

1. Record Nr.	UNINA9910467583103321
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Titolo	Battery management systems [[electronic resource]] : volume I : battery modeling // Gregory L. Plett
Pubbl/distr/stampa	Boston, Mass., : Artech House, 2015
ISBN	9781630810245 (e-book) 9781630810238 (hbk.)
Descrizione fisica	1 online resource (xi, 327 p.) : ill
Collana	Artech House power engineering series
Disciplina	621.31242
Soggetti	Electric batteries Lithium cells - Mathematical models Battery chargers - Mathematical models Electric vehicles - Batteries Lithium cells Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	1. Battery Boot Camp -- 2. Equivalent-Circuit Models -- 3. Microscale Cell Models -- 4. Continuum-Scale Cell Models -- 5. State-Space Models and the Discrete-Time Realization Algorithm -- 6. Reduced-Order Models -- 7. Thermal Modeling.
Sommario/riassunto	Large-scale battery packs are needed in hybrid and electric vehicles, utilities grid backup and storage, and frequency-regulation applications. In order to maximize battery-pack safety, longevity, and performance, it is important to understand how battery cells work. This first of its kind new resource focuses on developing a mathematical understanding of how electrochemical (battery) cells work, both internally and externally. This comprehensive resource derives physics-based micro-scale model equations, then continuum-scale model equations, and finally reduced-order model equations. This book describes the commonly used equivalent-circuit type battery model and develops equations for superior physics-based models of lithium-ion cells at different length scales. This resource also presents a breakthrough technology called the discrete-time realization

algorithm that automatically converts physics-based models into high-fidelity approximate reduced-order models.
