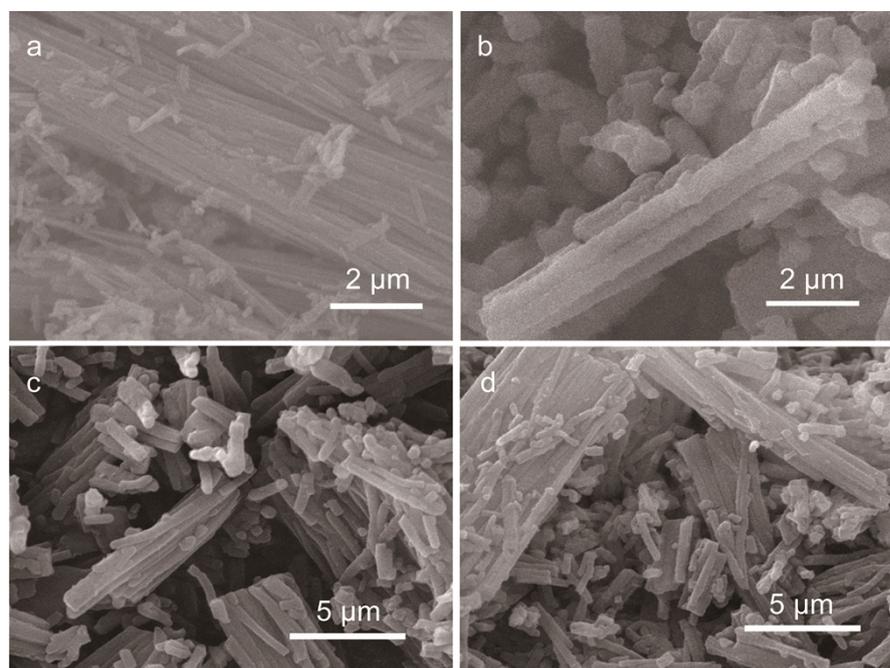


## Electronic Supplementary Information

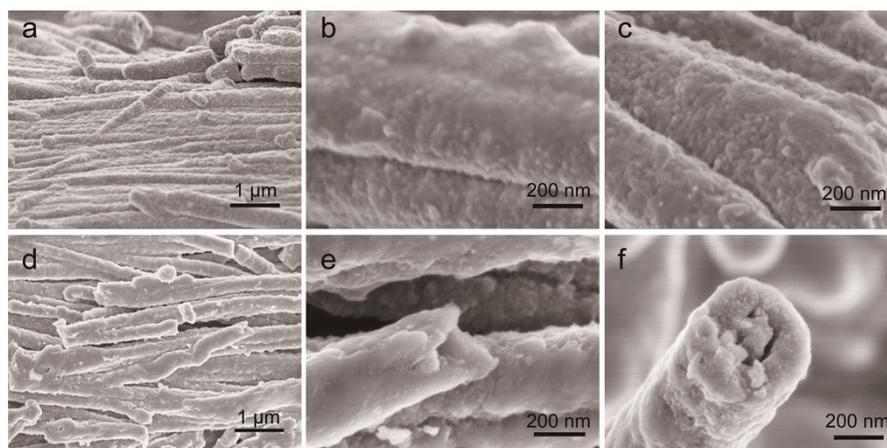
### Aqueous Li-ion Cells with Superior Cycling Performance Using Multi-channeled Polyaniline/Fe<sub>2</sub>O<sub>3</sub> Nanotube Anodes

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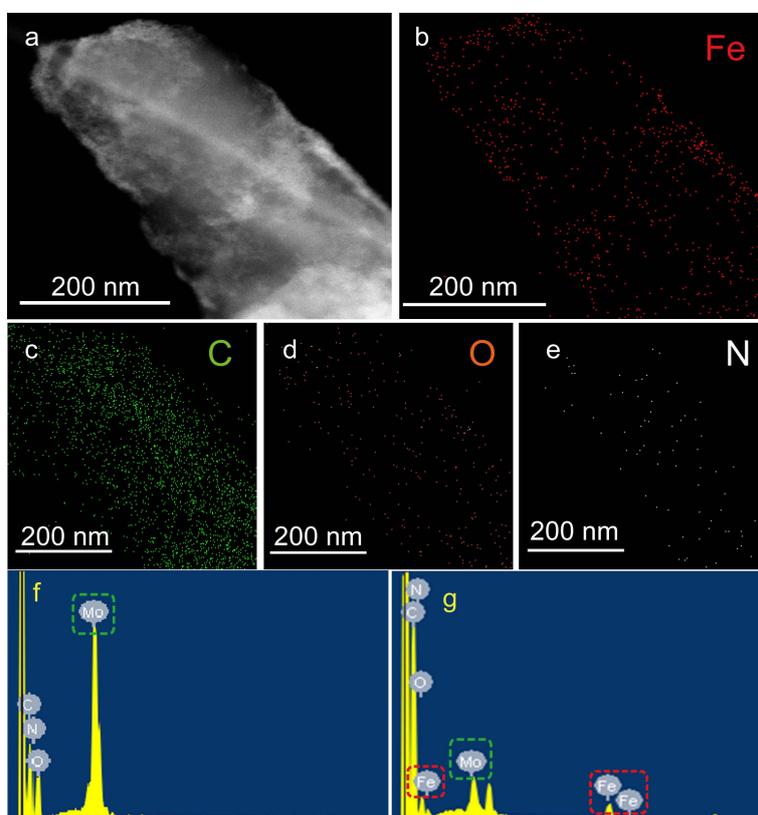
<sup>a</sup> *Laboratory of Advanced Materials, Department of Chemistry, Fudan University, Shanghai, 200433, People's Republic of China. E-mail: gfzheng@fudan.edu.cn.*



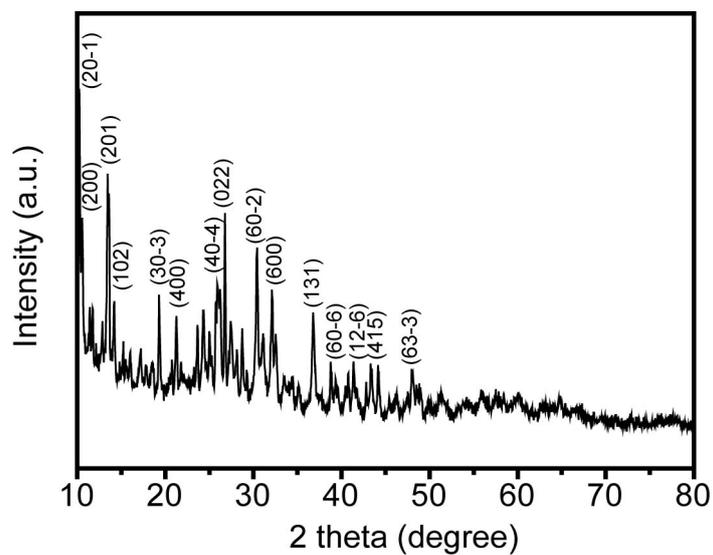
**Figure S1.** SEM images of ANI-Mo<sub>3</sub>O<sub>10</sub> NWs (a), MoO<sub>x</sub>/PANI NWs (b), de-doped PANI NTs (c) and PANI/Fe<sub>2</sub>O<sub>3</sub> NTs (d), respectively.



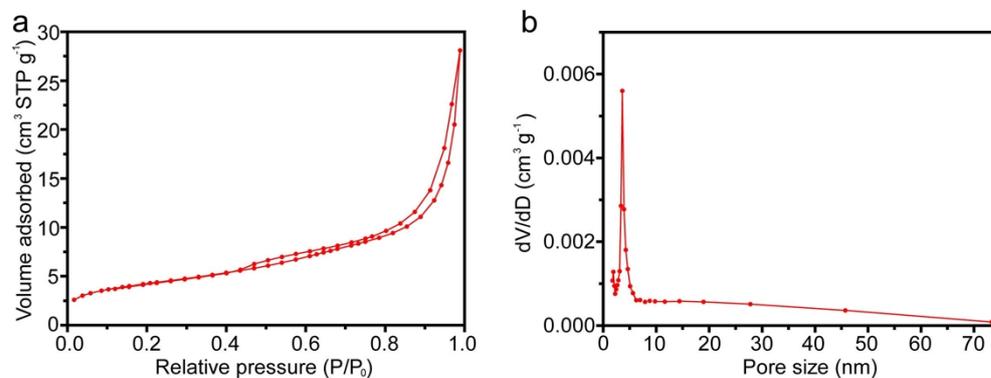
**Figure S2.** FESEM images of re-doped PANI NTs (a-c) and PANI/Fe<sub>2</sub>O<sub>3</sub> NTs (d-e).



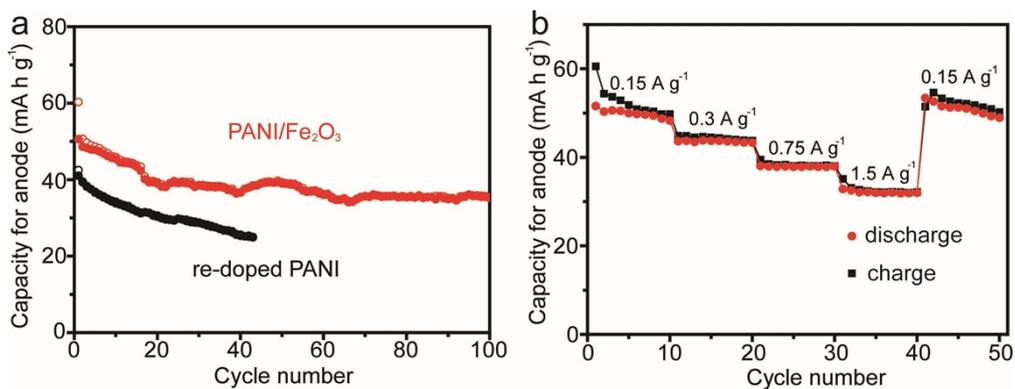
**Figure S3.** (a) Scanning transmission electron microscopy (STEM) image of the end of a single NT. (b-e) The EDS mapping analysis images of Fe (red), C (green), O (orange) and N (white) at the same position. (f, g) EDS spectra of ANI-Mo<sub>3</sub>O<sub>10</sub> NWs and PANI/Fe<sub>2</sub>O<sub>3</sub> NTs, indicating the complete elimination of MoO<sub>x</sub>.



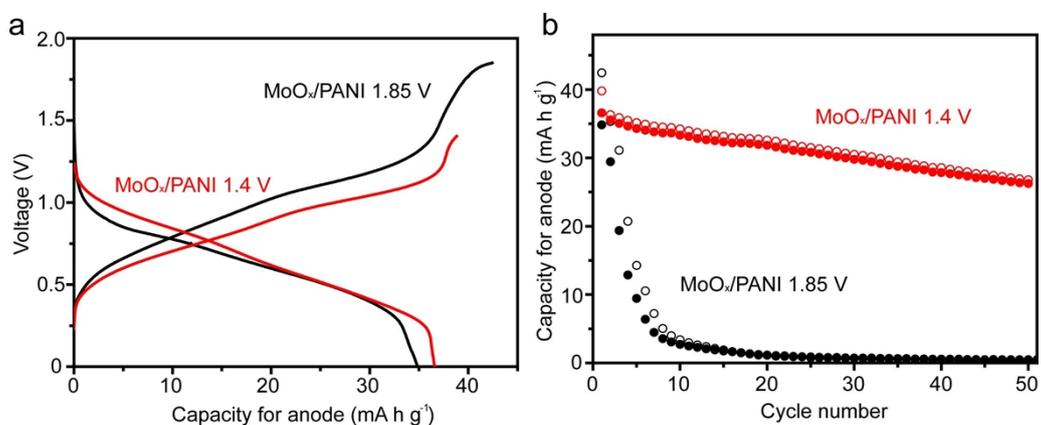
**Figure S4.** XRD pattern of ANI-Mo<sub>3</sub>O<sub>10</sub> (Mo<sub>3</sub>O<sub>10</sub>(C<sub>6</sub>H<sub>8</sub>N)<sub>2</sub>·2H<sub>2</sub>O) NWs (JCPDS NO. 50-2402).



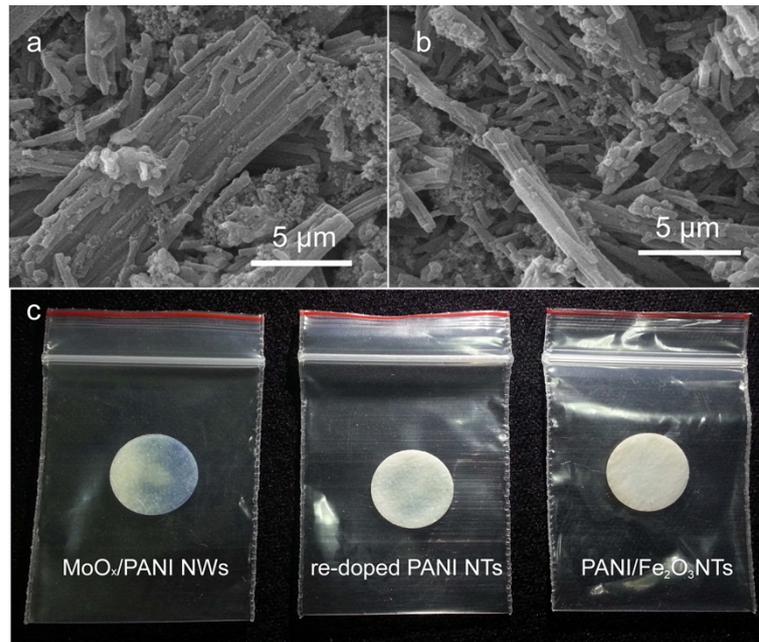
**Figure S5.** Nitrogen sorption isotherm (a) and pore size distribution (b) of PANI/Fe<sub>2</sub>O<sub>3</sub> NTs.



**Figure S6.** (a) The cyclic performances comparison between PANI/Fe<sub>2</sub>O<sub>3</sub> and re-doped PANI within 100 cycles. (b) The rate cyclic performance of (PANI/Fe<sub>2</sub>O<sub>3</sub>)//LiMn<sub>2</sub>O<sub>4</sub> cell.



**Figure S7.** The initial charge/discharge curves (a) and cyclic performances (b) of (MoO<sub>x</sub>/PANI)//LiMn<sub>2</sub>O<sub>4</sub> ARLIBs tested at the range of 1.4—0.05 (red) and 1.85—0.05 V (black).



**Figure S8.** SEM images of fresh PANI/Fe<sub>2</sub>O<sub>3</sub> NTs electrode (a) and the same sample after 70 cycles of charge and discharge. (c) Optical images of the separators in three different cell using MoO<sub>x</sub>/PANI NWs, re-doped PANI NTs, and PANI/Fe<sub>2</sub>O<sub>3</sub> NTs as the anodes, respectively.