

Supporting information

Excellent Deformable Oxide Glass Electrolytes and Oxide-type All-Solid-State Li₂S-Si Batteries Employing These Electrolytes

Hiroshi Nagata*, Junji Akimoto

National Institute of Advanced Industrial Science and Technology (AIST), Central 5, 1-1-1 Higashi, Tsukuba, Ibaraki 305-8565, Japan

Corresponding Author *: Hiroshi Nagata - E-mail: nagata.hiroshi@aist.go.jp

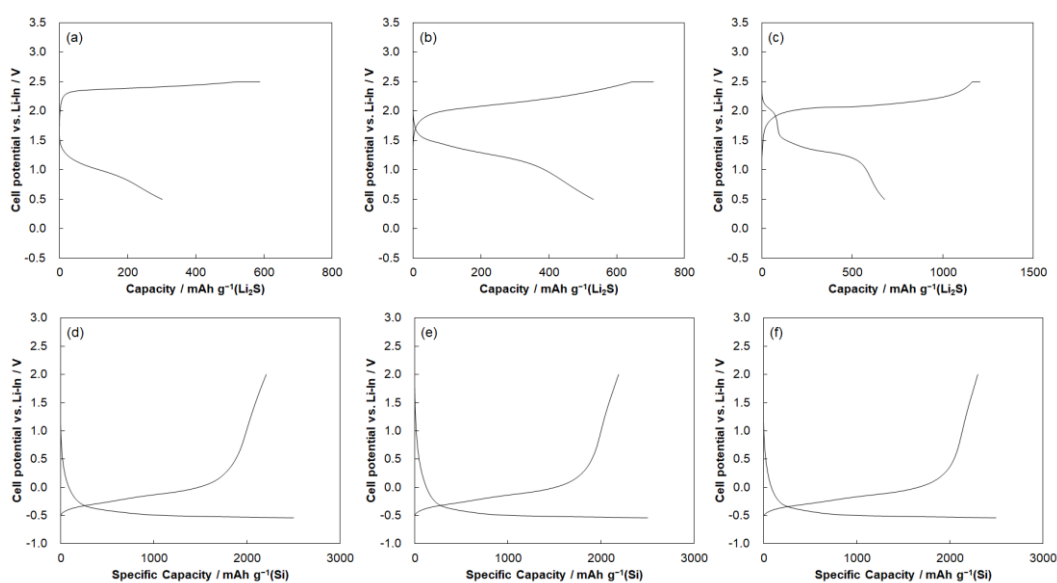


Figure S1. First charge–discharge curves of half-battery cells for Li₂S positive composite electrodes employing 0.60Li₂SO₄-0.40Li₂CO₃ (a), 0.45Li₂SO₄-0.30Li₂CO₃-0.25LiCl (b), and 0.42Li₂SO₄-0.28Li₂CO₃-0.30LiI (c) and Si negative negative composite electrodes employing 0.60Li₂SO₄-0.40Li₂CO₃ (d), 0.45Li₂SO₄-0.30Li₂CO₃-0.25LiCl (e) and 0.45Li₂SO₄-0.30Li₂CO₃-0.25LiBr (f) at 0.064 mA cm⁻² at 45°C.

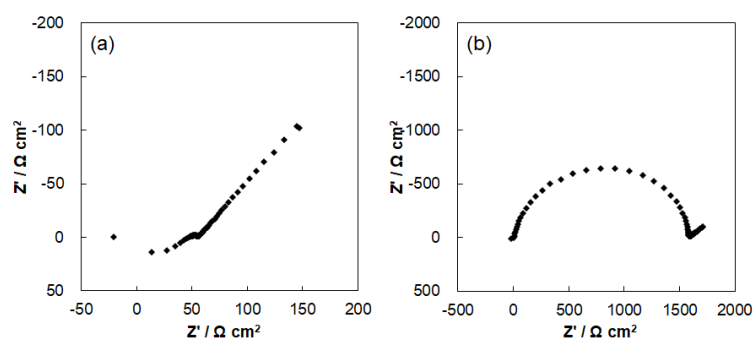


Figure S2. Nyquist plots of all-solid-state $\text{Li}_2\text{S-Si}$ full-battery cells for consisting $\text{Li}_3\text{PS}_4\text{-LiI}$ (a) or $0.45\text{Li}_2\text{SO}_4\text{-}0.30\text{Li}_2\text{CO}_3\text{-}0.25\text{LiBr}$ (b) as the SE layer. The AC-impedance data of these full-battery cells were collected from an AC-impedance analyzer (1260A Frequency Response Analyzer, Solartron Analytical) by applying an AC-voltage of 50 mV and a frequency range of 1 Hz to 32 MHz.