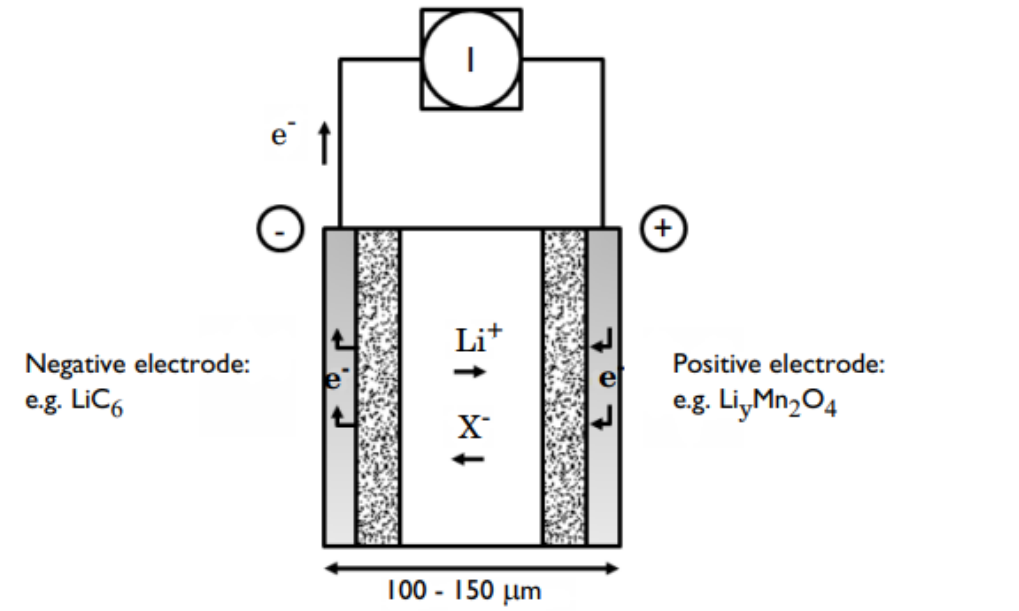

Discharge, negative electrode:

$$LiC_6 \rightarrow xLi^+ + Li_{1-x}C_6 + e^-$$

Discharge, positive electrode:

$$xLi^+ + xe + {}^-LiMn_2O_4 \rightarrow Li_{1-x}Mn_2O_4$$

Figure 1: Cross section of a lithium-ion battery showing the electrochemical processes that occur during operation.

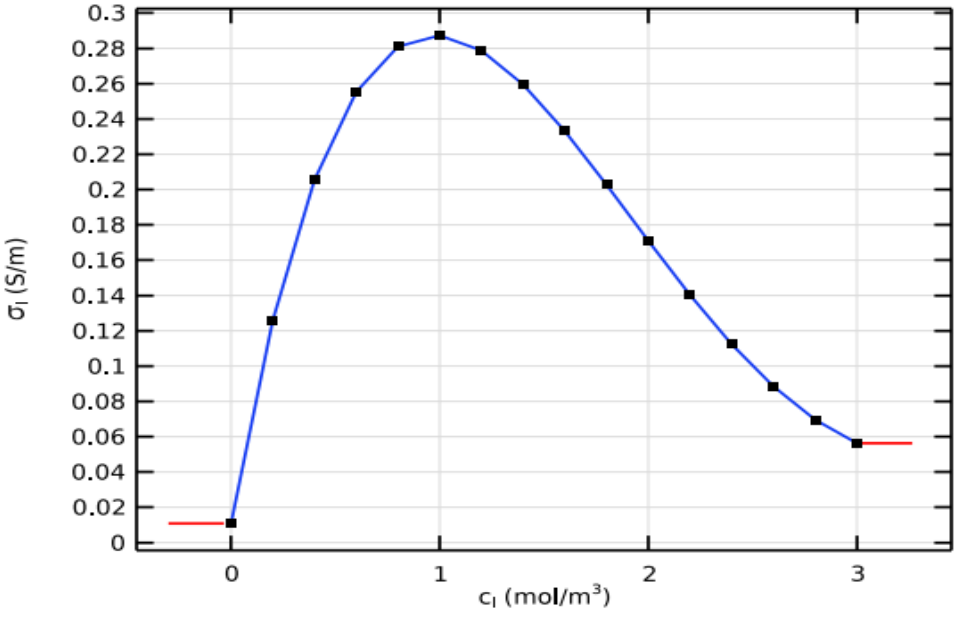

Figure 2: The model specifies the ionic conductivity of the electrolyte using an interpolation function according to this behavior with concentration.

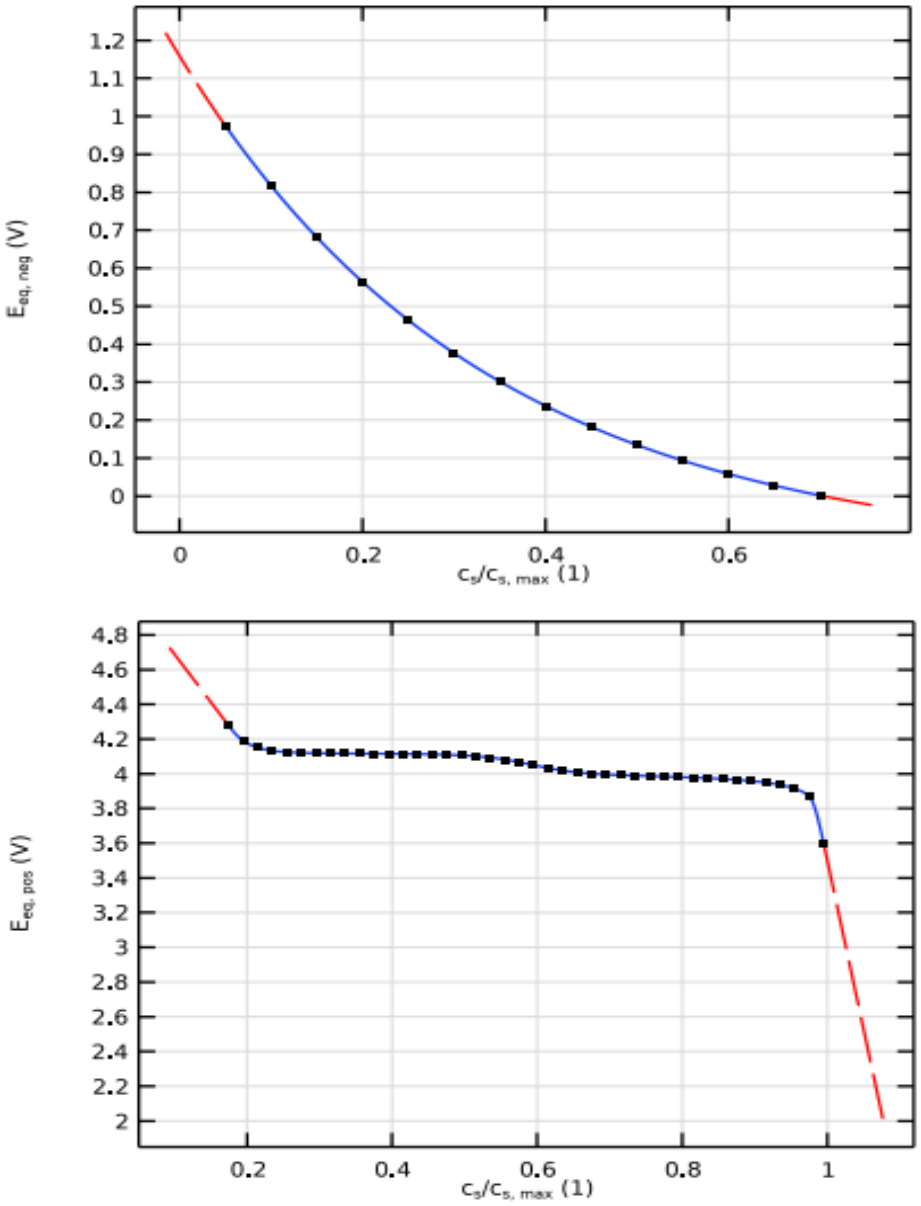

Figure 3: The equilibrium voltage of the electrode materials.

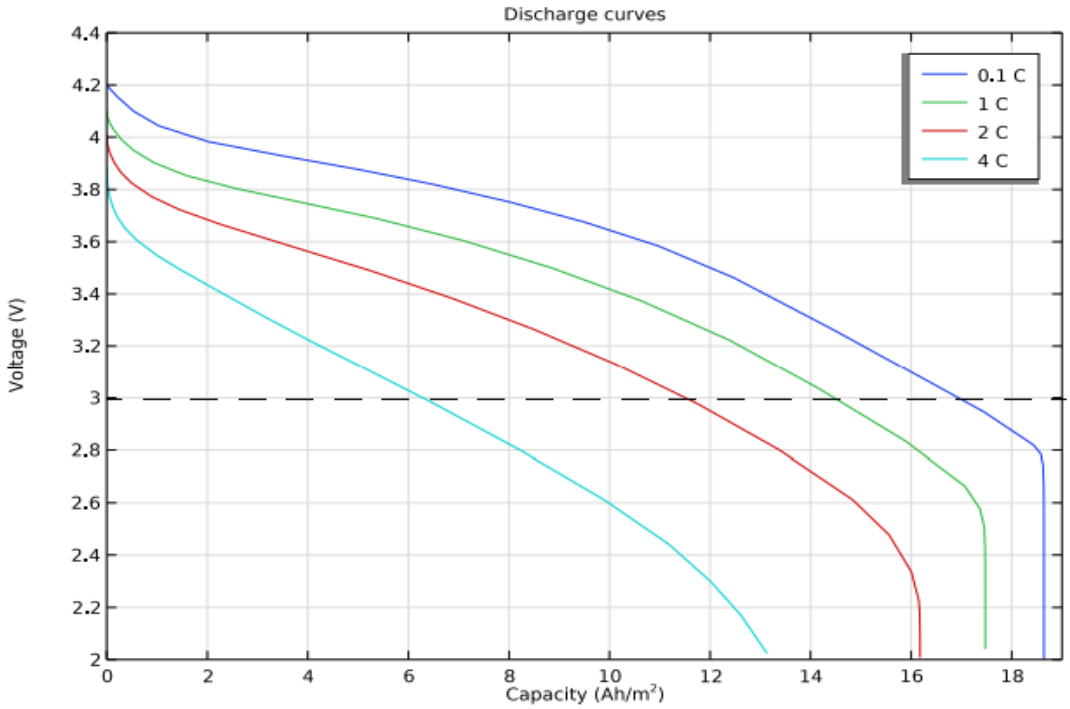

Figure 4: Discharge curves for various discharge rates. The dashed line marks the 3 V end-of-discharge limit for the cell.

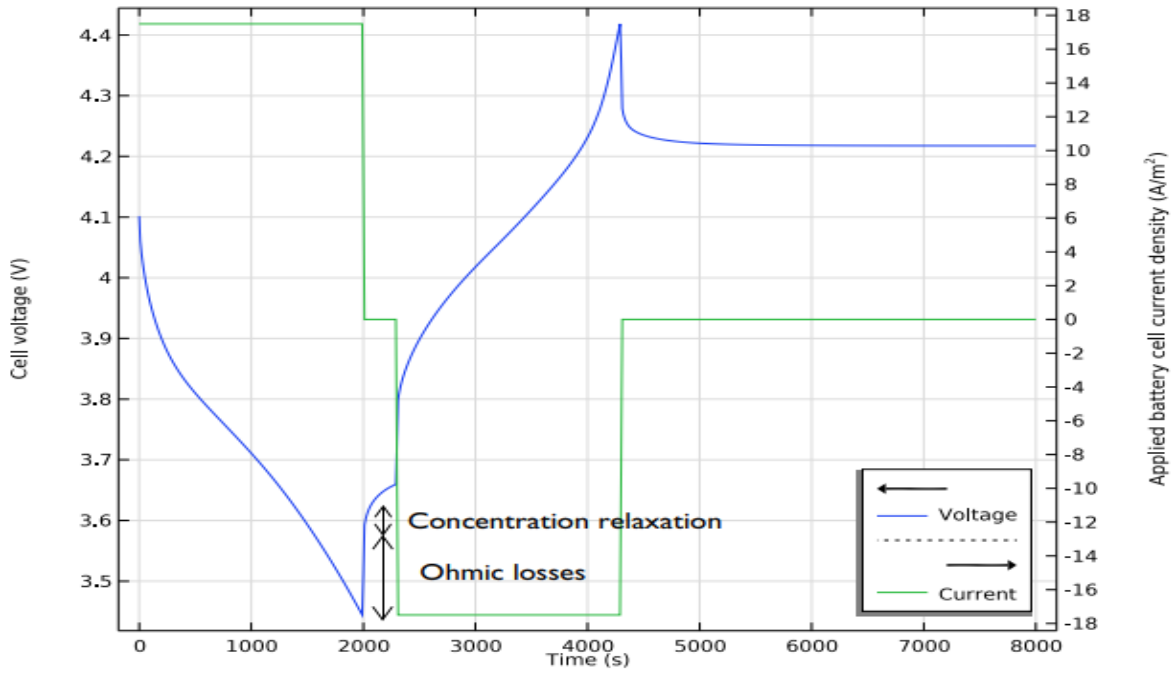

Figure 5: Cell voltage and current during the applied cycle.

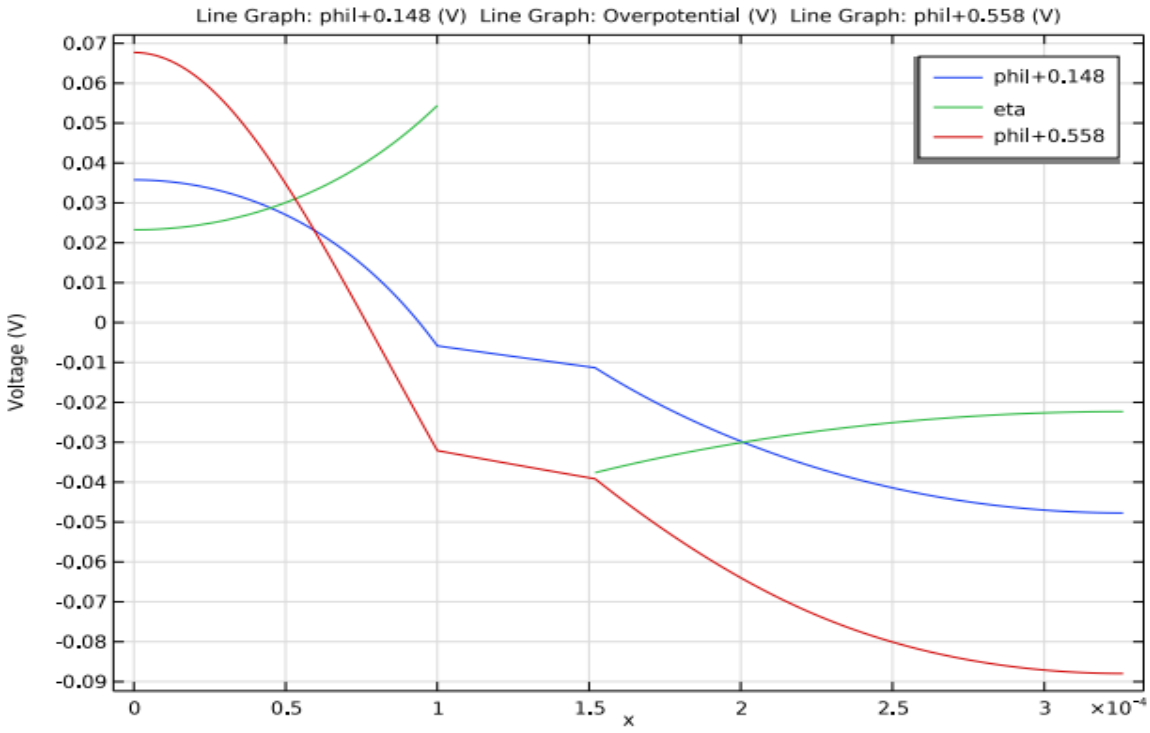

Figure 6: Voltage losses in the battery during discharge.

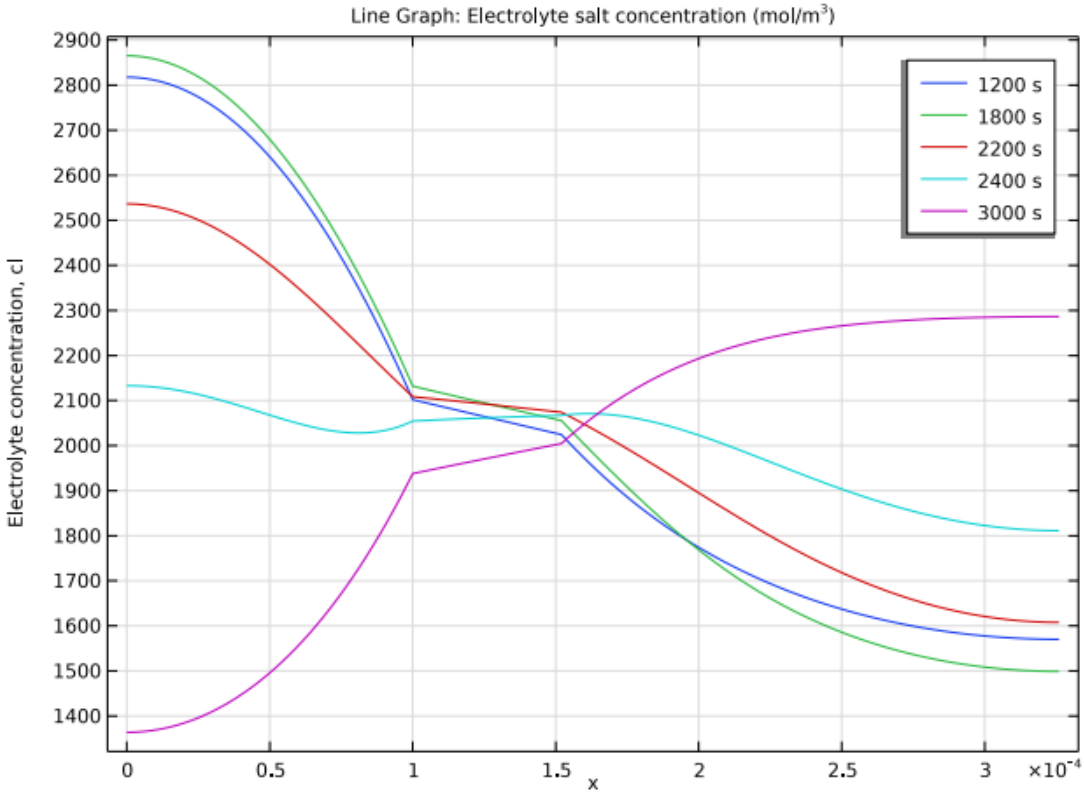

Figure 7: Electrolyte-phase concentration profiles at various times.

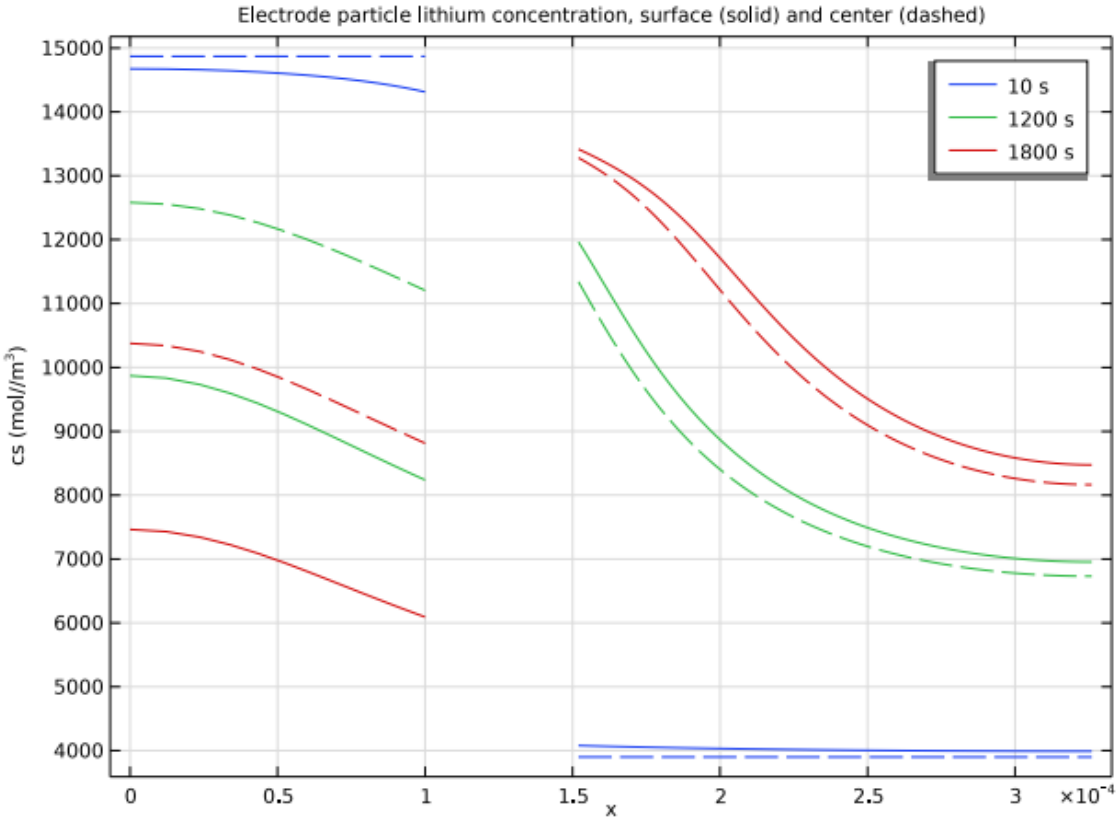

Figure 8: Concentration distribution of lithium in the solid particles during the discharge phase. (Dashed lines: Center of particles. Solid lines: Surface of particles.)