

SUPPORTING INFORMATION

Processing Challenges and Strategies for Robust Ultrathin Solid Electrolyte Membrane in Sulfide-based All-Solid-State Batteries

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Electrode design parameters			
N/P ratio		1.2	
Active material Fraction (%)		80	
Catholyte Fraction (%)		10	
Carbon Fraction (%)		5	
Binder Fraction (%)		5	
Cathode porosity (%)		15	
Cathode areal loading (mAh cm ⁻²)		3	
Cell design parameters			
Battery pack insulation thickness (mm)		10	
Thickness of cell container Al layer (um)		100	
Length to width ratio for cathode		3	
Cell thickness target (mm)		20	
Thickness of cell edge from cathode to outside of fold (mm)		1	
Thickness of terminal material (mm)		1	
Distance of top of cathode to the top of terminal (mm)		15	
Cathode parameters			
Cathode	Nominal capacity (mAh g ⁻¹)	Material density (g/cm ³)	OCV at 100% SOC, V
LFP	150	3.45	3.8
NCM811	200	4.65	4.2
S	1675	2.07	2.5
Anode parameters			
Anode	Nominal capacity (mAh g ⁻¹)	Material density (g/cm ³)	
Li	3860	0.534	
Solid electrolyte membrane parameter			
Material	Lithium availability (g/g of electrolyte)	Material density (g/cm ³)	
LPSCI	0.1551	1.54	

Table S1. Table of input parameters for the calculation of **Figure 4a-4c**. Reproduced with permission.¹ Copyright 2022 Cell Press.

REFERENCE

- (1) Dixit, M.; Parejiya, A.; Essehli, R.; Muralidharan, N.; Haq, S. U.; Amin, R.; Belharouak, I. SolidPAC Is an Interactive Battery-on-Demand Energy Density Estimator for Solid-State Batteries. *Cell Rep. Phys. Sci.* **2022**, 3 (2), 100756.