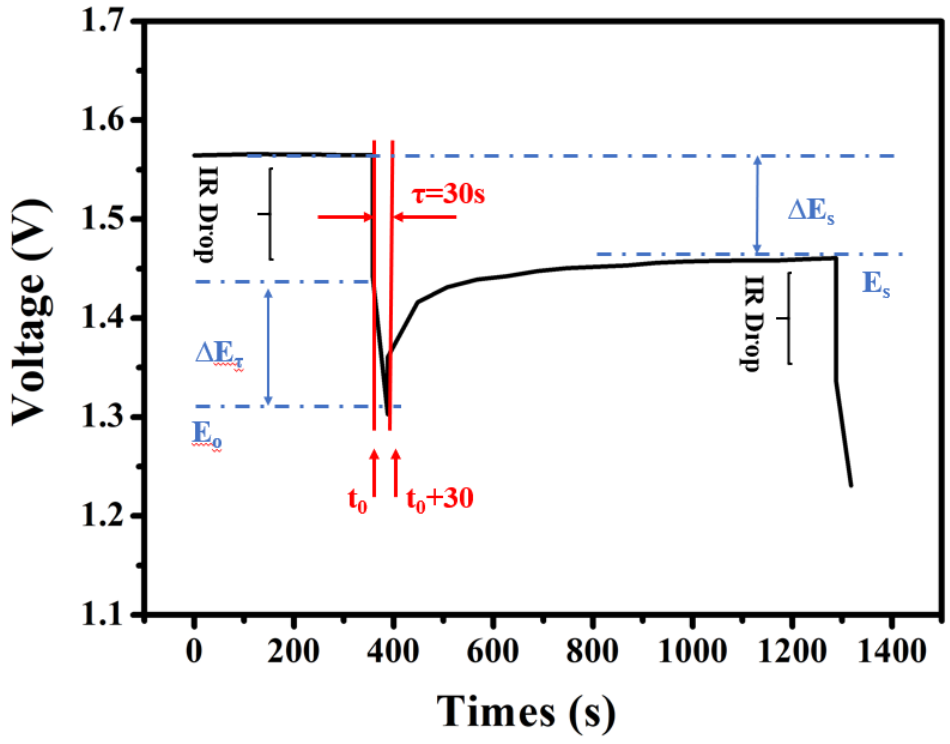

Fig. S9 E vs. t curves of 0.5-MoO_3/PCNFs electrode for a single GITT during discharge process.

By applying a constant discharge current of 100 mAg^{-1} for a limited period of time τ, which is 30 seconds, the voltage of the battery at the equilibrium potential (Eo) will decrease to a new

value due to the change in lithium content. The battery is then held at the open circuit voltage (OCV) for 15 minutes to reach a new steady state potential (Es), which is determined by Fick's second law of diffusion and is calculated based on Equation 1. (S1) is as follows[1]:

$$\mathbf{D} = \frac{4l^2}{\pi t}\left(\frac{\Delta E_s}{\Delta E_\tau}\right)^2 \qquad \textbf{(S1)}$$

Where τ is the duration of the current pulse (s), and ΔEs is the steady-state potential change (V) of the current pulse, which is the difference between Eo and Es. ΔEτ is a potential change (V) during the constant current pulse after the iR falls. L is the lithium ion diffusion length (cm); for a dense electrode, it is equal to the thickness of the electrode.

References

1. G Fang, Z Wu, J Zhou, C Zhu, X Cao, T Q Lin, Y M Chen, C Wang, A Q Pan, and S Q Liang, Advanced Energy Materials, 2018,1703155.