

# BA Seminar

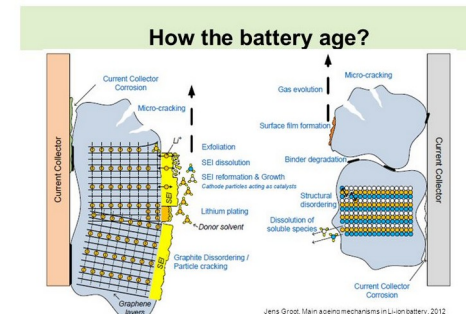
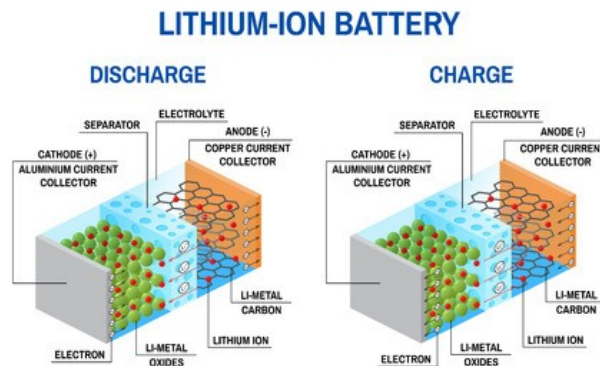
SS 2022

Elektronik und Computer Engineering  
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Determining the internal resistance  
of a lithium ion battery

# Lithium Ion Battery general information

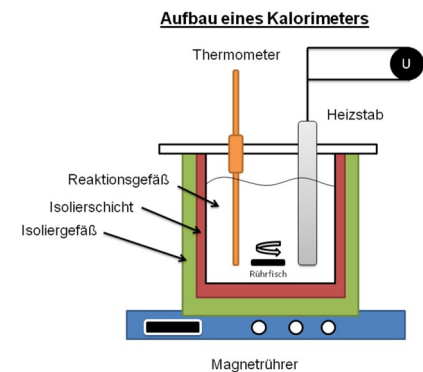
- Build of a Lithium Ion Battery
- Aging Process
- Meaning of the internal resistance



- ✓ Complex set of ageing mechanisms due to multiple interactions
- ✓ Complementary characterization techniques and models needed

# Methods to determine the internal resistance of a Lithium Ion battery

- Hybrid Pulse Power Characterization (HPPC)
- Galvanostatic Intermittent Titration Technique (GITT)
- Electrochemical Impedance Spectroscopy (EIS)
- Calorimetric Measurement
- DC Charging Method
- Parameterization using current pulses



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# Modeling Simulink

- Model
- Data Evaluation

