

Homogeneity of lithium distribution in cylinder-type Li-ion batteries

Thursday, 18 June 2015 09:00 (20 minutes)

Spatially-resolved in situ neutron powder diffraction with gauge volume $2 \times 2 \times 20 \text{ mm}^3$ has been applied to probe the lithium concentration in the graphite anode of four different Li-ion cells of 18650-type in charged state. Information about underlying processes defining lithium distribution is crucial for the manufacturing of safe, robust and high-performance Li-ion cells. Structural studies performed in combination with electrochemical measurements and X-ray computed tomography under real cell operating conditions unambiguously revealed non-homogeneity of lithium distribution in the negative electrode. Deviations from a homogeneous behaviour have been found in both radial and axial directions of 18650-type cells and were attributed to effects involving cell geometry and electrical connection of electrodes, which might play a crucial role in the homogeneity of the lithium distribution in the active materials within each electrode.

Primary author: SENYSHYN, Anatoliy

Presenter: SENYSHYN, Anatoliy

Session Classification: Structure

Track Classification: Material Science