Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Support Information

Boosting the Ionic Conductivity of PEO Electrolyte by Waste Eggshell-derived Filler for High-performance Solid Lithium/Sodium Battery

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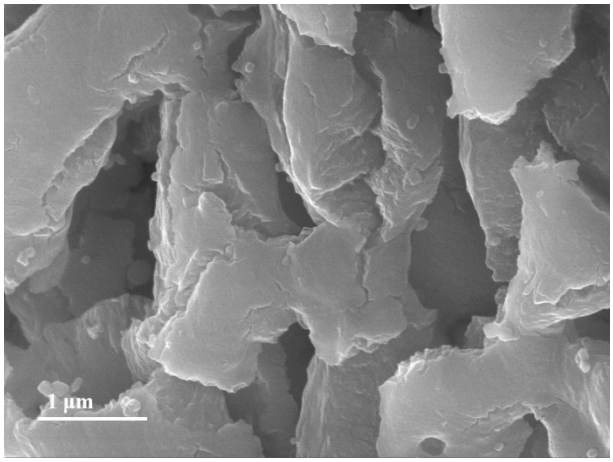

Figure S1. SEM image of calcined eggshell with no ball-milling treatment.

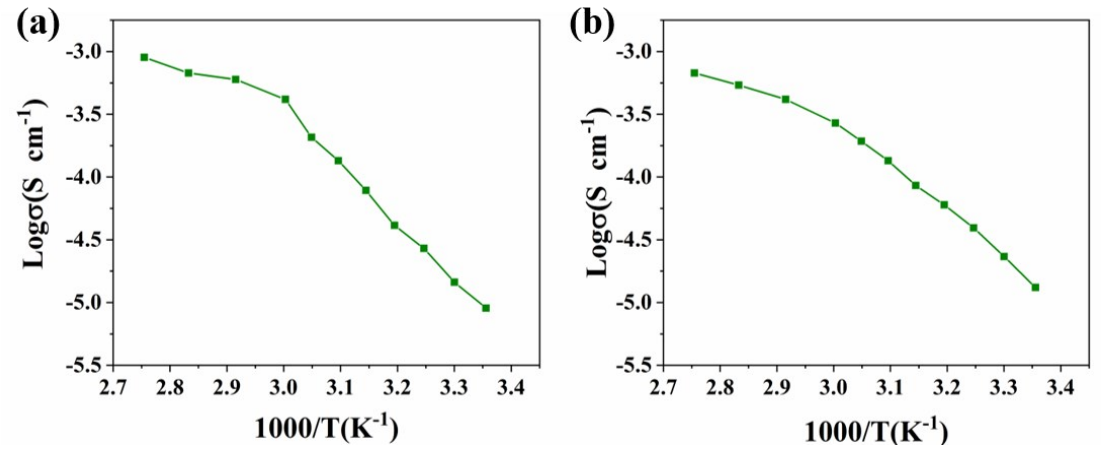

Figure S2. Ionic conductivities for PEO-commercial CaO(7%)-Li and PEO-commercial CaO(5%)-Na composite electrolytes.

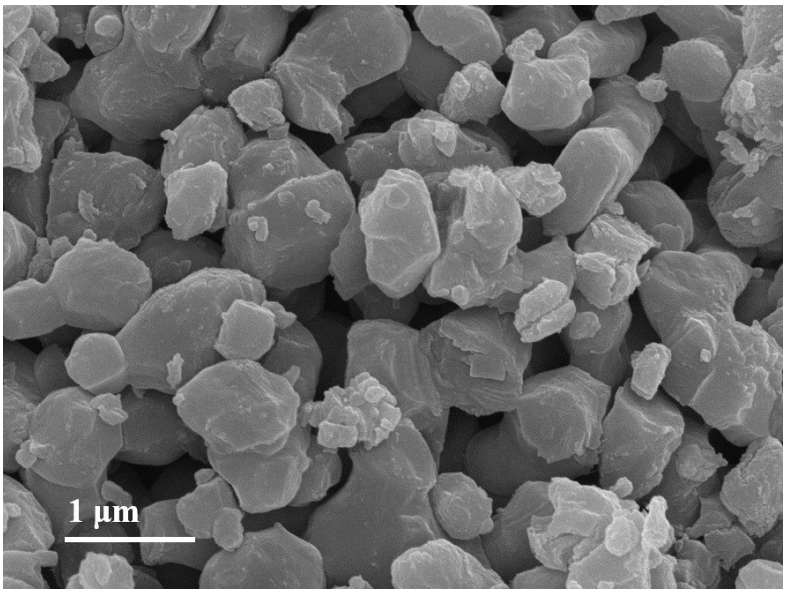

Figure S3. SEM image of commercial CaO.

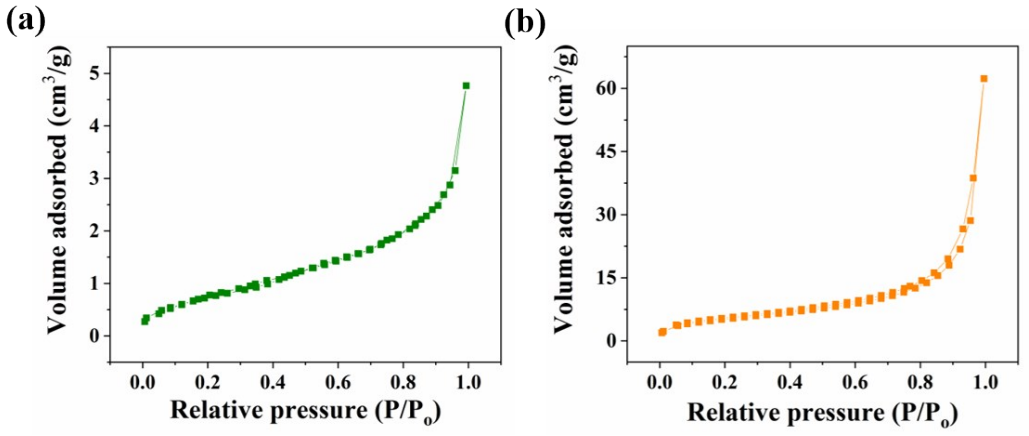

Figure S4. N_2 adsorption-desorption isotherms of (a) commercial CaO, (b) FDE.

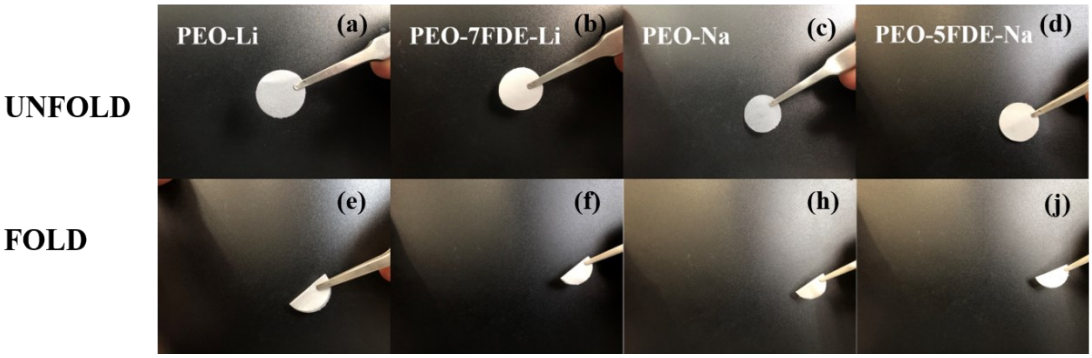

Figure S5. Digital photograph and bending performance of (a, e) PEO-Li, (b, f) PEO-7FDE -Li, (c, h) PEO-Na, (d, j) PEO-5FDE-Na electrolyte membranes.

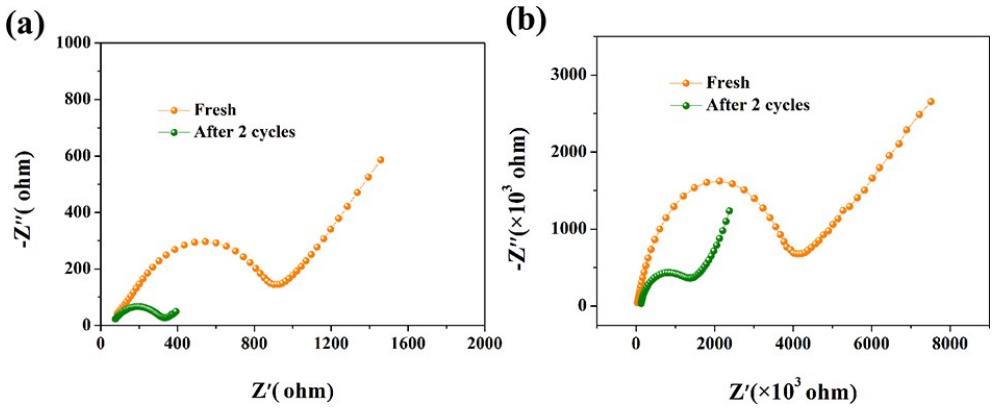

Figure S6. EIS plots of the (a) $LiFePO_4$/Li cells with PEO-7FDE-Li, (b) NVP/Na cells with PEO-5FDE-Na before and after 2 cycles.

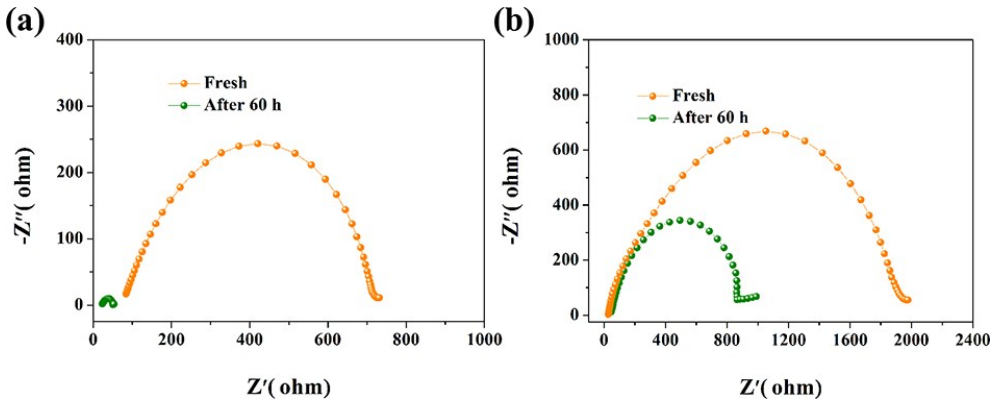

Figure S7. EIS plots of the symmetric cell battery before and after 60 h cycling for (a) Li|PEO-7FDE-Li|Li, (b) Na|PEO-5FDE-Na|Na.

Table S1. ICP data of calcined eggshell.

	Ca	Mg	Other
		wt %	
Sample	99.11	0.88	< 0.1

Table S2. Ionic conductivities for PEO/FDE composite electrolyte at different temperatures.

T / ^{o}C	Ionic conductivities / S cm^{-1}			
	PEO-Li	PEO-7FDE-Li	PEO-Na	PEO-5FDE-Na
25	7.06×10^{-6}	6.39×10^{-5}	6.10×10^{-6}	4.90×10^{-5}
60	1.54×10^{-4}	7.27×10^{-4}	1.20×10^{-4}	5.39×10^{-4}
90	4.50×10^{-4}	1.20×10^{-3}	3.60×10^{-4}	8.99×10^{-4}