

Calcination-Driven Enhancement of LAGP Electrolytes for High-Performance Solid-State Li Metal Batteries

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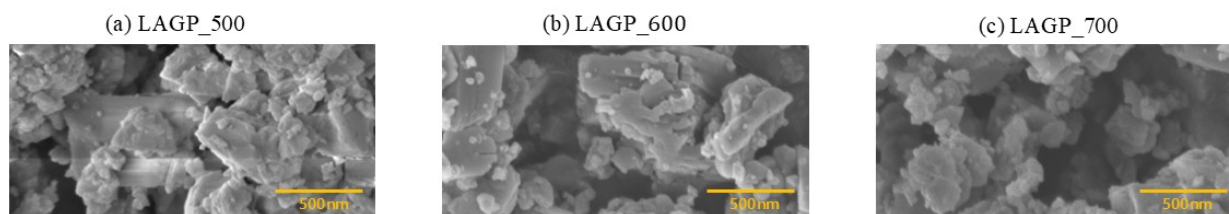


Fig. S1 SEM images of LAGP powders calcined at (a) 500, (b) 600, and (c) 700 °C.

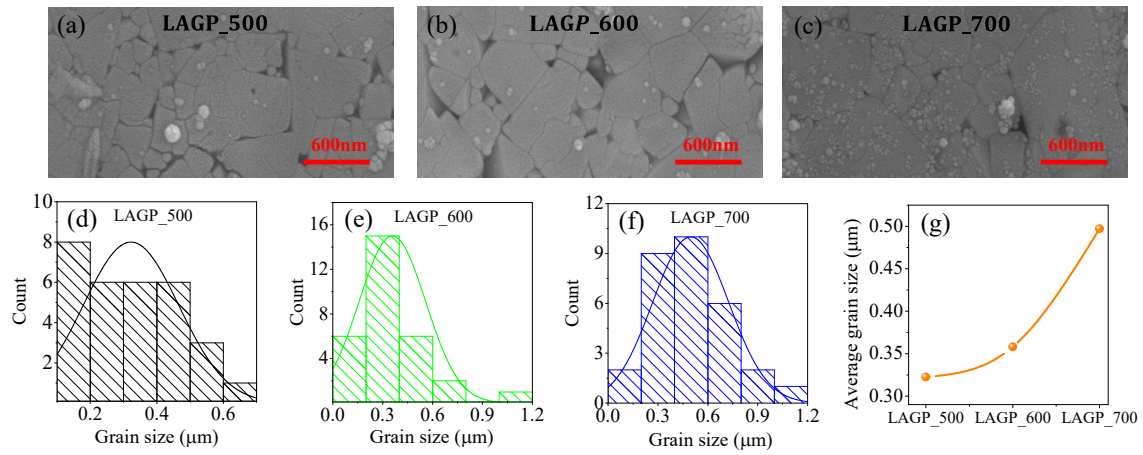


Fig. S2. (a–c) Surface SEM images of thermally etched sintered LAGP pellets, prepared from powders calcined at different temperatures. (d–f) Surface grain size distributions for the respective samples. (g) Variation in average grain size across the samples.

Table. S1. ICP-OES elemental analysis for LAGP samples.

	Al ppm	Ge ppm	Li ppm	Li : Al : Ge
LAGP 500	29717.586	277407.125	23891.457	1.35 : 0.43 : 1.5
LAGP 600	29139.749	267834.245	23266.622	1.36 : 0.44 : 1.5
LAGP 700	30113.355	278280.793	23987.300	1.35 : 0.44 : 1.5

Table. S2. Fitting parameters derived from Raman spectra of LAGP pellets.

LAGP_500					LAGP_600				LAGP_700			
	Position	FWHM	Area	Intensity - Max Height	Position	FWHM	Area	Intensity - Max Height	Position	FWHM	Area	Intensity - Max Height
Peak 1	1009.7	25	0.658	0.024	1011.5	23.9	0.940	0.036	1011.6	20.5	0.918	0.041
Peak 2	1050.1	13.6	0.624	0.043	1044.2	16	0.278	0.016	1044.1	15.9	0.829	0.048
Peak 3	1097.1	40.3	2.823	0.065	1097.8	40	3.217	0.075	1098.7	37.3	3.715	0.093
Peak 4	1114.9	37	1.543	0.039	1117.9	36.5	1.654	0.042	1119	31.8	2	0.059

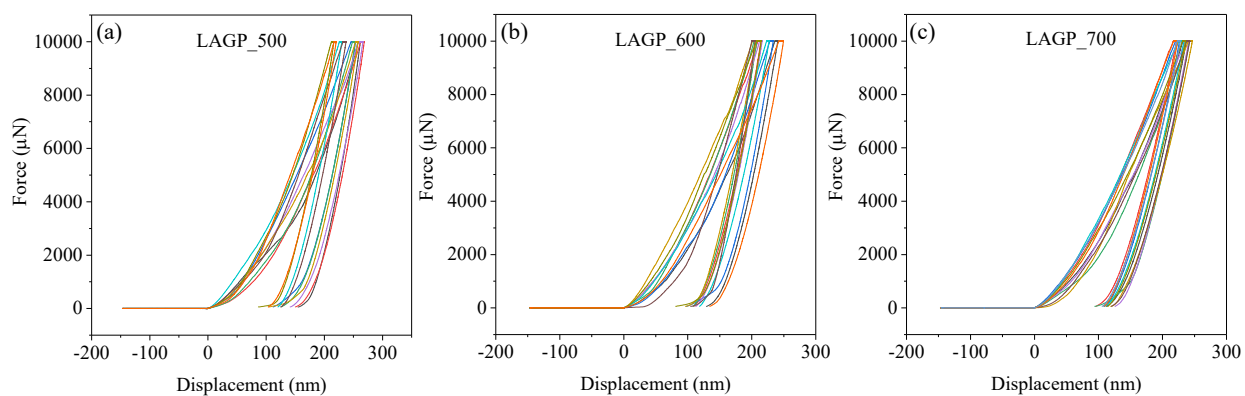


Fig. S3. Force-displacement (p-h) curves at constant load of 10 mN for (a) LAGP_500 (b) LAGP_600 and (c) LAGP_700 at different locations (10-11 points).

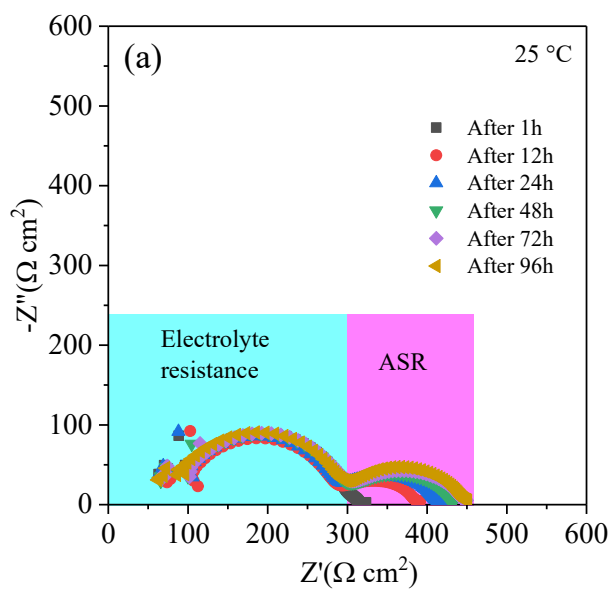


Fig. S4. (a) Time-dependent impedance for the Li|LAGP_700|Li symmetric cell at 25 °C.