# Supporting Information

# Enhancing the Stability and Initial Coulombic Efficiency of Silicon Anodes through Coating with Glassy ZIF-4

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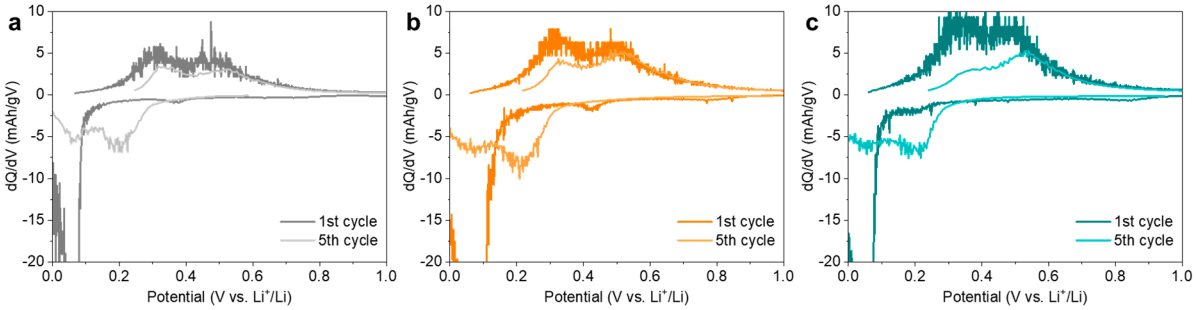


**Figure S1.** dQ/dV curves of SZ, SZ-4, and SZ-10 electrode obtained from the galvanostatic curves.

**Table S1.** Warburg coefficient and Li-ion chemical diffusion coefficient calculated by EIS methods.

| Electrode | Conditions | Warburg coefficient ($\Omega$ $s^{-0.5}$) | Diffusivity ($cm^2$ $s^{-1}$) |
|---|---|---|---|
| SZ | After 1st cycle | 14.684 | 8.14352E-11 |
| | After 50th cycle | 13.755 | 9.28082E-11 |
| SZ-4 | After 1st cycle | 23.095 | 3.29226E-11 |
| | After 50th cycle | 21.834 | 3.6834E-11 |
| SZ-10 | After 1st cycle | 14.815 | 8.00045E-11 |
| | After 50th cycle | 21.93 | 3.65124E-11 |

Diffusivities were calculated from the Warburg element. The formula which is described below was used for calculating diffusivities.

$$D_{Li^+} = \frac{R^2T^2}{2n_{Li^+}^4A^2F^4C_{Li^+}^2\sigma_W^2}$$

In this equation, $R$ represents the gas constant (8.314 J $mol^{-1}$ $K^{-1}$), $T$ represents temperature in Kelvin (298.15 K), $n_{Li+}$ represents the number of electrons per species reaction (for lithium ions, $n_{Li+} = 1$), $A$ represents the surface area of electrode (1.54 $cm^2$), $F$ means Faraday constant (96485 C $mol^{-1}$), $C_{Li+}$ represents the concentration of lithium ions in mol $cm^{-3}$ (0.001 mol $cm^{-3}$), respectively.