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Li ion transport in intercalation systems: theoretical aspects

Electrochemical batteries and Li ion intercalation systems

Thermodynamic aspects of Li ion batteries. Homogeneous and two-phase states. Charging and discharging processes in equilibrium and non-equilibrium conditions

Limitations of the charging/discharging process by transport or/and interfacial exchange factors. General principles of PITT, GITT and impedance techniques

Cottrell-equation based treatments of PITT data [1,2]

Theories of coupled ionic transport and interfacial ionic exchange [2]. Methods of PITT data treatments [2,3]. Examples for conducting polymer films [4] and Li ion intercalation systems [5]. Two-phase coexistence intervals

Media with mixed (electron-ion) conductors. Balance equations, transport relations and electroneutrality condition. Modified-electrode configuration [6-8]. Impedance diagrams. High- and low-frequency behaviour. Warburg impedance [6-10]

References

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4. M. D. Levi, R. Demadrille et al, J. Electrochem. Soc., 2005, vol. 152, E61-E67
5. O. A. Drozhzhin, M. A. Vorotyntsev et al, Electrochim. Acta, 2013, vol. 89, 262–269
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Der Vortrag findet um **16:15 Uhr** im Gebäude der Materialwissenschaften,
Lichtwiese, Alarich-Weiss-Str. 2, **Raum 77** statt