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SIENA SANCHEZ

The Market Impact of Standardized Design in Commercial PEV Battery Pack Purchase and Disposal Springer Nature

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.

Advances in Battery Technologies for Electric Vehicles John Wiley & Sons

Lithium-Ion Batteries: Basics and Applications Springer

Electrochemical Energy CRC Press

This book analyzes, from a historical comparative perspective, the Korean economic development model, the extent to which it has changed from its

classical model, and what constitutes its changes and continuity. Unlike studies claims the dissolution of Korean developmentalism, the book holds that the Korean state maintains its characteristics of state-led capitalism despite significant changes in policies and instruments rather than converge toward an AngloSaxon-style free market system. It emphasizes that the continuity of state-led capitalism is compatible with institutional change. Some institutionalists insist that the continuity of Korean developmentalism is based on path dependency. In contrast, this book argues that Korean capitalism could sustain its state developmentalism by changes in policies and instruments to improve national industrial competitiveness in the changed context of international competition. This book will be of interest to East Asian scholars, comparative economists, and those curious about the future of the Korean peninsula.

Lithium Batteries John Wiley & Sons

The transition to a climate-neutrality is expected to boost the demand for batteries in the coming years. If the EU wants to be competitive in the global market of battery manufacturing it has to ensure a sustainable, secure supply of raw materials needed for the batteries value chain. Therefore, reliable systemic information on recent availability of these raw materials within the EU economy is crucial to identify hotspots and define ways to secure their sustainable supply. Material System Analysis (MSA) can provide crucial information for the recent past on sustainable resource management, including the provision of evidence to inform policy decision-making on the sustainable and competitive supply of e.g. battery raw materials. This report focuses on the MSA studies of five selected materials used in batteries: cobalt, lithium, manganese, natural graphite, and nickel.

It summarises the results related to material stocks and flows for each material. The MSA studies, were performed for five consecutive reference years, i.e. from 2012 to 2016. This report however presents only the MSA results for 2016. Priority has been given to official and publicly available data sources. Because of their importance for the future battery value chain in Europe, the five MSA have been harmonised considering the latest available datasets publicly available on batteries stocks and flows (update from the ProSum database). The five battery-related materials analysed show a very strong reliance on imports along the value chain. In particular the material systems are all highly dependent on imports of primary and/or semi-processed materials. The EU self-sufficiency was analysed separately for each stage. For the extraction stage, natural graphite had the lowest value of EU self-sufficiency in 2016 (less than 1% of the amount used in manufacturing was extracted in the EU), while nickel had the highest (37% of nickel in its primary forms was extracted in the EU). For the EU manufacturing stage, 75% of the products containing cobalt and lithium consumed in the use stage were produced in the EU, in 2016. On the other hand, the EU manufacturing of manganese, natural graphite and nickel products was self-sufficient to satisfy the EU consumption and supplying the external market. For all these materials the functional recycling of old scrap is still low and under development in the EU. Cobalt has the highest end-of-life recycling input rate (EOL-RIR) with 22%, while for lithium, this rate is close to 0%. This indicates that the EU is currently able to only slightly decrease its dependency on primary material using secondary materials recycled domestically. For the period covered by the MSA (2012-2016), results confirm that battery manufacturing has not been a dominant application. Based on the strong promotion of clean technologies, the demand for these raw materials is expected to multiply. As a consequence, imports of these materials will intensify, as domestic processing and manufacturing increases. The situation is however less clear for the net balance of the final products (containing these materials). In the coming years, the expansion in EU capacity to produce significant amounts of batteries and related final products will determine industry's competitiveness on the world battery market.

Recycling of Power Lithium-Ion Batteries Springer

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.

Handbook of Fluoropolymer Science and Technology National Academies Press

This handbook serves as a guide to deploying battery energy storage technologies, specifically for distributed energy resources and flexibility resources. Battery energy storage technology is the most promising, rapidly developed technology as it provides higher efficiency and ease of control. With energy transition through decarbonization and decentralization, energy storage plays a significant role to enhance grid efficiency by alleviating volatility from demand and supply. Energy storage also contributes to the grid integration of renewable energy and promotion of microgrid.

Electrochemical Storage Materials Springer Nature

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.

Industrial Carbon and Graphite Materials Springer

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.

Economic and Social Upgrading in Global Value Chains 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.

The Global Rise of the Modern Plug-In Electric Vehicle GRIN Verlag

Better Understand the Connection between Microbiology and the Inorganic World Microbiology for Minerals, Metals, Materials and the Environment links chemical, metallurgical, and other metal inherent systems with microbes, and analyzes the interdependence between them. Specifically intended to underscore the importance of microbes in environmental re

Energy and Water Development Appropriations for 2013: Dept. of Energy: Environmental management, legacy management FY 2013 budget; Energy efficiency and renewable energy, fossil energy, electricity delivery and energy reliability FY 2013 budget; Science: Loan Guarantee Program and ARPA-E, FY 2013 budget Nordic Council of Ministers

This book investigates how global value chain governance, public institutions and strategies in the area of industrial policy and industrial relations by stakeholders such as national or global trade unions, governments, companies or international NGOs shape upgrading in the Global South. A special feature is its interdisciplinarity, combining sociological, economic, legal and political dimensions. Case studies systematically compare different industry trajectories. Furthermore, it encompasses far-reaching insights into the role of global value chains for development, economic catching-up of countries and socio-political aspects such as working conditions and interest representation.

Mapping of lithium-ion batteries for vehicles: A study of their fate in the Nordic countries CRC Press

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.

Geoscience for the Public Good and Global Development Information Gatekeepers Inc

This first volume in the series on nanocarbons for advanced applications presents the latest achievements in the design, synthesis, characterization, and applications of these materials for electrochemical energy storage. The highly renowned series and volume editor, Xinliang Feng, has put together an internationally acclaimed expert team who covers nanocarbons such as carbon nanotubes, fullerenes, graphenes, and porous carbons. The first two parts focus on nanocarbon-based anode and cathode materials for lithium ion batteries, while the third part deals with carbon material-based supercapacitors with various applications in power electronics, automotive engineering and as energy storage elements in portable electric devices. This book will be indispensable for materials scientists, electrochemists, physical chemists, solid state physicists, and those working in the electrochemical industry.

Best Practices in State and Regional Innovation Initiatives Asian Development Bank

Atomic layer deposition (ALD) is a thin film deposition process renowned for its ability to produce layers with unrivaled control of thickness and composition, conformability to extreme three-dimensional structures, and versatility in the materials it can produce. These range from multi-component compounds to elemental metals and structures with compositions that can be adjusted over the thickness of the film. It has expanded from a small-scale batch process to large scale production, also including continuous processing – known as spatial ALD. It has matured into an industrial technology essential for many areas of materials science and engineering from microelectronics to corrosion protection. Its attributes make it a key technology in studying new materials and structures over an enormous range of applications. This Special Issue contains six research articles and one review article that illustrate the breadth of these applications from energy storage in batteries or supercapacitors to catalysis via x-ray, UV, and visible optics.

Recycling Potential of Rare Earth Elements and Cobalt in WEEE-Batteries Walter de Gruyter GmbH & Co KG

This book is an empirically rich case-study of what is currently the most popular alternative-fuel vehicle in the history of motorization – the electric two-wheeler (e-bike). The book provides sociological insights into e-bike mobility in China and discusses politics, social practices and larger issues of mobility transition in urban China. Taking an accessible approach to the subject, the book identifies the main sociospatial conflicts regarding the use of e-bikes and discusses why electric two-wheeler mobility is important for the future of urban China and urban transportation globally. This book will be an invaluable read for urban geographers and transportation researchers, but also for academics and general readers interested in Chinese Studies, specifically in the area of urban mobility in China.

Mastering Innovation in China Columbia University Press

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

Batteries in a Portable World National Academies Press

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.

Material System Analysis of Five Battery-related Raw Materials Ec & M Books

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.

Microbiology for Minerals, Metals, Materials and the Environment John Wiley & Sons

Electrochemical Energy: Advanced Materials and Technologies covers the development of advanced materials and technologies for electrochemical energy conversion and storage. The book was created by participants of the International Conference on Electrochemical Materials and Technologies for Clean Sustainable Energy (ICES-2013) held in Guangzhou, China, and incorporates select papers presented at the conference. More than 300 attendees from across the globe participated in ICES-2013 and gave presentations in six major themes: Fuel cells and hydrogen energy Lithium batteries and advanced secondary batteries Green energy for a clean environment Photo-Electrocatalysis Supercapacitors Electrochemical clean energy applications and markets Comprised of eight sections, this book includes 25 chapters featuring highlights from the conference and covering every facet of synthesis, characterization, and performance evaluation of the advanced materials for electrochemical energy. It thoroughly describes electrochemical energy conversion and storage technologies such as batteries, fuel cells, supercapacitors, hydrogen generation, and their associated

materials. The book contains a number of topics that include electrochemical processes, materials, components, assembly and manufacturing, and degradation mechanisms. It also addresses challenges related to cost and performance, provides varying perspectives, and emphasizes existing and emerging solutions. The result of a conference encouraging enhanced research collaboration among members of the electrochemical energy community, Electrochemical Energy: Advanced Materials and Technologies is dedicated to the development of advanced materials and technologies for electrochemical energy conversion and storage and details the technologies, current achievements, and future directions in the field.

The Greening of Asia Springer

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.

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