

# T06 In Situ Optical Microscopy

## How it works

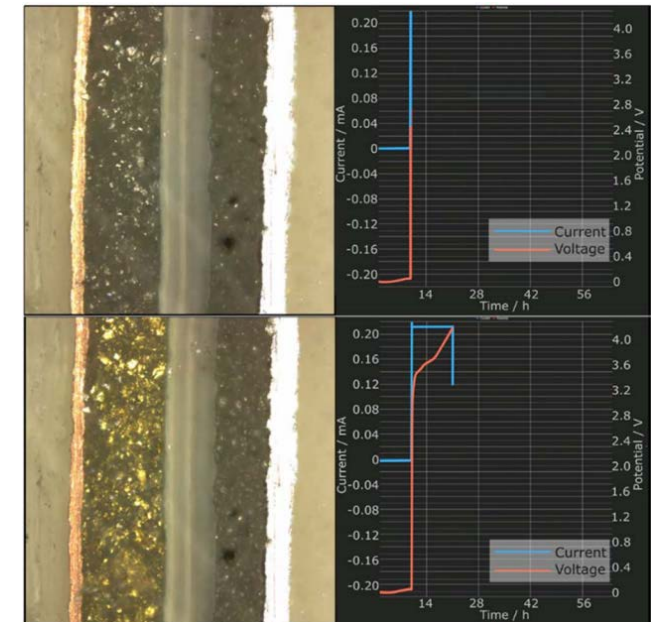
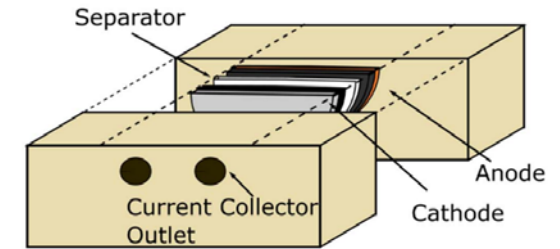
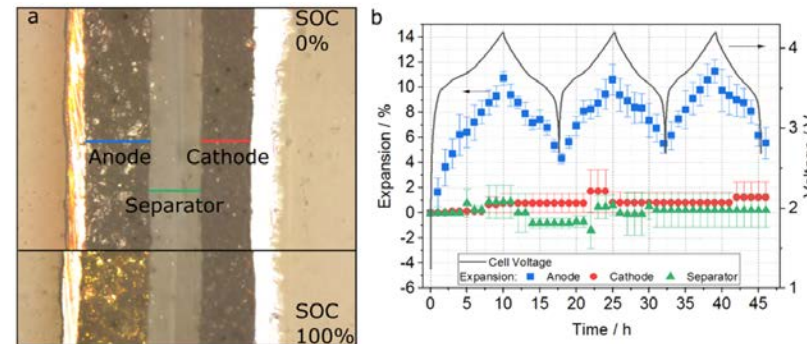
In-situ view into a cross-sectioned Li-ion full cell during operation

## What can be seen

- Color changes of active material, e.g. graphite (black),  $\text{LiC}_{12}$  (red),  $\text{LiC}_6$  (gold)
- Homogeneity of lithiation within anode
- Speeds of lithiation fronts during charging
- Dilatation of anode and cathode

What kind of sample ? Anode and cathode (size: ~A4 sheet)

Why is it useful ? performance



Investigation time-scale : months

Maturity level : in development

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**TEESMAT**

Open Innovation Test Bed for Electrochemical  
Energy Storage Materials

## Reference:

[1] C. Hogrefe, T. Waldmann, M.B. Molinero, L. Wildner, P. Axmann, M. Wohlfahrt-Mehrens, 'Cross-Sectional In Situ Optical Microscopy with Simultaneous Electrochemical Measurements for Lithium-Ion Full Cells', J. Electrochem. Soc. 169 (2022) 050519, <https://doi.org/10.1149/1945-7111/ac6c57>

