Electronic Supplementary Material (ESI) for RSC Advances.

The Li-S battery: an investigation of redox shuttle and self-discharge behaviour with $LiNO_3$-containing electrolytes

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Supporting Information

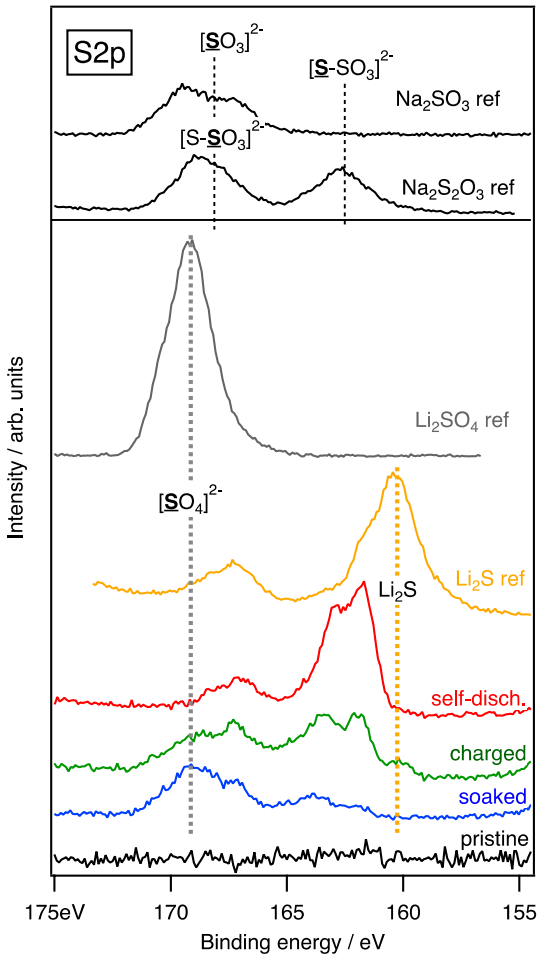

Figure S1: reference XPS spectra for Na_2SO_3, NaS_2O_3, Li_2SO_4 and Li_2S alongside the XPS spectra for the anode samples as measured in Fig. 3.

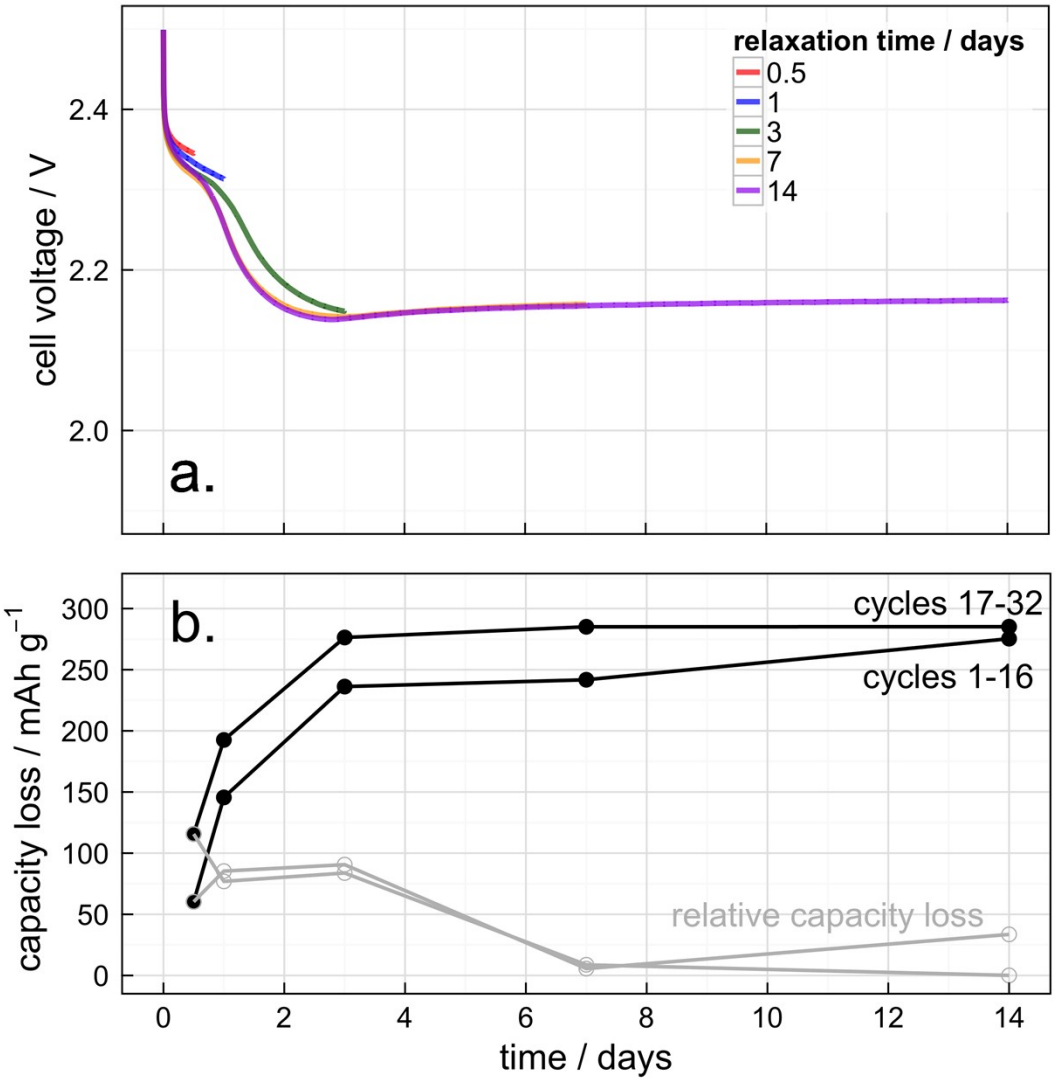

Figure S2: Additional plot for analysis of the "cycle/wait" test (Section 3.4, Fig. 5). a) Voltage profiles for the relaxation periods during cycles 1-16 only. b) Reproduction of Fig 5b) from the manuscript for comparison purposes. This plot further supports the conclusion that self-discharge slows dramatically as the cell reaches the lower voltage plateau at 2.15 V.

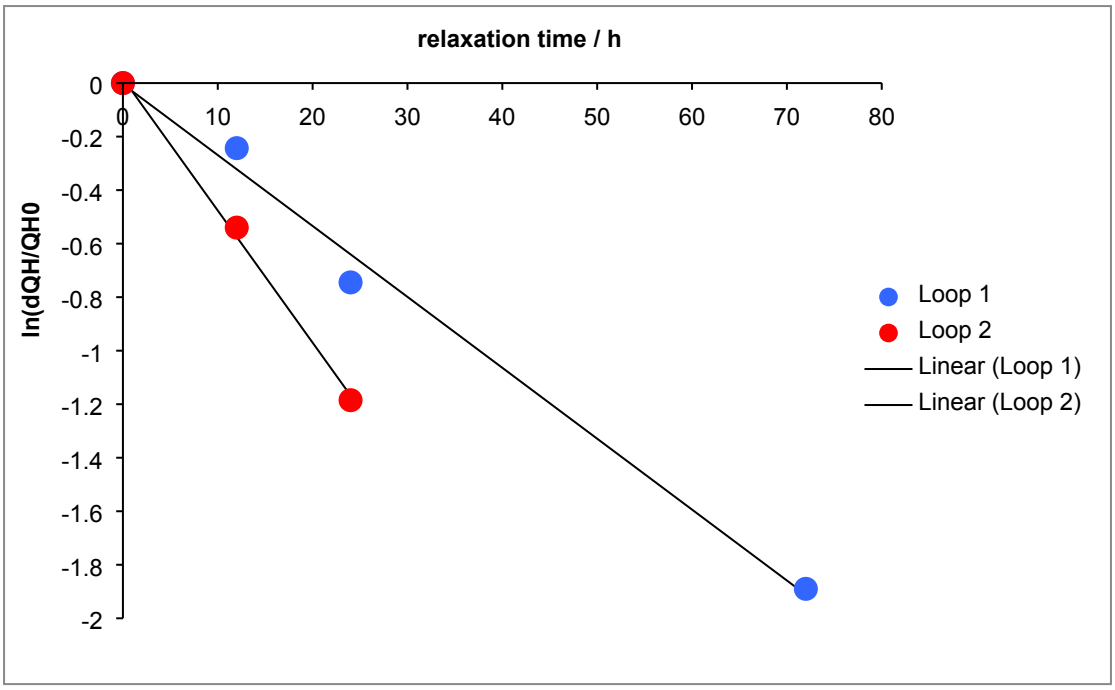

Figure S3: Estimation of the polysulfide shuttle constant as defined by Mikhaylik and Akridge (i.e., the negative of the gradient of the linear fit with units h^{-1}).

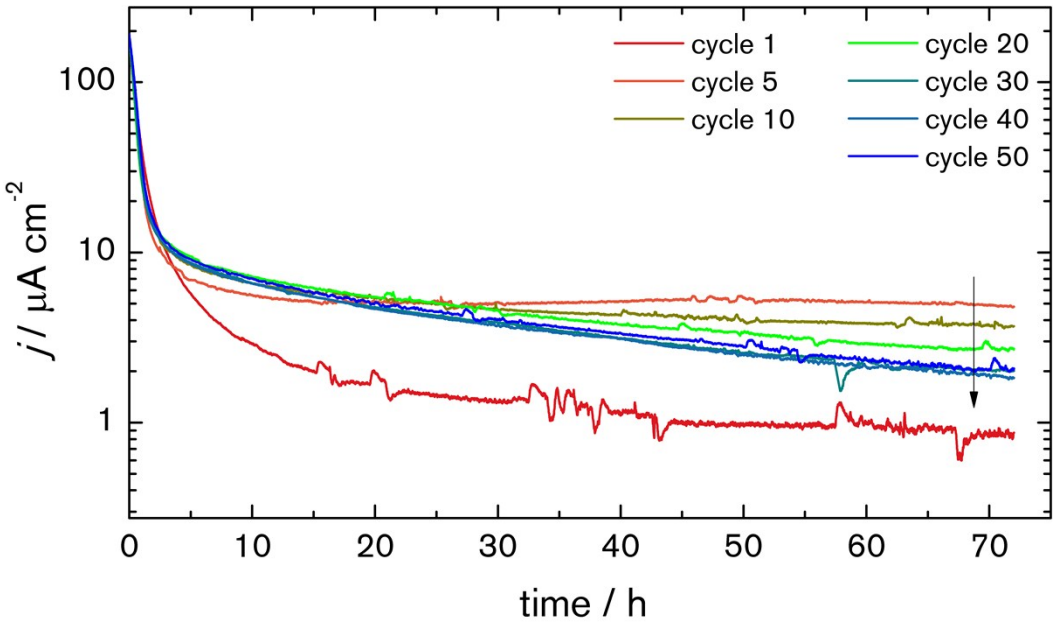

Figure S4: current transients during OCV relaxations of the cell made every 10 cycles.