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*Advanced Electric Drive Vehicles* Aldus Manutius to a friend  
**Electric and Hybrid Vehicles** **Electric Vehicles for Smart Cities** *Planning the Charging Infrastructure for Electric Vehicles in Cities and Regions* **European Convergence in Property Valuation** **The Energy Disruption Triangle** *Electric Vehicle Battery Systems* **Hybrid Electric Power Train Engineering and Technology: Modeling, Control, and Simulation** Electric Vehicles **Focus On: 100 Most Popular Sedans** TECHNOLOGY MANAGEMENT *Advances in Battery Manufacturing, Service, and Management Systems* The Electric Battery: Charging Forward to a Low-Carbon Future **Industrial Applications of Batteries** **Planning the Charging Infrastructure for Electric Vehicles in Cities and Regions** **Mars** Putting it on Paper **Cell-Secreted Vesicles** The Tech Behind Electric Cars Current Topics in iPSCs Technology **Advances in Production Management Systems. The Path to Intelligent, Collaborative and Sustainable Manufacturing** **Behaviour of Lithium-Ion Batteries in Electric Vehicles** A Collection of Technical Papers Proceedings of the 28th Intersociety Energy Conversion Engineering Conference *News for All the People: The Epic Story of Race and the American Media* Long Hard Road Encyclopedia of Microbiology Engineering Sustainable Life on Earth Encyclopedia of Cell Biology *Mesenchymal Stromal Cells as Tumor Stromal Modulators* **Comprehensive Nanoscience and Nanotechnology** **Reva EV** Advances in Parasitology Extracellular Vesicles in Infectious Diseases **Business and Commercial Aviation Energy Management Strategies for Electric and Plug-in Hybrid Electric Vehicles** *The Immunomodulatory Properties of Extracellular Vesicles from Pathogens, Immune Cells and Non-Immune Cells* RNA Nanotechnology and Therapeutics **Orange Coast Magazine**

Hybridization is an increasingly popular paradigm in the auto

industry, but one that is not fully understood by car manufacturers. In general, hybrid electric vehicles (HEV) are designed without regard to the mechanics of the power train, which is developed similarly to its counterparts in internal combustion engines. Hybrid Electric Power Train Engineering and Technology: Modeling, Control, and Simulation provides readers with an academic investigation into HEV power train design using mathematical modeling and simulation of various hybrid electric motors and control systems. This book explores the construction of the most energy efficient power trains, which is of importance to designers, manufacturers, and students of mechanical engineering. This book is part of the Research Essentials collection. Orange Coast Magazine is the oldest continuously published lifestyle magazine in the region, bringing together Orange County's most affluent coastal communities through smart, fun, and timely editorial content, as well as compelling photographs and design. Each issue features an award-winning blend of celebrity and newsmaker profiles, service journalism, and authoritative articles on dining, fashion, home design, and travel. As Orange County's only paid subscription lifestyle magazine with circulation figures guaranteed by the Audit Bureau of Circulation, Orange Coast is the definitive guidebook into the county's luxe lifestyle. Offers a sweeping account of the class and racial conflicts in the American news media, from the first colonial newspaper to the Internet age. By the co-author of Harvest of Empire. Electric cars have come a long way since the first gasoline-electric hybrid vehicles hit the market in the late 1990s. Some modern electric cars boast a range of nearly 300 miles (483 kilometers) on one charge. And they're not all for the tame of heart. Some electric-powered sports cars can reach top speeds of 250 miles (402 km) per hour! Take young readers on a journey through the technology that makes electric cars so amazing. This book addresses the practical issues for commercialization of current and future electric and plug-in hybrid electric vehicles (EVs/PHEVs). The volume focuses on power electronics and motor drives based solutions for both current as well as future EV/PHEV technologies. Propulsion system requirements and motor sizing for

EVs is also discussed, along with practical system sizing examples. PHEV power system architectures are discussed in detail. Key EV battery technologies are explained as well as corresponding battery management issues are summarized. Advanced power electronic converter topologies for current and future charging infrastructures will also be discussed in detail. EV/PHEV interface with renewable energy is discussed in detail, with practical examples. An easy-to-understand and engaging exploration of the battery's development across history that reveals current technological advances, celebrates the innovators who have led the charge forward, and shows how the electric battery represents the path to a low-carbon future.

- Demystifies the electric battery, explains how modern technology has overcome its historic limitations, and presents how this seemingly ordinary technology will enable a new era of sustainability for future generations
- Addresses a topic of growing interest among general readers as electric cars designed to be affordable to the middle class from major manufacturers such as Chevrolet and Nissan are joined by new options from upstart electric vehicle manufacturer Tesla
- Written by an Institute for Energy and the Environment research team with the requisite knowledge of energy policy and of science, as well as communication skills, to research and present a compelling narrative on electric batteries past, present, and future

Interest in RNA nanotechnology has increased in recent years as recognition of its potential for applications in nanomedicine has grown. Edited by the world's foremost experts in nanomedicine, this comprehensive, state-of-the-art reference details the latest research developments and challenges in the biophysical and single molecule approaches in RNA nanotechnology. In addition, the text also provides in-depth discussions of RNA structure for nanoparticle construction, RNA computation and modeling, single molecule imaging of RNA, RNA nanoparticle assembly, RNA nanoparticles in therapeutics, immunorecognition of RNA nanomaterials, RNA chemistry for nanoparticle synthesis, and conjugation and labeling. Presents the latest research and discoveries in RNA nanotechnology

Features contributions from world-class experts in the field

Covers RNA

nanoparticles in therapeutics Describes self-assembled RNA nanoparticles Comprehensive Nanoscience and Technology, Second Edition allows researchers to navigate a very diverse, interdisciplinary and rapidly-changing field with up-to-date, comprehensive and authoritative coverage of every aspect of modern nanoscience and nanotechnology. Presents new chapters on the latest developments in the field Covers topics not discussed to this degree of detail in other works, such as biological devices and applications of nanotechnology Compiled and written by top international authorities in the field Electric Vehicle Battery Systems provides operational theory and design guidance for engineers and technicians working to design and develop efficient electric vehicle (EV) power sources. As Zero Emission Vehicles become a requirement in more areas of the world, the technology required to design and maintain their complex battery systems is needed not only by the vehicle designers, but by those who will provide recharging and maintenance services, as well as utility infrastructure providers. Includes fuel cell and hybrid vehicle applications. Written with cost and efficiency foremost in mind, Electric Vehicle Battery Systems offers essential details on failure mode analysis of VRLA, NiMH battery systems, the fast-charging of electric vehicle battery systems based on Pb-acid, NiMH, Li-ion technologies, and much more. Key coverage includes issues that can affect electric vehicle performance, such as total battery capacity, battery charging and discharging, and battery temperature constraints. The author also explores electric vehicle performance, battery testing (15 core performance tests provided), lithium-ion batteries, fuel cells and hybrid vehicles. In order to make a practical electric vehicle, a thorough understanding of the operation of a set of batteries in a pack is necessary. Expertly written and researched, Electric Vehicle Battery Systems will prove invaluable to automotive engineers, electronics and integrated circuit design engineers, and anyone whose interests involve electric vehicles and battery systems. \* Addresses cost and efficiency as key elements in the design process \* Provides comprehensive coverage of the theory, operation, and configuration of complex battery systems,

including Pb-acid, NiMH, and Li-ion technologies \* Provides comprehensive coverage of the theory, operation, and configuration of complex battery systems, including Pb-acid, NiMH, and Li-ion technologies

Current Topics in iPSCs provides a deep analysis of the underlying fundamentals that support short and mid-term developments and milestones in the business of mesenchymal stem cell therapies. This volume explores the next frontier of MSC therapies and how the transformational potential of therapeutic adult cells will be realised in all therapy areas. The impacts of clinical and economic benefits are dissected throughout each of the chapters. Written by thought leaders in the field for those curious about the interface of science and business. Explores the strategy at the forefront of the science of mesenchymal stem cells Provides an overview of all therapy areas where MSC and MSC-derived products can be used therapeutically Depicts transformational changes in healthcare that enable the implementation of MSC-powered technology platforms

The Encyclopedia of Cell Biology offers a broad overview of cell biology, offering reputable, foundational content for researchers and students across the biological and medical sciences. This important work includes 285 articles from domain experts covering every aspect of cell biology, with fully annotated figures, abundant illustrations, videos, and references for further reading. Each entry is built with a layered approach to the content, providing basic information for those new to the area and more detailed material for the more experienced researcher. With authored contributions by experts in the field, the Encyclopedia of Cell Biology provides a fully cross-referenced, one-stop resource for students, researchers, and teaching faculty across the biological and medical sciences. Fully annotated color images and videos for full comprehension of concepts, with layered content for readers from different levels of experience Includes information on cytokinesis, cell biology, cell mechanics, cytoskeleton dynamics, stem cells, prokaryotic cell biology, RNA biology, aging, cell growth, cell Injury, and more In-depth linking to Academic Press/Elsevier content and additional links to outside websites and resources for further reading A one-stop resource for students,

researchers, and teaching faculty across the biological and medical sciences Putting It On Paper is the perfect starter for new authors as well as the ideal refresher for more experienced writers looking for up-to-date information. This book cuts through all the hype and takes a practical approach to understanding, creating, and using a book press kit to propel book sales. The textbook covers the main directions of technology project management, including innovation and crisis management, high-tech marketing, licensing and certification, basics of transfer and commercialization of new technologies and new product development. The textbook may be useful for managers of enterprises, workers of research institutes, universities, as well as for business owners and students who study or work on problems of commercialization of scientific and technical developments. English edition of the textbook is a revised and translated version of chapters 3, 4, 8 of the textbook "Technology Management" edited by Professor Vladimir I. Syryamkin, 2010. Advances in Parasitology, Volume 104, the latest in a series first published in 1963, contains comprehensive reviews on all areas of interest in contemporary parasitology. The series includes medical studies of parasites of major influence, along with reviews of more traditional areas, such as zoology, taxonomy, and life history, which help to shape current thinking and applications. This new release includes sections on Leishmania Tropica, Extracellular Vesicles in Host-Parasite Interaction, Cathepsins and Vaccines for Fascioliosis, Echinococcosis Transmission on the Tibetan Plateau, A Review of Diagnostics for STH from a Public Health Perspective, and Zoonotic Transmission of Intestinal Parasites: Implications for Control and Elimination. Informs and updates on all the latest developments in the field of parasitology Includes medical studies of parasites of major influence, such as, Leishmania Tropica and the transmission of Echinococcosis Contains contributions from leading authorities and industry experts Features reviews of more traditional areas, such as zoology, taxonomy, and life history, which help to shape current thinking and applications

Inhaltsangabe:Abstract: The dissertation analyses whether or not and to what extent the managers of German open-ended property

funds see a necessity for amendments to the current German property valuation standards in the context of an increasing demand for European convergence in valuation practice. A critical review of the literature is structured in two chapters: (1) European valuation convergence; and (2) legal background and valuation standards in Germany in a European context. Three main drivers for European convergence have been identified, namely international investment, International Accounting Standards (IAS) and the new Basel Capital Accord. The main standard setting organisations with a European scope are the IVSC, TEGoVA and RICS. German standards are highly regulated by law (BauGB, KAGG, WertV, WertR). However, the relevant valuation basis in Germany mainly complies with its international counterpart. Three methods are outlined in the German standards (WertV), but additional approaches are allowed according to the guidelines (WertR). Systematic differences could be identified between the German investment method and relevant international approaches. The main German specialities in this regard are separation of value for land and building, consideration of only one income (sustainable long-term rent) and arriving at gross values. The Cost Approach is meaningless for the valuation of open-ended funds. Alternative international approaches are Term & Reversion, Layer, Equivalent Yield and DCF. 13 rating scale and 9 open-ended questions were extracted from the above headings and were assessed by 8 managers of open-ended property funds. Further in depth information could be gathered by semi-structured and unstructured interviews with 5 of these managers and 3 valuers. The survey indicated that the German fund managers are quite satisfied with the German standards (WertV) and only minor problems arise. A - 1 - European Convergence in Property Valuation: How do the German Open-Ended Property Funds measure up? need for modification could not be identified. DCF is used occasionally by fund managers, but the appropriateness for neutral valuations is seen with scepticism. Traditional British direct capitalisation methods are unpopular in Germany. Problems arise with the transparency in Germany due to data protection and sometimes with the qualification of German valuers. The

emergence of a two tier market (domestic and international) is [...] The first book on electric and hybrid vehicles (EVs) written specifically for automotive students and vehicle owners Clear diagrams, photos and flow charts outline the charging infrastructure, how EV technology works, and how to repair and maintain hybrid and electric vehicles Optional IMI online eLearning materials enable students to study the subject further and test their knowledge Full coverage of IMI Level 2 Award in Hybrid Electric Vehicle Operation and Maintenance, IMI Level 3 Award in Hybrid Electric Vehicle Repair and Replacement, IMI Accreditation, C&G and other EV/Hybrid courses. The first book on electric and hybrid vehicles (endorsed by the IMI) starts with an introduction to the market, covering the different types of electric vehicle, costs and emissions, and the charging infrastructure, before moving on to explain how hybrid and electric vehicles work. A chapter on electrical technology introduces learners to subjects such as batteries, control systems and charging which are then covered in more detail within their own chapters. The book also covers the maintenance and repair procedures of these vehicles, including fault finding, servicing, repair and first-responder information. Case studies are used throughout to illustrate different technologies. Long Hard Road: The Lithium-Ion Battery and the Electric Car provides an inside look at the birth of the lithium-ion battery, from its origins in academic labs around the world to its transition to its new role as the future of automotive power. It chronicles the piece-by-piece development of the battery, from its early years when it was met by indifference from industry to its later emergence in Japan where it served in camcorders, laptops, and cell phones. The book is the first to provide a glimpse inside the Japanese corporate culture that turned the lithium-ion chemistry into a commercial product. It shows the intense race between two companies, Asahi Chemical and Sony Corporation, to develop a suitable anode. It also explains, for the first time, why one Japanese manufacturer had to build its first preproduction cells in a converted truck garage in Boston, Massachusetts. Building on that history, Long Hard Road then takes readers inside the auto industry to show how lithium-ion solved the problems of



earlier battery chemistries and transformed the electric car into a viable competitor. Starting with the Henry Ford and Thomas Edison electric car of 1914, it chronicles a long list of automotive failures, then shows how a small California car converter called AC Propulsion laid the foundation for a revolution by packing its car with thousands of tiny lithium-ion cells. The book then takes readers inside the corporate board rooms of Detroit to show how mainstream automakers finally decided to adopt lithium-ion. Long Hard Road is unique in its telling of the lithium-ion tale, revealing that the battery chemistry was not the product of a single inventor, nor the dream of just three Nobel Prize winners, but rather was the culmination of dozens of scientific breakthroughs from many inventors whose work was united to create a product that ultimately changed the world.

The two-volume set IFIP AICT 513 and 514 constitutes the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2017, held in Hamburg, Germany, in September 2017. The 121 revised full papers presented were carefully reviewed and selected from 163 submissions. They are organized in the following topical sections: smart manufacturing system characterization; product and asset life cycle management in smart factories of industry 4.0; cyber-physical (IIoT) technology deployments in smart manufacturing systems; multi-disciplinary collaboration in the development of smart product-service solutions; sustainable human integration in cyber-physical systems: the operator 4.0; intelligent diagnostics and maintenance solutions; operations planning, scheduling and control; supply chain design; production management in food supply chains; factory planning; industrial and other services; operations management in engineer-to-order manufacturing; gamification of complex systems design development; lean and green manufacturing; and eco-efficiency in manufacturing operations.

Electric Vehicles for Smart Cities: Trends, Challenges, and Opportunities uniquely examines different approaches to electric vehicle deployment in the context of smart cities. It provides a holistic picture of electromobility within urban areas, offering an integrated approach to city transportation systems by

considering the energy systems, latest vehicle technologies, and transport infrastructure. *Electric Vehicles for Smart Cities* addresses the interaction between grid infrastructure, vehicles, costs and benefits, and operational reliability within an integrated framework. The book examines the role electric vehicles play in the social and political aspects of climate change mitigation, as well as a renewable energy-based economy. It explains how electric vehicles and their system requirements work, including recharging techniques and infrastructures, and discusses alternative market deployment approaches. Includes case studies from cities around the world, including Amsterdam, London, Oslo, Barcelona, Los Angeles, New York, Silicon Valley, Los Angeles, Beijing, Shanghai, Tianjin, Tokyo, and Goto Islands

*Traces the developments, innovations, advantages, and disadvantages in the electric car industry* Provides learning aids such as discussion questions and text boxes

*Planning the charging infrastructure for electric vehicles (EVs) is a new challenging task. This book treats all involved aspects: charging technologies and norms, interactions with the electricity system, electrical installation, demand for charging infrastructure, economics of public infrastructure provision, policies in Germany and the EU, external effects, stakeholder cooperation, spatial planning on the regional and street level, operation and maintenance, and long term spatial planning. This work was published by Saint Philip Street Press pursuant to a Creative Commons license permitting commercial use. All rights not granted by the work's license are retained by the author or authors. Addresses the methodology and theoretical foundation of battery manufacturing, service and management systems (BM2S2), and discusses the issues and challenges in these areas* This book brings together experts in the field to highlight the cutting edge research advances in BM2S2 and to promote an innovative integrated research framework responding to the challenges. There are three major parts included in this book: manufacturing, service, and management. The first part focuses on battery manufacturing systems, including modeling, analysis, design and control, as well as economic and risk analyses. The second part focuses on information

technology's impact on service systems, such as data-driven reliability modeling, failure prognosis, and service decision making methodologies for battery services. The third part addresses battery management systems (BMS) for control and optimization of battery cells, operations, and hybrid storage systems to ensure overall performance and safety, as well as EV management. The contributors consist of experts from universities, industry research centers, and government agency. In addition, this book: Provides comprehensive overviews of lithium-ion battery and battery electrical vehicle manufacturing, as well as economic returns and government support Introduces integrated models for quality propagation and productivity improvement, as well as indicators for bottleneck identification and mitigation in battery manufacturing Covers models and diagnosis algorithms for battery SOC and SOH estimation, data-driven prognosis algorithms for predicting the remaining useful life (RUL) of battery SOC and SOH Presents mathematical models and novel structure of battery equalizers in battery management systems (BMS) Reviews the state of the art of battery, supercapacitor, and battery-supercapacitor hybrid energy storage systems (HESSs) for advanced electric vehicle applications Advances in Battery Manufacturing, Services, and Management Systems is written for researchers and engineers working on battery manufacturing, service, operations, logistics, and management. It can also serve as a reference for senior undergraduate and graduate students interested in BM2S2. Climate scientists have clarified the main causes of climate change, and the tight timescale within which humans must change behaviour, and implement effective solutions, wherever they are needed across the world. This book uncovers many of the powerful actions and uses them effectively to achieve sustainable human life, of improved quality, in a way that is affordable out of earned income for all humans, wherever they live. The ultimate solution to climate change lies not just in doing and consuming less but does instead entirely revolve around our ability to "out innovate" the problem. John F. Coplin, CBE, FREng, FCGI, has had a long and distinguished career in engineering and has operated and advised at all levels from heads

of state, company chairs, engineering directors, government advisory boards, and on the shop floor. He is perfectly placed to take a wide-ranging approach, applying modern design and innovative engineering at a systemic level in order to provide novel approaches that will have far-reaching impact on reversing humankind's impact on this planet. His projections and solutions are based on facts, reasonable calculations, and science learnt from nature. Unafraid to challenge current thinking, John looks at solutions across multiple sectors, including aviation, cars and domestic local transport, clean and renewable energy, food and agriculture, and housing and communities, and describes the particular potential of hydrogen as fuel. The book is written in a language for all. It is small enough to be used as a practical guide to where some of the most useful improvements are to be found and as a way to start important conversations. A real-world guide for adapting to the new energy era

**The Energy Disruption Triangle** is a treatise on the energy revolution's real-world impacts, and a handbook for anyone looking to weather the storm. Three major technologies are already changing the energy paradigm: solar energy, electric vehicles, and energy storage. As technology continues to evolve and become more accessible to the masses, the nation's energy habits will experience a dramatic upheaval; this book provides actionable guidance to help you adapt. We are already in the beginning stages of this black swan event, and most people don't know what's coming—but it will come much sooner and much faster than anyone thinks. This book reveals the revolution happening right before our eyes, and shows you how to thrive in this new era. Learn how our energy supplies—and usage—are changing

**Understand why energy storage matters, and how the technology is evolving**

**Explore the history and future of groundbreaking energy technologies**

**Delve into the disruption of the U.S. energy supply, and the possibility of energy independence**

**Rapidly advancing battery technology is boosting energy storage for homeowners, utilities, and electric vehicle manufacturers, stranding fossil fuels in the ground due to the high price of extraction relative to cost-effective sources such as solar and wind. Traditional energy sources are being phased out, and**

our nation has come to a fork in the road: uphold the status quo and allow our energy supply to be disrupted, or adapt and advance to a state of total energy independence. The Energy Disruption Triangle explores the state of U.S. energy from source to consumer, and provides insight into the three sectors that are changing the world.

Encyclopedia of Microbiology, Fourth Edition gathers both basic and applied dimensions in this dynamic field that includes virtually all environments on Earth. This range attracts a growing number of cross-disciplinary studies, which the encyclopedia makes available to readers from diverse educational backgrounds. The new edition builds on the solid foundation established in earlier versions, adding new material that reflects recent advances in the field. New focus areas include 'Animal and Plant Microbiomes' and 'Global Impact of Microbes'. The thematic organization of the work allows users to focus on specific areas, e.g., for didactical purposes, while also browsing for topics in different areas. Offers an up-to-date and authoritative resource that covers the entire field of microbiology, from basic principles, to applied technologies. Provides an organic overview that is useful to academic teachers and scientists from different backgrounds. Includes chapters that are enriched with figures and graphs, and that can be easily consulted in isolation to find fundamental definitions and concepts.

Industrial Applications of Batteries looks at both the applications and the batteries and covers the relevant scientific and technological features. Presenting large batteries for stationary applications, e.g. energy storage, and also batteries for hybrid vehicles or different tools. The important aerospace field is covered both in connection with satellites and space missions. Examples of applications include, telecommunications, uninterruptible power supplies, systems for safety/alarms, car accessories, toll collection, asset tracking systems, medical equipment, and oil drilling. The first chapter on applications deals with electric and hybrid vehicles. Four chapters are devoted to stationary applications, i.e. energy storage (from the electric grid or solar/wind energy), load levelling, telecommunications, uninterruptible power supplies, back-up for safety/alarms. Battery management by intelligent systems and prediction of battery life

are dealt with in a dedicated chapter. The topic of used battery collection and recycling, with the description of specific treatments for the different systems, is also extensively treated in view of its environmental relevance. Finally, the world market of these batteries is presented, with detailed figures for the various applications. \* Updated and full overview of the power sources for industries \* Written by leading scientists in their fields \* Well balanced in terms of scientific and technical information To counter seas of cars, rising petrol prices, and snarling traffic—Reva Electric Vehicle is India's offering to the world in the shape of a zero emission, green mobility option. Dr Maini recounts the story of Reva—India's first commercial electric vehicle—from the inception, ideation, designing the car to taking it to the world. It is a story coloured with hope, determination, disappointment, success, and jubilation—it is the passion for making green commuting a viable possibility come alive in these pages from Reva's journey. It is the story of a team that believed in its products against all odds. A story of many firsts, this book is an immortal account of India soundly on the forefront of electric vehicle movement with this unique car. This detailed volume presents hands-on technological protocols used to target an array of cell-secreted extracellular vesicles (EVs) in a variety of biological systems. Beginning with methods for EV purification and analysis, the book continues with sections on the study of EV functions as well as specific systems and models allowing for the study of EVs of different origin. Written for the highly successful Methods in Molecular Biology series, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step and readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and practical, Cell-Secreted Vesicles: Methods and Protocols serves as an ideal guide to conducting systematic assays in an effort to further our understanding of the mode of assembly, secretion, and targeting of EVs which will serve eventually as new therapeutic openings. Mesenchymal stromal/stem cells (MSCs) represent a heterogeneous cell population with immunomodulating, tissue repairing, differentiating, migratory

and angiogenic abilities, making them important tools for clinical and translational research. An understanding of the role of MSCs in modulating tumor growth provides a glimpse into their role in non-pathological tissue remodeling and potential regenerative tissue therapies. Mesenchymal Stromal Cells as Tumor Stromal Modulators is a comprehensive source for the understanding of the role of MSCs as ubiquitous connective tissue cell components, which may have both direct and indirect effects on the tumor microenvironment and potential for regenerative therapeutics for various diseases. Using cancer as a model disease, this book explores the transformative role MSCs play in the recruitment of disease cells, cell repair and immunological defenses. Explores the biology of mesenchymal stromal cells (MSCs) and tissue related function Discusses the bidirectional communication between tumor stroma and MSCs derived from bone marrow, from adipose tissue and from other tissue types Provides in-depth analysis of the effects of MSCs on key processes that regulate disease progression, such as angiogenesis, metastatic potential, invasion, proliferation, tumor immune privileges

th th Mars, the Red Planet, fourth planet from the Sun, forever linked with 19 and 20 Century fantasy of a bellicose, intelligent Martian civilization. The romance and excitement of that fiction remains today, even as technologically sophisticated -botic orbiters, landers, and rovers seek to unveil Mars' secrets; but so far, they have yet to find evidence of life. The aura of excitement, though, is justified for another reason: Mars is a very special place. It is the only planetary surface in the Solar System where humans, once free from the bounds of Earth, might hope to establish habitable, self-sufficient colonies. Endowed with an insatiable drive, focused motivation, and a keen sense of -ploration and adventure, humans will undergo the extremes of physical hardship and danger to push the envelope, to do what has not yet been done. Because of their very nature, there is little doubt that humans will in fact conquer Mars. But even earth-bound extremes, such those experienced by the early polar explorers, may seem like a walk in the park compared to future experiences on Mars. Electrification is an evolving paradigm shift in the transportation industry toward

more efficient, higher performance, safer, smarter, and more reliable vehicles. There is in fact a clear trend to move from internal combustion engines (ICEs) to more integrated electrified powertrains. Providing a detailed overview of this growing area, *Advanced Electric Drive Vehicles* begins with an introduction to the automotive industry, an explanation of the need for electrification, and a presentation of the fundamentals of conventional vehicles and ICEs. It then proceeds to address the major components of electrified vehicles—i.e., power electronic converters, electric machines, electric motor controllers, and energy storage systems. This comprehensive work: Covers more electric vehicles (MEVs), hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), range-extended electric vehicles (REEVs), and all-electric vehicles (EVs) including battery electric vehicles (BEVs) and fuel cell vehicles (FCVs) Describes the electrification technologies applied to nonpropulsion loads, such as power steering and air-conditioning systems Discusses hybrid battery/ultra-capacitor energy storage systems, as well as 48-V electrification and belt-driven starter generator systems Considers vehicle-to-grid (V2G) interface and electrical infrastructure issues, energy management, and optimization in advanced electric drive vehicles Contains numerous illustrations, practical examples, case studies, and challenging questions and problems throughout to ensure a solid understanding of key concepts and applications *Advanced Electric Drive Vehicles* makes an ideal textbook for senior-level undergraduate or graduate engineering courses and a user-friendly reference for researchers, engineers, managers, and other professionals interested in transportation electrification. This book surveys state-of-the-art research on and developments in lithium-ion batteries for hybrid and electric vehicles. It summarizes their features in terms of performance, cost, service life, management, charging facilities, and safety. Vehicle electrification is now commonly accepted as a means of reducing fossil-fuels consumption and air pollution. At present, every electric vehicle on the road is powered by a lithium-ion battery. Currently, batteries based on lithium-ion technology are ranked first in terms of performance, reliability and safety. Though other



systems, e.g., metal-air, lithium-sulphur, solid state, and aluminium-ion, are now being investigated, the lithium-ion system is likely to dominate for at least the next decade - which is why several manufacturers, e.g., Toyota, Nissan and Tesla, are chiefly focusing on this technology. Providing comprehensive information on lithium-ion batteries, the book includes contributions by the world's leading experts on Li-ion batteries and vehicles.

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