

The ultra-long stable lithium-metal battery assembled with polysulfide-functionalized separator

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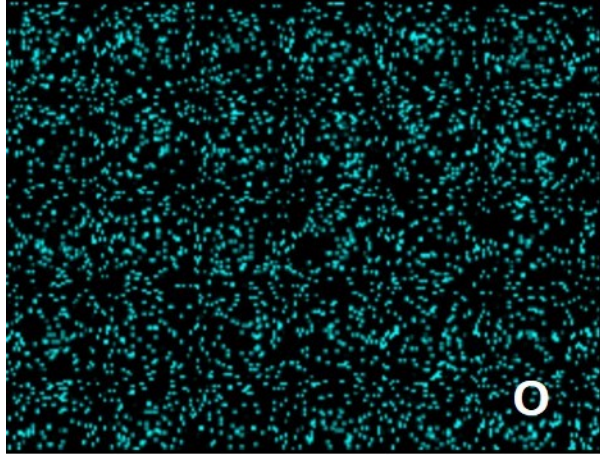
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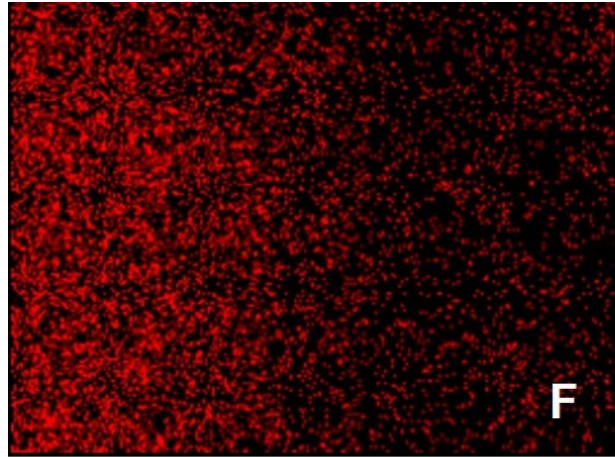
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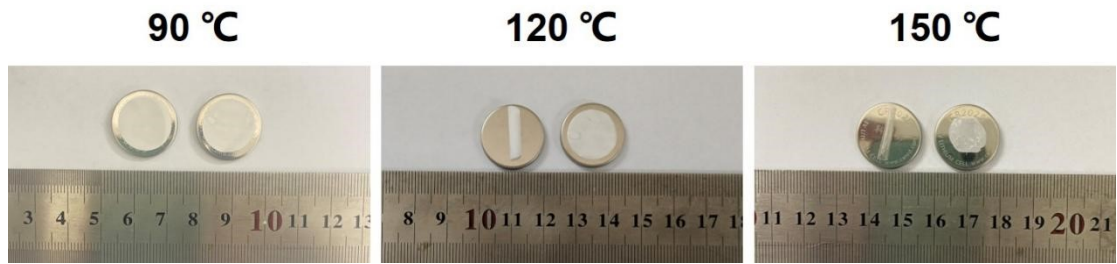
S1. The thickness of the PESV composite separator.



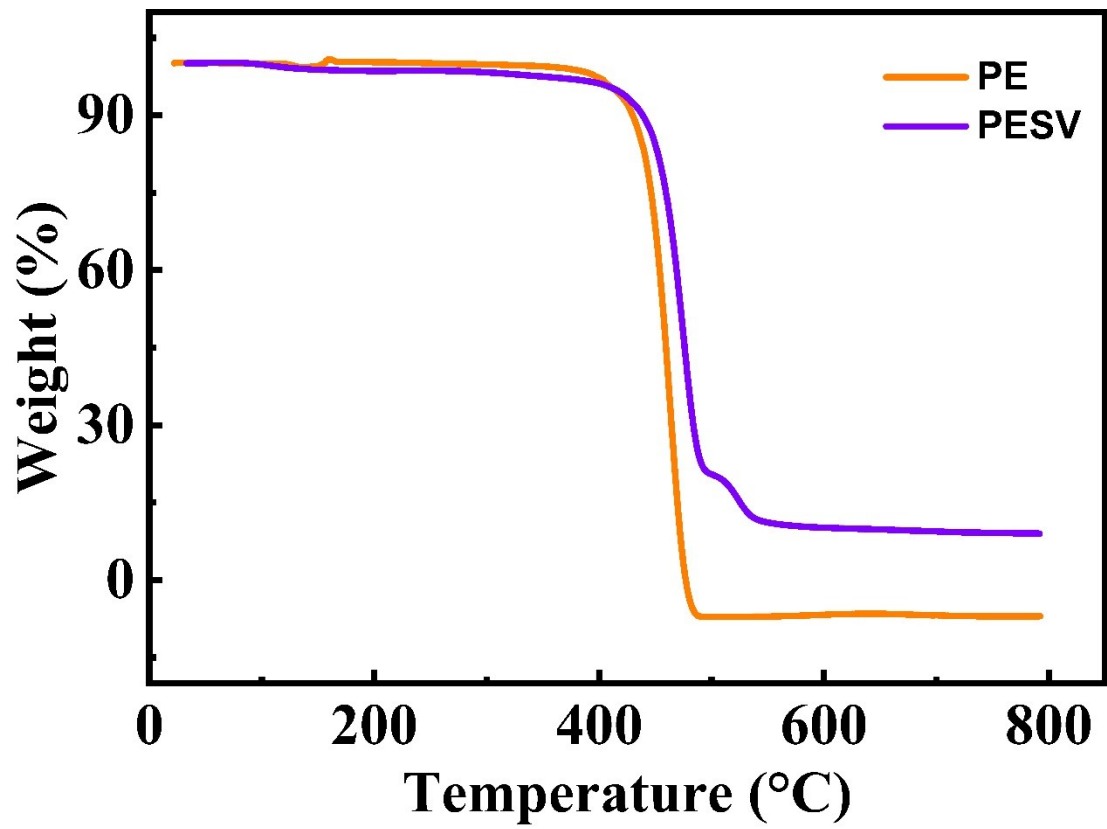
S2. The element mapping of O in the PESV composite separator.



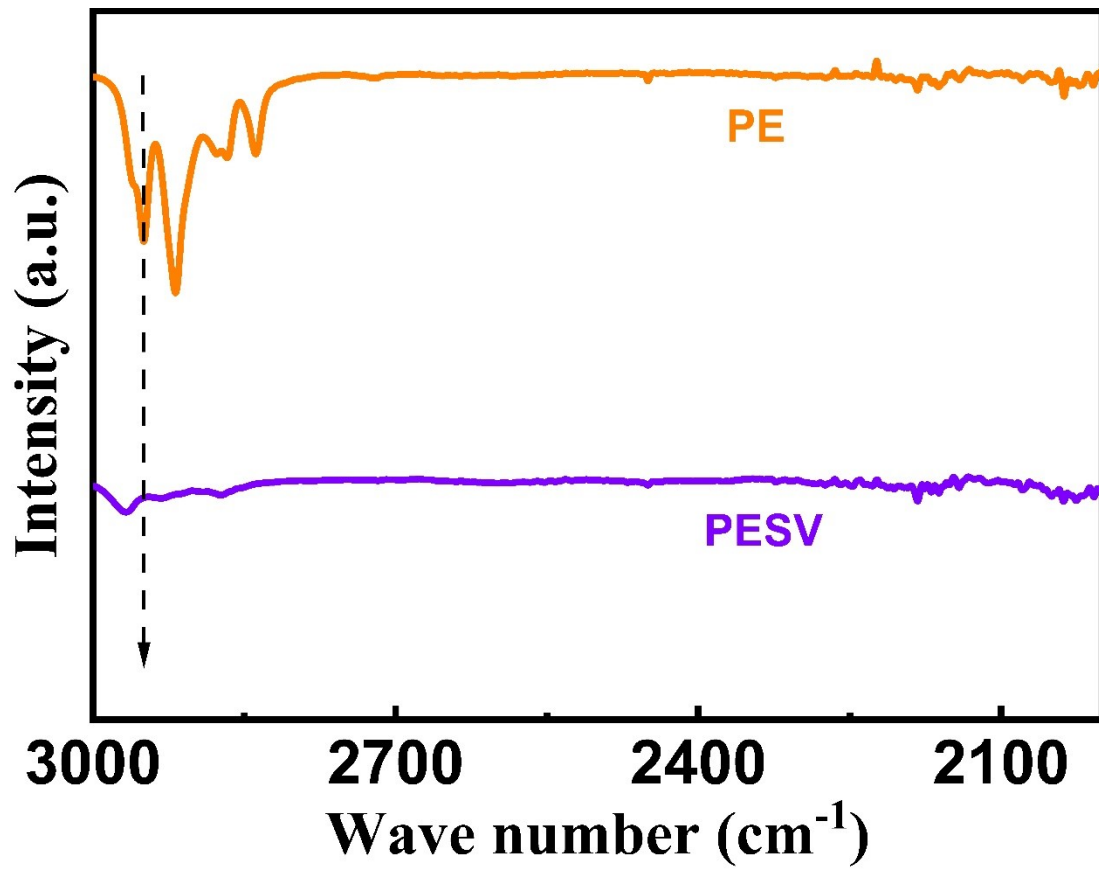
S3. The element mapping of F in the PESV composite separator.



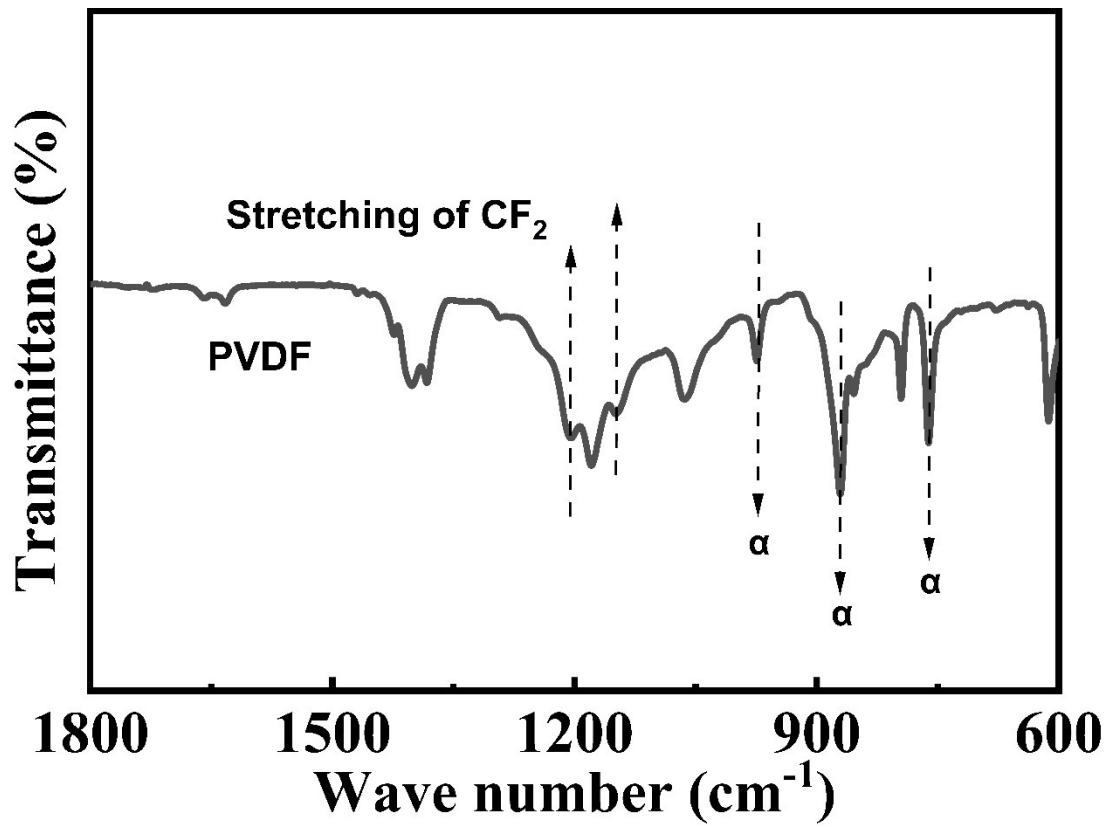
S4. The morphology of the PE and PESV separators at 90 °C, 120 °C and 150 °C.



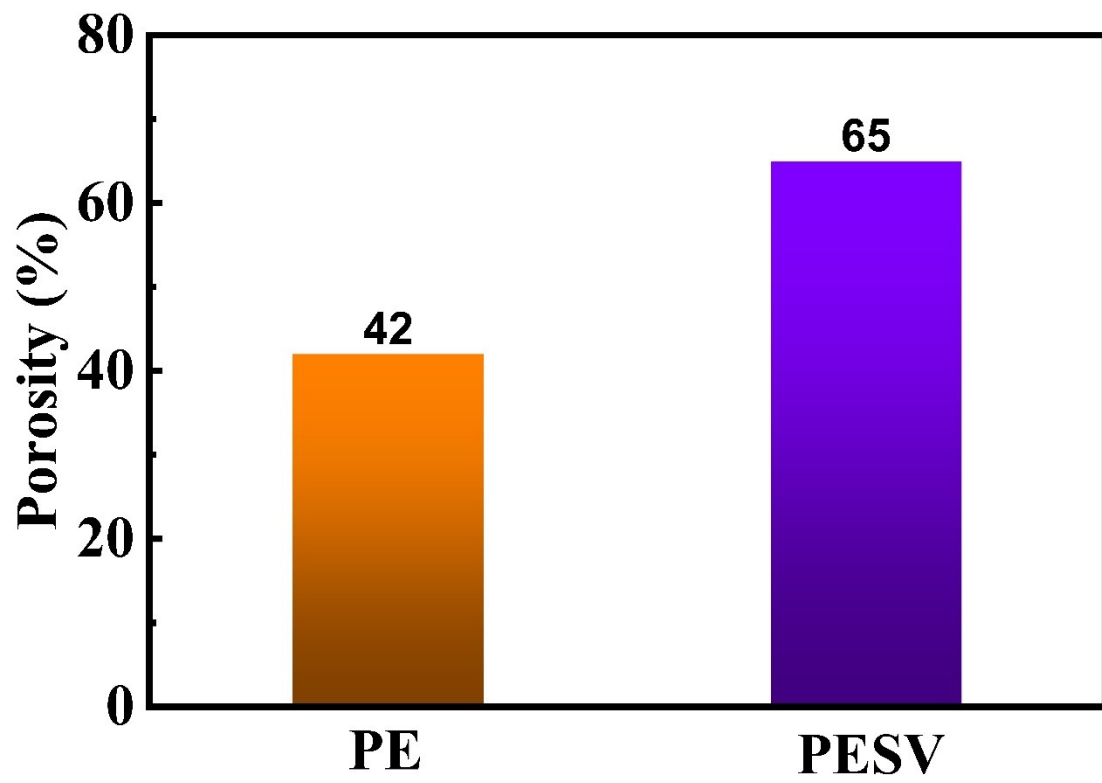
S5. The thermogravimetric analysis (TGA) of the PE and PESV separators.



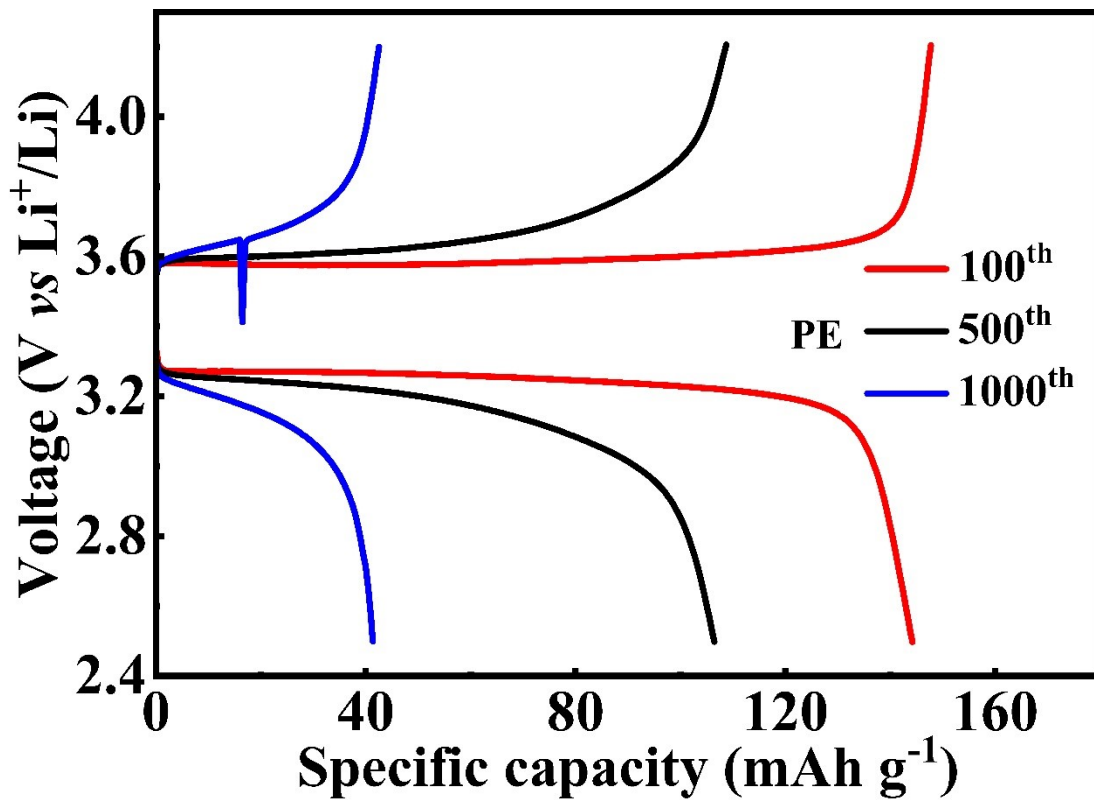
S6. The FTIR results of the PESV separator.



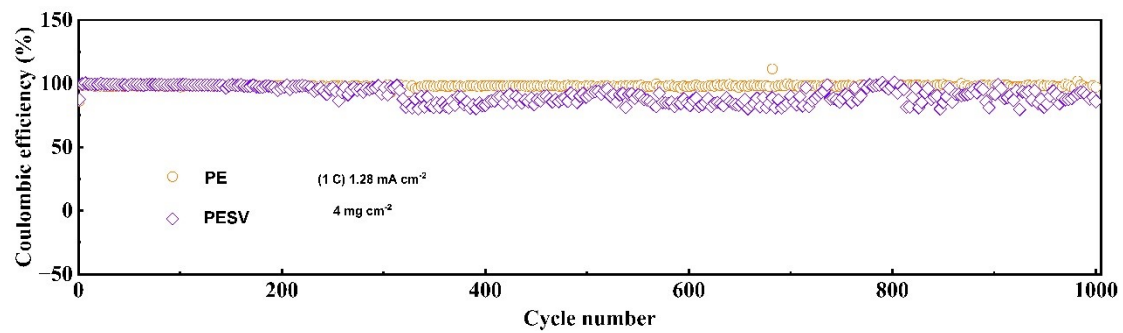
S7. The FTIR results of the PVDF.



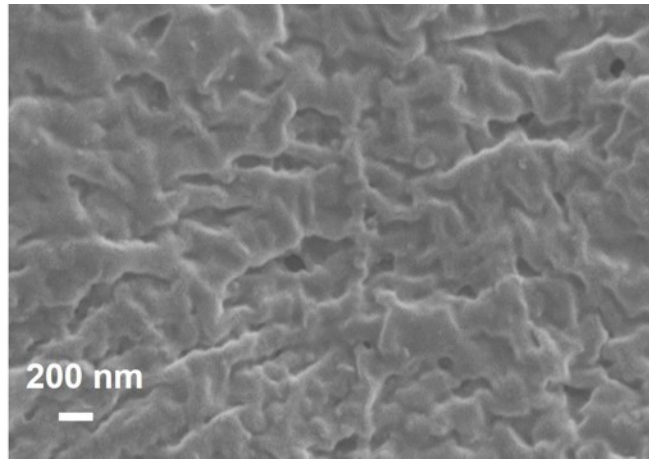
S8. The porosity of the PE and PESV separators.



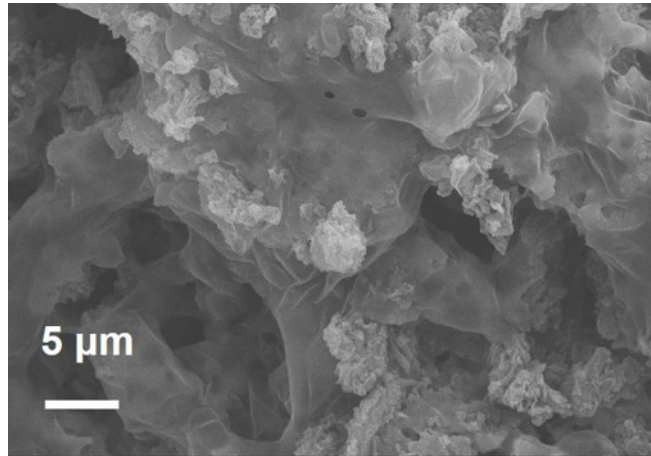
S9. Charging-discharging plot of LFP/Li batteries with PE.



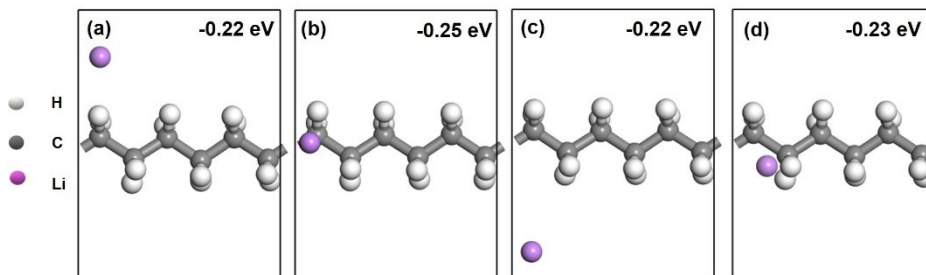
S10. The corresponding coulombic efficiency of cells with the PESV and PE separators at 1.28 mA cm⁻² with mass loading of 4 mg cm⁻².



S11. The SEM image of the PE after 300 cycles



S12. The SEM image of lithium anode in LFP/Li with the PE after 300 cycles.



S13. The binding energy between PE and Li^+ at different positions.