Supporting information

Nonflammable single-solvent electrolyte towards highly stable Li-rich Mn-based cathode materials

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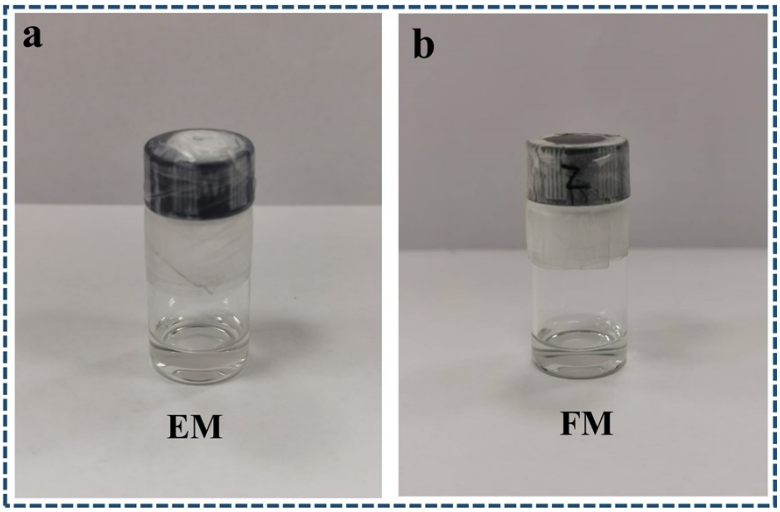

Fig. S1. The optical photos of EM and FM electrolytes.

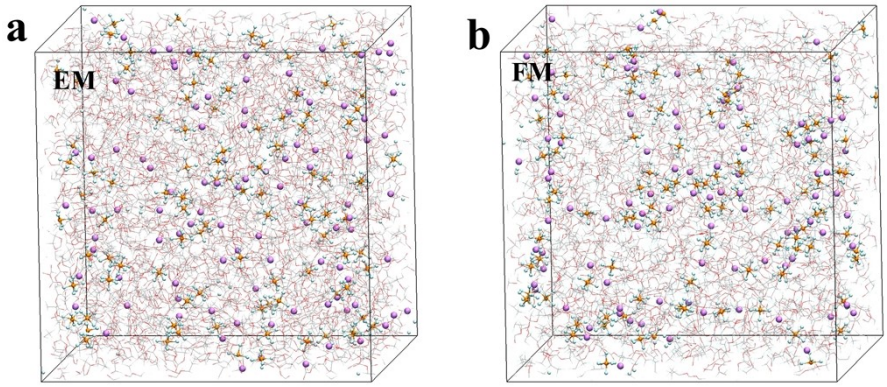

Fig. S2. The simulation snapshots of the (a) EM and (b) FM electrolytes.

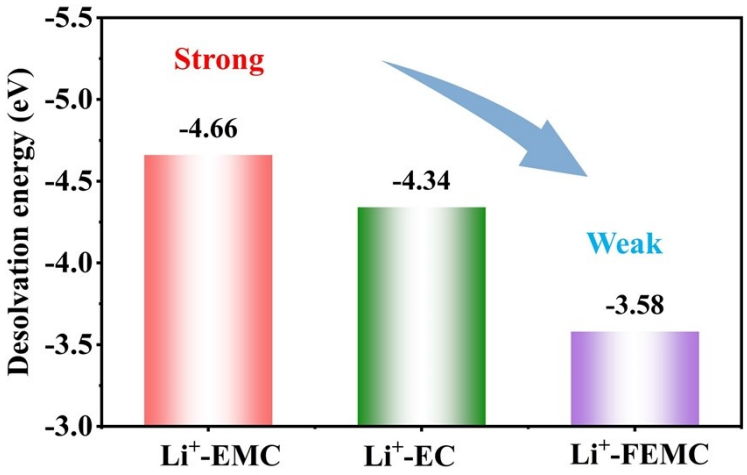

Fig. S3. The desolvation energies based on the coordination numbers between Li^+ and solvents.

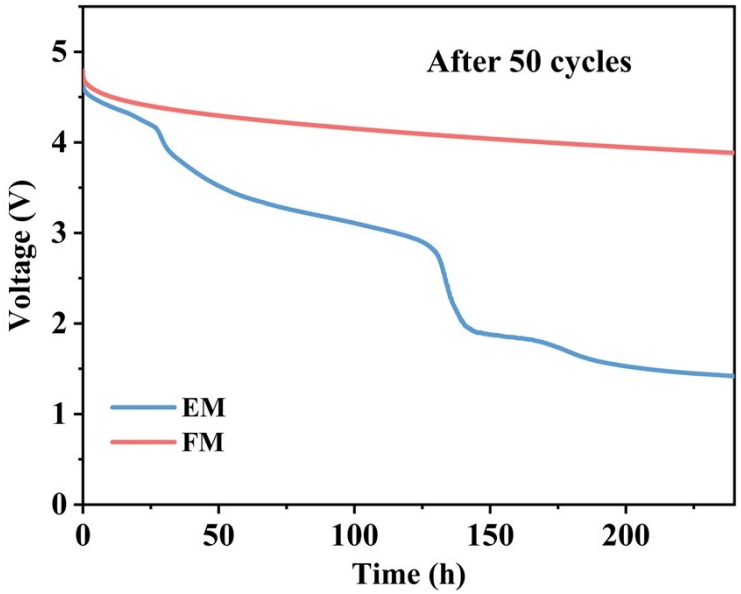

Fig. S4. Self-discharge curves of Li||LRM cells with EM and FM electrolytes at 4.8 V after 50 cycles.

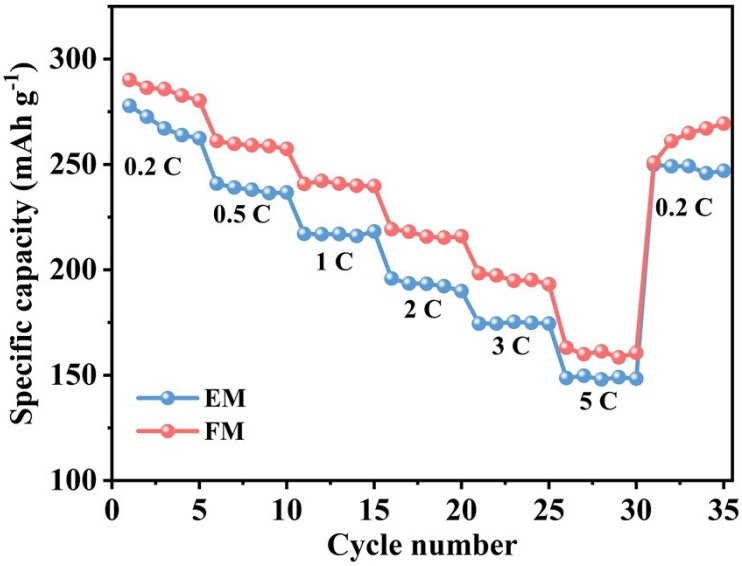

Fig. S5. Rate capability of Li||LRM cells with different electrolytes at 0.2, 0.5, 1, 2, 3, 5, and 0.2 C.

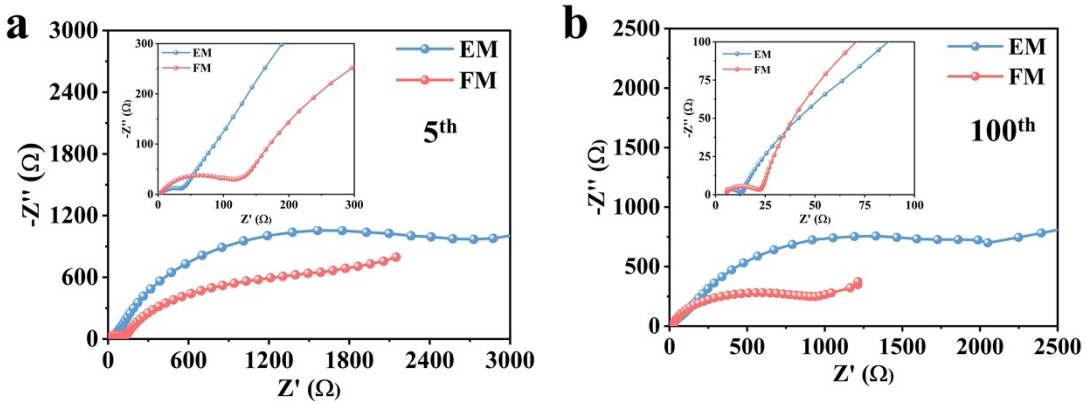

Fig. S6. Nyquist plots of Li||LRM cells using EM and FM electrolytes after 5 and 100 cycles, respectively.

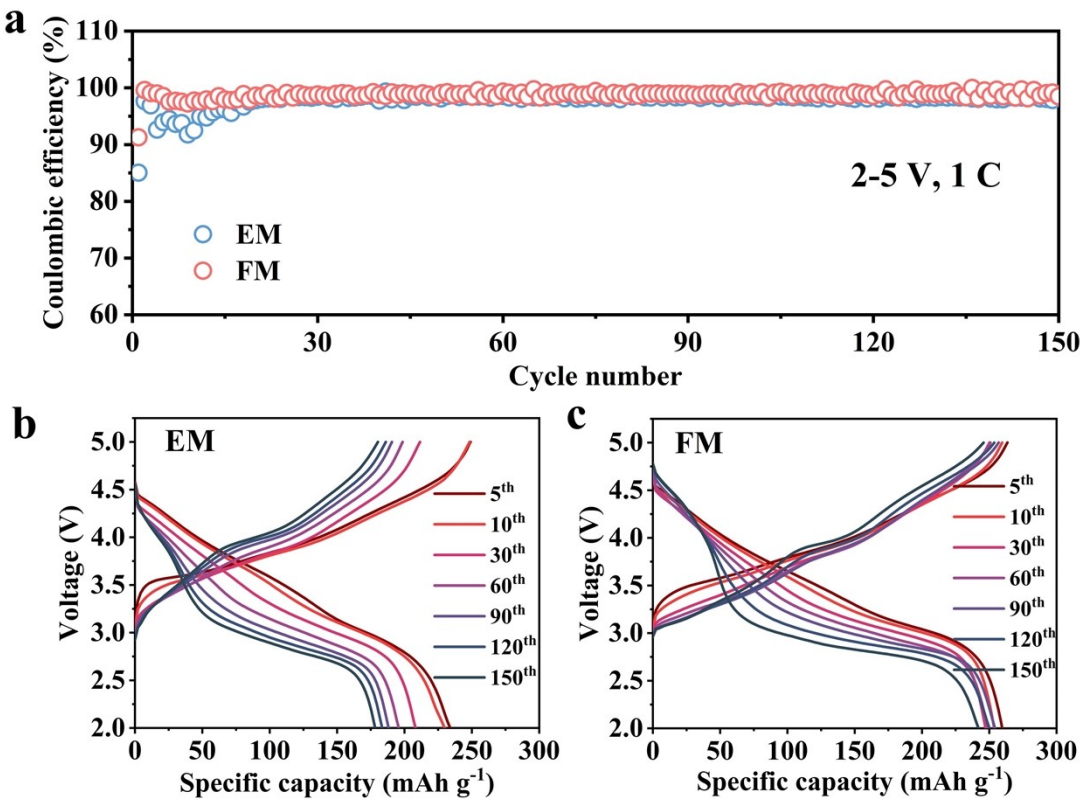

Fig. S7. (a) Coulombic efficiency of Li||LRM cells using different electrolytes in the voltage range of 2-5 V. (b, c) Corresponding charge and discharge curves with (b) EM and (c) FM electrolytes.

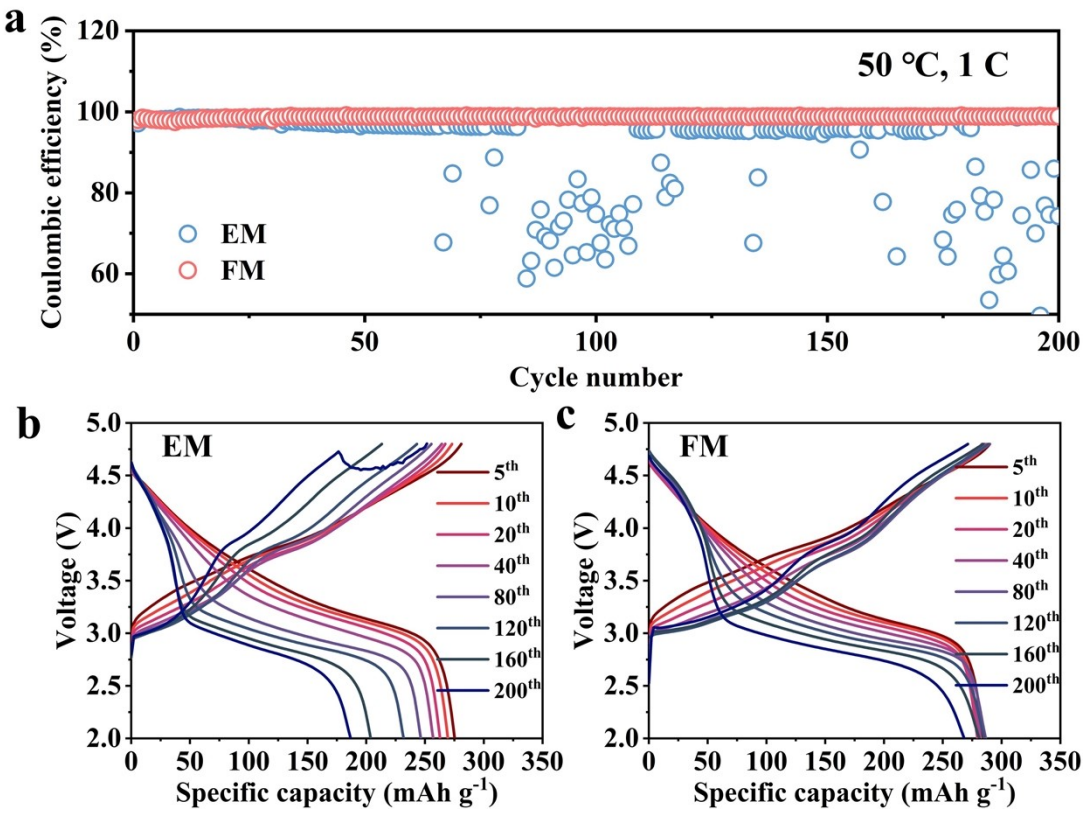

Fig. S8. (a) Coulombic efficiency of Li||LRM cells using different electrolytes at 50 °C. (b, c) Corresponding charge and discharge curves with (b) EM and (c) FM electrolytes.

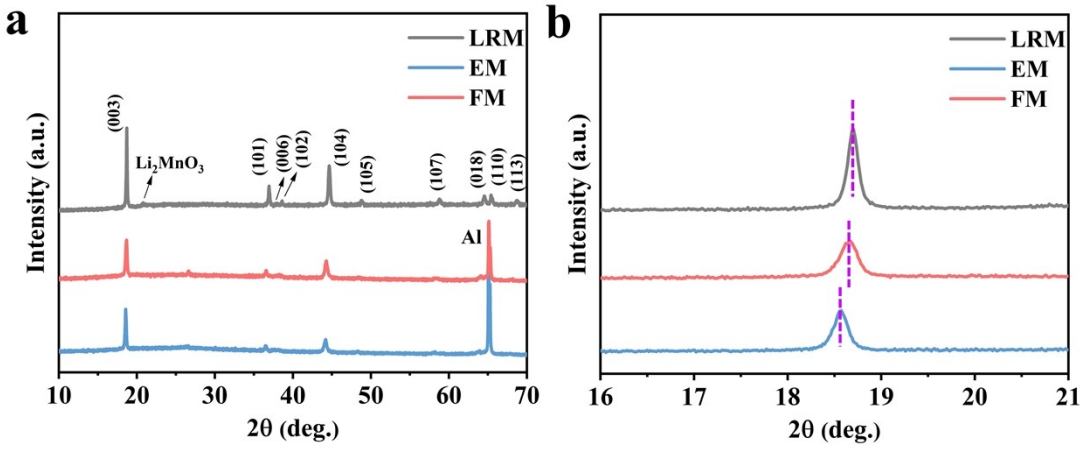

Fig. S9. The XRD patterns of the pristine LRM cathode and the cycled cathodes with EM and FM electrolytes. (b) Corresponding enlarged local plots.

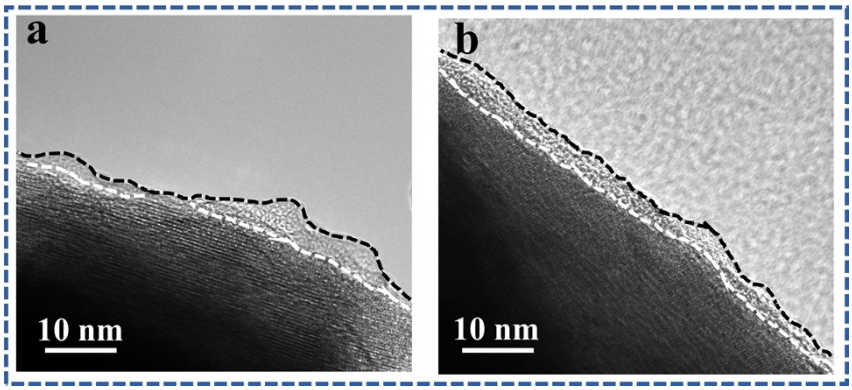

Fig. S10. TEM images of LRM cathode materials with (a) EM and (b) FM electrolytes after 100 cycles.

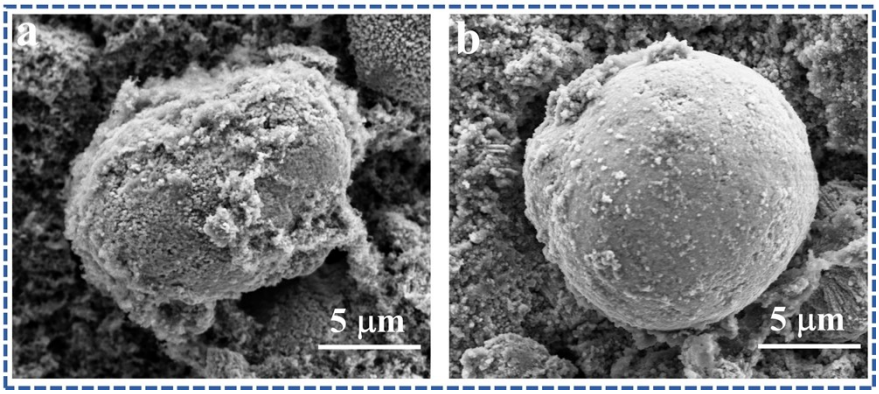

Fig. S11. SEM images of LRM cathode materials with (a) EM and (b) FM electrolytes after 100 cycles.

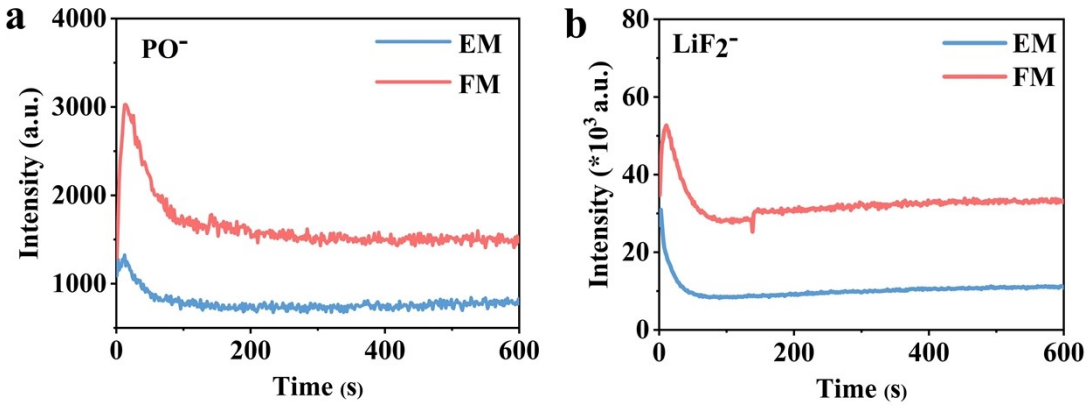

Fig. S12. The etching depth curves of the cycled cathode with different electrolytes by

TOF-SIMS: (a) PO^-, (b) LiF_2^-.

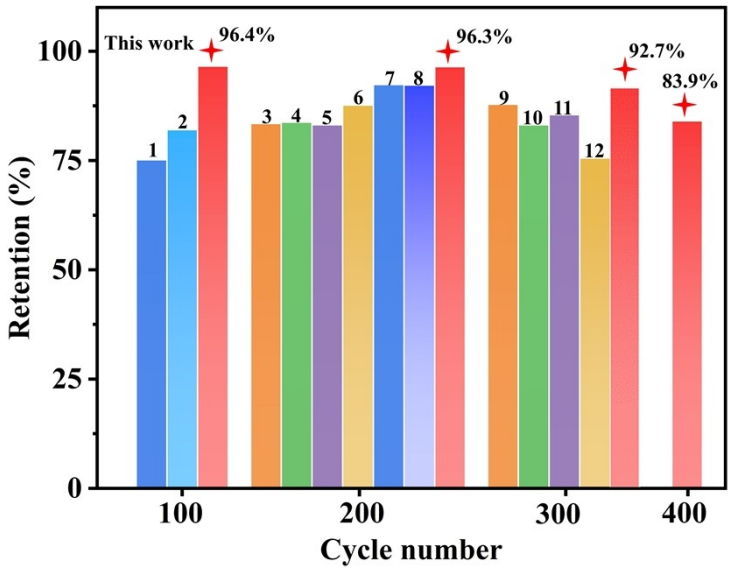

Fig. S13. Literature summaries of capacity retention of LRM cathodes with different electrolytes.[1-12]

References

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