

Supporting Information

Surface Reinforcing Balloon Trick-Inspired Separator/Li metal Integrated Assembly to Improve Electrochemical Performance of Li Metal Batteries

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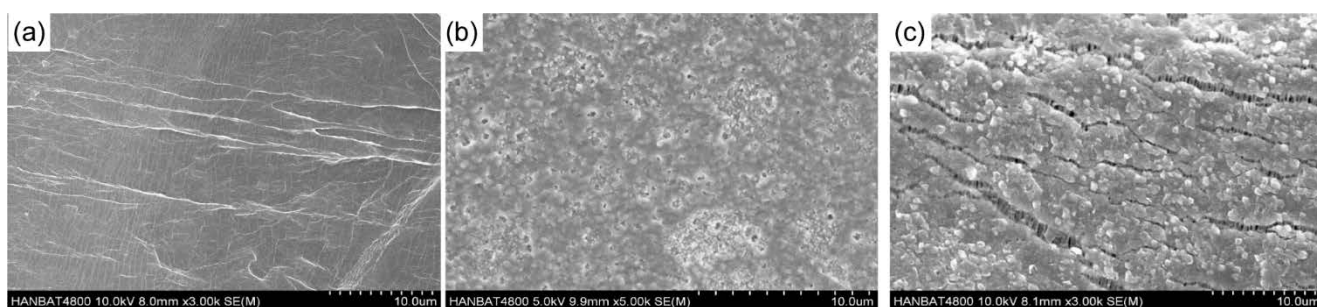


Figure S1. Scanning electron microscope (SEM) image of (a) a bare Li metal surface. SEM images of the PVdF protection layer dried under vacuum for (b) 12 h and (c) 24 h.

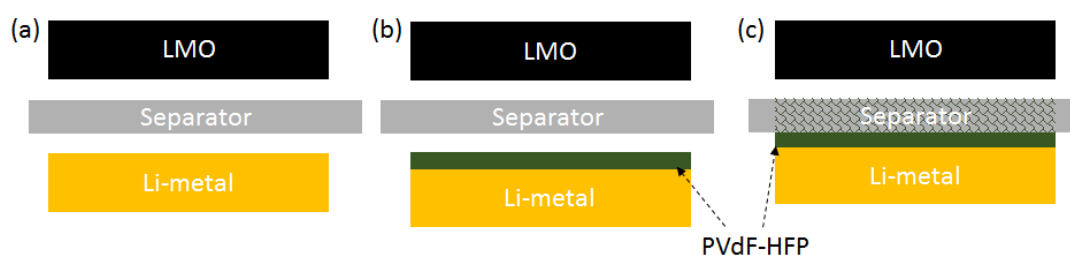


Figure S2. Schematics describing three different types of Li metal/LMO (LiMn_2O_4) half cells based on (a) bare Li metal, (b) a protection layer, and (c) separator/Li metal integrated assembly.

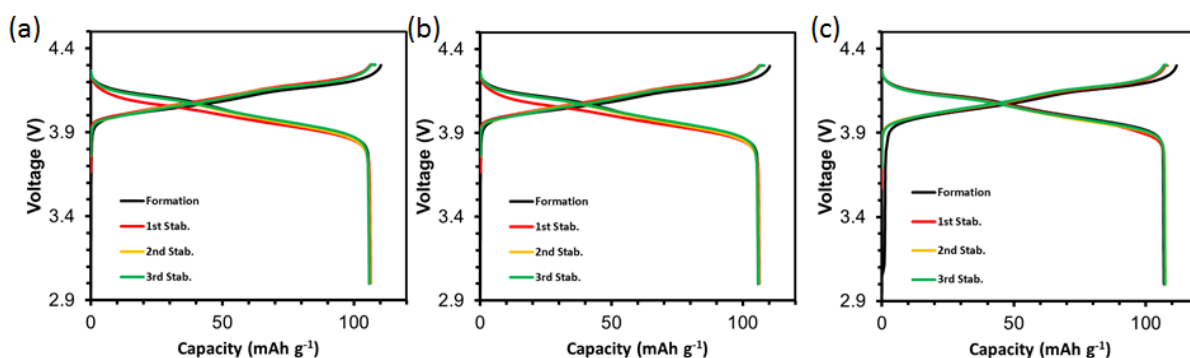


Figure S3. Potential profiles of Li metal/LMO (LiMn_2O_4) half cells based on (a) bare Li metal, (b) a protection layer, and (c) separator/Li metal integrated assembly during precycling.

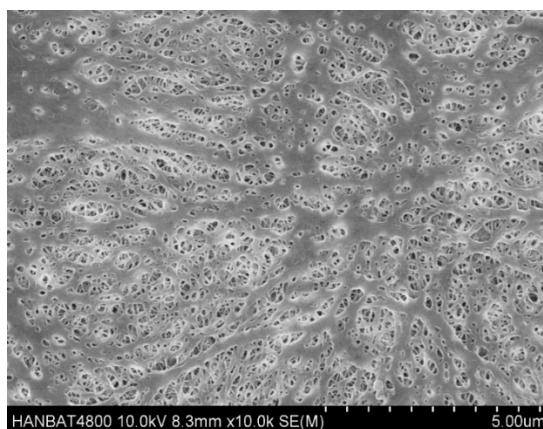


Figure S4. The PE separator of the separator/Li metal integrated assembly was gently removed by hand, and the surface structure of the PE side was monitored using SEM.

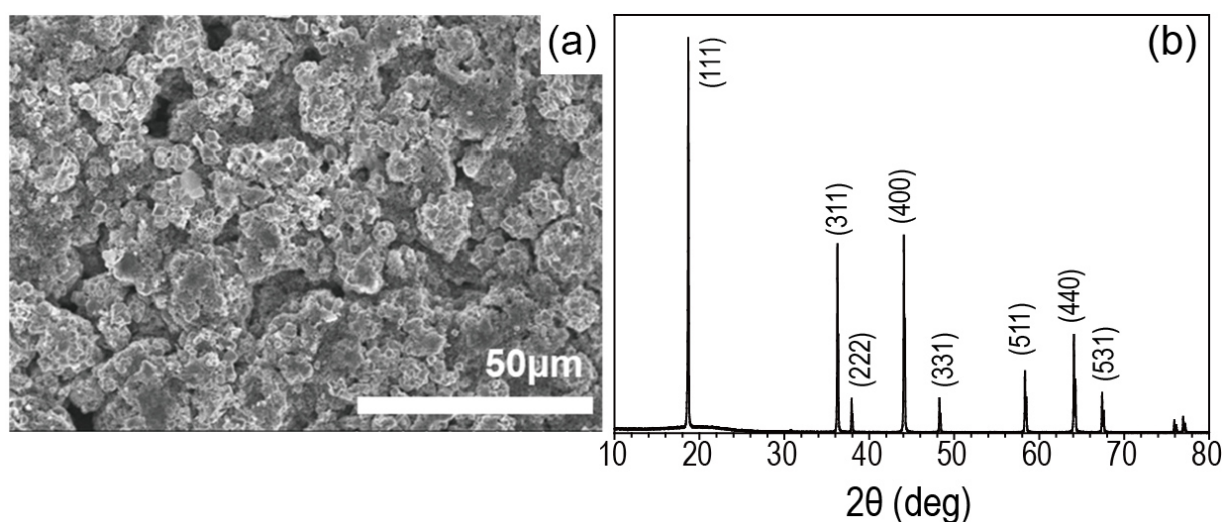


Figure S5. (a) a SEM image and (b) X-ray diffractograms of LiMn_2O_4 electrode used in this study. XRD data were collected at $2\theta = 10\text{--}80^\circ$. The well-defined reflection peaks include eight lattice planes at (111), (311), (222), (400), (311), (511), (440) and (531).

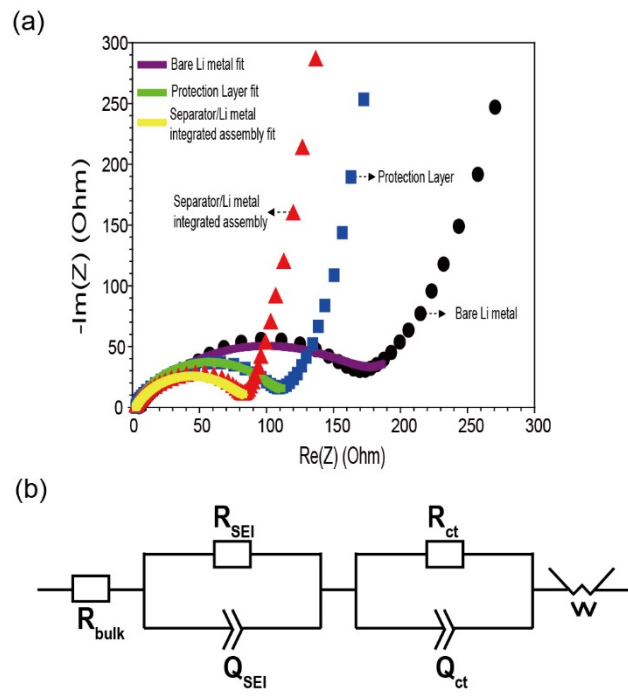


Figure S6. An equivalent circuit used in Figure 7 and data fitting results using the circuit.