Special Issue

Li-Ion Batteries: Modelling and Control from Manufacturing to Performance Evaluation

Message from the Guest Editor

We invite you to contribute to this *Energies* Special Issue on new approaches to modelling and control of lithium-ion batteries. The upcoming years are an exciting time given the demand for robust battery models and their applications. Various mathematical models are used to address this, e.g. multiphysics models are used in design optimization and predict degradation. Empirical models are typically used in control and systems applications. New research directions are developing, involving reduced-order models and machine learning that build upon the advantages of multiphysics and empirical methods. Several challenges however persist, e.g. robust parameter estimation schemes, fast computational approaches and deploying battery models for automotive, aerospace, and grid applications. This Special Issue therefore welcomes new research that explores these challenges and will include the following topics:

- Multiphysics, data-driven modelling of Li-ion batteries
- Battery manufacturing and performance prediction
- Physics-informed machine learning models
- Model parameterisation and validation methodologies
- Degradation modelling
- Battery pack and battery management systems

Guest Editor

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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