Supporting Information

Building Artificial Solid Electrolyte Interphase on Spinel Lithium Manganate for High Performance Aqueous Lithium-ion Batteries

Wujie Dong[a§], Xieyi Huang[a§], Yan Jin[a], Miao Xie[a], Wei Zhao[a], Fuqiang Huang [a,b]*

[a] *State Key Laboratory of High Performance Ceramics and Superfine Microstructures, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai 200050, P.R. China*

State Key

[b]*Laboratory of Rare Earth Materials Chemistry and Applications, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, P.R. China*

Prof. FQ. Huang

E-mail: huangfq@mail.sic.ac.cn (FQ. Huang)

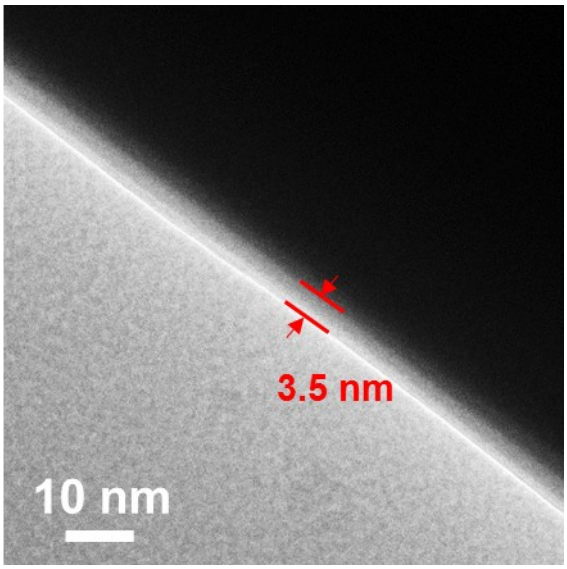

Figure S1. Electrochemical in-situ polymerized LiPAA layer on carbon fiber.

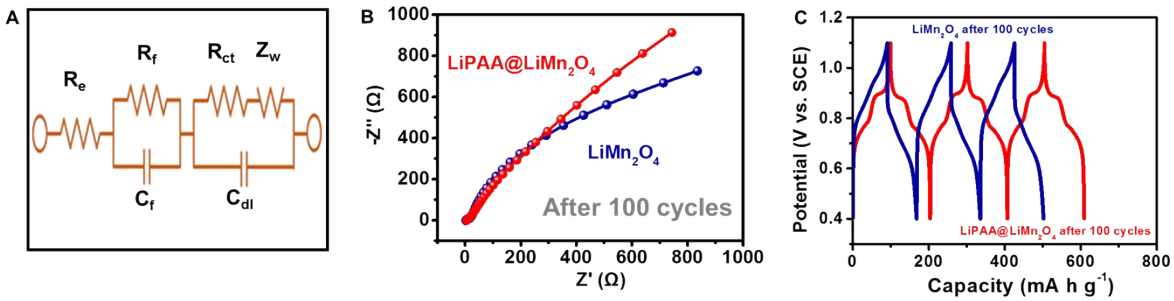

Figure S2. (A) The relevant Randles equivalent circuit. **(B)** Nyquist plots of pristine $LiMn_2O_4$ LiPAA@$LiMn_2O_4$ and spanning over 0.01 Hz to 10^5 Hz after 100 cycles. **(C)** GCD curves of $LiMn_2O_4$ and LiPAA@$LiMn_2O_4$ after 100 cycles.

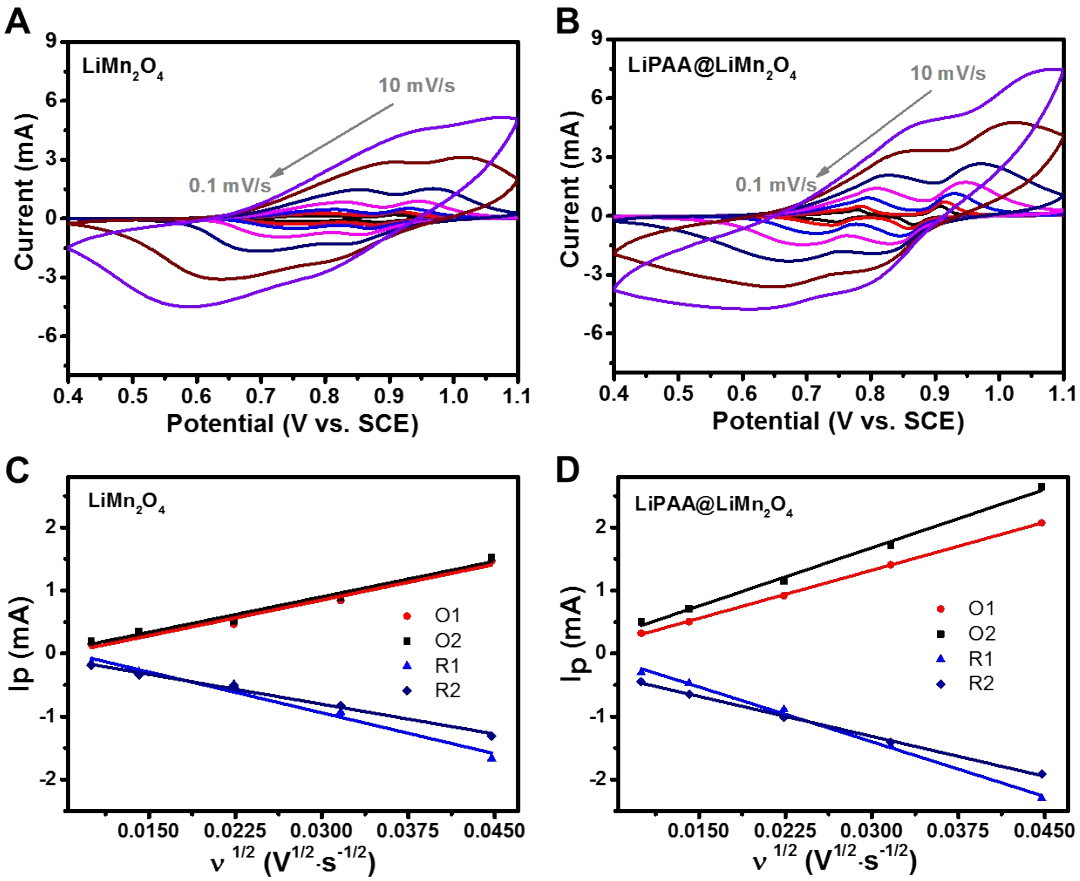

Figure S3. CV curves of (A) $LiMn_2O_4$ and (B) LiPAA@$LiMn_2O_4$ electrodes at the scan rate spanning over 0.1 mV s^{-1} to 10 mV s^{-1}. Plot of peak current (I_p) vs. square root of scan rate ($v^{1/2}$) for (C) $LiMn_2O_4$ and (D) LiPAA@$LiMn_2O_4$.

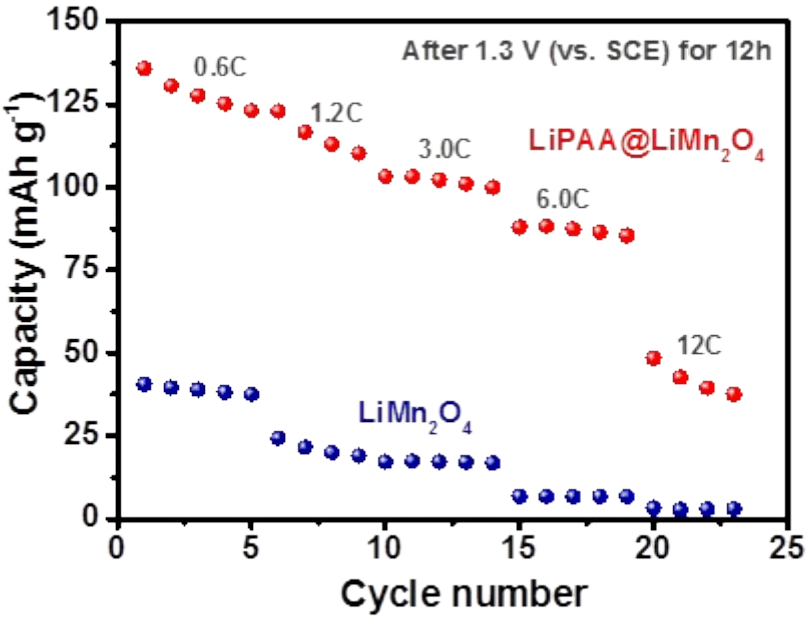

Figure S4. Rate performance of LiPAA@$LiMn_2O_4$ and $LiMn_2O_4$ electrodes spanning before and after holding at 1.3 V (vs. SCE) for 12 h.

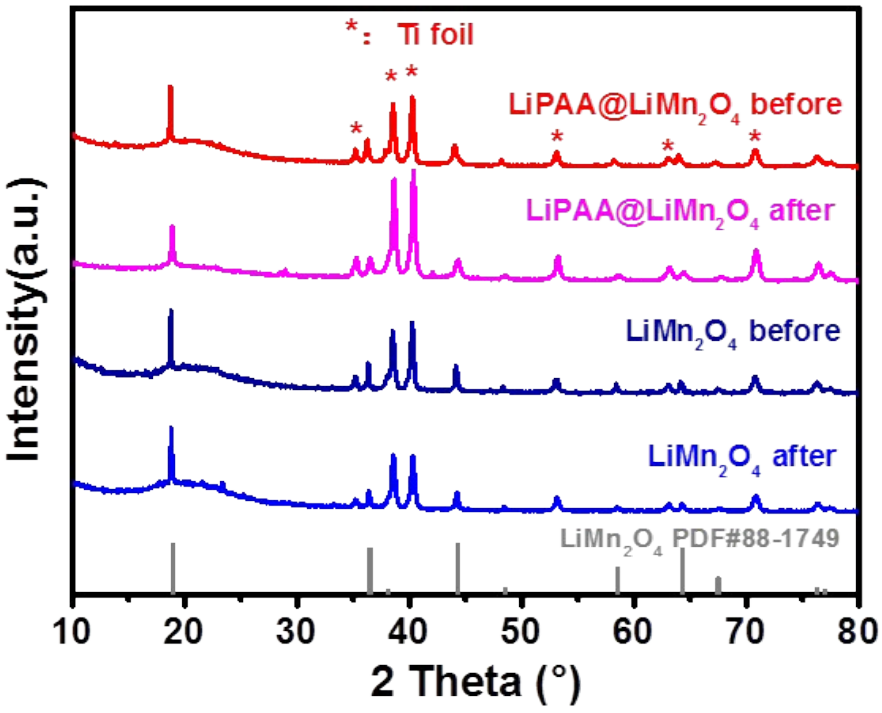

Figure S5. *Ex-situ* XRD before and after the overcharged LiPAA@$LiMn_2O_4$ and $LiMn_2O_4$ electrodes.