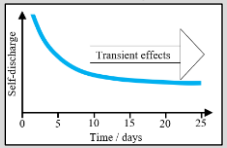
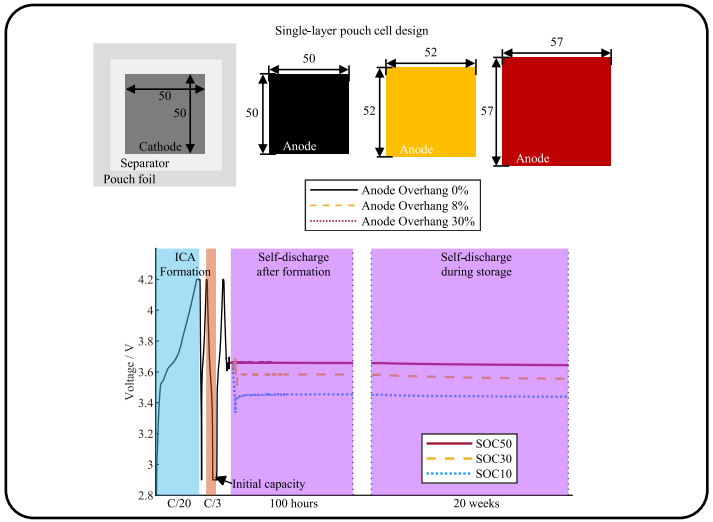
Transient Self-Discharge after Formation in Lithium-Ion Cells: Impact of State-of-Charge and Anode Overhang

- Investigate the transient self-discharge causing long measurement times in LIB manufacturing during the cell aging (final quality control step).
- Single-layer pouch cells with **varying anode overhang**.
- Storage test for self-discharge at **different States-of-Charge (SOC)**.
- Main reasons for transient self-discharge:
  1. SEI growth
  2. Anode overhang equalization

Quality control:
Self-discharge test





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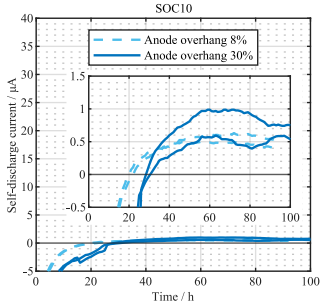
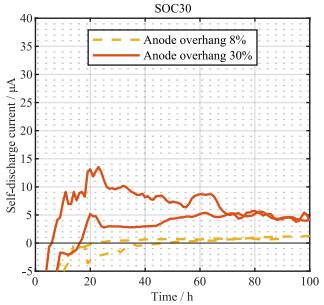
Self-discharge after formation

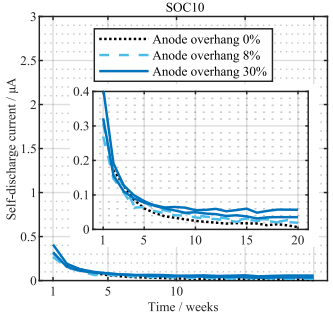


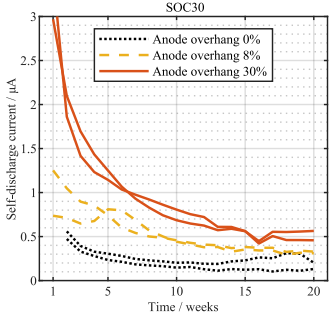


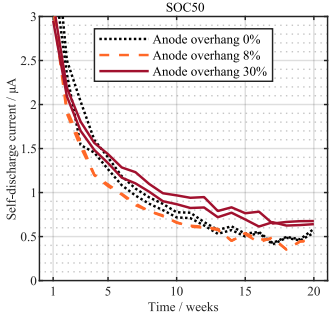
Reliable self-discharge at >50h
→ faster quality measurement

Anode overhang effect distorts the self-discharge and cell quality

Self-discharge during storage







<u>Low SOC:</u>
Very low self-discharge, but still transient behavior → SEI growth

<u>Low to medium SOC:</u>
Anode overhang equalization contributes to self-discharge

<u>Medium SOC:</u>
SEI growth dominantes transient self-discharge