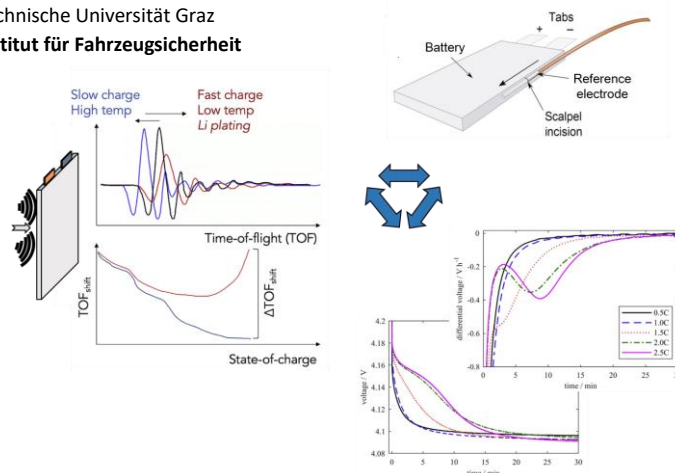


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Correlation between detection methodologies for lithium plating in commercial lithium-ion pouch batteries

Background:

In the last decades due advances in material development and innovative design, Li-ion batteries have become an attractive candidate as energy storage system for the automotive industry. The complexity of lithium-ion batteries however brings new challenges for any electric vehicle manufacturer. A deeper understanding of the electrochemical behavior and the ongoing processes during battery charging and discharging can help avoid the occurrence of unwanted battery degradation mechanisms and elongate battery life. The funded research project "SafeBattery" is co-financed by seven industrial partners with the objective to understand and evaluate the effect of battery ageing mechanisms on the battery mechanical performance and safety.

Formation of metallic lithium on the surface of the anode active material not only leads to reduction of the battery performance, but can also trigger an internal short circuit by penetrating the battery separator. This is the reason why it is important to detect lithium plating in the early formation stages to prevent battery failure. The goal of this research is to compare and correlate the results of several different methodologies for detection of lithium plating.

Tasks:

- Literature research on:
 - Lithium plating formation and effect on the battery
 - Methodologies for detection of lithium plating
- Planning and fulfillment of experimental measurements
- Data evaluation and comparison between different methods

Requirements:

- Interest on renewable energies and e-mobility
- Degree on mechanical engineering or similar
- Interest in conducting practical work
- Propensity to team work and cooperation
- Ability to self-organizing and structure simple tasks

Organizational:

- Start: immediately as possible
- Duration: 6 - 8 Months
- Languages: English (mandatory), German (optional)
- Remuneration: 2500€
- Contact:
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