Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

A conductive polymer coated MoO_3 anode enables an Al-ion capacitor with high performance

Faxing Wang,[a,c,#] Zaichun Liu,[b,#] Xiaowei Wang,[b] Xinhai Yuan,[c] Xiongwei Wu,[b,*] Yusong Zhu, [b] Lijun Fu,[b,*] and Yuping Wu, [a,b,c,*]

[a] College of Energy and Institute for Electrochemical Energy Storage, Nanjing Tech University, Nanjing 211816, Jiangsu Province, China

[b] College of Science, Hunan Agriculture University, Changsha, Hunan 410128, China

[c] New Energy and Materials Laboratory (NEML), Department of Chemistry, Fudan University, Shanghai 200433, China

Supplementary figures:

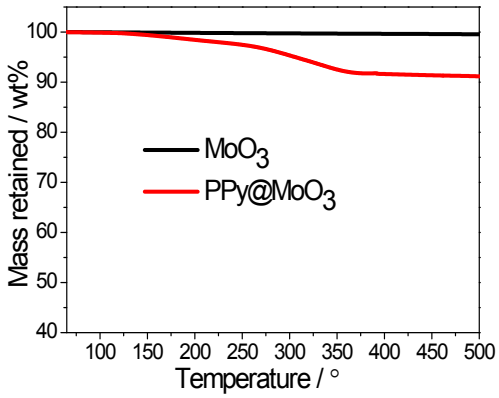

Fig. S1Thermogravimetic analysis of the MoO_3 nanotubes under air.

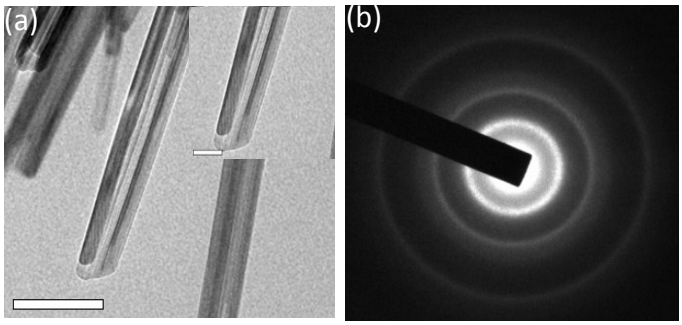

Fig. S2 (**a**) TEM micrograph of the MoO_3 nanotubes, and (**b**) SAED pattern for PPy layer. Scale bar, 200 nm (**a**), 100nm (inserted in **a**)

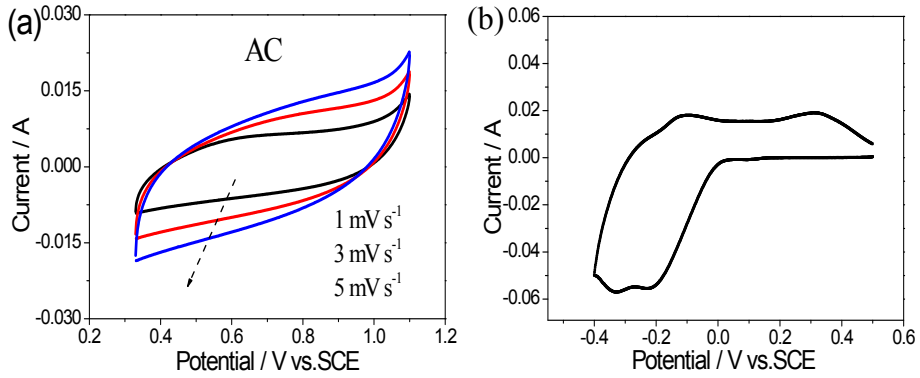

Fig. S3 CV curves of (a) AC at different scan rate and (b) MoO_3 nanotubes in 0.5 mol l-1 $Al_2(SO_4)_3$ electrolyte at 5 mV s^{-1}.

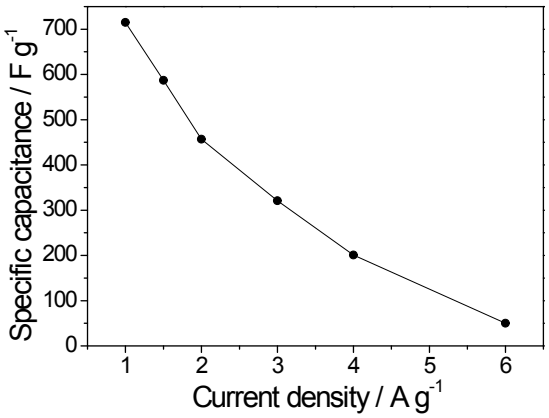

Fig. S4 Change of capacitance with current densities for MoO_3 nanotubes.

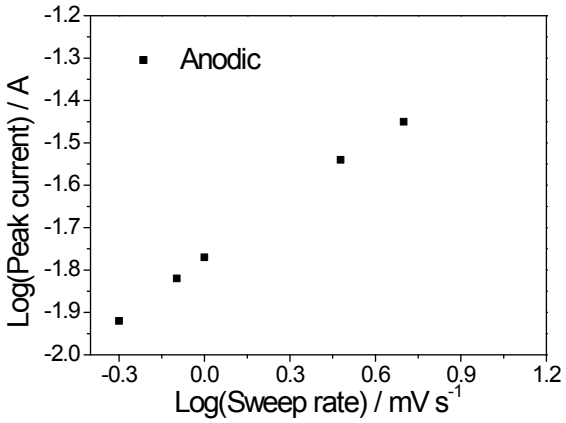

Fig. S5 b-value determination from the peak currents..

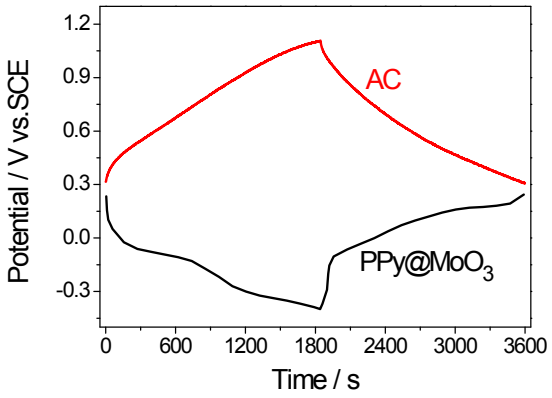

Fig. S6 Typical charge/discharge curves of the individual electrode (AC and PPy@MoO_3).

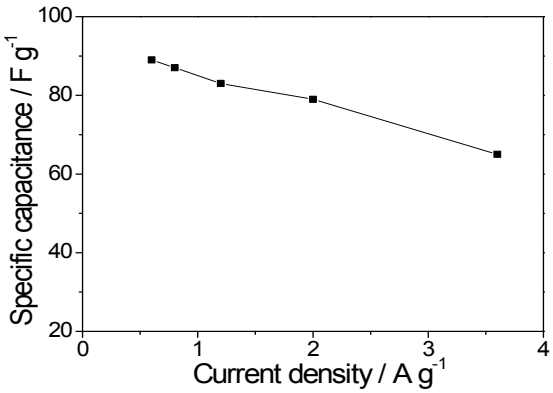

Fig. S7 Change of capacitance with current densities for the Al-ion capacitor (PPy@MoO_3//AC).The capacitance and energy density were calculated based on the total mass of cathode and anode materials.

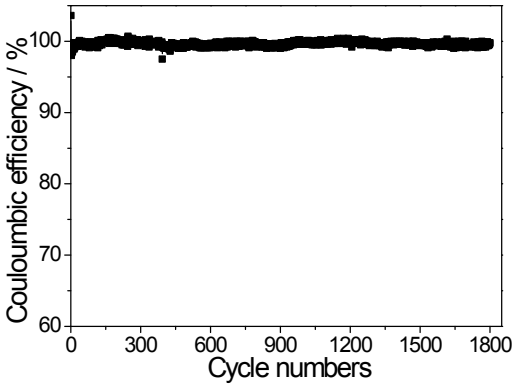

Fig. S8 The Coulombic efficiency of the Al ion capacitor based on PPy@MoO_3 as the anode at 2 A g^{-1}.