

Electrochemically Stable In Situ Dilatometry of NMC, NCA and Graphite Electrodes for Lithium-Ion Cells

In this study we investigate the thickness changes of electrodes during cycling using a dilatometry setup and compare them to XRD-measured crystal structure changes from scientific literature. Both the reliability of the dilation measurement and the electrochemical performance of the dilatometry setup are thoroughly validated and significantly exceed those of related studies that have been published in recent years.

- Thickness change investigation of various TMO electrodes and graphite electrodes with varying particle shape and porosity
- Measurement setup within a glovebox in a temperature-controlled chamber
- Prediction of thickness changes on electrode level by extrapolating structural changes obtained from XRD-data not always reliable
- Maximum reversible thickness for graphite (flake type) 6.5% and maximum expansion for TMO electrodes 1.7%

