

Electronic Supplementary Information for

**Enhanced Lithium ion storage performance of tannic acid in the  
electrolytes of LiTFSI**

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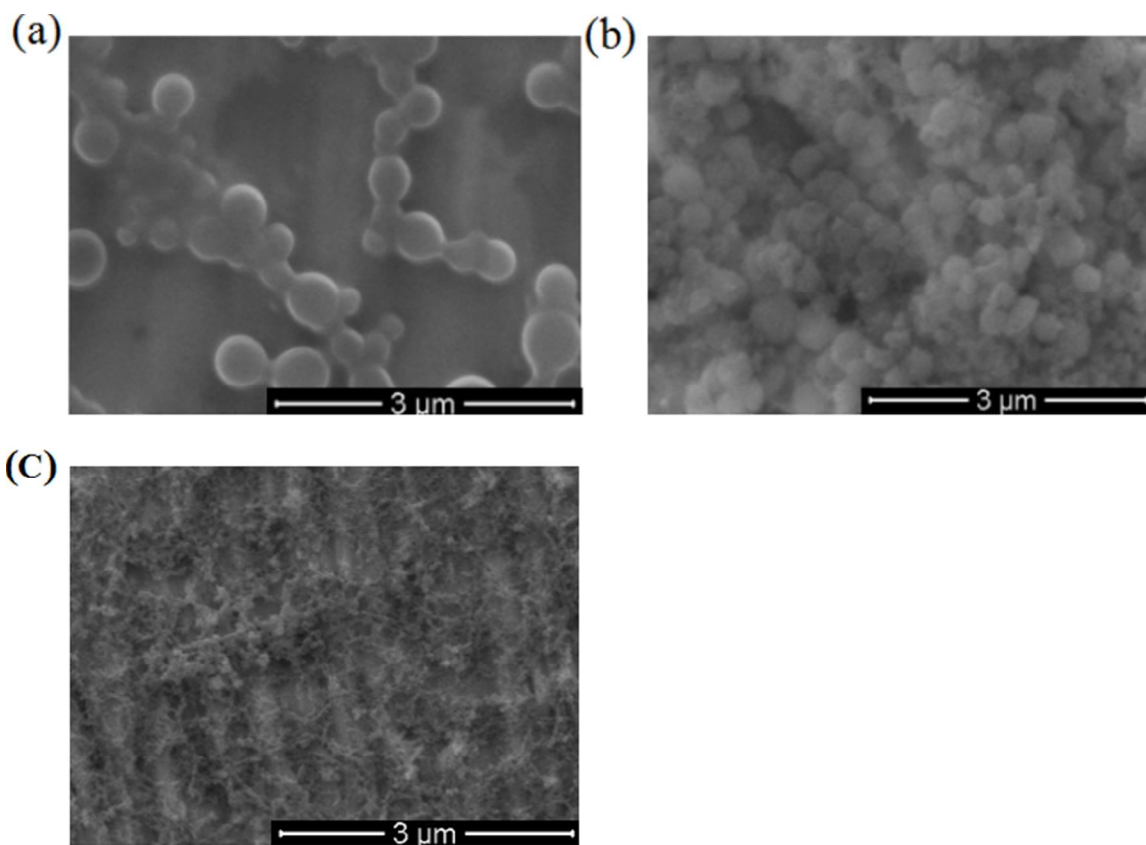
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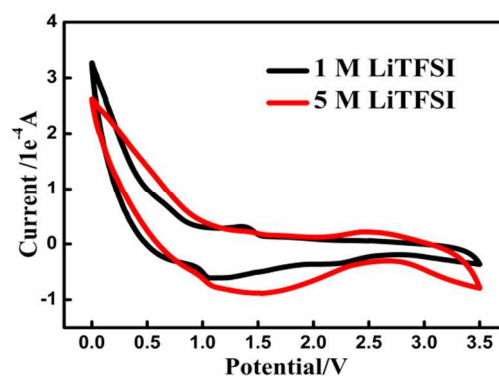
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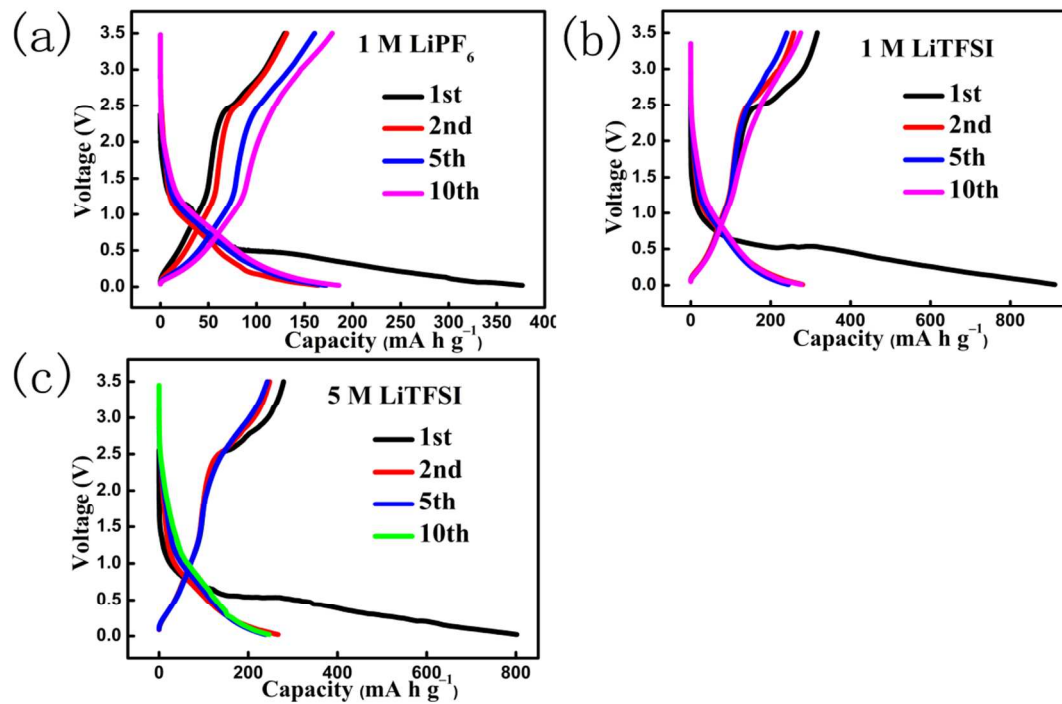


**Figure S1.** The SEM of the tannic acid (a) before (b) after lithiation (C) after 30 cycles

## II. Electrochemical tests



**Figure S2.** The CV curves of TA in 1 M LiTFSI and 5 M LiTFSI within the potential range from 3.5 V to 0 V (vs.  $\text{Li}^+/\text{Li}$ ) at a scan rate of  $1 \text{ mV s}^{-1}$ .



**Figure S3.** The charge/discharge profiles of TA in different electrolytes ((a) 1 M LiPF<sub>6</sub>, (b) 1 M LiTFSI, (c) 5 M LiTFSI) within the potential range (0-3.5 V vs. Li<sup>+</sup>/Li) at a current density of 10 mA g<sup>-1</sup>.

**Table S1.** The fitted parameters results of Figure. 6. (internal resistance ( $R_e$ ), constant phase element (CPE-1), the SEI film resistance ( $R_s$ ), non-ideal constant phase element (CPE-2), the charge transfer resistance ( $R_{ct}$ ) and the Warburg impedance ( $Z_w$ )).

Formula of electrolyte	$R_e(\Omega)$	CPE-1	$R_s(\Omega)$	CPE-2	$R_{ct}(\Omega)$	$Z_w(\Omega)$
1 M LiPF <sub>6</sub>	8.462	$2.742 \times 10^{-5}$	$5.183 \times 10^{16}$	$2.663 \times 10^{-3}$	408.5	$5.154 \times 10^{-13}$
1 M LiTFSI	29.15	$3.459 \times 10^{-5}$	$1.082 \times 10^4$	$1.484 \times 10^{-3}$	145.7	$2.534 \times 10^{-20}$
3 M LiTFSI	59.69	$2.393 \times 10^{-5}$	$1.507 \times 10^3$	$1.49 \times 10^{-3}$	82.47	$4.268 \times 10^{-16}$
5 M LiTFSI	111.3	$7.228 \times 10^{-5}$	$2.133 \times 10^{14}$	$1.01 \times 10^{-3}$	202.3	$5.061 \times 10^{-16}$