

# ADVANCED FUNCTIONAL MATERIALS

## Supporting Information

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Enabling High-Performance NASICON-Based Solid-State Lithium Metal Batteries Towards Practical Conditions

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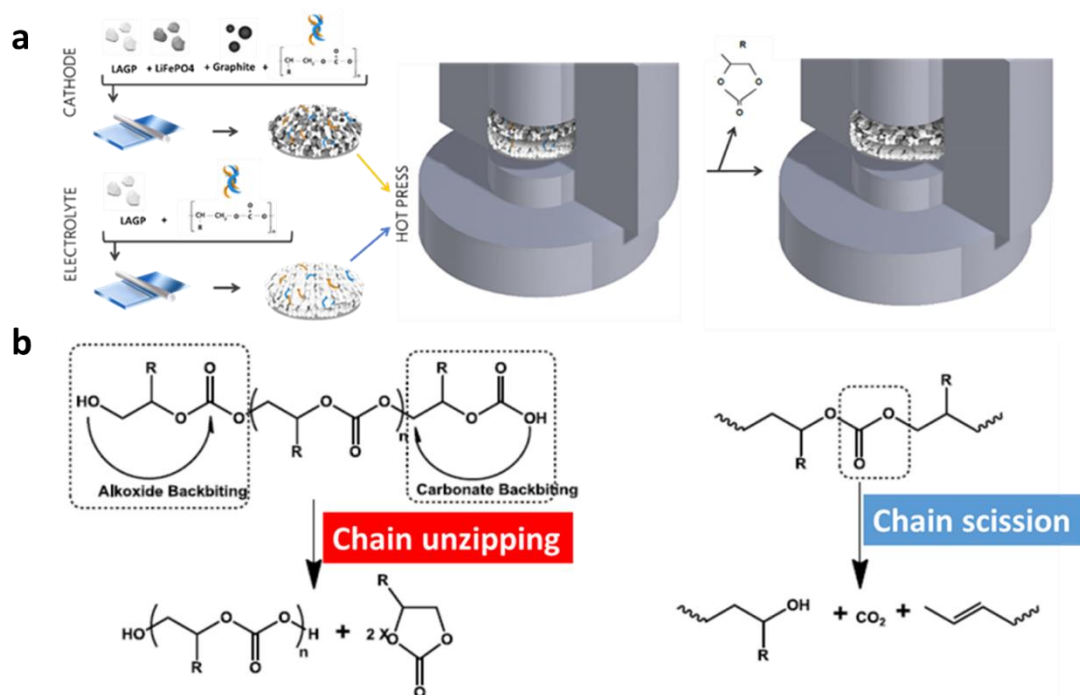
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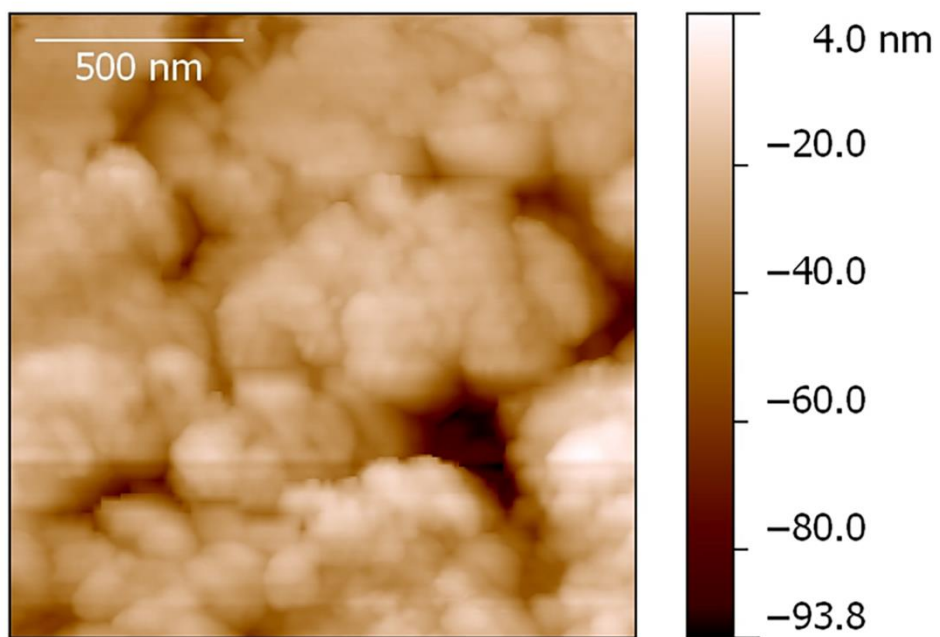
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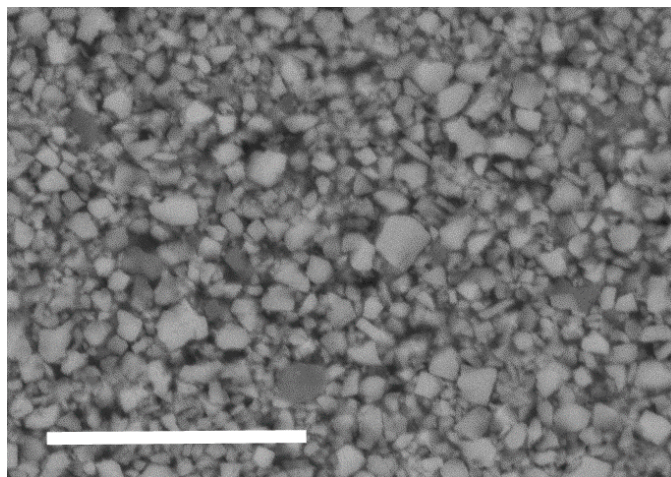
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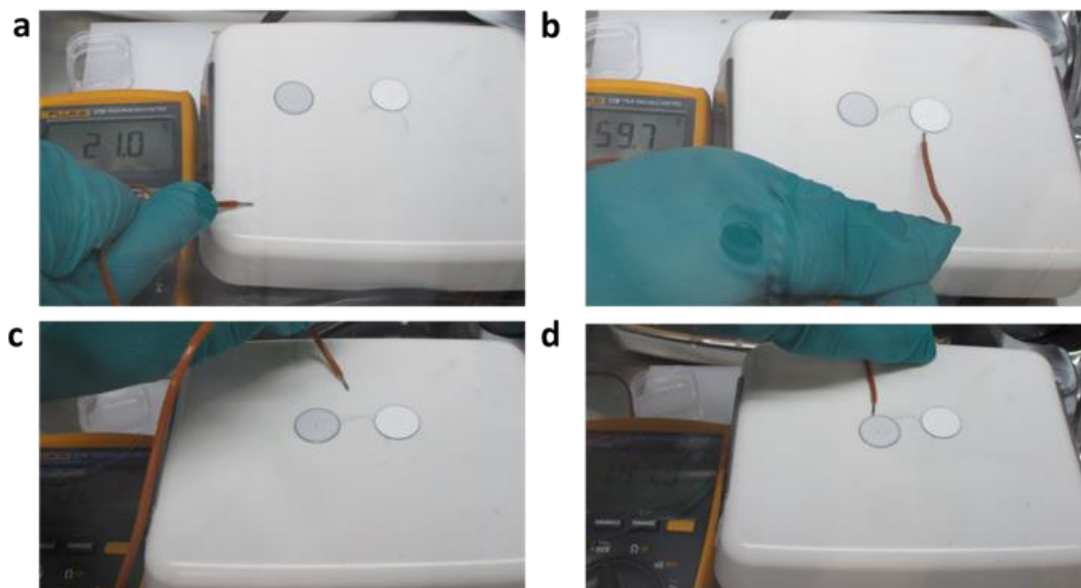
**Figure S1:** a) schematic representing the preparation of cathode and electrolyte and b) chemistry of polycarbonate decomposition.



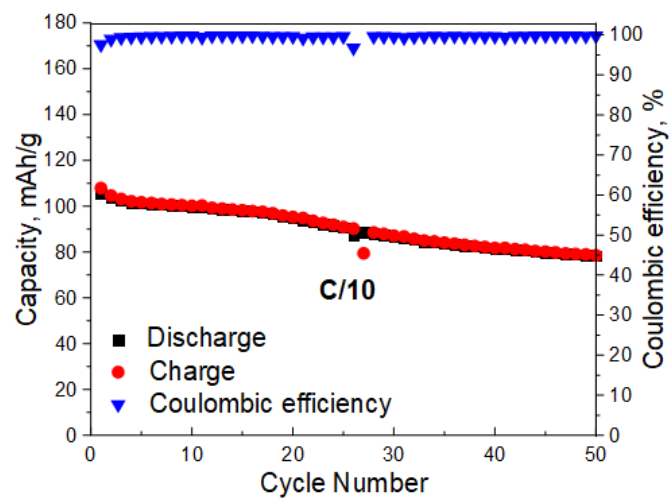
**Figure S2:** AFM image of LAGP pellet surface.



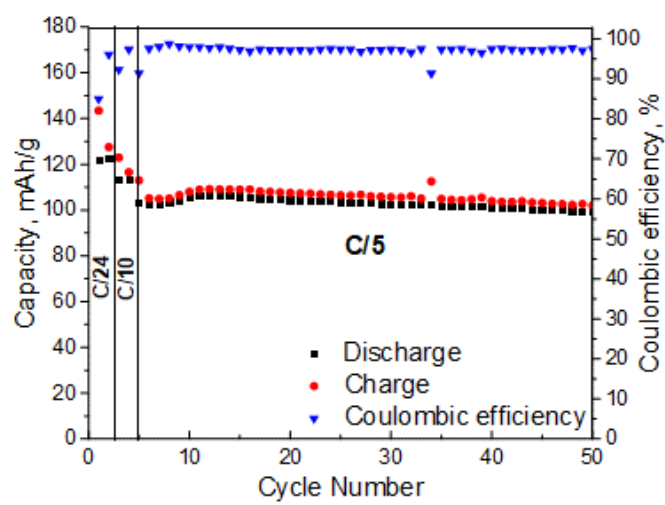
**Figure R3:** SEM image of LAGP/ionic-liquid interlayer (scale bar 5 microns).



**Figure S4:** heating experiment of the film from a) Room temperature to b) 59,7° C, c) 82,7° C and d) 141° C.

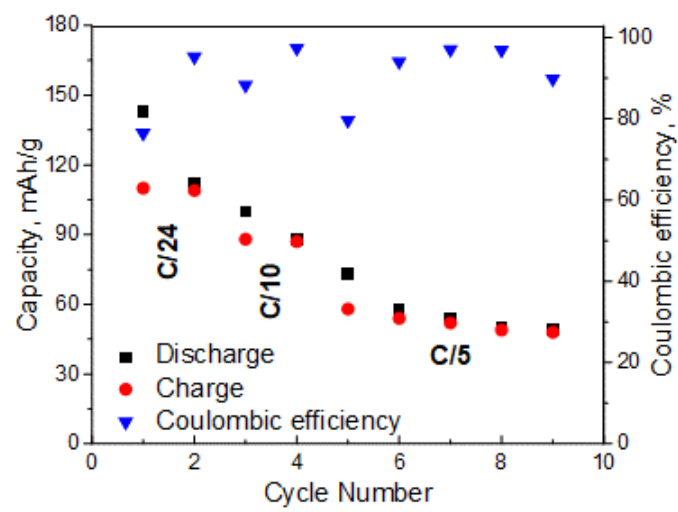


**Figure S5:** Cell performance of Li/LiTFSI-PEO interlayer/LAGP/LFP SSLMB at 80 °C.

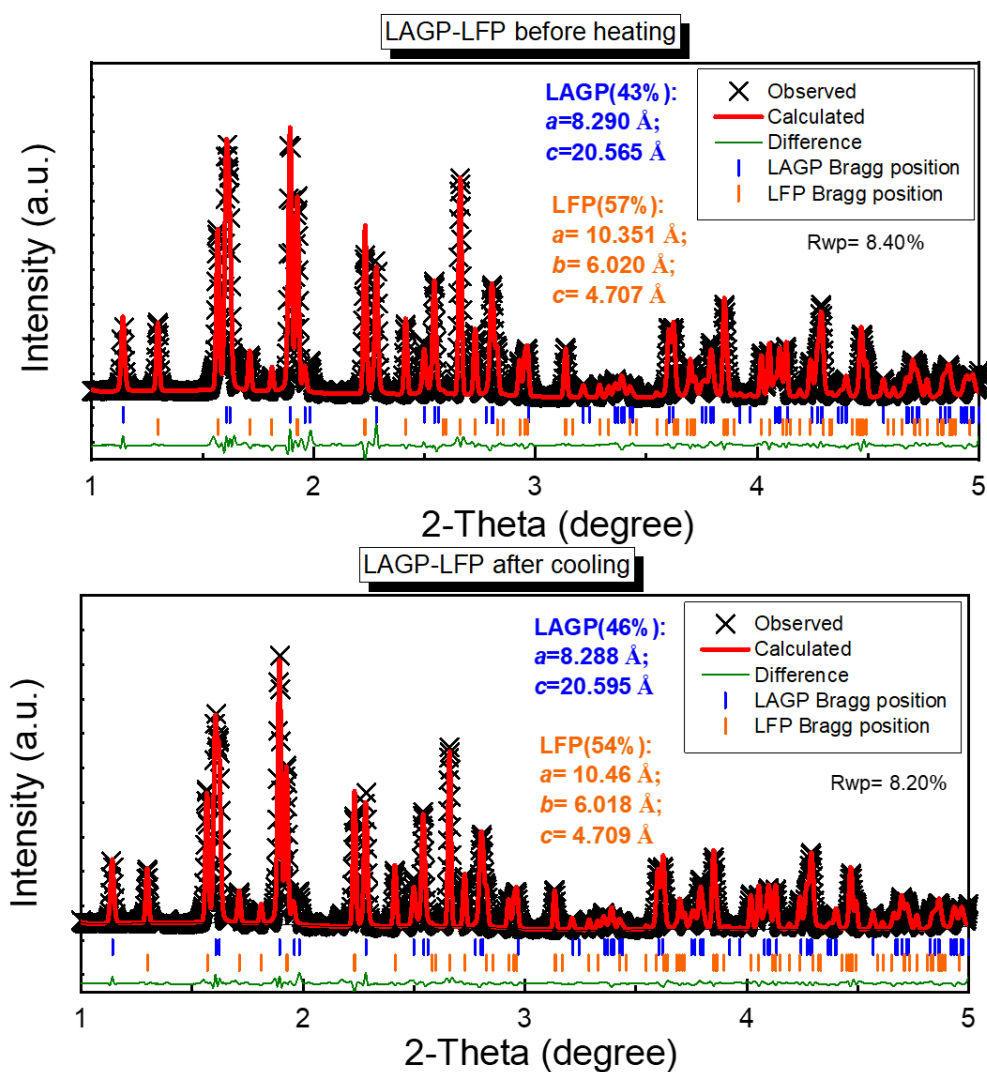


**Figures S6:** cycling performance of the Li/ionic-liquid interlayer/LAGP/LFP cell at 60° C.

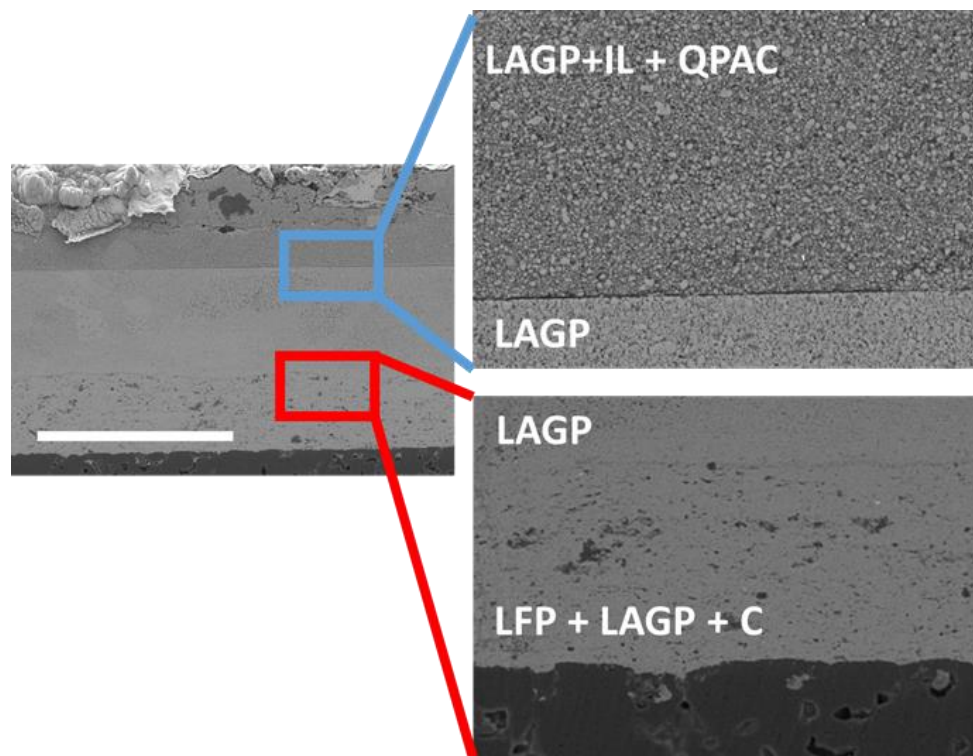




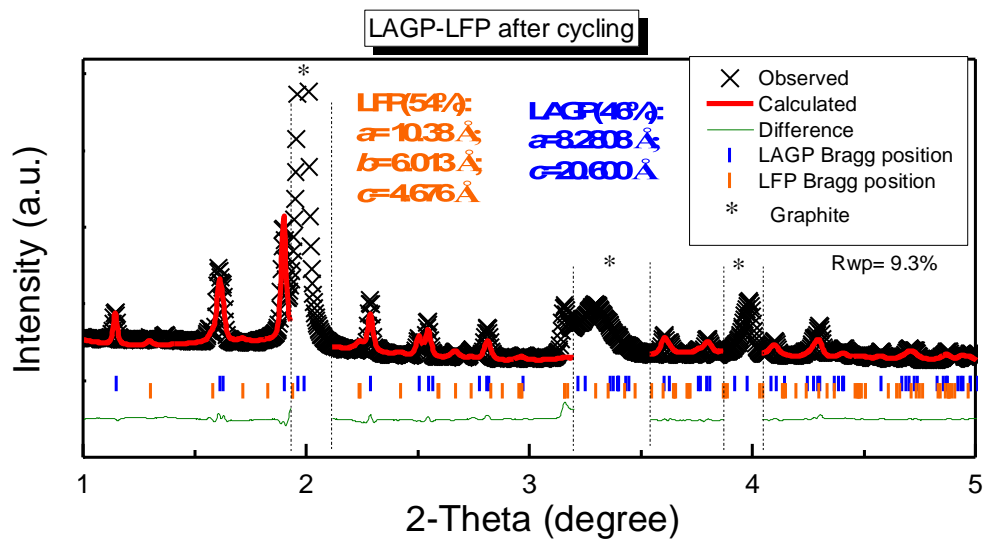
**Figures S7:** cycling performance of the Li/ionic-liquid interlayer/LAGP/LFP cell at 25° C.



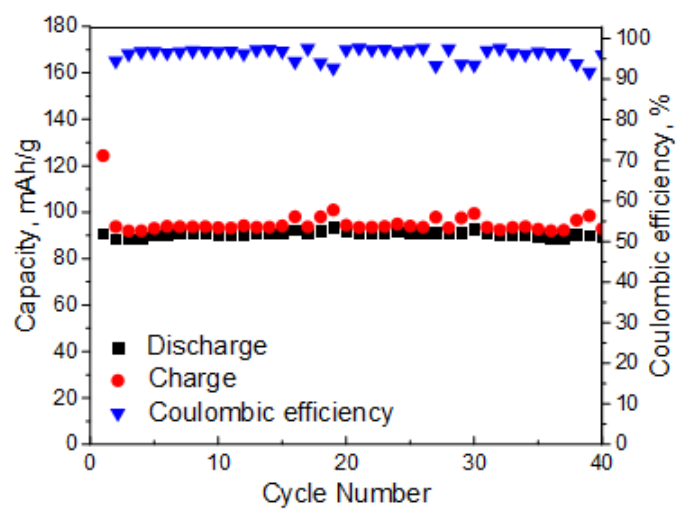
**Figure S8:** Rietveld refinement of HEXRD patterns of LAGP/LFP mixture (a) before and (b) after heating.



**Figure S9:** Cross section SEM image of the Li/ionic-liquid interlayer/LAGP/LFP cell after 50 cycles, top panel shows Li-interlayer interface, while bottom panel shows LFP-LAGP interface after cycling.



**Figure S10:** HEXRD and Rietveld refinement of LFP-LAGP-graphite pellet after 50 cycles.



**Figure S11:** Cycle performance of Li/ionic-liquid interlayer/LAGP/LFP SSLMB with a weight ratio LFP:LAGP:Graphite of 55:35:10.