Validation of a Li-Ion Battery for Vehicles
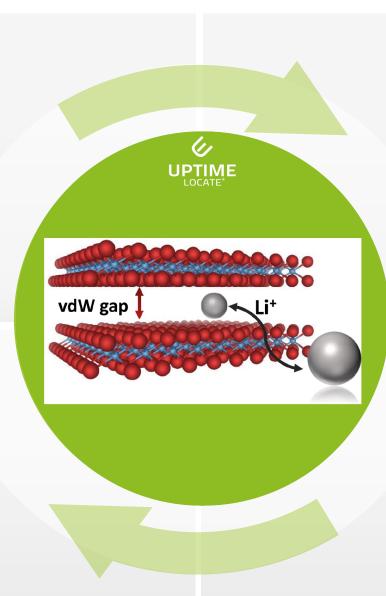
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Background

- Li-Ion batteries for vehicles are endangered by highly transient operation modes and boundary conditions

- The controller has to keep each cell in narrow temperature and current windows

- Reliability and durability has to be demonstrated against various failure modes

Requirement

- Validation tests addressing all failure modes of Li-Ion batteries
  - including the bandwidth of vehicle operation and controller strategies

- A program to demonstrate long term reliability and lifetime

- Indicators for early failure detection

Customer benefit

- Validation with focus on critical customer vehicle operation

- Reliability-induced limits for controller parametrization

- Generic set of tests for Li-Ion batteries and dedicated tests against long term failure modes

The Solution with Uptime LOCATE

- Test design to address damaging operation
  - with respect to critical reference customers
  - including driving, charging and stand-still

- Validation program via damage kinetics under critical operation conditions

- Screening tests
  - to check the sustainability of the controller parametrization
  - to identify indicators for failure modes

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vdW gap

Li^+