

Electronic Supplementary Information

Crystallographic Facet- and Size-controllable Synthesis of Spinel $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ with Excellent Rate Capability and Cyclic Stability as Cathode of High Voltage Lithium Ion Battery

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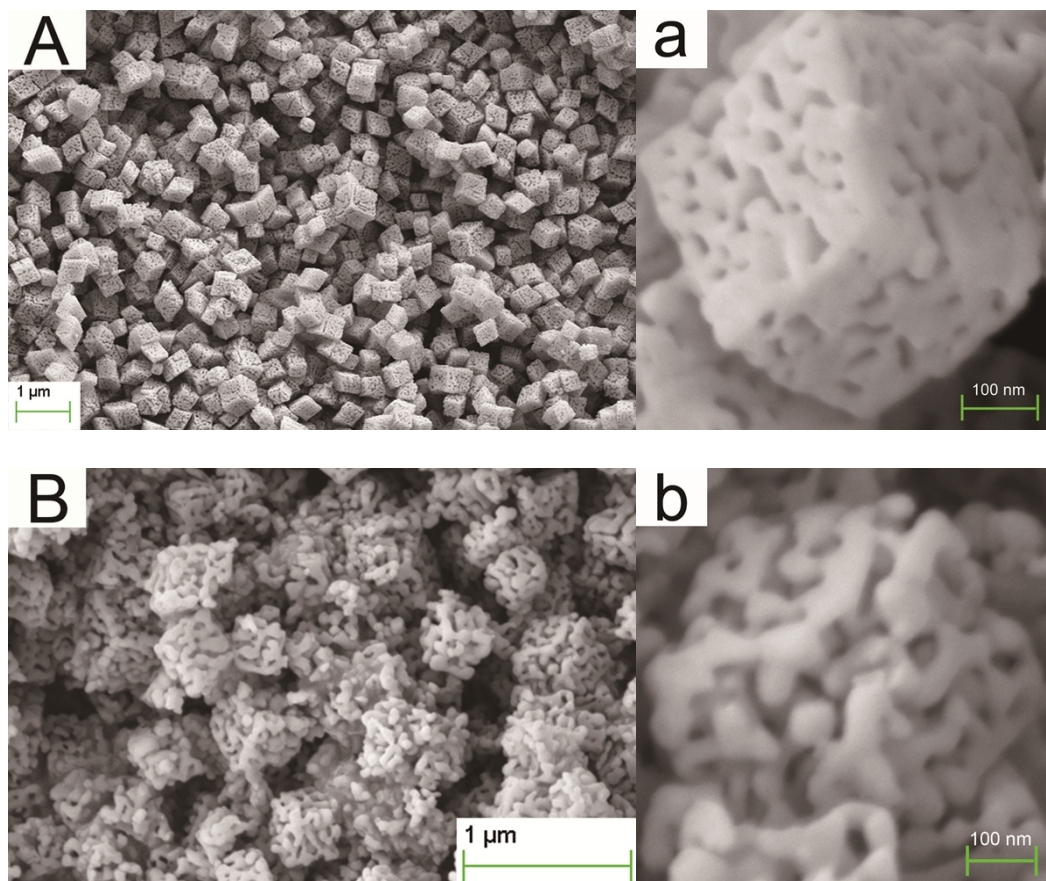


Fig. S1. SEM images of (A and a) Mn₂O₃-4h and (B and b) Mn₂O₃-12h.

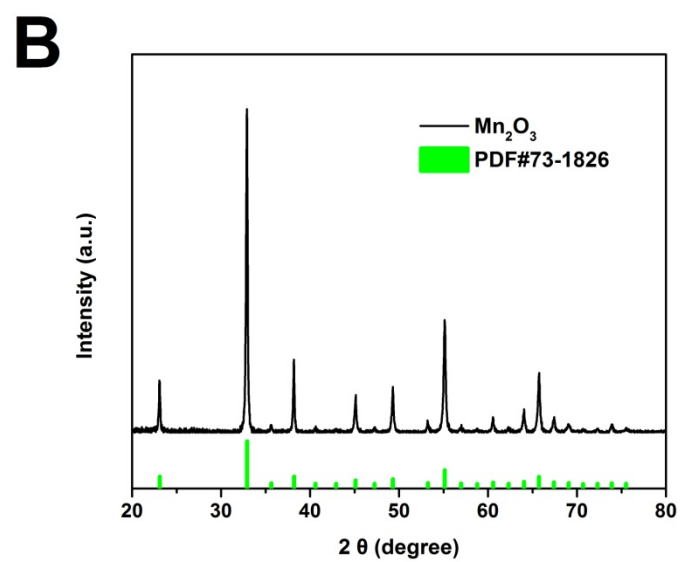
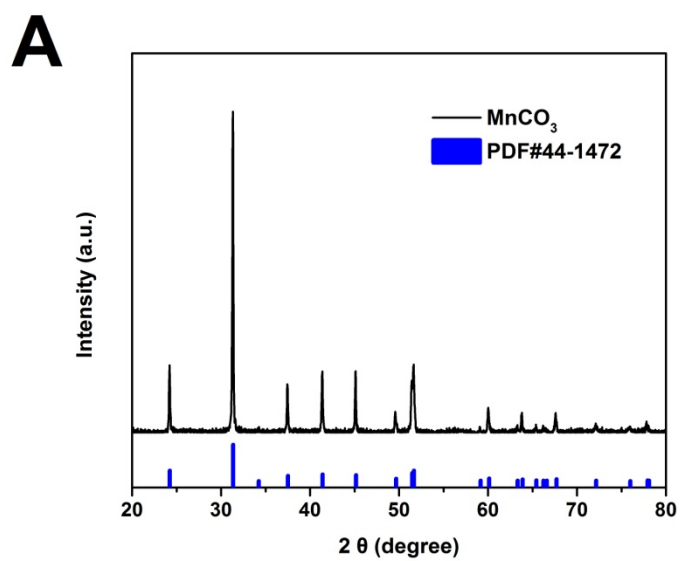


Fig. S2. X-Ray diffraction patterns of MnCO_3 (A) and Mn_2O_3 -8h (B).

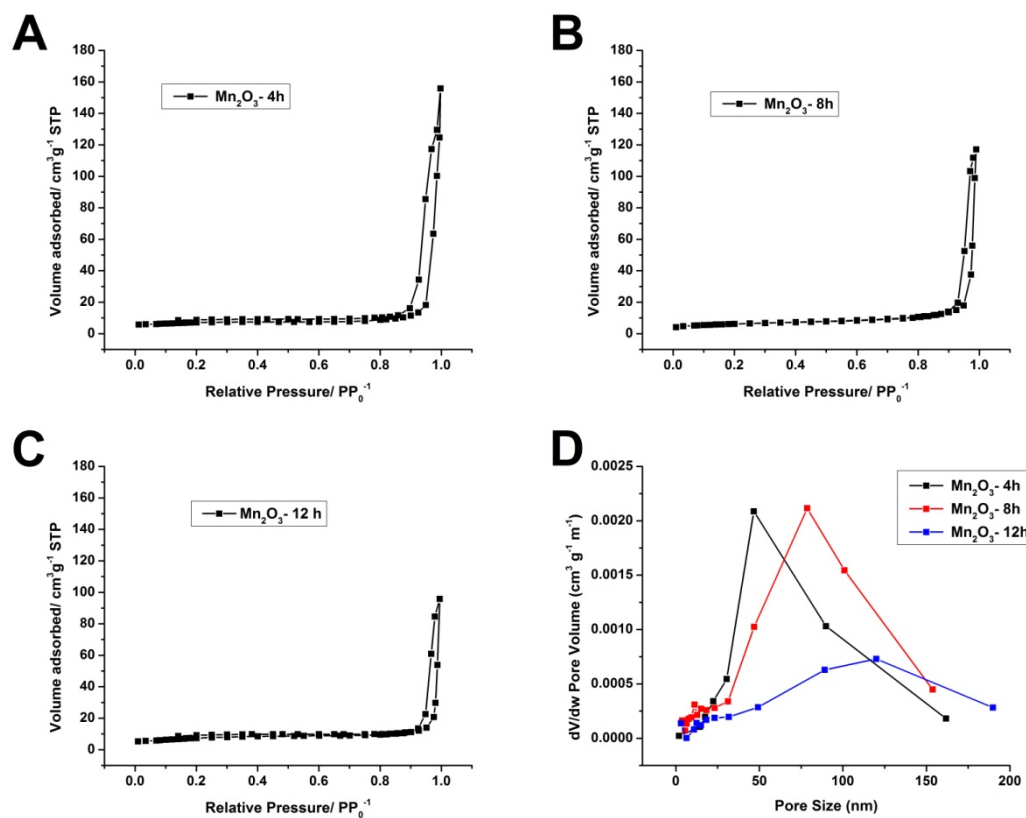


Fig. S3. (A, B and C) N_2 adsorption/desorption isotherms of Mn_2O_3 sintered for various times and (D) the corresponding pore size distribution.

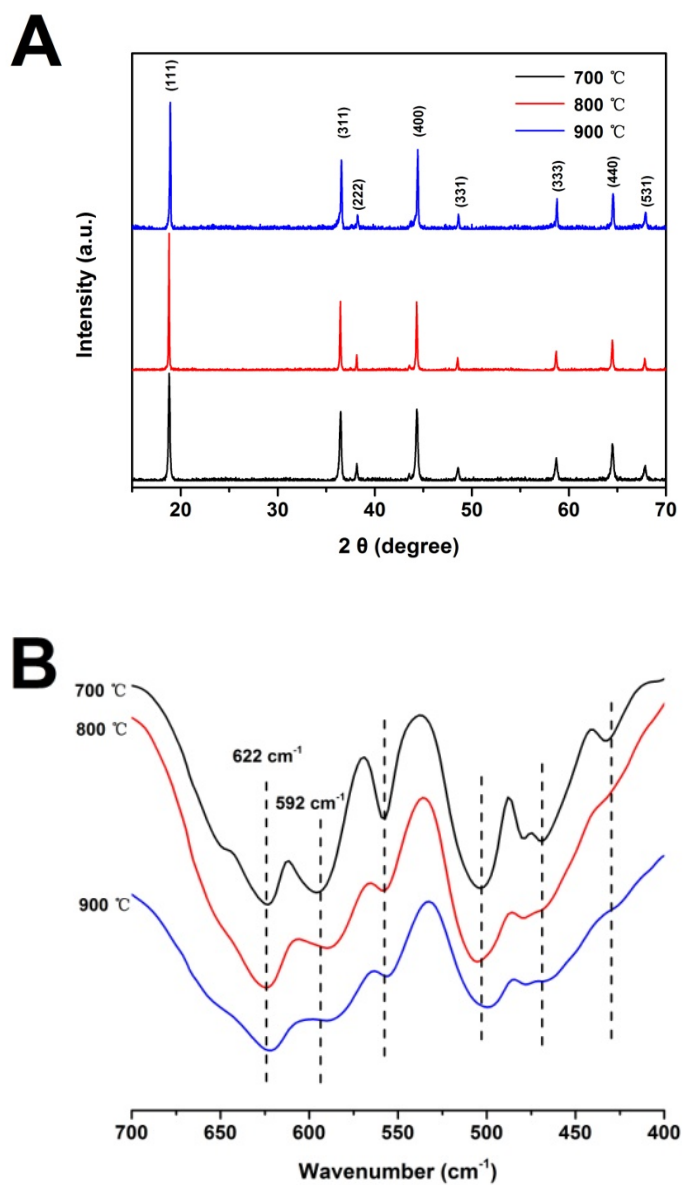


Fig. S4. (A) X-Ray diffraction patterns and (B) FTIR of $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ sintered at different temperatures.

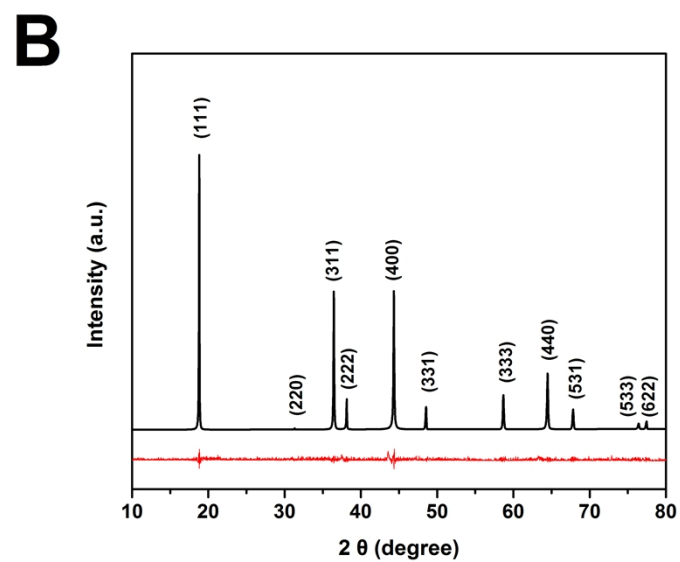
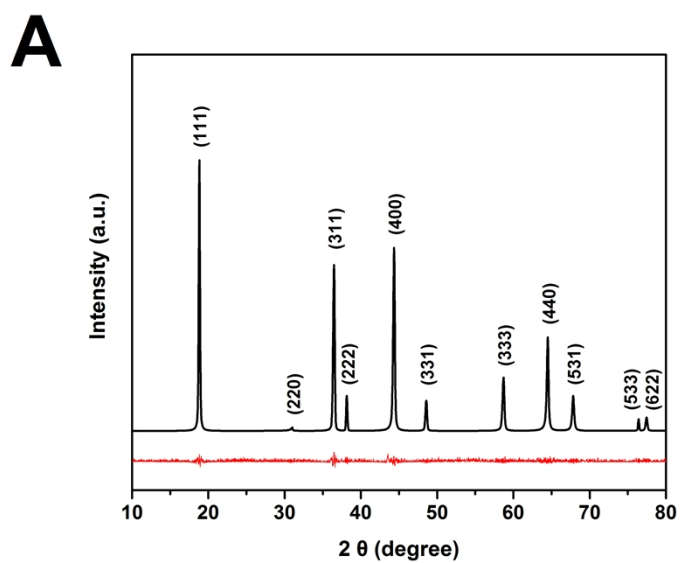


Fig. S5. Rietveld refinement profiles of XRD data for $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ sintered at (A) 700 °C and (B) 800 °C.

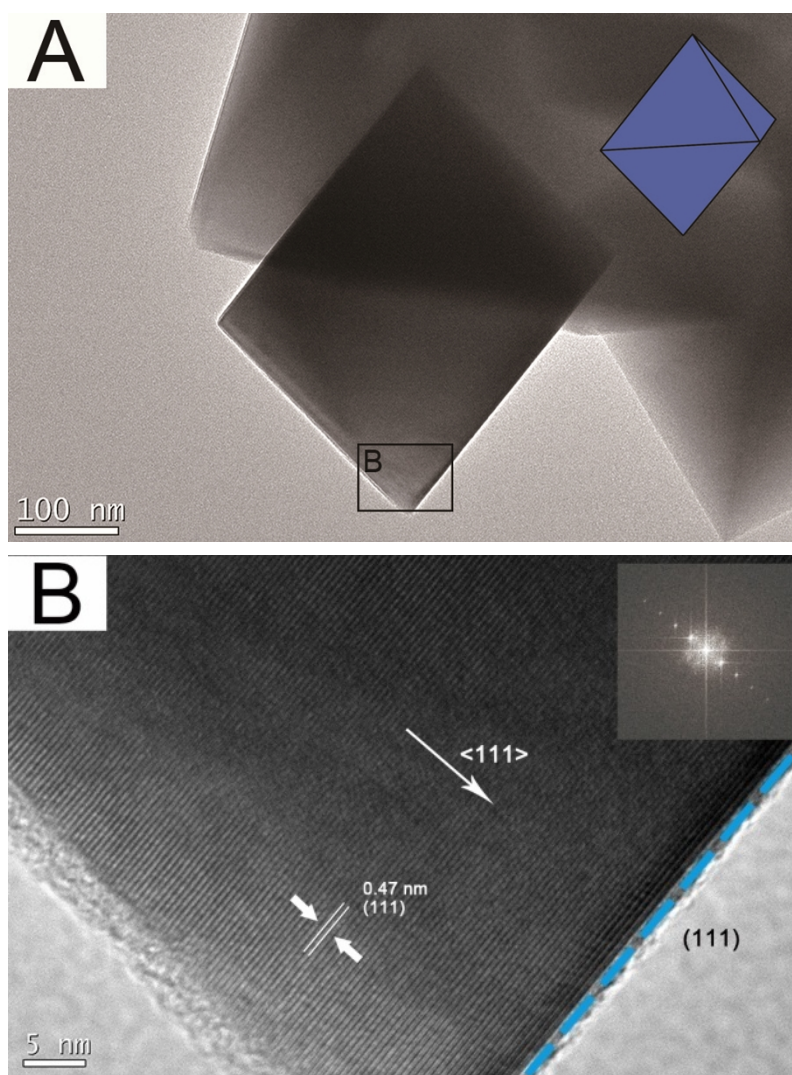


Fig. S6. TEM image (A) and the HRTEM image (B) corresponding to the region in A of SF-LNMO.

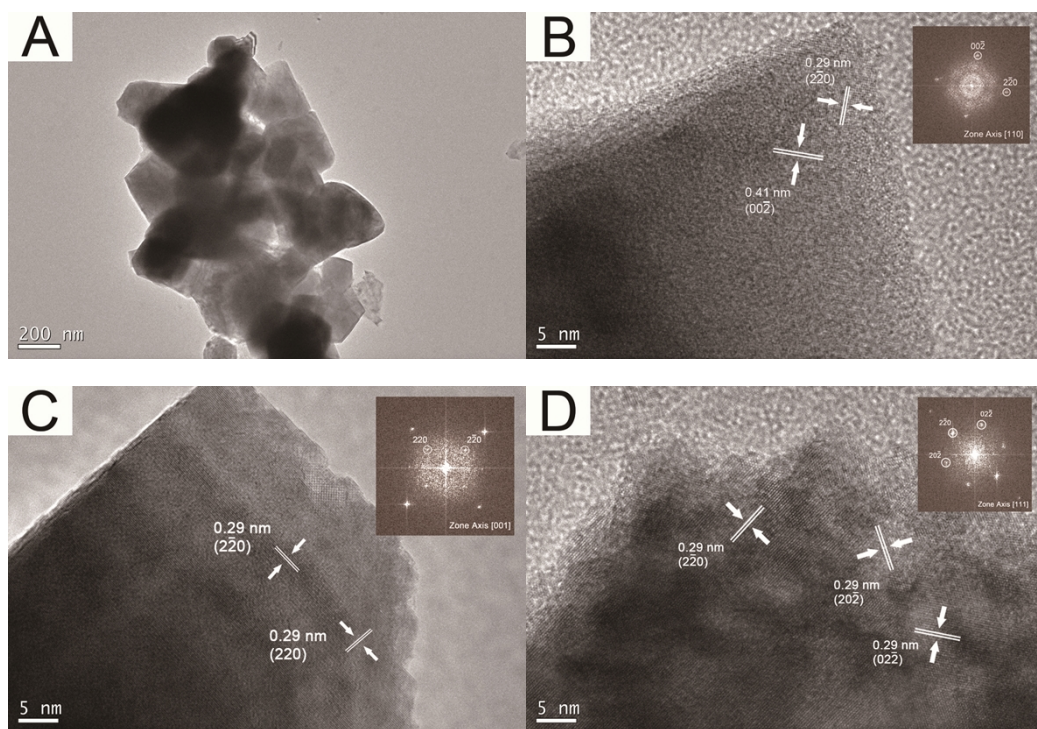


Fig. S7. TEM image (A) and the HRTEM images (B, C and D) of MF-LNMO.

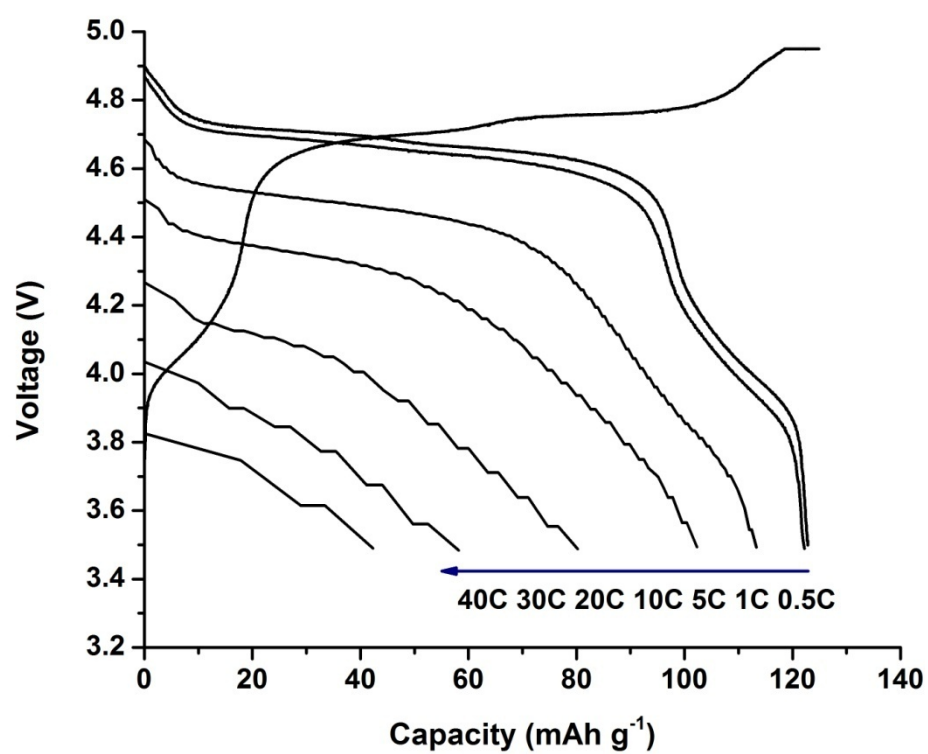


Fig. S8. Discharge voltage-capacity profiles of MF-LNMO at different current rates.

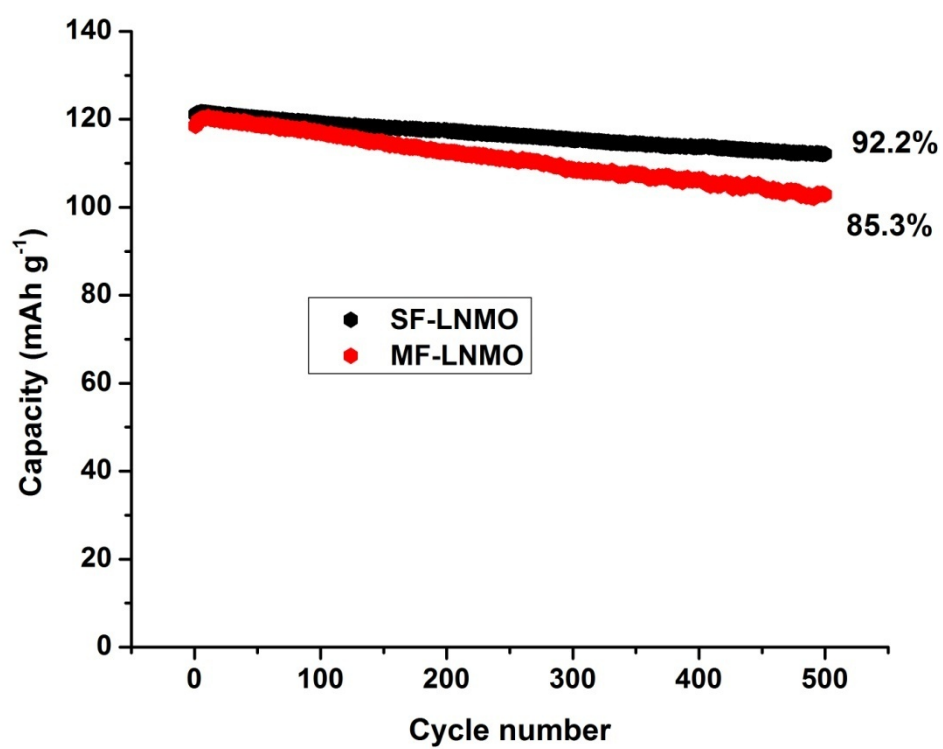


Fig. S9. Cyclic performance of SF-LNMO and MF-LNMO at the rate of 2 C charging and discharging at 25 °C.

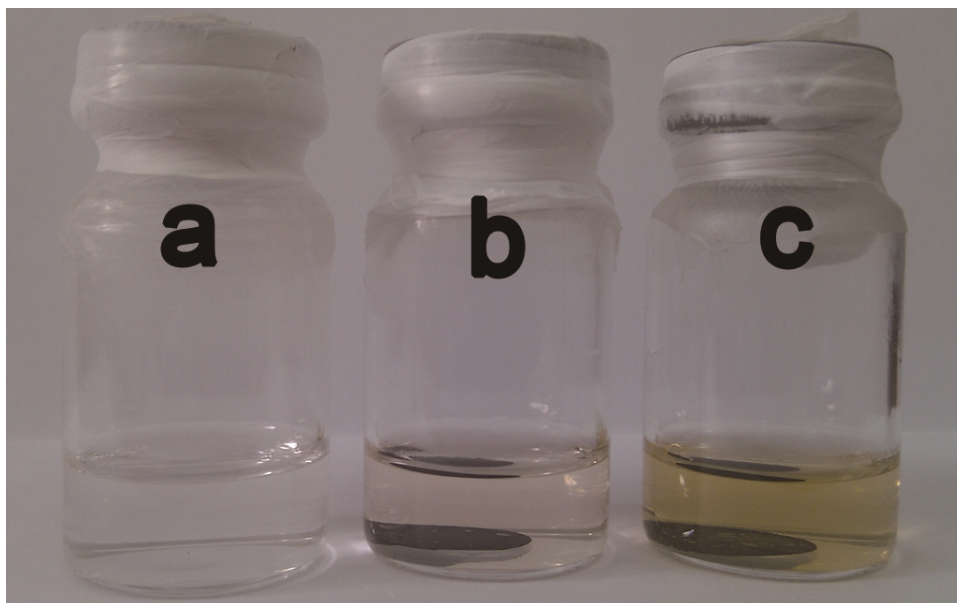


Fig. S10. Photographs of the electrolyte stored at 55 °C for 24 h: (a) without spinel sample, (b) with SF-LNMO electrode and (c) with MF-LNMO electrode.

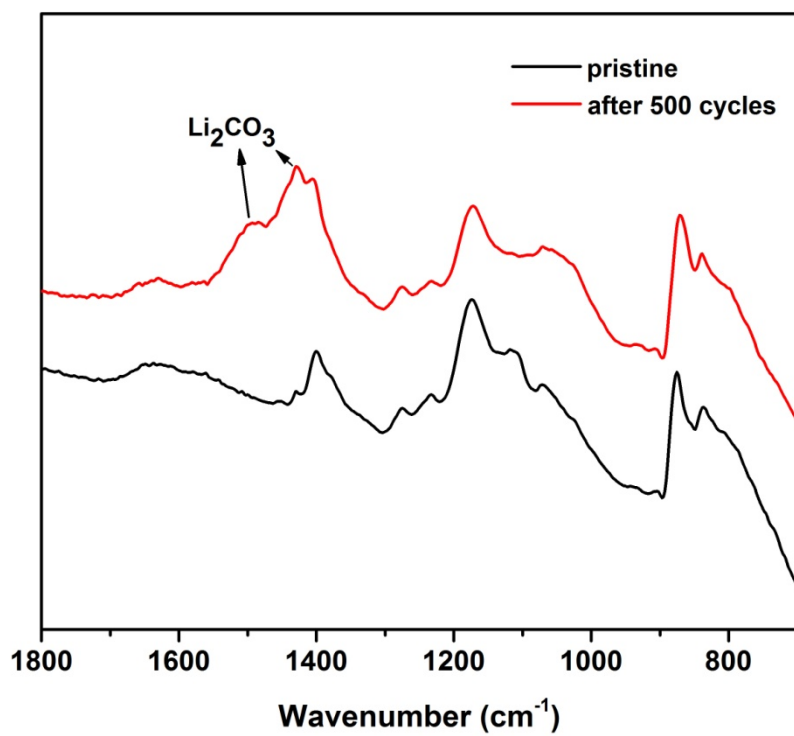


Fig. S11. FTIR spectra of SF-LNMO electrodes before and after 500 charge-discharge cycles.