Supporting Information

First-Cycle Evolution of Local Structure in Electrochemically Activated Li_2MnO_3

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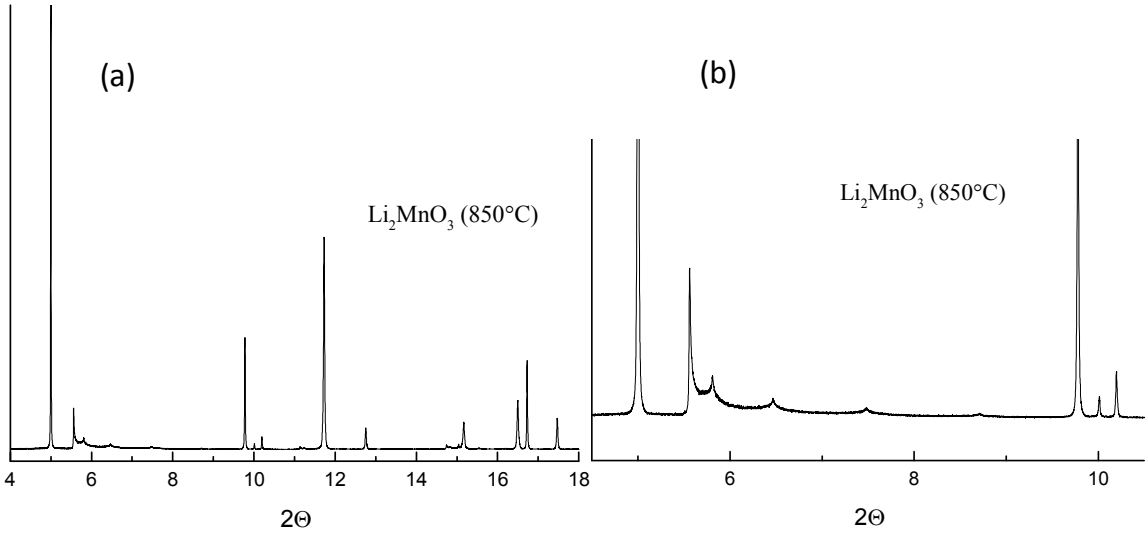

Figure SI-1. (a) High-resolution ($\Delta Q/Q \approx 2 \times 10{-}4$) synchrotron X-ray powder diffraction data (HR-XRD) of Li_2MnO_3 annealed at 850°C for 24 hours. (b) Magnified region of the ~5-10 2θ range. Data were collected at 11-BM at the Advanced Photon Source (APS), Argonne National Laboratory. Scans were collected in transmission mode on spinning Kapton capillaries using a fixed wavelength of 0.413710 Å at a temperature of 295 K.

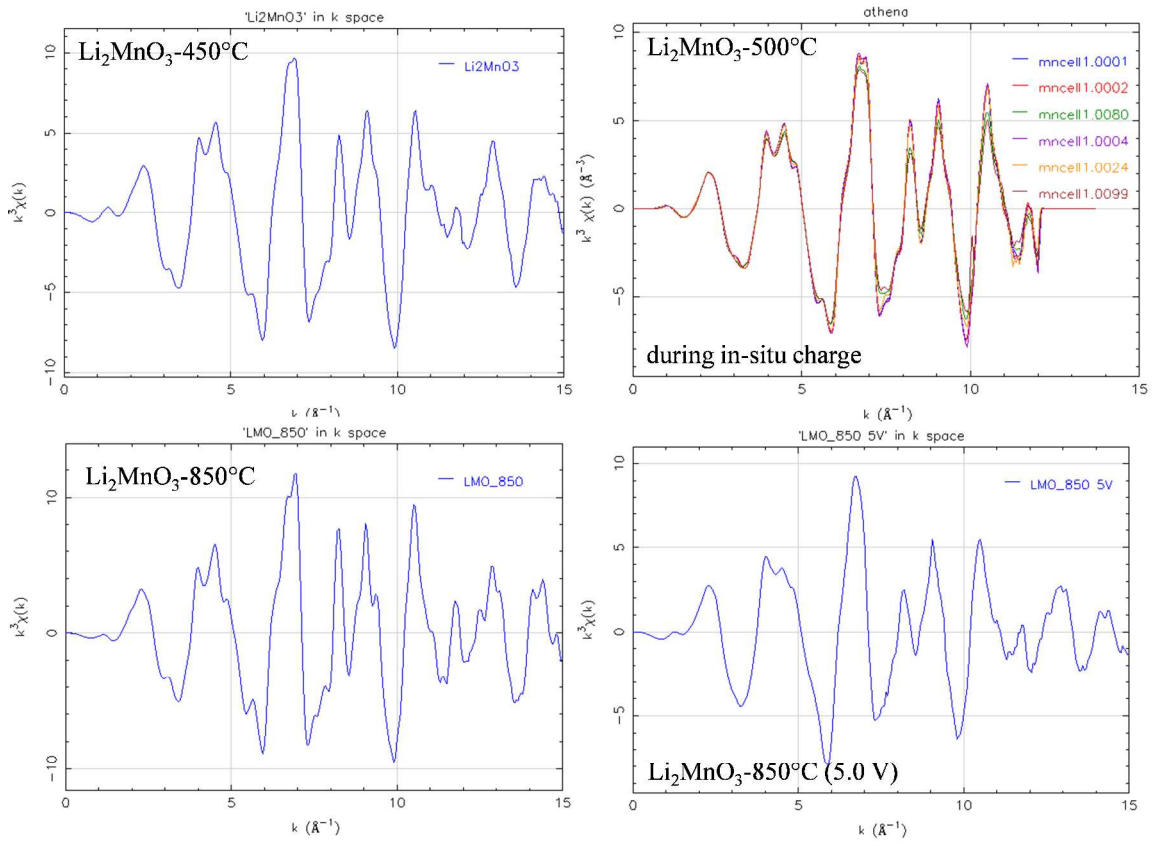

Figure SI-2. Raw, extracted, k^3-weighted EXAFS data of Li_2MnO_3.

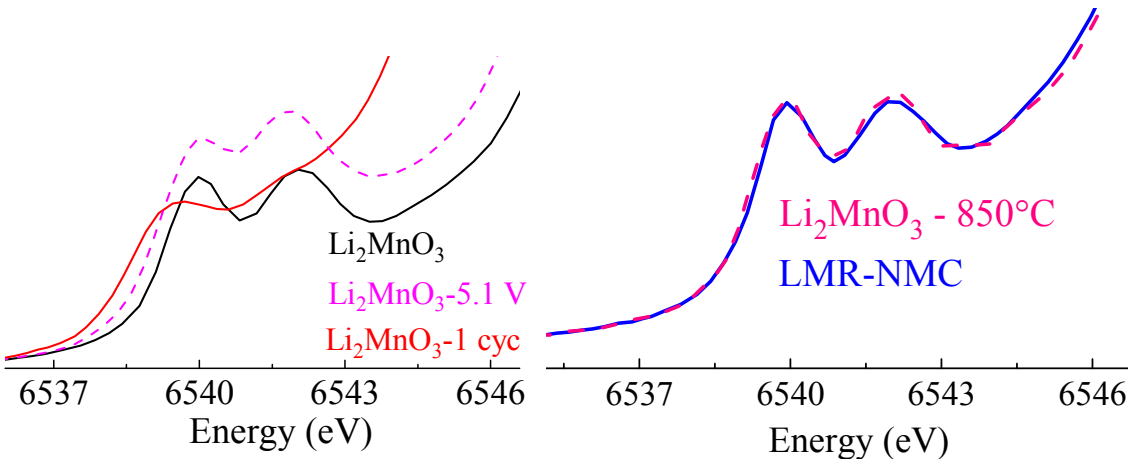

Figure SI-3. Comparison of Mn K, pre-edge data for fresh and cycled Li_2MnO_3 (left) and high temperature (850°C) Li_2MnO_3 and LMR-NMC (right).

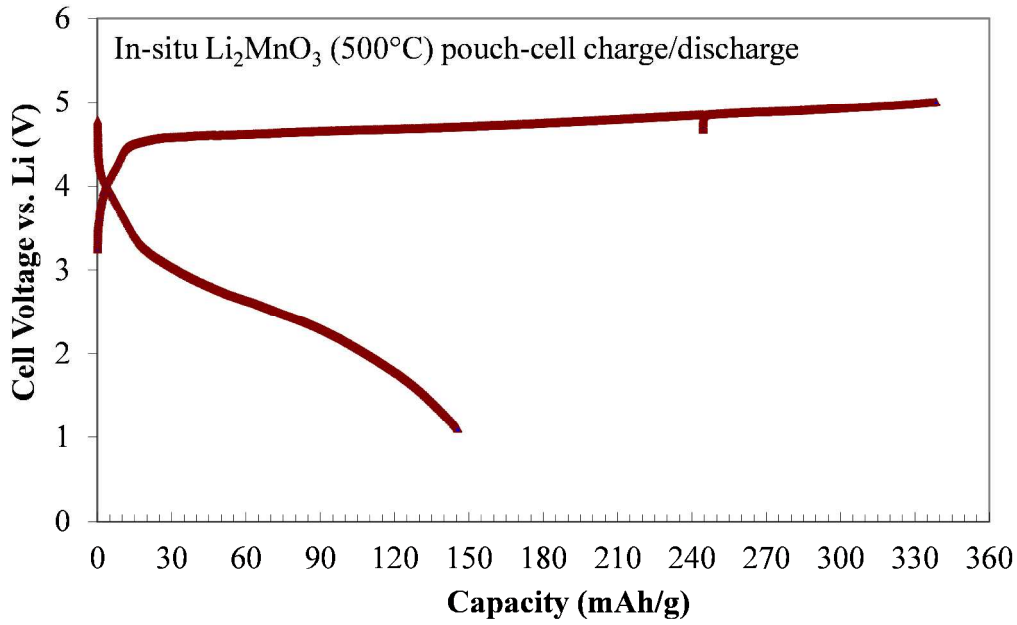

Figure SI-4. First-cycle charge and discharge curves for the in-situ Li_2MnO_3 (500°C) pouch cell.

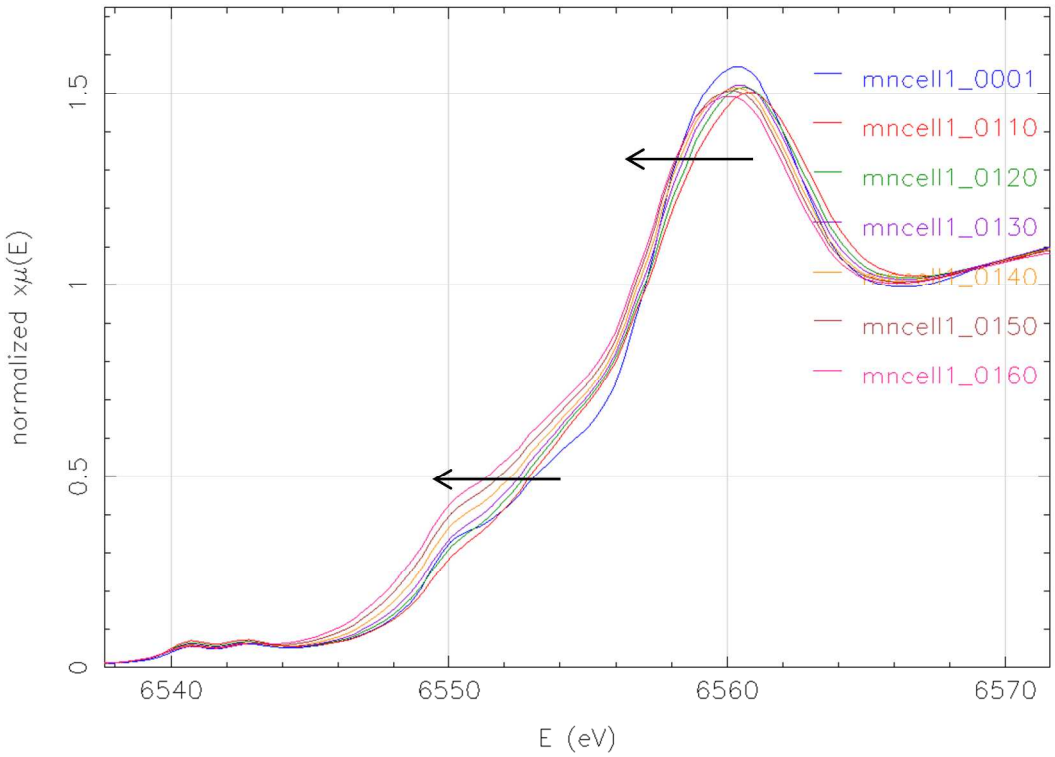

Figure SI-5. XANES data of the first-cycle discharge between 5.0-1.0 V for the in-situ Li_2MnO_3 (500°C) pouch cell. Arrows show a systematic shift to lower energy as the discharge progresses from 5.0 V (mncell1_110, red) to 1.0 V (mncell1_0160, magenta). The fresh cell is labeled as mncell1_001 (blue).