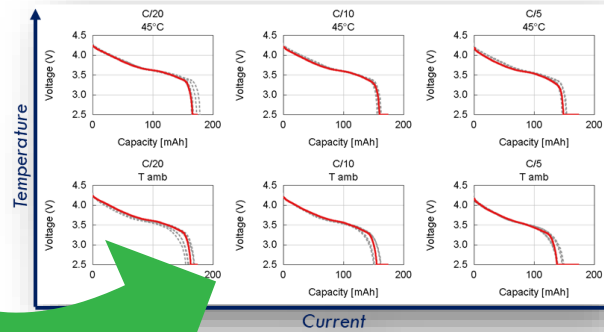


PWT

Coin Cell Model Simulation in GT-AutoLion

GT  **AutoLion**
Lithium-ion Battery Simulation



HOW WE BUILT A DIGITAL TWIN OF A LITHIUM CELL

- Building of a coin cell starting from recycled materials
- Testing of performance at different temperatures and current rates
- Characterization of aging mechanism
- Building of a *GT-AutoLion* Model representative of the real cell
- Validation of the model on Experimental data

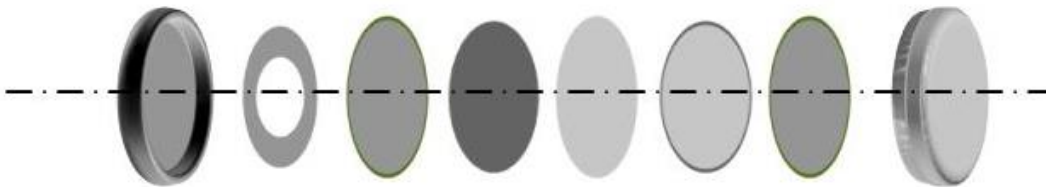
SWIPE!





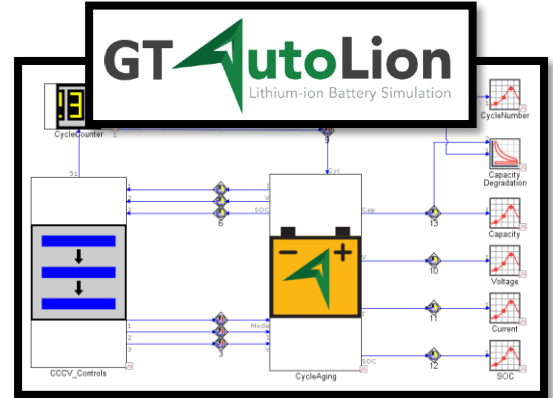
The active material of the positive electrode is **NMC622** while the negative electrode is made of **graphite**.

The coin cell is built starting from a recycled prismatic cell for automotive application. Material is rescued and cleaned to be used for creating new smaller cells.

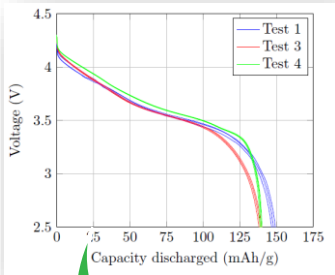


Particular attention is paid to aligning all the elements that make up the geometry of the cell to obtain maximum performance!

The assembled coin cell is built and ready to be tested. Experimental data are required to characterize the simulation model.

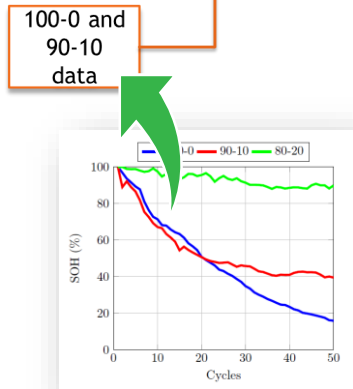
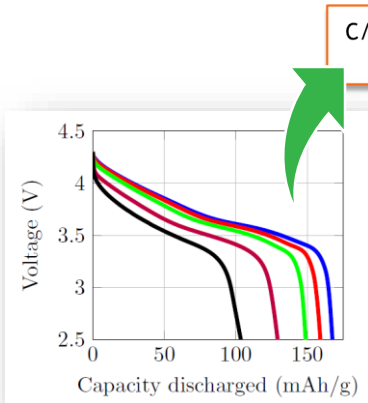


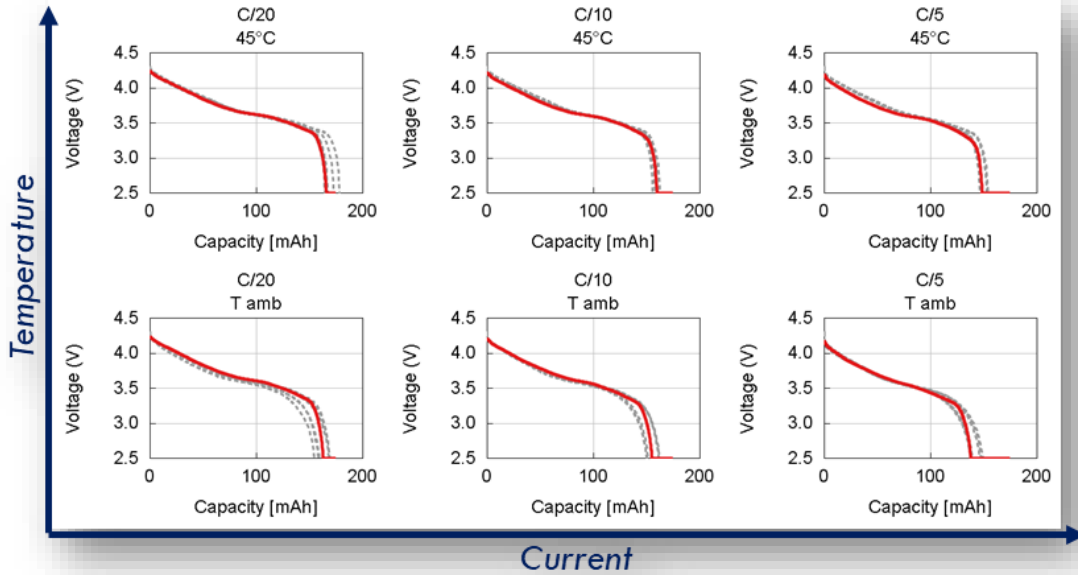
A three-steps calibration is performed in GT-AutoLion. Different parameters need to be tuned!



MATERIAL BEHAVIOR CALIBRATION

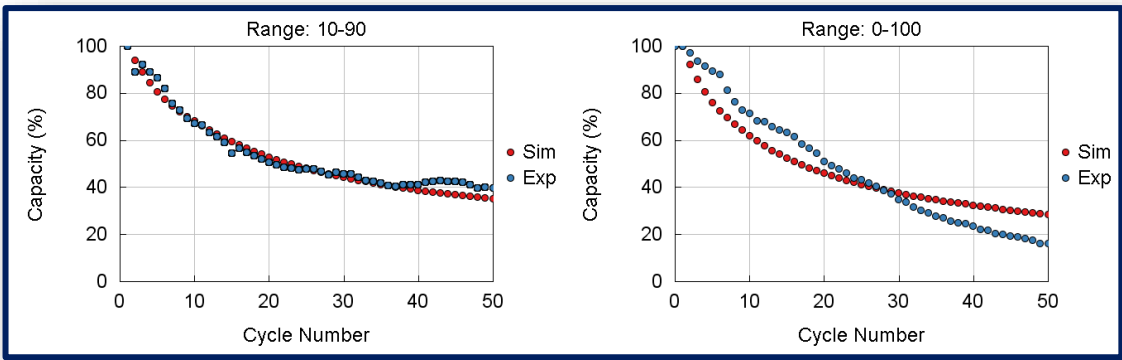
AGING MECHANISM CALIBRATION

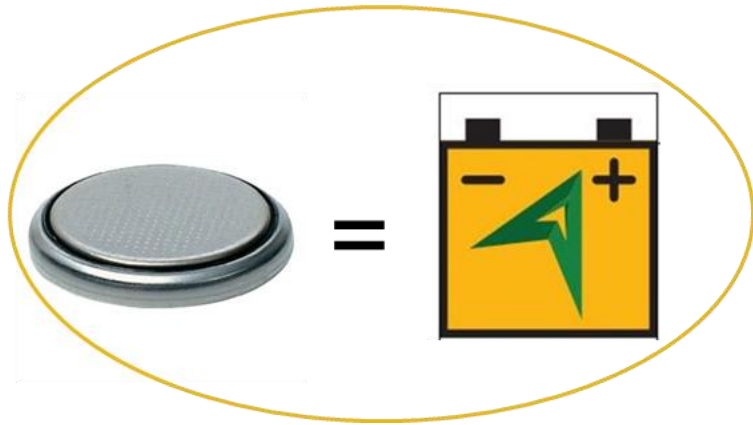




Simulated cell behavior is representative of the real phenomena. The correlation is good at different temperature and current rates.

Also Cycle-Aging phenomena are correctly predicted by the tool!





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