

**Constructing Stable Ordered Channels for Solid Electrolyte
Membrane with High Ionic Conductivity Combining the Advantages
of Liquid Crystal and Ionic Liquid**

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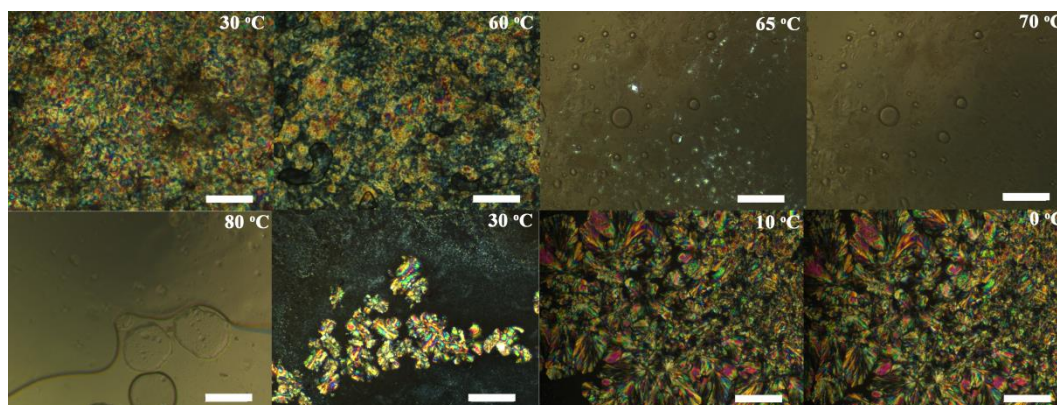


Figure S1. The POM images of LC monomer (C6M) with the increase of temperature from 30 to 80 °C, and then decrease from 80 to 0 °C.

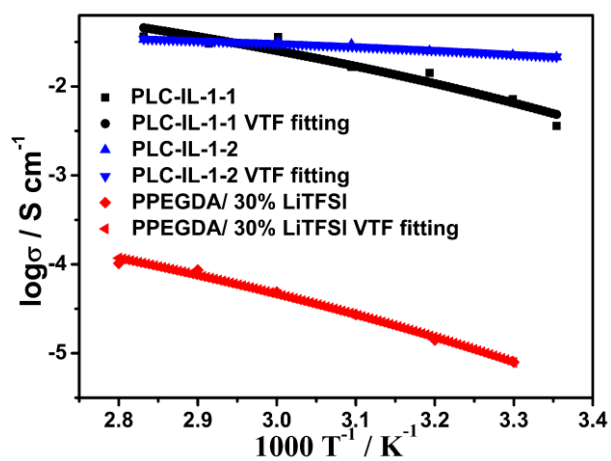


Figure S2. The ionic conductivities of PLC-IL-1-1 and PLC-IL-1-2, which is compared with PPEGDA/30% LiTFSI.

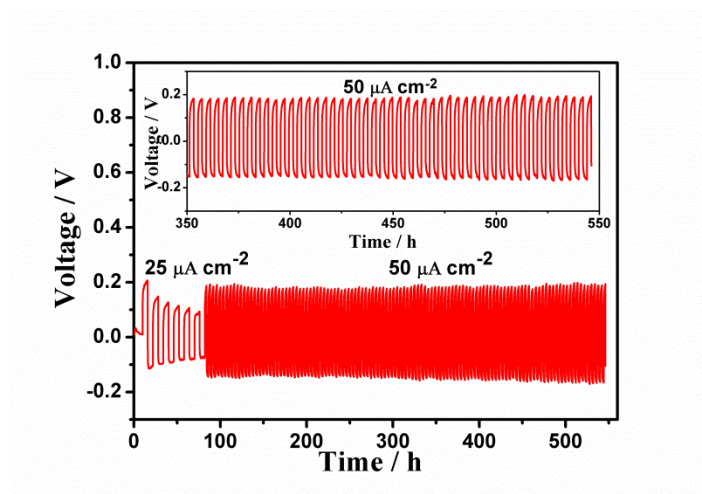


Figure S3. Striping/plating curves of Li/PLC-IL-1-2/Li symmetrical cell at the current density of 25 and 50 $\mu\text{A cm}^{-2}$ at 30 °C.

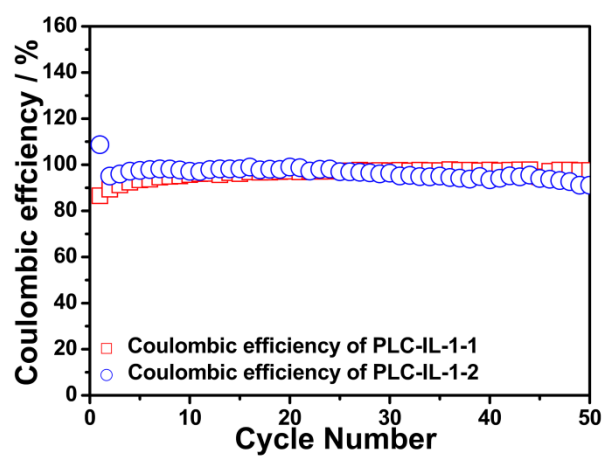


Figure S4. Coulombic efficiency of the LFP/PLC-IL-1-1/Li and LFP/PLC-IL-1-2/Li cells.

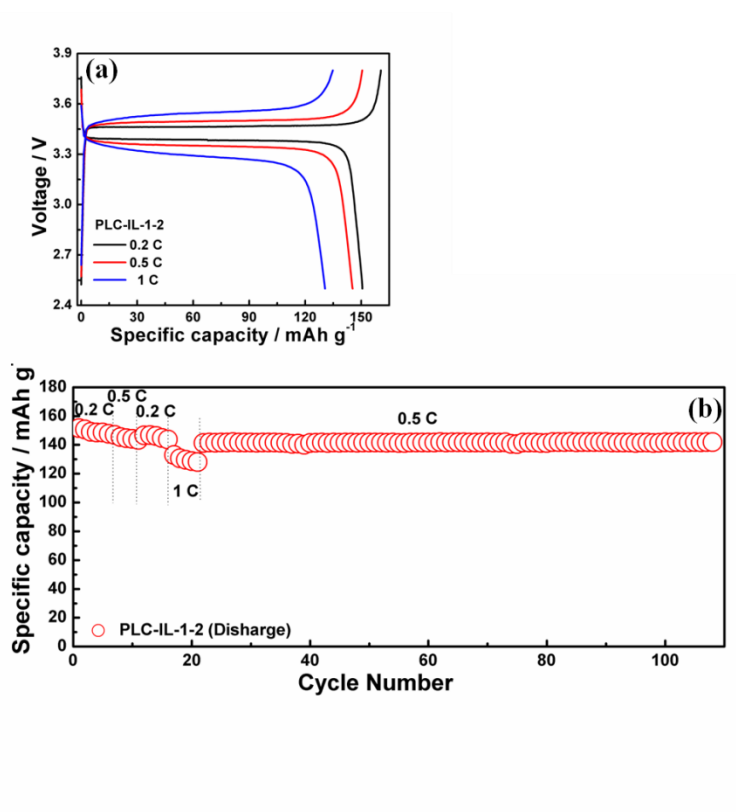


Figure S5. (a) Charge and discharge capacities of the LFP/PLC-IL-1-2/Li cell at the current densities of 0.2, 0.5 and 1 C, respectively. (b) The cycle performance of the LFP/PLC-IL-1-2/Li cell at different C-rates.