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# Explains the current state of the science and points the way to technological advances

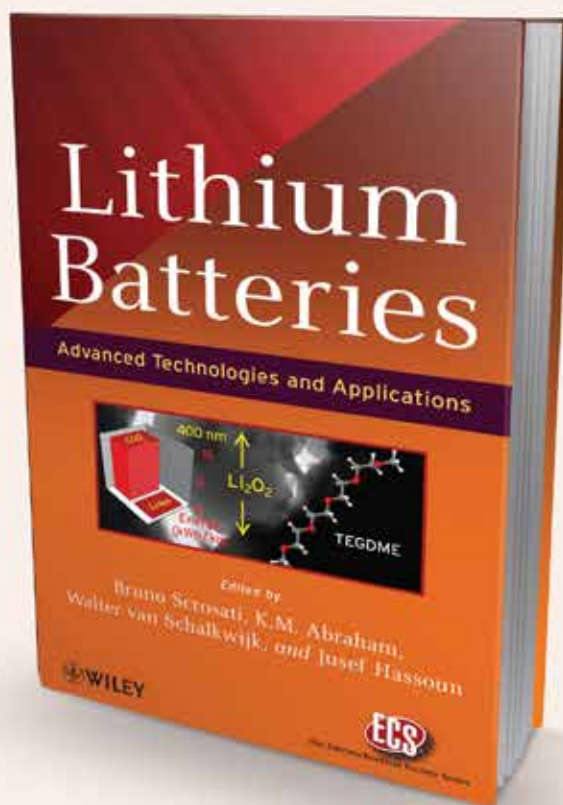
Despite tremendous progress in the last two decades in the engineering and manufacturing of lithium-ion batteries, they are currently unable to meet the energy and power demands of many new and emerging devices. This book sets the stage for the development of a new generation of higher-energy density, rechargeable lithium-ion batteries by advancing battery chemistry and identifying new electrode and electrolyte materials.

The first chapter of *Lithium Batteries* sets the foundation for the rest of the book with a brief account of the history of lithium-ion battery development.

Next, the book covers such topics as:

- Advanced organic and ionic liquid electrolytes for battery applications
- Advanced cathode materials for lithium-ion batteries
- Metal fluorosulphates capable of doubling the energy density of lithium-ion batteries
- Efforts to develop lithium-air batteries
- Alternative anode rechargeable batteries such as magnesium and sodium anode systems

Each of the sixteen chapters has been contributed by one or more leading experts in electrochemistry and lithium battery technology. Their contributions are based on the latest published findings as well as their own firsthand laboratory experience. Figures throughout the book help readers understand the concepts underlying the latest efforts to advance the science of batteries and develop new materials. Readers will also find a bibliography at the end of each chapter to facilitate further research into individual topics. *Lithium Batteries* provides electrochemistry students and researchers with a snapshot of current efforts to improve battery performance as well as the tools needed to advance their own research efforts.



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