ENERGY MATERIALS

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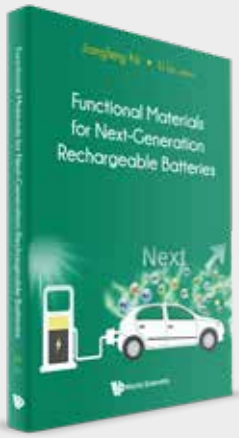
Functional Materials for Next-Generation Rechargeable Batteries

edited by **Jiangfeng Ni** *(Soochow University, China)*
& **Li Lu** *(National University of Singapore)*



This book starts with principles and fundamentals of lithium rechargeable batteries, followed by their designs and assembly. The book then focuses on the recent progress in the development of advanced functional materials, as both cathode and anode, for next-generation rechargeable batteries such as lithium-sulfur, sodium-ion, and zinc-ion batteries. One of the special features of this book is that both inorganic electrode materials and organic materials are included to meet the requirement of high energy density and high safety of future rechargeable batteries. In addition to traditional non-aqueous rechargeable batteries, detailed information and discussion on aqueous batteries and solid-state batteries are also provided.

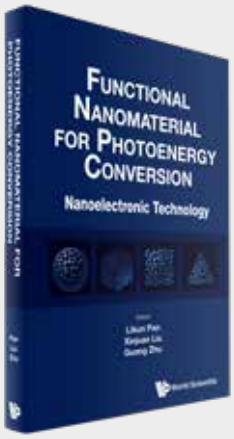
Readership: Advanced undergraduates, graduate students, scientists, and engineers who are interested in the battery technology.

220pp **Mar 2021**
978-981-123-067-7(ebook) **US$132** **£115**

Functional Nanomaterial for Photoenergy Conversion

Nanoelectronic Technology

edited by **Likun Pan** *(East China Normal University, China)*, **Xinjuan Liu** *(China Jiliang University, China)* & **Guang Zhu** *(Suzhou University, China)*



This book presents a comprehensive review of the recent progress in exploring various functional nanomaterials for the applications in photocatalysis and solar cells. A perspective on the future outlook of the photoelectric energy conversion based on functional nanomaterials is discussed in this book

Readership: This book is an essential source of reference for scientists with research fields in energy, physics, chemistry and materials. It is also suitable reading for graduate students.

316pp **Nov 2020**
978-981-122-240-5(ebook) **US$162** **£145**

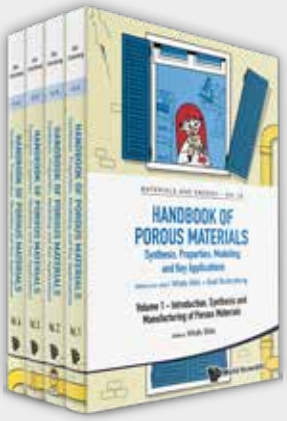
Materials and Energy - Vol 16

Handbook of Porous Materials

Synthesis, Properties, Modeling and Key Applications **(In 4 Volumes)**
Volume 1: Introduction, Synthesis and Manufacturing of Porous Materials
Volume 2: Characterisation and Simulation of Porous Materials
Volume 3: Separations Using Porous Materials
Volume 4: Porous Materials for Energy Conversion and Storage

Editor-in-chief: **Vitaly Gitis** *(Ben Gurion University of the Negev, Israel)*
& **Gadi Rothenberg** *(University of Amsterdam, The Netherlands)*

Volume editors: **Vitaly Gitis**, **Gadi Rothenberg**, **Anton A Kiss** *(The University of Manchester, UK)* & **David Eisenberg** *(Technion — Israel Institute of Technology, Israel)*



Coordinating the efforts of 37 expert authors in 14 chapters, they construct the story of porous carbons, ceramics, zeolites and polymers from varied viewpoints: surface and colloidal science, materials science, chemical engineering, and energy engineering. The first comprehensive reference work on porous materials in the last 20 years, especially relevant in the fields of characterisation, simulations, and energy applications, where huge progress has been made in the past two decades

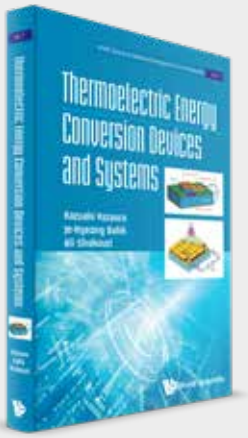
Readership: This comprehensive reference work is most suitable for university libraries as well as technical institutes, industrial R&D departments and national and key laboratories. It is written for researchers, graduate students and engineers working in materials science, the energy transition, chemistry and chemical engineering.

1492pp (Set) **Dec 2020**
978-981-122-323-5(ebook) **US$2370** **£2085**

WSPC Series in Advanced Integration and Packaging - Vol 7

Thermoelectric Energy Conversion Devices and Systems

by **Kazuaki Yazawa** *(Purdue University, USA)*,
Je-Hyeong Bahk *(University of Cincinnati, USA)*
& **Ali Shakouri** *(Purdue University, USA)*



This unique compendium emphasizes key factors driving the performance of thermoelectric energy conversion systems. Important design parameters such as heat transfer at the boundaries of the system, material properties, and form factors are carefully analyzed and optimized for performance including the cost-performance trade-off. Numbers of examples are provided on the applications of thermoelectric technologies, e.g., power generation, cooling of electronic components, and waste heat recovery in wearable devices.

Readership: Professionals, researchers, academics, undergraduate and graduate students in mechanical engineering, semiconductors, and electrical & electronic engineering.

370pp **Feb 2021**
978-981-121-827-9(ebook) **US$192** **£170**

New and Featured Titles

Handbook of Renewable Energy Technology & Systems

edited by **Ramesh C Bansal** *(University of Sharjah, UAE)* & **Ahmed F Zobaa** *(Brunel University, UK)*

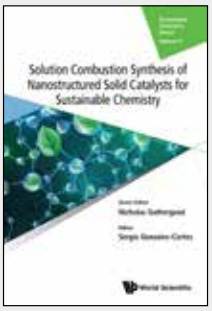
This book comprises 22 chapters, arranged into four sections, which present a comprehensive analysis of various renewable energy-based distributed generation (DG) technologies. Aspects of renewable energy covered include wind and photovoltaic power systems and technology, micro-grids, power electronic applications, power quality, and the protection of renewable distributed generation.

Readership: Researchers and professionals working in the field Renewable Energy, Wind, PV, DG, Microgrid, Smart Grid, Power Systems.

715pp **May 2021**
978-1-78634-903-3(ebook) **US$312** **£275**

Sustainable Chemistry Series - Vol 5

Solution Combustion Synthesis of Nanostructured Solid Catalysts for Sustainable Chemistry



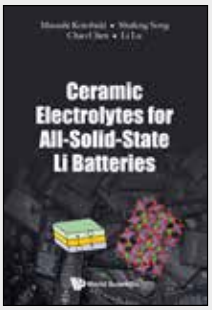
edited by **Sergio L González-Cortés** *(University of Oxford, UK)*

This is an interdisciplinary collection of fundamental and applied cutting-edge studies which highlight general and specific aspects of the synthesis of nanostructured catalysts through Solution Combustion Synthesis (SCS), studying their applications from the perspective of green chemistry. This book intends to integrate the fundamental principles of the SCS process with its engineering aspects and covers the synthesis of a wide variety of catalytic materials.

Readership: Advanced undergraduate and graduate students, researchers and practitioners in the fields of catalysis, solution combustion synthesis, synthesis of solid catalysts, green chemistry, solid state chemistry, environmental technology and nanochemistry.

268pp **Nov 2020**
978-1-78634-870-8(ebook) **US$147** **£130**

Ceramic Electrolytes for All-Solid-State Li Batteries



by **Masashi Kotobuki** *(NUS, Singapore)*, **Shufeng Song** *(Chongqing University, China)*, **Chao Chen** *(NUS, Singapore)* & **Li Lu** *(NUS, Singapore)*

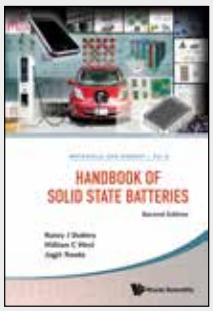
This book is about various Li ion ceramic electrolytes and their applications to all-solid-state battery. It contains a wide range of topics from history of ceramic electrolytes and ion conduction mechanisms to recent research achievements. Here oxide-type and sulfide-type ceramic electrolytes are described in detail. Additionally, their applications to all-solid-state batteries, including Li-air battery and Li-S battery, are reviewed.

Readership: Graduate students, young researchers and research engineers studying ceramic electrolytes.

248pp **Jul 2018**
978-981-3233-89-8(ebook) **US$147** **£130**

Materials and Energy - Vol 6

Handbook of Solid State Batteries (2nd Edition)



edited by **Nancy J Dudney** *(Oak Ridge National Laboratory, USA)*, **William C West** *(Nagoya University, Japan)* & **Jagjit Nanda** *(Oak Ridge National Laboratory, USA)*

"The book is quite complete, divided into three sections with a total of 22 chapters, most of them ending with outlook and perspectives, and is generally well written. The book will be a great resource for students and researchers discovering the field. I highly recommend the Handbook of Solid State Batteries to anyone interested in this emerging area of research."

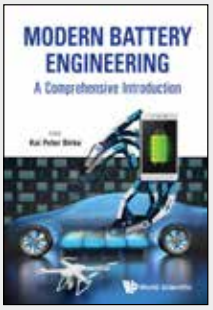
Journal of Applied Crystallography

Readership: Scientists, technologists, and students in the fields of electrochemistry, condensed matter physics, chemistry, and materials science.

836pp **Aug 2015**
978-981-4651-90-5(ebook) **US$353** **£293**

Modern Battery Engineering

A Comprehensive Introduction



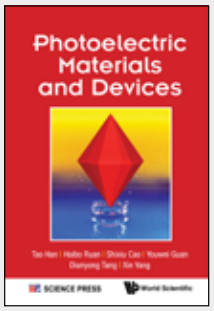
edited by **Kai Peter Birke** *(University of Stuttgart, Germany)*

"This is a book primarily for engineers and materials scientists either researching or developing Li-ion energy storage batteries who want to understand some of the critical aspects of Li-ion battery technology and gain knowledge about the latest engineering designs and latest materials being used in Li-ion batteries. Good technical depth, many tables of data, and many illustrations combined with references at the end of each chapter for further in-depth study make this book worth reading to gain a quick understanding of the current state-of-the art in Li-ion battery technology and the fundamental issues and challenges facing Li-ion battery designers."

IEEE Electrical Insulation Magazine

304pp **Apr 2019**
978-981-4651-90-5(ebook) **US$353** **£293**

Photoelectric Materials and Devices



by **Tao Han**, **Haibo Ruan**, **Shixiu Cao**, **Youwei Guan**, **Dianyong Tang** & **Xin Yang** *(Chongqing University of Arts and Sciences, China)*

This book mainly introduces the basic theory and physical characteristics of photoelectric materials, the preparation technology of photoelectric components, the working principle, the latest application, the latest progress of photoelectric materials and devices technology and the correlation with other technologies. The content mainly involves the theoretical basis of photoelectric materials, micro-nano photoelectric materials and devices, semiconductor luminescent materials and devices, inorganic photoluminescence materials, LED packaging technology, transparent conductive materials, touch screen, display screen, solar cell materials and the basic principles and development trend of their applications

Readership: Undergraduates, graduates and research professionals looking for a reference material that combines the subjects of electronic/optoelectronic materials and devices, suitable for classroom instruction at senior college level or for non-experts.

400pp **May 2021**
978-981-123-061-5(ebook) **US$222** **£195**

Surface Photovoltage Analysis of Photoactive Materials

by **Thomas Dittrich** *(Helmholtz-Zentrum Berlin für Materialien und Energie, Germany)* & **Steffen Fengler** *(Helmholtz-Zentrum Geesthacht für Materialien und Küstenforschung, Germany)*

320pp Feb 2020 978-1-78634-766-4(ebook) US$147 £130

Oxygen Production and Reduction in Artificial and Natural Systems

edited by **James Barber** *(Imperial College London, UK)*, **Alexander V Ruban** *(Queen Mary University of London, UK)* & **Peter J Nixon** *(Imperial College London, UK)*

436pp Apr 2019 978-981-3276-92-5(ebook) US$192 £170

Hydrogen-Bonding Research in Photochemistry, Photobiology, and Optoelectronic Materials

edited by **Keli Han** *(Chinese Academy of Sciences, China)* & **Guangjiu Zhao** *(Tianjin University, China)*

456pp Mar 2019 978-1-78634-608-7(ebook) US$237 £210

Materials and Energy - Vol 13

Theory and Methods of Photovoltaic Material Characterization

Optical and Electrical Measurement Techniques

by **Richard K Ahrenkiel** *(Colorado School of Mines, USA)* & **S Phil Ahrenkiel** *(South Dakota School of Mines & Technology, USA)*

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Catalytic Science Series - Vol 17

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The Challenges for Biofuels Production

edited by **Bo Zhang** *(Wuhan Institute of Technology, China)* & **Duncan Seddon** *(Duncan Seddon & Associates Pty. Ltd., Australia)*

316pp May 2018 978-1-78634-484-7(ebook) US$177 £156

Innovative Thermoelectric Materials

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edited by **Howard E Katz** *(Johns Hopkins University, USA)* & **Theodore O Poehler** *(Johns Hopkins University, USA)*

292pp Apr 2016 978-1-78326-606-7(ebook) US$195 £162

Flexible Electronics

From Materials to Devices

edited by **Guozhen Shen** *(Chinese Academy of Sciences, China)* & **Zhiyong Fan** *(The Hong Kong University of Science and Technology, Hong Kong)*

476pp Jun 2016 978-981-4651-99-8(ebook) US$267 £222

Series on Photoconversion of Solar Energy - Vol 3

Nanostructured and Photoelectrochemical Systems for Solar Photon Conversion

edited by **Mary D Archer** *(Imperial College, UK)* & **Arthur J Nozik** *(National Renewable Energy Laboratory, USA)*

780pp Aug 2008 978-1-84816-154-2(ebook) US$423 £352

Series on Photoconversion of Solar Energy - Vol 4

Clean Electricity from Photovoltaics

(2nd Edition)

edited by **Mary D Archer** *(Imperial College, UK)* & **Martin A Green** *(University of New South Wales, Australia)*

708pp Dec 2014 978-1-84816-768-1(ebook) US$267 £222

Clean Energy

Hydrogen/Fuel Cells Laboratory Manual (with DVD-ROM)

by **K S V Santhanam**, **Gerald A Takacs**, **Massoud J Miri**, **Alla V Bailey**, **Thomas D Allston** & **Roman J Press** *(Rochester Inst. of Technology, USA)*

140pp Mar 2016 978-981-4749-67-1(ebook) US$63 £55

World Scientific Series in Nanoscience and Nanotechnology - Vol 7

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edited by **Dawn A Bonnell** *(The University of Pennsylvania, USA)* & **Sergei V Kalinin** *(Oak Ridge National Laboratory, USA)*

640pp May 2013 978-981-4434-71-3(ebook) US$237 £196

World Scientific Series in Current Energy Issues - Vol 2

Solar Energy

edited by **Gerard M Crawley** *(Marcus Enterprise LLC, USA & University of South Carolina, USA)*

436pp Jun 2016 978-981-4689-50-2(ebook) US$243 £202

Nanostructured Titanium Dioxide Materials

Properties, Preparation and Applications

by **Alireza Khataee** *(University of Tabriz, Iran)* & **G Ali Mansoori** *(University of Illinois at Chicago, USA)*

204pp Nov 2011 978-981-4374-73-6(ebook) US$141 £117

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With Applications in Agriculture, the Environment and Energy

edited by **Joan J Manyà** *(University of Zaragoza, Spain)* & **Gabriel Gascó** *(Technical University of Madrid, Spain)*

224pp Sep 2020 978-1-78634-897-5(ebook) US$132 £115

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Materials and Energy - Vol 12

World Scientific Handbook of Organic Optoelectronic Devices (In 2 Volumes)

Volume 1: Perovskite Electronics

Volume 2: Organic Photovoltaics (OPVs)

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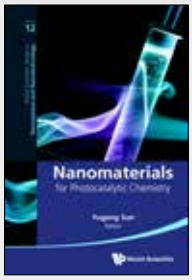
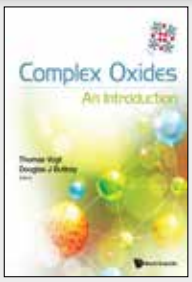
908pp (Set) Aug 2018

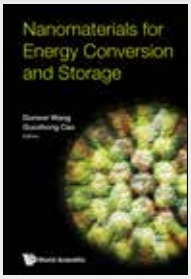
978-981-3239-84-5(ebook) US$818 £720

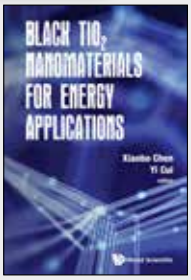
Energy Materials: EBook Collection

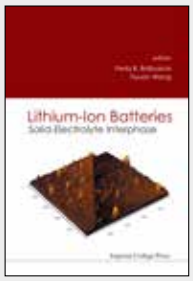
Energy Storage / Batteries

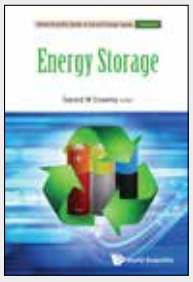













Series on Chemistry, Energy and the Environment - Vol 4

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380pp Apr 2018 978-981-3228-14-6(ebook) US$207 £182

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edited by **Dunwei Wang** *(Boston College, USA)* & **Guozhong Cao** *(University of Washington, USA)*

836pp Jan 2018 978-1-78634-363-5(ebook) US$359 £315

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edited by **Xiaobo Chen** *(University of Missouri-Kansas City, USA)* & **Yi Cui** *(Stanford)*

332pp Feb 2017 978-1-78634-166-2(ebook) US$203 £168

Lithium-Ion Batteries

Solid-Electrolyte Interphase

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The Chemistry of Nanostructured Materials

Volume II

edited by **Peidong Yang** *(UC Berkeley)*

336pp Jan 2011 978-981-4313-07-0(ebook) US$141 £117

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Volume editors: **Yu Lu** *(University of California, Riverside, USA)*, **Yat Li** *(University of California, Santa Cruz, USA)*, **Yiding Liu** *(Southwest Petroleum University, China)*, **Le He** *(Soochow University, China)*, **Yihan Zhu** *(Zhejiang University of Technology, China)* & **Yu Han** *(King Abdullah University of Science and Technology, Saudi Arabia)*

2376pp (Set) Oct 2019 978-981-3277-87-8(ebook) US$2925 £2575

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