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MODELING AND COMPUTATION OF BATTERIES NUMBER: 300

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ABSTRACT

Despite the scientific breakthrough in electromobility and Internet of Things (IoT), battery research fails to deliver satisfactory design suggestions for building high performance batteries. Faster charging times are necessary for a broader use in electromobility. Lower degradation over time is expected especially in harsh environments in IoT. Electrochemical cell is used in a battery performing an ionic and electronic current as the main transport process of electric charges. Simultaneous to this transport, production of heat and internal friction cause temperature change and deformation. Such a sophisticated multiphysics application is very challenging to analyze such that various methods are being investigated concerning the modeling of mechanochemisty [1], thermodynamical modeling in multiphysics [2], computation of intercalation [3], as well as computational accuracy in the finite element method [4].

This minisymposium intends to bring different groups working on batteries for modeling multiphysics and developing computational methods at the micrometer lengthscale of one electrochemical cell.

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