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CAMERON JAYLEEN

Handbook on Battery Energy Storage System John Wiley & Sons
Advances in Battery Technologies for Electric Vehicles provides an in-depth look into the research being conducted on the development of more efficient batteries capable of long distance travel. The text contains an introductory section on the market for battery and hybrid electric vehicles, then thoroughly presents the latest on lithium-ion battery technology. Readers will find sections on battery pack design and management, a discussion of the infrastructure required for the creation of a battery powered transport network, and coverage of the issues involved with end-of-life management for these types of batteries. Provides an in-depth look into new research on the development of more efficient, long distance travel batteries Contains an introductory section on the market for battery and hybrid electric vehicles Discusses battery pack design and management and the issues involved with end-of-life management for these types of batteries
Advanced Battery Management System for Electric Vehicles MDPI
The handbook focuses on a complete outline of lithium-ion batteries. Just before starting with an exposition of the fundamentals of this system, the book gives a short explanation of the newest cell generation. The most important elements are described as negative / positive electrode materials, electrolytes, seals and separators. The battery disconnect unit and the battery management system are important parts of modern lithium-ion batteries. An economical, faultless and efficient battery production is a must today and is represented with one chapter in the handbook. Cross-cutting issues like electrical, chemical, functional safety are further topics. Last but not least standards and transportation themes are the final chapters of the handbook. The different topics of the handbook provide a good knowledge base not only for those working daily on electrochemical energy storage, but also to scientists, engineers and students concerned in modern battery systems.
Lithium Batteries Ec & M Books
This volume, covering metals and minerals, contains chapters on approximately 90 commodities. In addition, this volume has chapters on mining and quarrying trends and on statistical surveying methods used by Minerals Information, plus a statistical summary.
Minerals Yearbook Metals and Minerals 2010 Volume I John Wiley & Sons
Thermal Management of Electric Vehicle Battery Systems provides a thorough examination of various conventional and cutting edge electric vehicle (EV) battery thermal management systems (including phase change material) that are currently used in the industry as well as being proposed for future EV batteries. It covers how to select the right thermal management design, configuration and parameters for the users' battery chemistry, applications and operating conditions, and provides guidance on the setup, instrumentation and operation of their thermal management systems (TMS) in the most efficient and effective manner. This book provides the reader with the necessary information to develop a capable battery TMS that can keep the cells operating within the ideal operating temperature ranges and uniformities, while minimizing the associated energy consumption, cost and environmental impact. The procedures used are explained step-by-step, and generic and widely used parameters are utilized as much as possible to enable the reader to incorporate the conducted analyses to the systems they are working on. Also included are comprehensive thermodynamic modelling and analyses of TMSs as well as databanks of component costs and environmental impacts, which can be useful for providing new ideas on improving vehicle designs. Key features: Discusses traditional and cutting edge technologies as well as research directions Covers thermal management systems and their selection for different vehicles and applications Includes case studies and practical examples from the industry Covers thermodynamic analyses and assessment methods, including those based on energy and exergy, as well as exergoeconomic, exergoenvironmental and enviroeconomic techniques Accompanied by a website hosting codes, models, and economic and environmental databases as well as various related information Thermal Management of Electric Vehicle Battery Systems is a unique book on electric vehicle thermal management systems for researchers and practitioners in industry, and is also a suitable textbook for senior-level undergraduate and graduate courses.
Recycling Potential of Rare Earth Elements and Cobalt in WEEE-Batteries Nordic Council of Ministers
Presenting a complete guide for the planning, design and implementation of solar PV systems for off-grid applications, this book features analysis based on the authors' own laboratory testing as well as their in the field experiences. Incorporating the latest developments in smart-digital and control technologies into the design criteria of the PV system, this book will also focus on how to integrate newer smart design approaches and techniques for improving the efficiency, reliability and flexibility of the entire system. The design and implementation of India's first-of its-kind Smart Mini-Grid system (SMG) at TERI premises, which involves the integration of multiple renewable energy resources (including solar PV) through smart controllers for managing the load intelligently and effectively is presented as a key case study. Maximizing reader insights into the performance of different components of solar PV systems under different operating conditions, the book will be of interest to graduate students, researchers, PV designers, planners, and practitioners working in the area of solar PV design, implementation and assessment.
Best Practices in State and Regional Innovation Initiatives Springer Nature
One of Asia's best-respected writers on business and economy, Hong Kong-based author Mark L. Clifford provides a behind-the-scenes look at what companies in China, India, Japan, Korea, the Philippines, Indonesia, Hong Kong, Singapore, and Thailand are doing to build businesses that will lessen the environmental impact of Asia's extraordinary economic growth. Dirty air, foul water, and hellishly overcrowded cities are threatening to choke the region's impressive prosperity. Recognizing a business opportunity in solving social problems, Asian businesses have developed innovative responses to the region's environmental crises. From solar and wind power technologies to green buildings, electric cars, water services, and sustainable tropical forestry, Asian corporations are upending old business models in their home countries and throughout the world. Companies have the money, the technology, and the people to act—yet, as Clifford emphasizes, support from the government (in the form of more effective, market-friendly policies) and the engagement of civil

society are crucial for a region-wide shift to greener business practices. Clifford paints detailed profiles of what some of these companies are doing and includes a unique appendix that encapsulates the environmental business practices of more than fifty companies mentioned in the book.

Sustainability Through Innovation in Product Life Cycle Design Springer

The number of electric vehicles (cars, buses, e-bikes, electric scooters and electric motorcycles) sold in the Nordic countries is currently increasing quickly. That means that more electricity is used for driving, and also that more of some important metals are being used than earlier. This report regards the fate of the lithium-ion batteries used in vehicles in the Nordic countries. Currently the “Battery Directive” (EC, 2006) which is a producer’s responsibility directive, is under revision and this study is a knowledge base intended for use by the Nordic Environmental Protection Agencies for their referral response in the revision process. This report focuses on the aspect of metal resources, but it does not elaborate on a broader range of environmental impacts, as these were outside the scope of this study.

Handbook of Fluoropolymer Science and Technology Walter de Gruyter GmbH & Co KG

Most of the policy discussion about stimulating innovation has focused on the federal level. This study focuses on the significant activity at the state level, with the goal of improving the public's understanding of key policy strategies and exemplary practices. Based on a series of workshops and conferences that brought together policymakers along with leaders of industry and academia in a select number of states, the study highlights a rich variety of policy initiatives underway at the state and regional level to foster knowledge based growth and employment. Perhaps what distinguishes this effort at the state level is most of all the high degree of pragmatism. Operating out of necessity, innovation policies at the state level often involve taking advantage of existing resources and recombining them in new ways, forging innovative partnerships among universities, industry and government organizations, growing the skill base, and investing in the infrastructure to develop new technologies and new industries. Many of these initiatives are being guided by leaders from the private sector and universities. The objective of Best Practices in State and Regional Innovation Initiatives: Competing in the 21st Century is not to do an empirical review of the inputs and outputs of various state programs. Nor is it to evaluate which programs are superior. Indeed, some of the notable successes, such as the Albany nanotechnology cluster, represent a leap of leadership, investment, and sustained commitment that has had remarkable results in an industry that is actively pursued by many countries. The study's goal is to illustrate the approaches taken by a variety of highly diverse states as they confront the increasing challenges of global competition for the industries and jobs of today and tomorrow.

The Korean Developmental State CRC Press

Diploma Thesis from the year 2013 in the subject Engineering - Industrial Engineering and Management, grade: 1,0, Technical University of Berlin (Institut für Technischen Umweltschutz - Fachgebiet Abfallwirtschaft), language: English, abstract: [...] Since the majority of Li-ion and NiCd batteries and a large amount of NiMH batteries is disposed of along with the devices they were employed in as energy sources, a huge potential of REE and cobalt is inherent in waste electrical and electronic equipment (WEEE). This thesis inquires about the role of REE and cobalt in WEEE-batteries and assesses the total contained quantities and the actual recovered quantities of REE and cobalt contained in WEEE-batteries. Thereby, the investigation focused on WEEE-batteries of a group of selected equipment types which did arise as waste from the German consumer sector in 2011. For the investigation, a calculation model was developed and furnished by data acquired through literature and market research, plant visits, expert interviews and experimental surveys. The results show that from a theoretical recycling potential of 41.7 ± 7.2 tons of REE in WEEE-batteries, no REE are currently recovered in the sense of a functional recycling. Of the 364.3 ± 63.7 tons of cobalt contained in WEEE-batteries, only 47.8 ± 13.7 tons were separately recovered. The low collection rate of battery powered WEEE was identified as a main causal factor. To increase the collected amount of WEEE-batteries [...]

Lithium-Ion Batteries: Basics and Applications Springer Nature

In terms of commercialization, nanomaterials occupy a unique place in nanotechnology. Engineered nanomaterials, especially nanoparticulate materials, are the leading sector in nanotechnology commercialization. In addition, the nanomaterial sector has attracted much more heated debate than any other nanotechnology sector with regard to safety, regulation, standardization, and ethics. This is the first book on nanotechnology commercialization that deals exclusively with nanomaterials. It provides overviews of the current trends in, and the issues associated with, the commercialization of nanomaterials by some of the foremost nanotechnology experts in their fields.

The Market Impact of Standardized Design in Commercial PEV Battery Pack Purchase and Disposal CRC Press

"Offers overview of applications of geosciences to sustainable development and geophilanthropic efforts worldwide, and offers advice to guide creation of development projects. Primacy of geologic input to all development activities is highlighted along with problems that are encountered and environmental issues that must be addressed" --

Recycling of Power Lithium-Ion Batteries Lithium-Ion Batteries: Basics and Applications

Recycling of Power Lithium-Ion Batteries Explore the past, present, and future of power lithium-ion battery recycling, from the governing regulatory framework to predictions of the future of the industry In Recycling of Power Lithium-Ion Batteries: Technology, Equipment, and Policies, a team of distinguished researchers and engineers delivers an authoritative and illuminating exploration of the industrial status and development trends in the global power lithium-ion battery sector. The book examines the development of advanced battery materials and new recycling technologies, as well as typical case studies in enterprise battery recycling. The authors provide a roadmap to the development of spent power battery recycling enterprises that can provide support to the sustainable development industry. Recycling of Power Lithium-Ion Batteries discusses a wide variety of topics with immediate applications to modern industry, including new application scenarios for power lithium-ion batteries, as well as an examination of the laws, regulations, and standards governing battery recycling. Readers will also find: A thorough introduction to the status and development of the lithium-ion battery and its key materials Fulsome discussions of battery recycling technologies and equipment, including pre-treatment technology for battery recycling Comprehensive explorations of the life cycle of power lithium-ion batteries and the impact of battery recycling Expansive treatments of the technology outlook in the lithium-ion battery space, including

green battery design and recovery systems Perfect for materials scientists, environmental chemists, and power technology engineers, Recycling of Power Lithium-Ion Batteries: Technology, Equipment, and Policies will also earn a place in the libraries of chemical and process engineers, electrochemists, and professionals working at waste disposal sites.

Electrochemical Technologies for Energy Storage and Conversion Woodhead Publishing

This book consists of chapters based on selected papers presented at the EcoDesign2015 symposium (9th International Symposium on Environmentally Conscious Design and Inverse Manufacturing). The symposium, taking place in Tokyo in December 2015, has been leading the research and practices of eco-design of products and product-related services since it was first held in 1999. The proceedings of EcoDesign2011 were also published by Springer. Eco-design of products and product-related services (or product life cycle design) are indispensable to realize the circular economy and to increase resource efficiencies of our society. This book covers the state of the art of the research and the practices in eco-design, which are necessary in both developed and developing countries. The chapters of the book, all of which were peer-reviewed, have been contributed by authors from around the world, especially from East Asia, Europe, and Southeast Asia. The features of the book include (1) coverage of the latest topics in the field, e.g., global eco-design management, data usage in eco-design, and social perspectives in eco-design; (2) an increased number of authors from Southeast Asian countries, with a greater emphasis on eco-design in emerging economies; (3) high-quality manuscripts, with the number of chapters less than half of that of the previous book.

Electrochemical Storage Materials Information Gatekeepers Inc

Lithium-Ion Batteries: Basics and ApplicationsSpringer

Minerals Yearbook John Wiley & Sons

We may be standing on the precipice of a revolution in propulsion not seen since the internal combustion engine replaced the horse and buggy. The anticipated proliferation of electric cars will influence the daily lives of motorists, the economies of different countries and regions, urban air quality and global climate change. If you want to understand how quickly the transition is likely to occur, and the factors that will influence the predictions of the pace of the transition, this book will be an illuminating read.

Atomic Layer Deposition utzverlag GmbH

Joachim Jan Thraen uses insights from history to provide a fresh perspective on China’s potential transition towards a global innovation leader. He applies historical evidence from countries like the United States, Germany, and Japan in the 19th and 20th century and builds on results from four case studies to reveal key strategies that firms can utilize to leverage China as a global hub of innovation. China’s large market, strong manufacturing networks, increasing R&D capabilities, and a government strongly supporting innovation provide unique opportunities for new forms of innovation driven by efficiency, rapid commercialization, and large volumes. Managers that understand China’s innovation trajectory and adjust innovation strategies accordingly will achieve greater success in mastering innovation in China as a foundation for global competitiveness.

The Global Rise of the Modern Plug-In Electric Vehicle CRC Press

The battery management system (BMS) optimizes the efficiency of batteries under allowable conditions and prevents serious failure modes. This book focuses on critical BMS techniques, such as battery modeling; estimation methods for state of charge, state of power and state of health; battery charging strategies; active and passive balancing methods; and thermal management strategies during the entire lifecycle. It also introduces functional safety and security-related design for BMS, and discusses potential future technologies, like digital twin technology.

Nanotechnology Commercialization CRC Press

Fluoropolymers continue to enable new materials and technologies as a result of their remarkable properties. This book reviews fluoropolymer platforms of established commercial interest, as well as recently discovered methods for the preparation and processing of new fluorinated materials. It covers the research and development of fluoropolymer synthesis, characterization, and processing. Emphasis is placed on emerging technologies in optics, space exploration, fuel cells, microelectronics, gas separation membranes, biomedical instrumentation, and much more. In addition, the book covers the current environmental concerns associated with fluoropolymers, as well as relevant regulations and potential growth opportunities. Concepts, studies, and new discoveries are taken from leading international laboratories, including academia, government, and industrial institutions.

Solar Photovoltaic System Applications GRIN Verlag

Lead-Acid Battery Technologies: Fundamentals, Materials, and Applications offers a systematic and state-of-the-art overview of the materials, system design, and related issues for the development of lead-acid rechargeable battery technologies. Featuring contributions from leading scientists and engineers in industry and academia, this book: Describes the underlying science involved in the operation of lead-acid batteries Highlights advances in materials science and engineering for materials fabrication Delivers a detailed discussion of the mathematical modeling of lead-acid batteries Analyzes the integration of lead-acid batteries with other primary power systems Explores emerging applications such as electric bicycles and microhybrid vehicles Lead-Acid Battery Technologies: Fundamentals, Materials, and Applications provides researchers, students, industrial professionals, and manufacturers with valuable insight into the latest theories, experimental methodologies, and research achievements in lead-acid battery technologies.

Global Sources Electronic Components Geological Society of America

The book focuses on the solid-state physics, chemistry and electrochemistry that are needed to grasp the technology of and research on high-power Lithium batteries. After an exposition of fundamentals of lithium batteries, it includes experimental techniques used to characterize electrode materials, and a comprehensive analysis of the structural, physical, and chemical properties necessary to insure quality control in production. The different properties specific to each component of the batteries are discussed in order to offer manufacturers the capability to choose which kind of battery should be used: which compromise between power and energy density and which compromise between energy and safety should be made, and for which cycling life. Although attention is primarily on electrode materials since they are paramount in terms of battery performance and cost, different electrolytes are also reviewed in the context of safety concerns and in relation to the solid-electrolyte interface. Separators are also reviewed in light of safety issues. The book is intended not only for scientists and graduate students working on batteries but also for

engineers and technologists who want to acquire a sound grounding in the fundamentals of battery science arising from the interaction of electrochemistry, solid state materials science, surfaces and interfaces.

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