Energy

Frankfurt Book Fair 2013 - Title Selection

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Energy

Sustainable Automotive Energy System in China
Ahrens
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Böer
Handbook of the Physics of Thin-Film Solar Cells
Chen
The Kuroshio Power Plant
Chow
Power System Coherency and Model Reduction
Dincer
Causes, Impacts and Solutions to Global Warming
Moddel
Rectenna Solar Cells
Morrell
Uranium Processing and Properties
Müller
Diffusion Dynamics of Energy-Efficient Renovations
Pappu
Optimization and Security Challenges in Smart Power Grids
Schock
Computational Materials Science for Thin-Film Solar Cells
Watson
Geothermal Engineering
Xue
Green Low-Carbon Development in China
null null, CAERC, Tsinghua University, Beijing, China, People's Republic

**Sustainable Automotive Energy System in China**

Sustainable Automotive Energy System in China aims at identifying and addressing the key issues of automotive energy in China in a systematic way, covering demography, economics, technology and policy, based on systematic and in-depth, multidisciplinary and comprehensive studies. Five scenarios of China’s automotive energy development are created to analyze the possible contributions in the fields of automotive energy, vehicle fuel economy improvement, electric vehicles, fuel cell vehicles and the 2nd generation biofuel development. Thanks to this book, readers can gain a better understanding of the nature of China’s automotive energy development and be informed about: 1) the current[...]

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**Handbook of the Physics of Thin-Film Solar Cells**

This handbook is a compendium giving a comprehensive description of the basics of semiconductor physics relevant to the design and analysis of thin film solar cell materials. It starts from the basics of material science, describing the material and its growth, defect and electrical properties, the basics of its interaction with photons and the involved statistics, proceeding to space charge effects in semiconductors and pn-junctions. Most attention is given to analyze homo- and hetero-junction solar cells using various models and applying the field-of-direction analysis for discussing current voltage characteristics, and helping to discover the involvement of high-field effects in[...]

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**Power System Coherency and Model Reduction**

“Power System Coherency and Model Reduction” provides a comprehensive treatment for understanding interarea modes in large power systems and obtaining reduced-order models using the coherency concept and selective modal analysis method. Both linear and nonlinear analysis methods are covered. This is a reference book for researchers interested in interarea oscillations and model reduction, and power engineers in developing reduced models for power system studies and control design.

and environment policies and strategies are scientifically discussed to expose the best ways to reduce global warming effects and protect the environment and energy sources affected by human activities. The importance of green energy consumption on the reduction of global warming, energy saving and energy security are also discussed. This book also focuses on energy management and conservation strategies for better utilization of energy sources and technologies in buildings and industry as well as ways of improving energy efficiency at the [...]

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Uranium Processing and Properties

Uranium Processing and Properties describes developments in uranium science, engineering and processing and covers a broad spectrum of topics and applications in which these technologies are harnessed. This book offers the most up-to-date knowledge on emerging nuclear technologies and applications while also covering new and established practices for working with uranium supplies. The book also aims to provide insights into current research and processing technology developments in order to stimulate and motivate innovation among readers. Topics covered include casting technology, plate and sheet rolling, machining of uranium and uranium alloys, forming and fabrication techniques, [...]

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Rectenna Solar Cells

Rectenna Solar Cells discusses antenna-coupled diode solar cells, an emerging technology that has the potential to provide ultra-high efficiency, low-cost solar energy conversion. This book will provide an overview of solar rectennas, and provide thorough descriptions of the two main components: the diode, and the optical antenna. The editors discuss the science, design, modeling, and manufacturing of the antennas coupled with the diodes. The book will provide concepts to understanding the challenges, fabrication technologies, and materials required to develop rectenna structures. Written by experts in their specialized fields.

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Diffusion Dynamics of Energy-Efficient Renovations

Causalities and Policy Recommendations

The Accelerating the diffusion of energy-efficient renovations is a key policy lever in order to reduce the environmental impact of buildings. This book provides a broad, systemic perspective on the causes of the diffusion of energy-efficient renovations in Switzerland and policy recommendations for accelerating the diffusion process. Specifically, the book provides a description of the societal problem situation within which the diffusion process takes place and an analysis of the actors involved. It provides a detailed explanation of the causes of the diffusion process that synthesizes insights from the engineering, economics, marketing, sociology, communication studies and political[...]

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Optimization and Security Challenges in Smart Power Grids

This book provides an overview of state-of-the-art research on “Systems and Optimization Aspects of Smart Grid Challenges.” The authors have compiled and integrated different aspects of applied systems optimization research to smart grids, and also describe some of its critical challenges and requirements. The promise of a smarter electricity grid could significantly change how consumers use and pay for their electrical power, and could fundamentally reshape the current Industry. Gaining increasing interest and acceptance, Smart Grid technologies combine power generation and delivery systems with advanced communication systems to help save energy, reduce energy costs and improve[...]

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Computational Materials Science for Thin-Film Solar Cells

How to Increase Efficiency

Scientists and engineers in academic and industrial research experience a strong evolving discipline: Computational Materials Science. This discipline provides materials insights that are not readily achievable by experiments, and it offers the opportunity
to design materials and composites “ab-initio”. This book presents the methods and the practical use of Computational Materials Science using two distinct examples: the development of optimized or alternative materials for CIGS (Copper-Indium-Gallium-dioxide) photovoltaics and the optimization of CIGS thin film solar cells for maximum efficiency. After a general introduction the theoretical background of the book is illustrated: [...]

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A. Watson, formerly Director, Te Awamutu, New Zealand

**Geothermal Engineering**

**Fundamentals and Applications**

This book explains the engineering required to bring geothermal resources into use. The book covers specifically engineering aspects that are unique to geothermal engineering, such as measurements in wells and their interpretation, transport of near-boiling water through long pipelines, turbines driven by fluids other than steam, and project economics. The explanations are reinforced by drawing comparisons with other energy industries.

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**Forthcoming**

J. Xue, Nagoya University, Nagoyashi, Aichi, Japan; Z. Zhao, The University of International, Beijing, China (P.R.); Y. Dai, Energy Research Institute, Beijing, China (P.R.); B. Wang, University of International, Beijing, China (P.R.) (Eds.)

**Green Low-Carbon Development in China**

The book provides an in depth analyses of the experience and lessons in Chinese energy and emissions reductions policies in a climate change constrained scenario. As China emerges as the world second largest economy and first largest carbon emitter, the country is moving onto a low-carbon development path. Projections of medium and long term energy supply and demand scenarios are presented, based on variations on the energy supply structure, key energy consumption sectors and energy conservation policy innovation. Energy efficiency policies are evaluated based on lessons and experiences from case studies in different sectors, and policy innovations in terms of financial, legal and [...]

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