Supporting Information

Room-Temperature Eutectic Synthesis for Upcycling of Cathode Materials
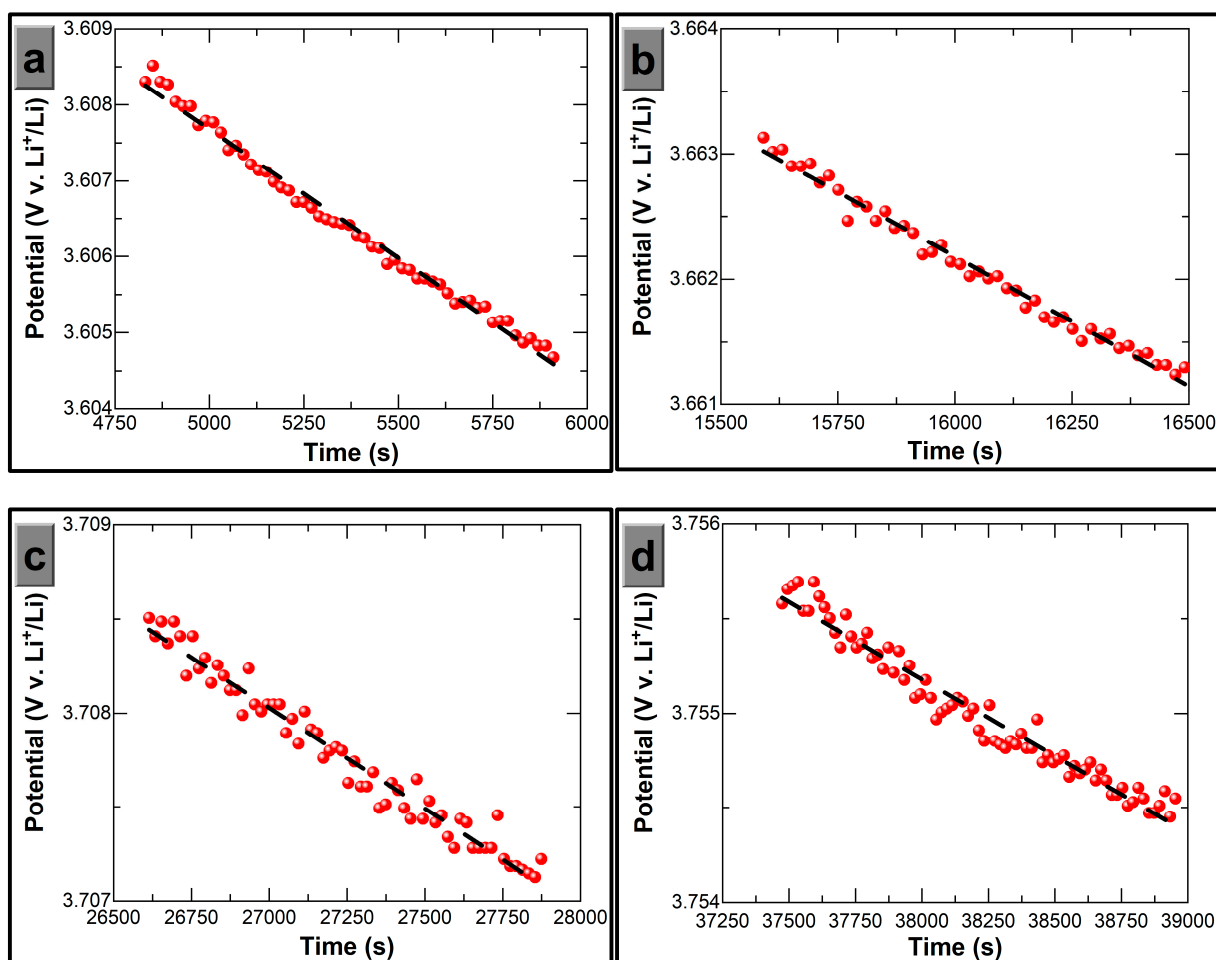
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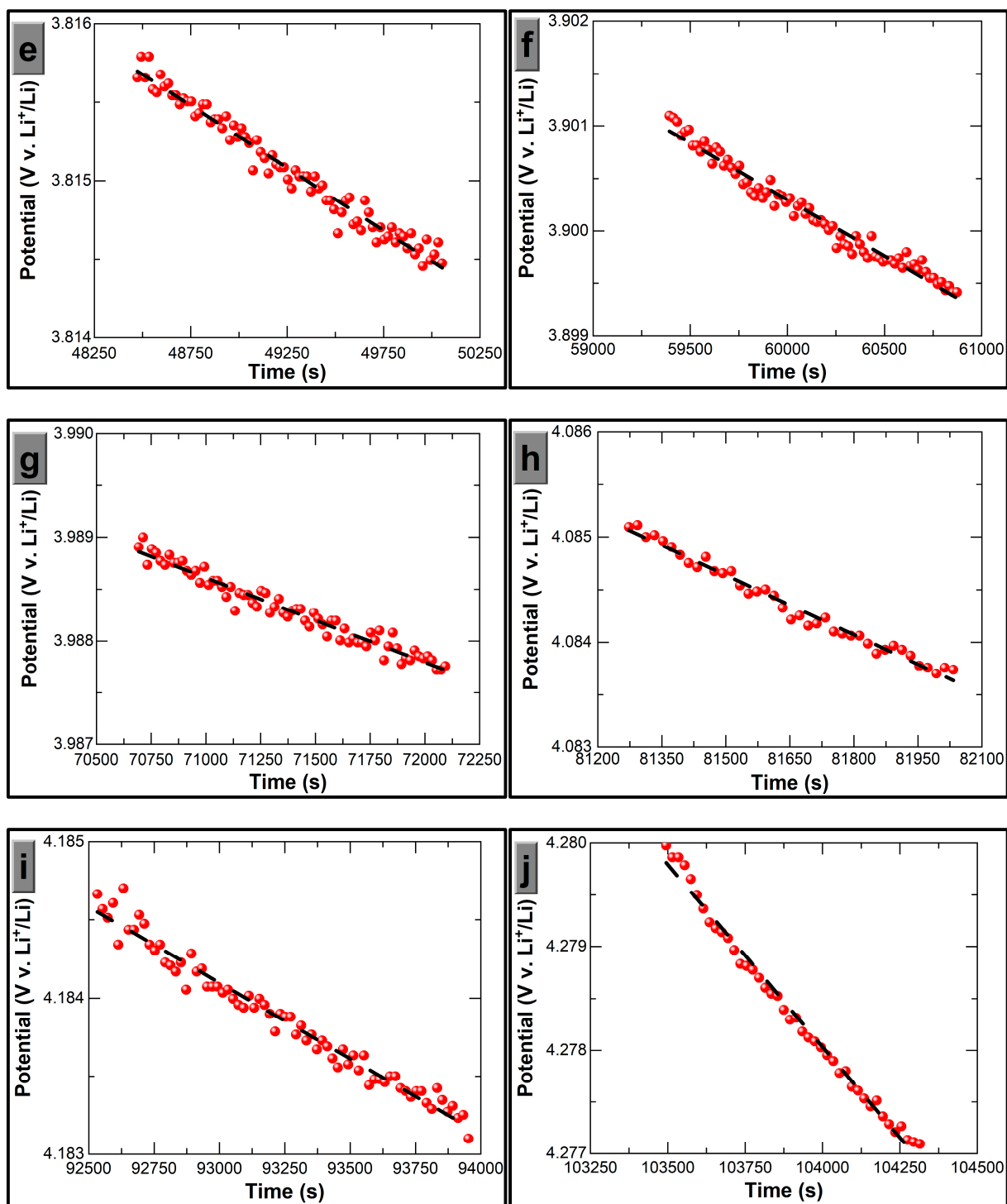
Education, Knoxville, TN, USA 37996

Fig. S1. The potential vs. time plots for the ten rest periods, executed at: a) 10% SOC, b) 20% SOC, c) 30% SOC, d) 40% SOC, e) 50% SOC, f) 60% SOC, g) 70% SOC, h) 80% SOC, i) 90%

SOC, and j) 100% SOC. The time represents the total time of the charge/discharge cycle. The dashed black line represents the linear fit of the raw data shown with the red data points.

Table S1. A summary of the data from the charge step of the GITT protocol.

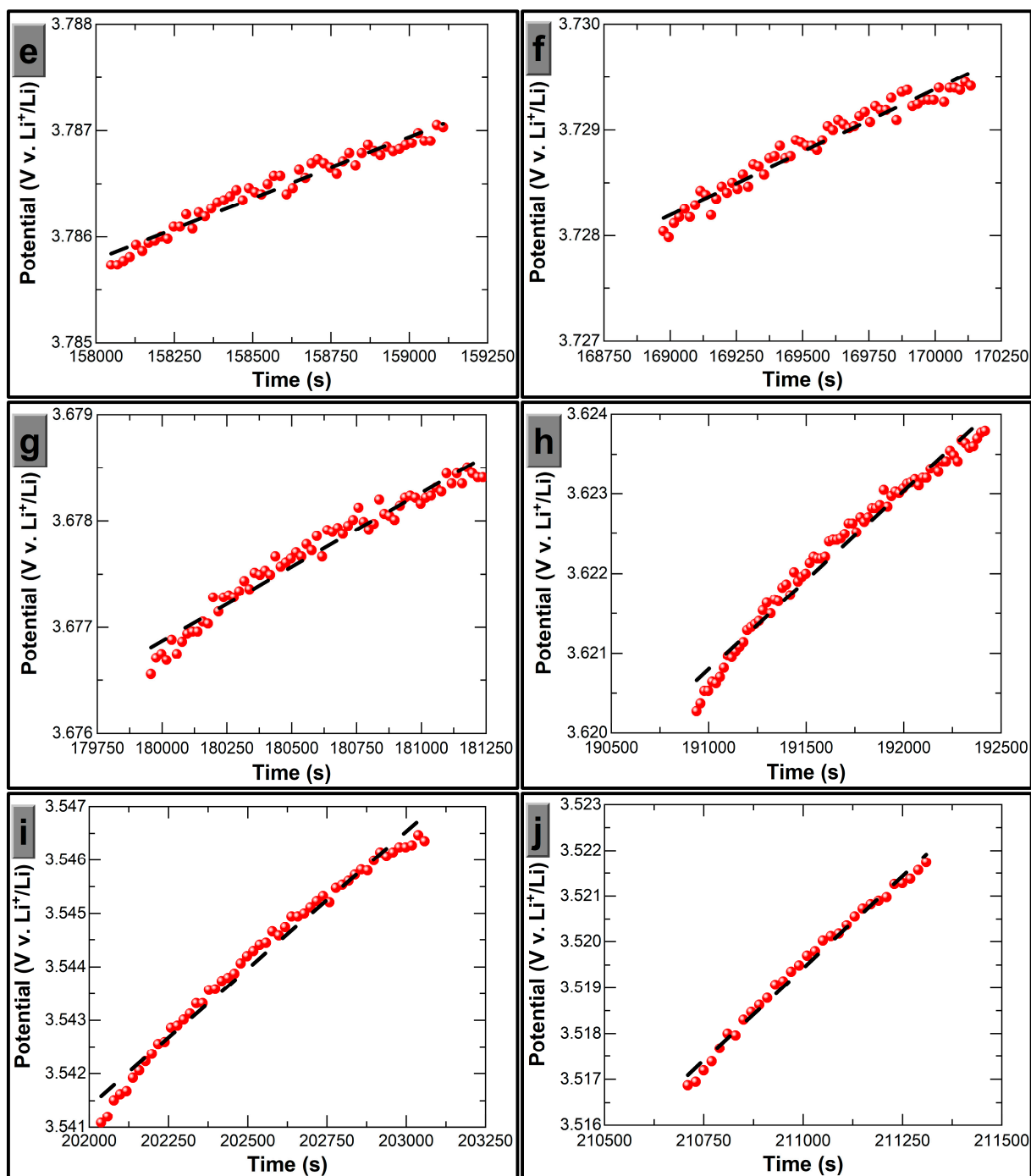| SOC (%)	Slope	Diffusion Coefficient (cm²·s⁻¹)	Potential (V vs. Li⁺/Li)
10	$3.39 \cdot 10^{-6}$	$4.99 \cdot 10^{-13}$	3.63
20	$2.06 \cdot 10^{-6}$	$3.03 \cdot 10^{-13}$	3.67
30	$1.08 \cdot 10^{-6}$	$1.59 \cdot 10^{-13}$	3.71
40	$8.20 \cdot 10^{-7}$	$1.21 \cdot 10^{-13}$	3.76
50	$7.90 \cdot 10^{-7}$	$1.16 \cdot 10^{-13}$	3.82
60	$1.07 \cdot 10^{-6}$	$1.58 \cdot 10^{-13}$	3.90
70	$8.10 \cdot 10^{-7}$	$1.19 \cdot 10^{-13}$	3.99
80	$1.88 \cdot 10^{-6}$	$2.77 \cdot 10^{-13}$	4.09
90	$9.70 \cdot 10^{-7}$	$1.43 \cdot 10^{-13}$	4.18
100	$3.52 \cdot 10^{-6}$	$5.18 \cdot 10^{-13}$	4.30
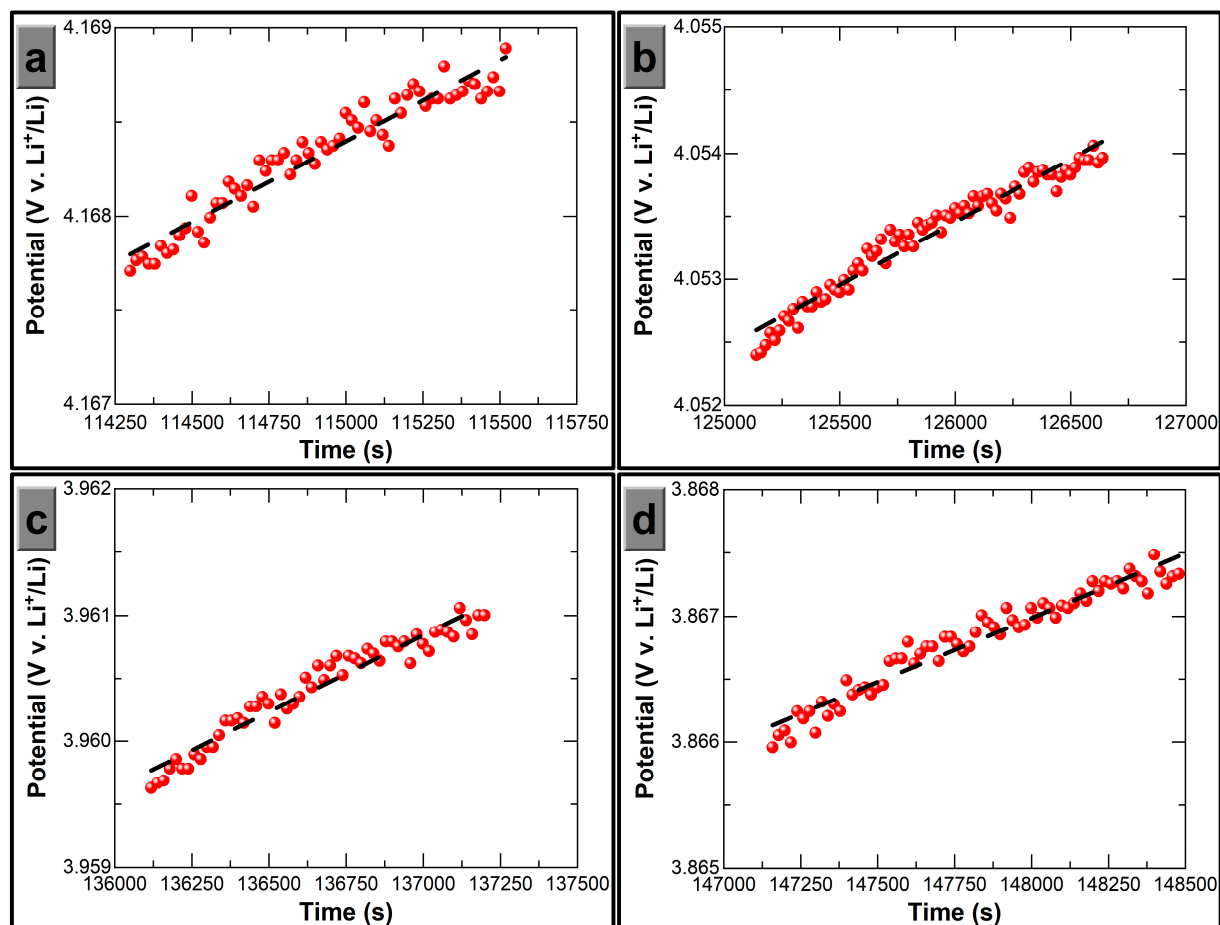
Fig. S2. The potential vs. time plots for the ten rest periods, executed at: a) 10% DOD, b) 20% DOD, c) 30% DOD, d) 40% DOD, e) 50% DOD, f) 60% DOD, g) 70% DOD, h) 80% DOD, i) 90% DOD, and j) 100% DOD. The time represents the total time of the charge/discharge cycle. The dashed black line represents the linear fit of the raw data shown with the red data points.

Table S2. A summary of the data from the discharge step of the GITT protocol.

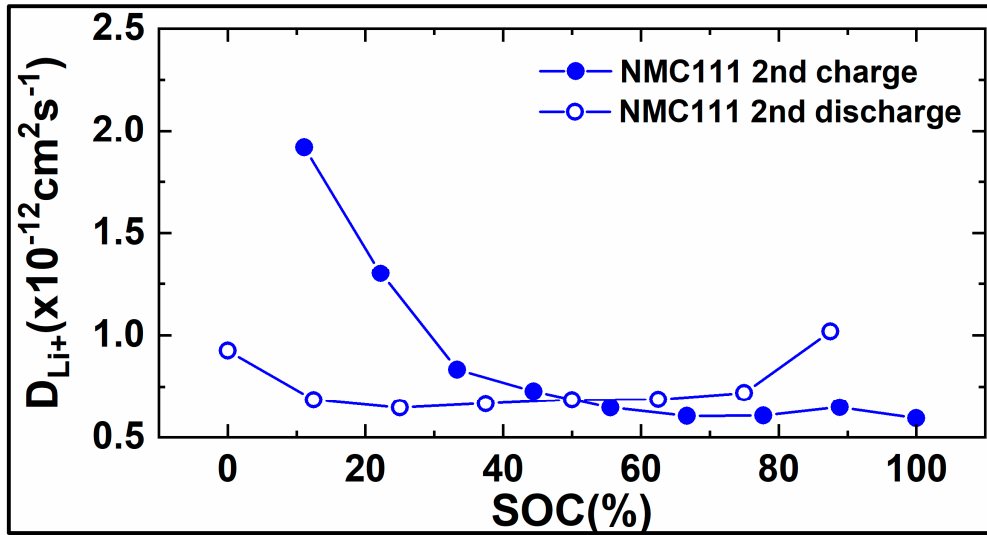| DOD (%)	Slope	Diffusion Coefficient (cm$^2\cdot$s^{-1})	Potential (V vs. Li$^+$/Li)
10	8.60$\cdot$10^{-7}	1.27$\cdot$10^{-13}	4.16
20	1.00$\cdot$10^{-6}	1.47$\cdot$10^{-13}	4.05
30	1.22$\cdot$10^{-6}	1.80$\cdot$10^{-13}	3.95
40	1.02$\cdot$10^{-6}	1.50$\cdot$10^{-13}	3.86
50	1.15$\cdot$10^{-6}	1.69$\cdot$10^{-13}	3.78
60	1.19$\cdot$10^{-6}	1.75$\cdot$10^{-13}	3.73
70	1.40$\cdot$10^{-6}	2.06$\cdot$10^{-13}	3.67
80	2.24$\cdot$10^{-6}	3.30$\cdot$10^{-13}	3.61
90	5.15$\cdot$10^{-6}	7.58$\cdot$10^{-13}	3.44
100	8.05$\cdot$10^{-6}	1.19$\cdot$10^{-12}	3.00

Fig. S3. The diffusion coefficient determined via GITT analysis for the CA-NMC111 material.
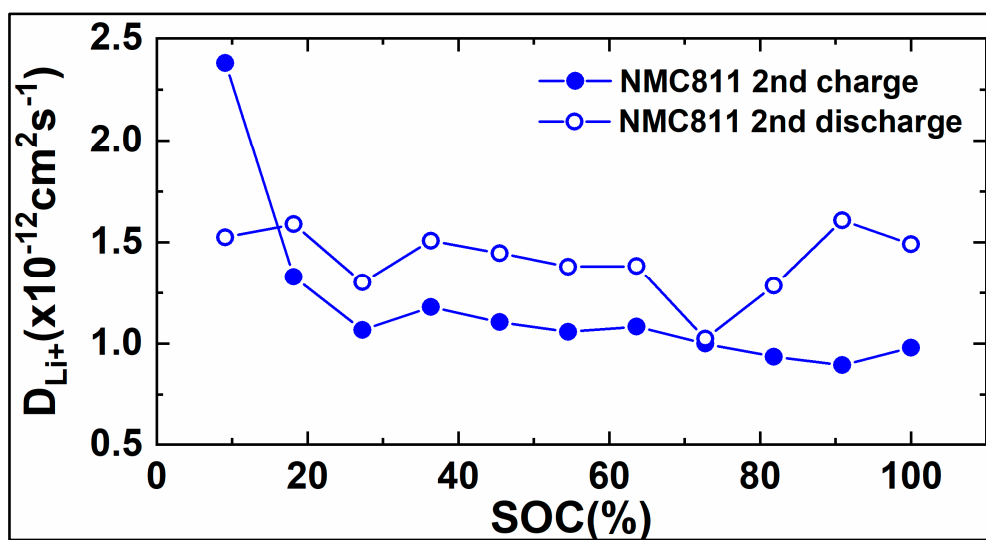
Fig. S4. The diffusion coefficient determined via GITT analysis for the CA-NMC811 material.