Supporting Information

Suppressing corrosion of aluminum foils via highly conductive graphene-like carbon coating in high-performance lithium-based batteries

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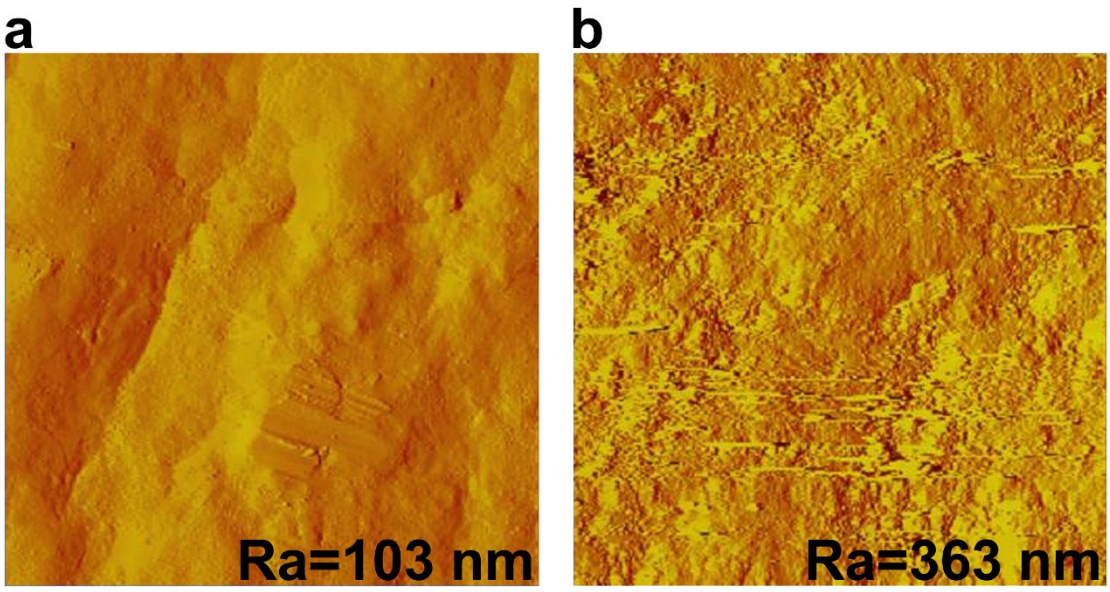

Figure S1. AFM images of (a) bare and (b) GLC coated Al foil. The size of images is 20 x 20 μm. Ra represents the average feature roughness from the foil surface.

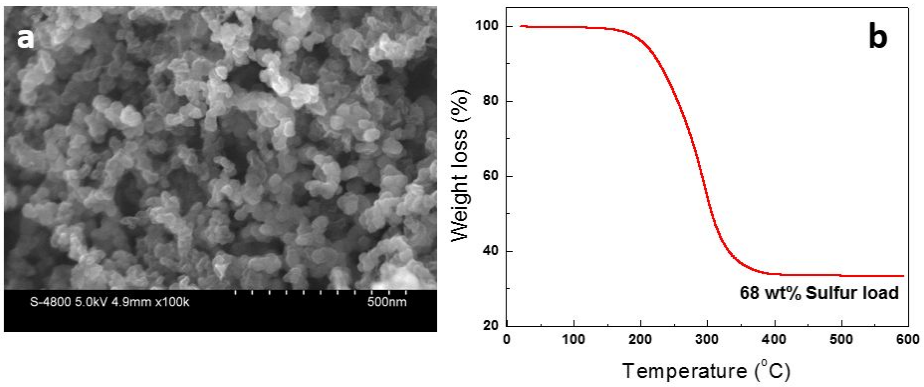

Figure S2. (a) FE-SEM image and (b) TGA curve of as-prepared carbon-sulfur composites.

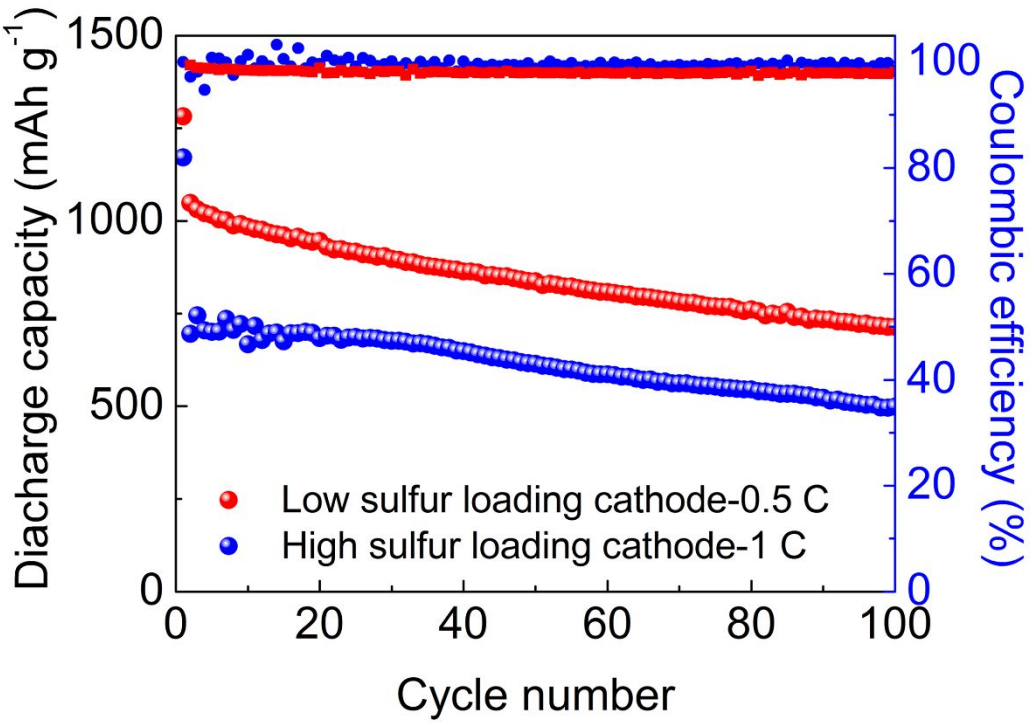

Figure S3. Cycling performance of the sulfur cathodes with low (1 mg cm^{-2}) and high (2 mg cm^{-2}) sulfur loadings at different current densities.

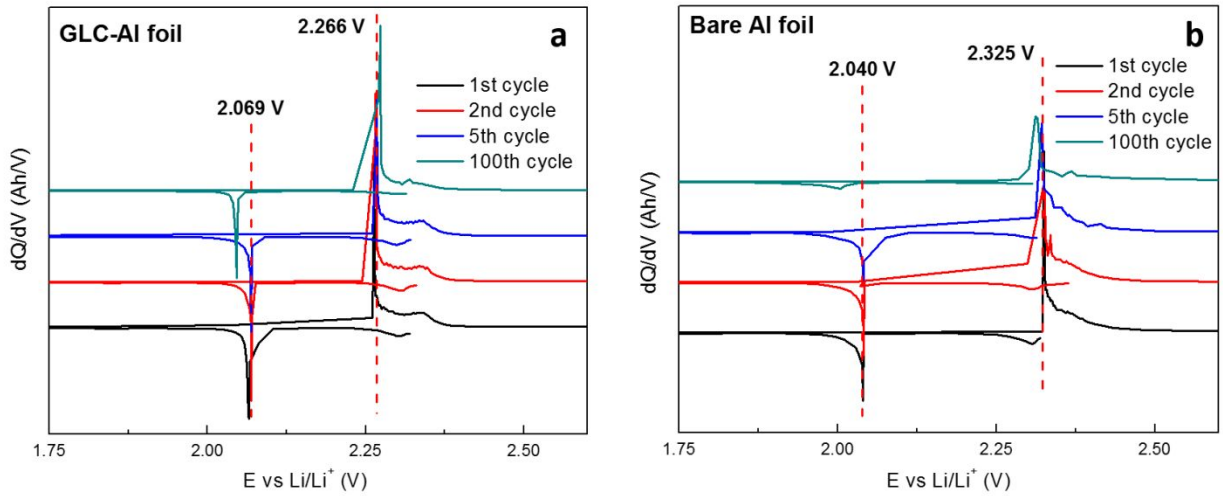

Figure S4. dQ/dV plots of as-prepared Li-S batteries in different discharge-charge cycles. (a) GLC-Al foil and (b) bare Al foil.

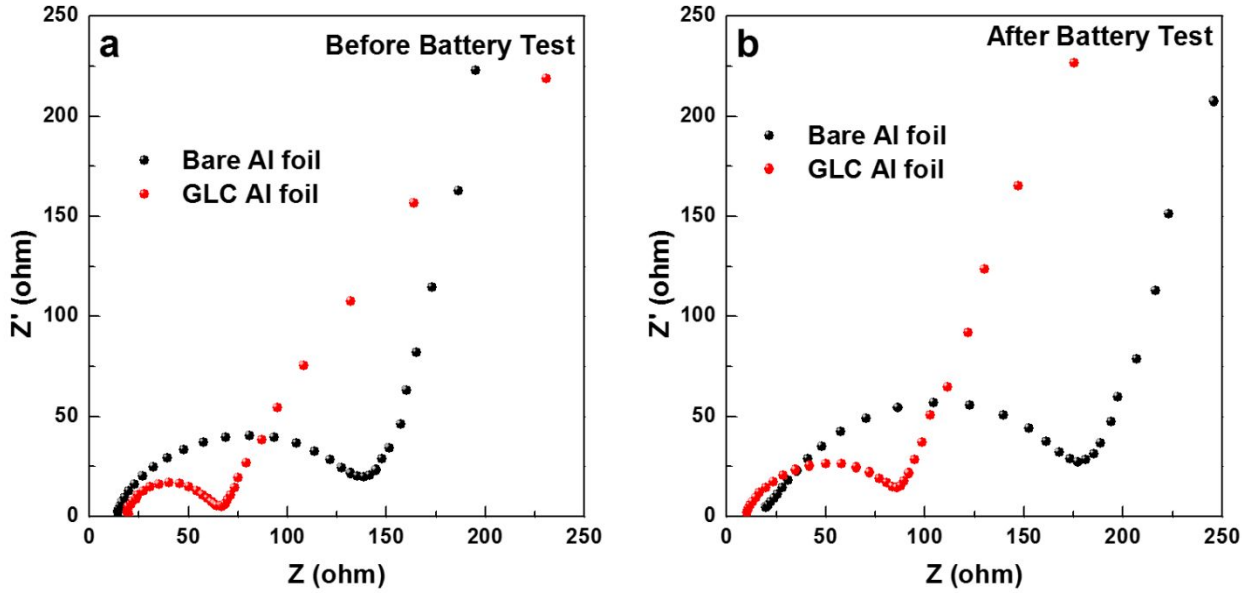

Figure S5. EIS spectra of as-prepared Li-S batteries with different current collectors (a) before and (b) after battery discharge-charge 50 cycles.

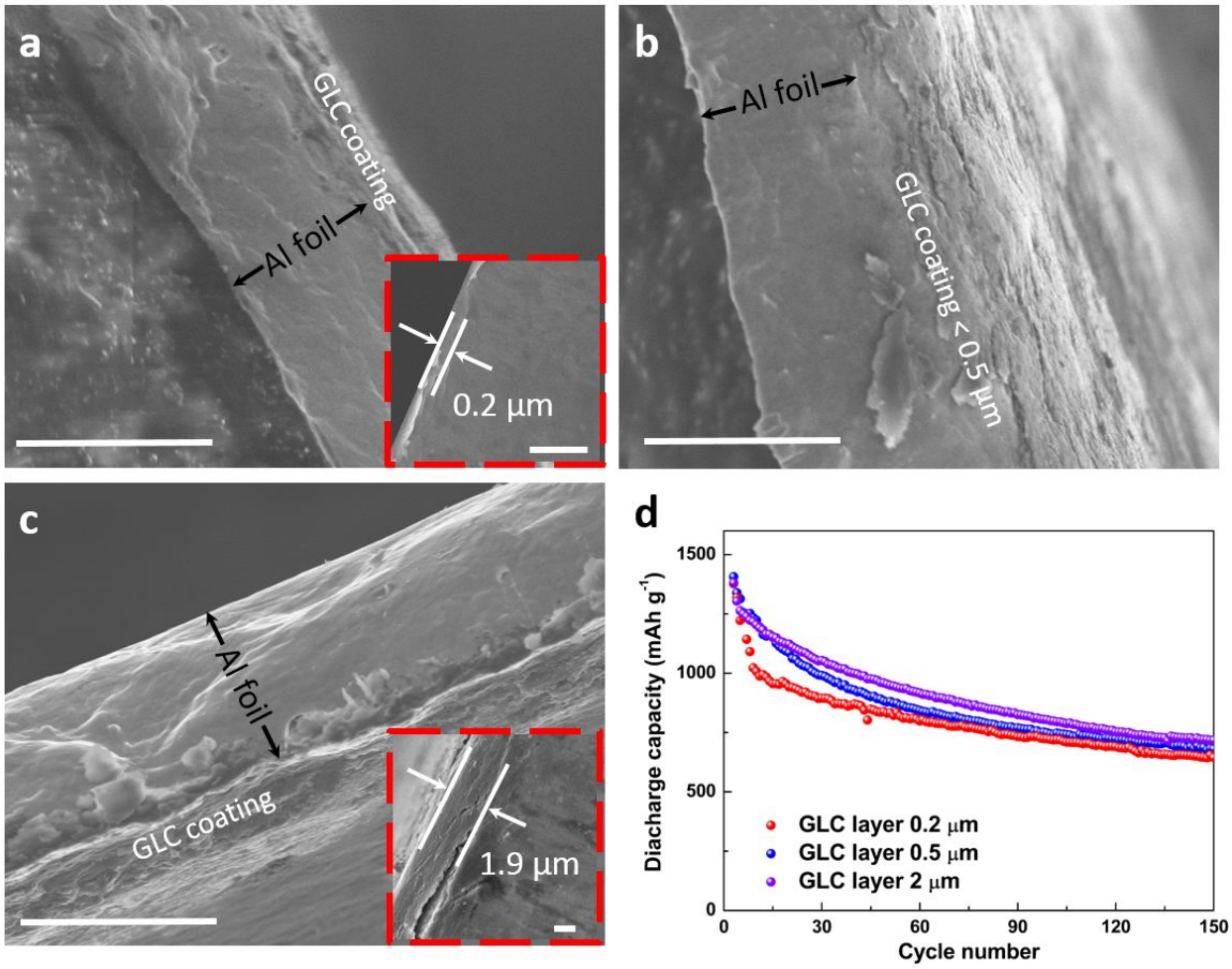

Figure S6. (a-c) FE-SEM images in cross-section view of GLC-Al foils with different thickness of GLC layer in a scale bar of 10 µm and (d) cycle performance of as-prepared C-S electrodes with these GLC Al foils. The scale bar in the inserted image (a, c) is 1 µm.

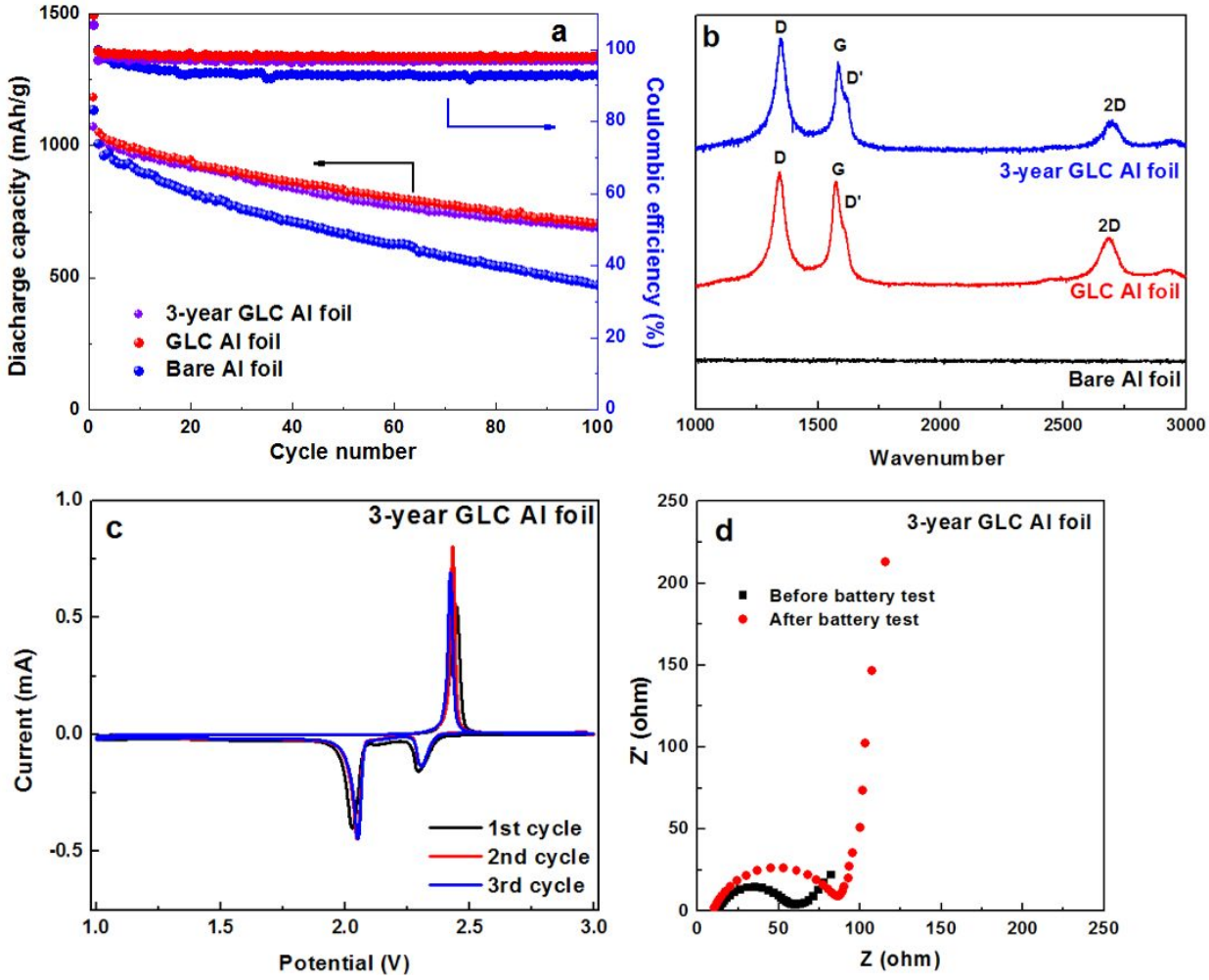

Figure S7. Physical and electrochemical characterizations of 3-year GLC Al foil and as-prepared C-S electrodes. (a) discharge-charge cycling performance at 800 mA g^{-1}; (b) Raman spectra; (c) CV curves; and (d) EIS plots.