

Collaborative Topic:

In situ Inference, Characterization,
and Validation

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Why

- Conventional test protocols and procedures are designed for evaluations of performance
 - Usually pass/fail tests
- We need test protocols for diagnosis and prognosis
 - Techniques and methods to understand degradation and failure modes

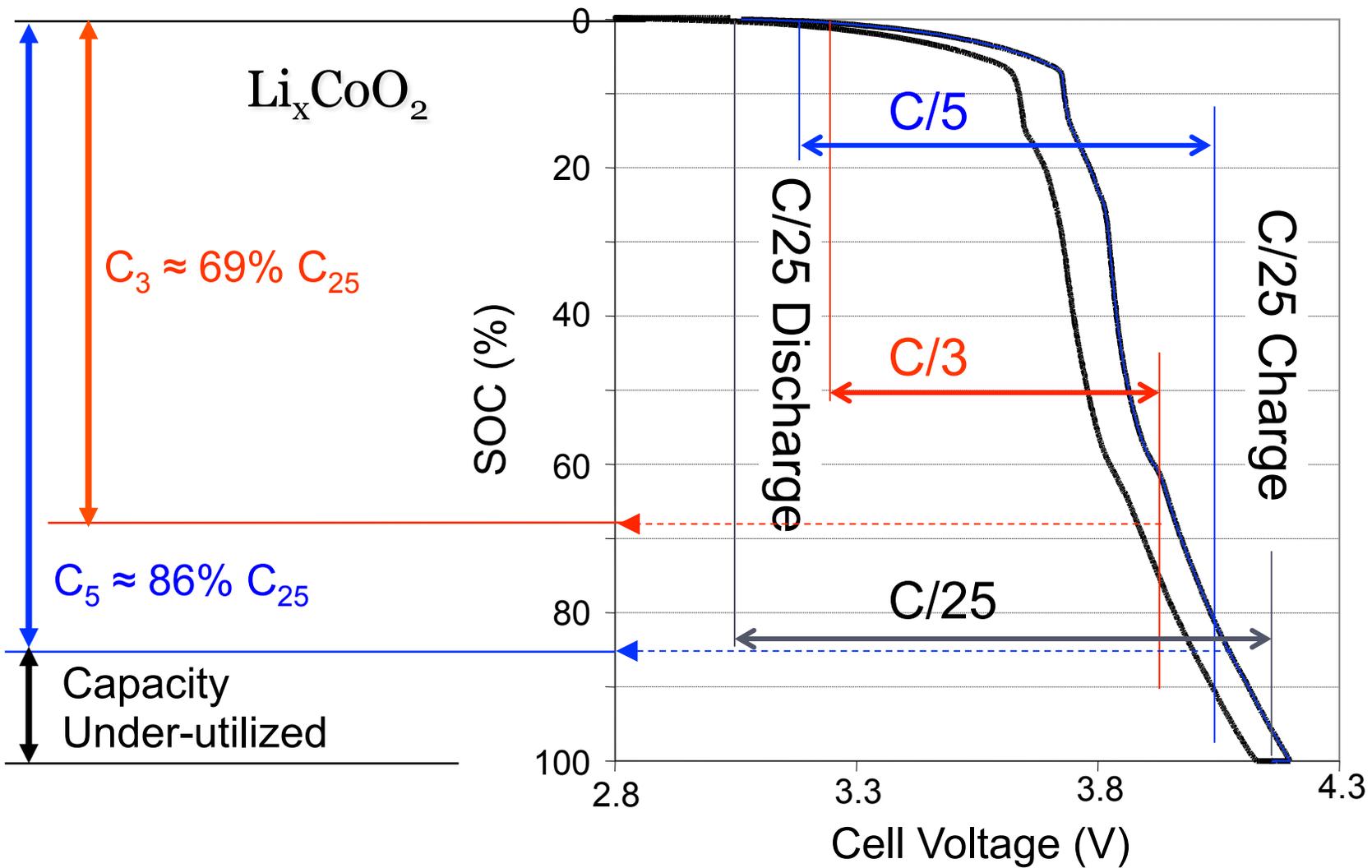


How

- Inference techniques:
 - SOC determination (Fuel gauge)
 - SOH determination (Life prediction)
- Characterization and validation
 - Collect physical and chemical evidence for mechanistic understanding
 - Prefer in situ, non-invasive approach

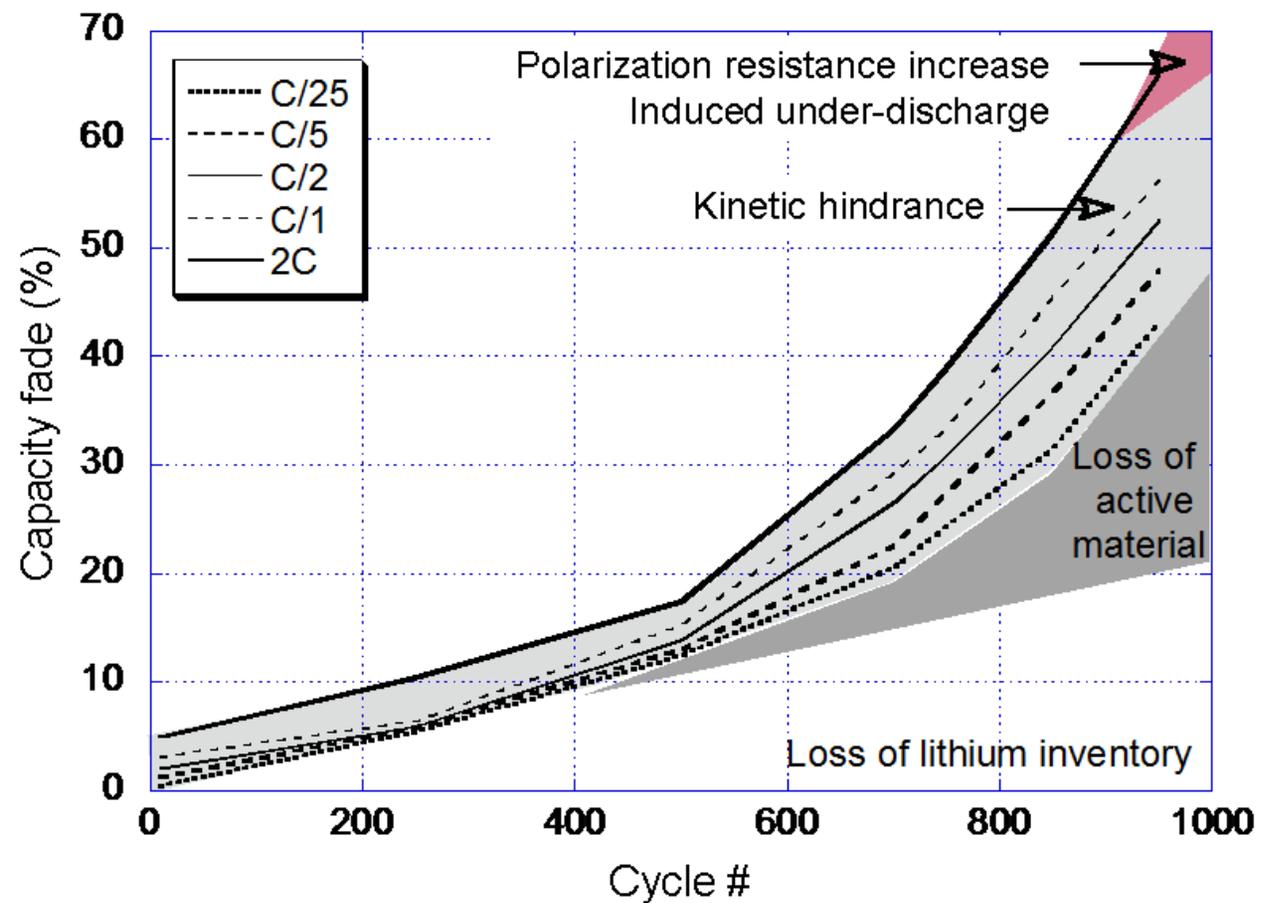
Inference of SOC

- Need to revise its definition
 - It is a thermodynamic property, which does not defined by its capacity.
 - Using OCV versus SOC curve as a universal curve to estimate SOC, which is a function of its chemistry (temperature and compositions), but independent of size and geometry.
 - Measurement of rest cell voltage would be sufficient.



How to define SOH

- Next time!





What we are looking for

- Collaboration on in situ characterization and validation
 - Collective body of characterization techniques
 - What can be collected from such characterization
 - Collective body of physical and chemical evidence for validation (“database” or “data bank”)
 - Correlate “cause” and “consequence”
 - Validate inference results