## Supporting Information

## Reducing interfacial resistance of $Li_{1.5}Al_{0.5}Ge_{1.5}(PO_4)_3$ solid electrolyte/electrode interface by polymer interlayer protection

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**Figure S1.** (a) Cross-sectional SEM image of the LAGP pallet before and after (b) sintering. (c) Photographs, XRD patterns (d) and EIS plots (e) of the LAGP pellet before and after sintering. (f) EIS plot of the PPC-SPE membrane.



**Figure S2.** Equivalent circuits for different symmetric cells in Figure 2. (a) Equivalent circuit for Li/LAGP/Li symmetric cell. (b) Equivalent circuit for Li/PPC-SPE/Li symmetric cell. (c) Equivalent circuit for Li/PLSSCE/Li symmetric cell. (d) Equivalent circuit for LFP/LAGP/LFP symmetric cell. (e) Equivalent circuit for LFP/PLSSCE/LFP symmetric cell.



Figure S3. Charge–discharge profile of LFP/LAGP/Li cell without PPC-SPE interlayers at 0.05 C.