

COMPUTATION FOR ENERGY STORAGE

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Energy storage devices and systems, from batteries, supercapacitors to fuel cells, have broad applications from electric vehicles, grids to consumer electronics. These systems are inherently multiphysics and multiscale. Technology advancement demands energy storage solutions with higher capacity, longer life, higher reliability and smarter management strategy. Designing such systems involves a trade-off among a large set of parameters. The topics of this symposium include, but are not limited to, the following:

- Computational mechanics of materials and structures for batteries, supercapacitors, fuel cells and other systems.
- Multiphysics simulations of electrochemical systems.
- Prediction of performance such as capacity and degradation.
- Failure mechanisms such as fracture and damage in energy storage materials and devices.
- Design and optimization of energy storage materials, devices and systems.
- Numerical simulation techniques including machine learning approaches for energy related applications.