ADVANCED MATERIALS

Supporting Information

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3D-Printing Electrolytes for Solid-State Batteries

Dennis W. McOwen, Shaomao Xu, Yunhui Gong, Yang Wen, Griffin L. Godbey, Jack E. Gritton, Tanner R. Hamann, Jiaqi Dai, Gregory T. Hitz, Liangbing Hu, and Eric D. Wachsman**

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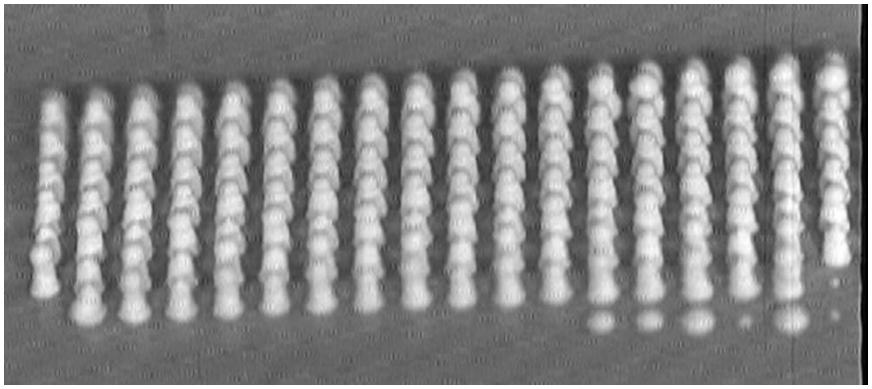

Figure S1. Photograph of as-printed columns using the self-supporting ink.

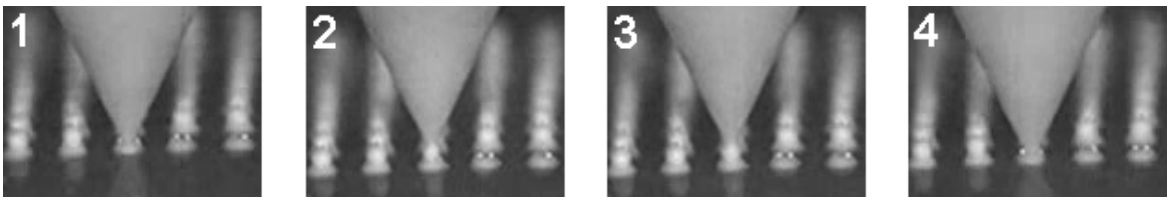

Figure S2. Video screenshots of the 3D-printing process. (1) The ceramic nozzle comes to the substrate surface and the dispensing ink contacts the substrate. (2-3) the nozzle moves upwards, creating a column, (4) and then moves to the right to print the next column. The 4 images above span ~1s.

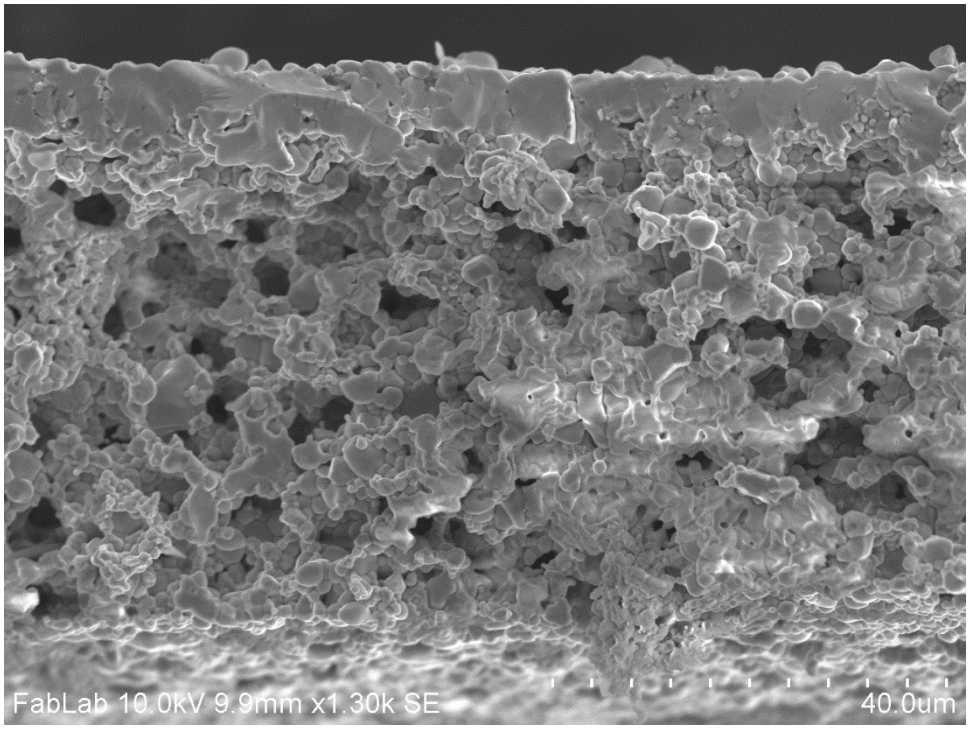

Figure S3. SEM cross-sectional image of porous-dense bilayer structure, showing the ability to 3D-print inks with and without porogens to create random porosity in multilayered structures.

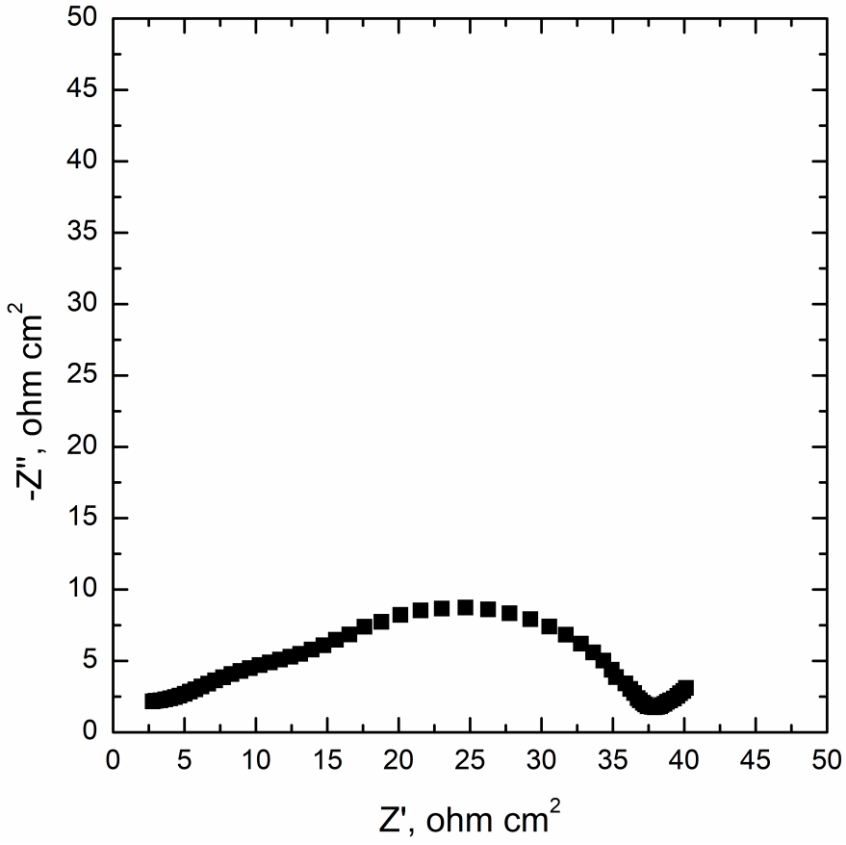

Figure S4. EIS of Li|3D-printed LLZ|Li metal cell depicted in Figure 4, measured before cycling.

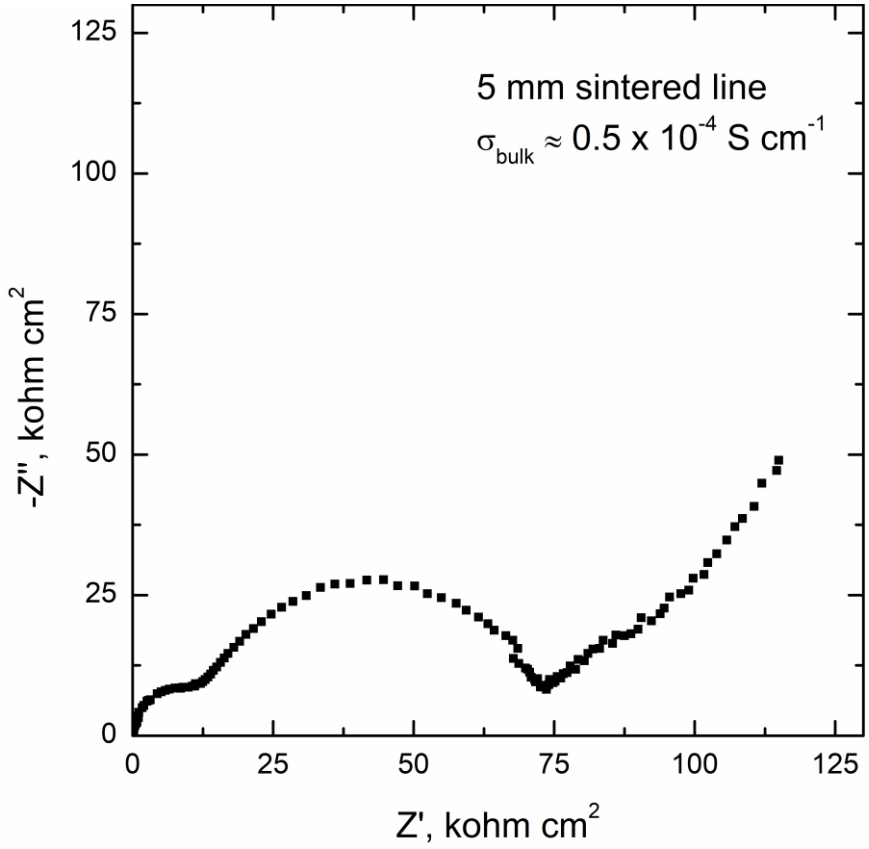

Figure S5. EIS (15 MHz to 1 Hz) of a 5 mm sintered rod made using the self-supporting ink. Au electrodes were annealed on each end of the rod and the EIS was measured at 25°C. Measured bulk conductivity is 0.5 x 10^{-4} S cm^{-1}.