2017 Catalogue

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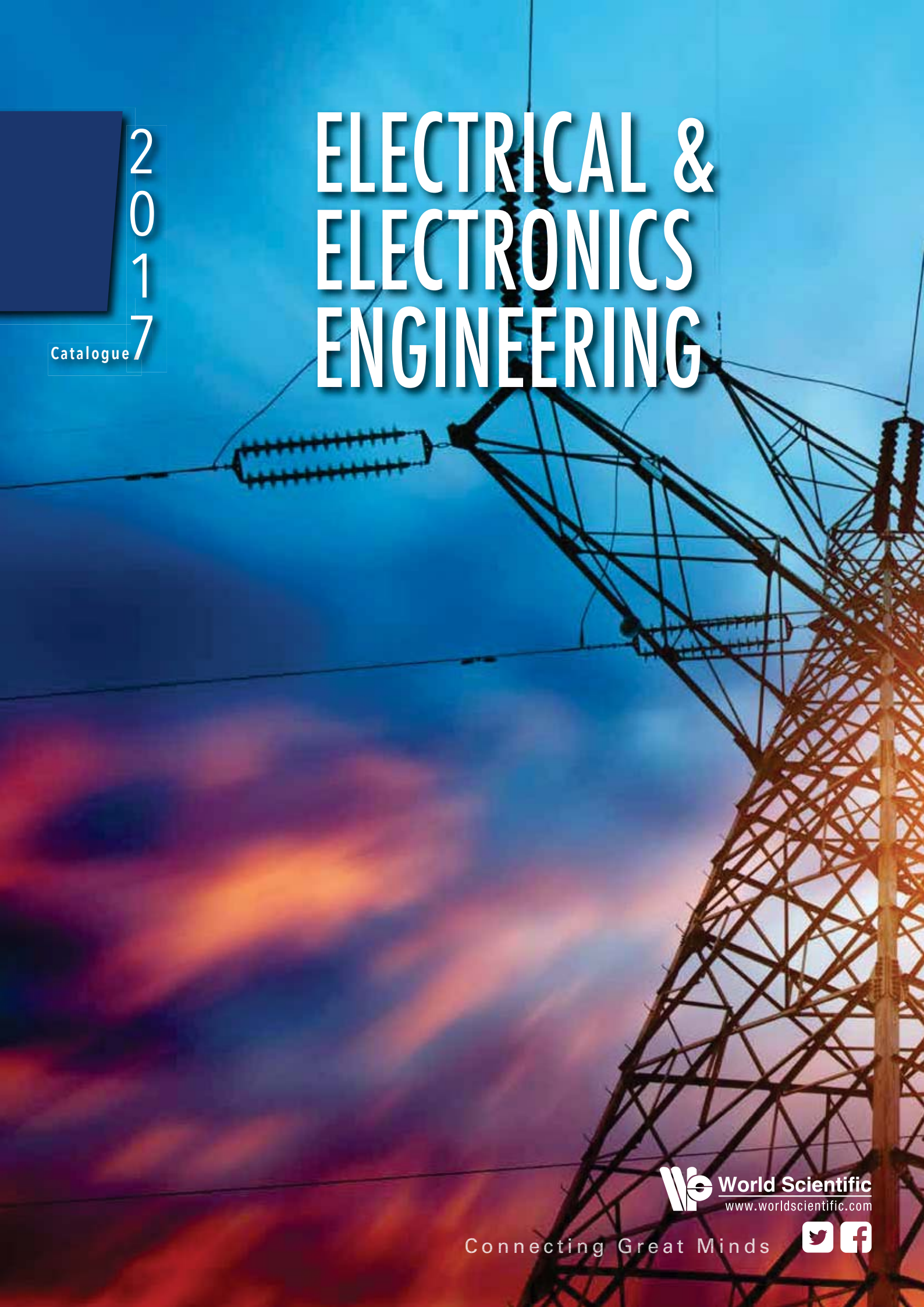

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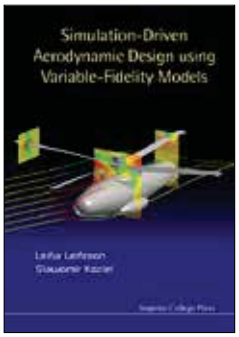

by **Leifur Leifsson** & **Slawomir Koziel**
(Reykjavik University, Iceland)

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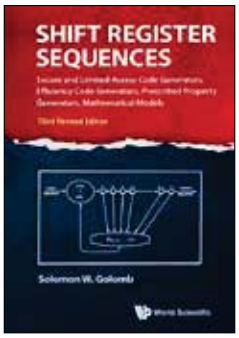

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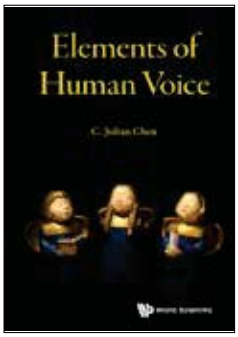

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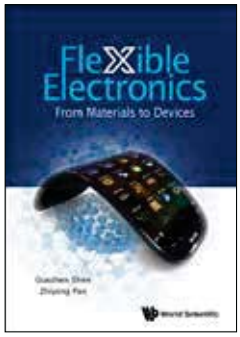

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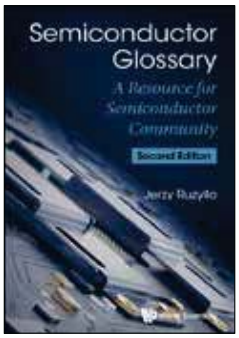

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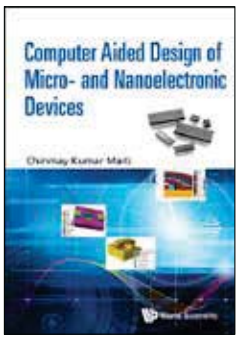

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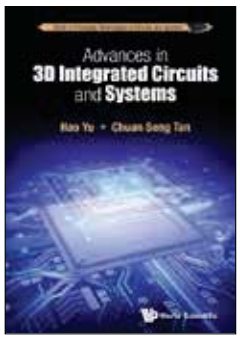

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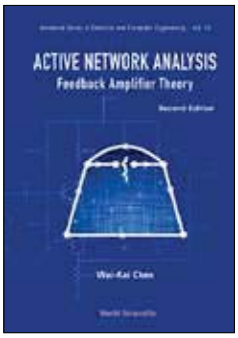

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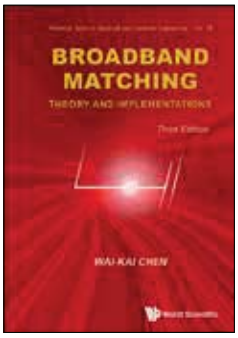

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(University of Illinois at Chicago, USA)

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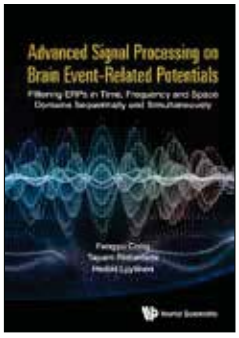

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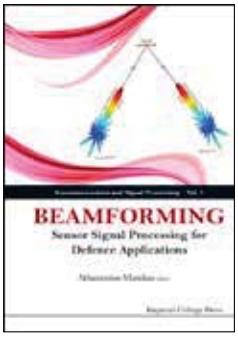

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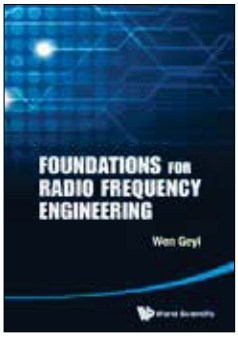

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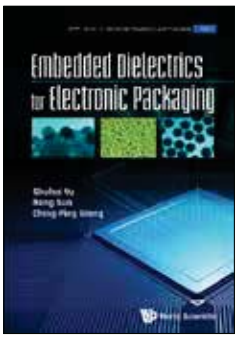

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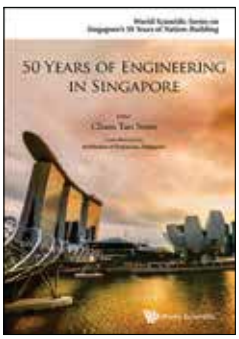

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Electrical & Electronics Engineering

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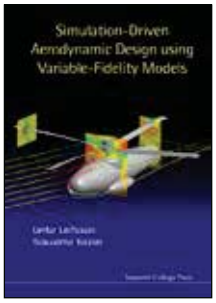
Applications and Analysis

SIMULATION-DRIVEN AERODYNAMIC DESIGN USING VARIABLE-FIDELITY MODELS



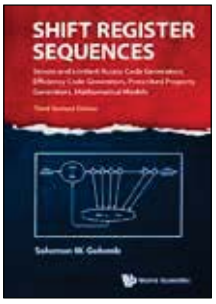
by **Leifur Leifsson** & **Slawomir Koziel**
(Reykjavik University, Iceland)

This book explores the alternative: performing computationally efficient design using surrogate-based optimization, where the high-fidelity model is replaced by its computationally cheap but still reasonably accurate representation: a surrogate. The emphasis is on physics-based surrogates. Application-wise, the focus is on aerodynamics and the methods and techniques described in the book are demonstrated using aerodynamic shape optimization cases. Applications in other engineering fields are also demonstrated.

Readership: Graduate students and researchers in the field of engineering, in particular, aerospace engineering.

444pp	**Mar 2015**	
978-1-78326-628-9	**US$174**	**£125**
978-1-78326-629-6(ebook)	**US$226**	**£163**

SHIFT REGISTER SEQUENCES



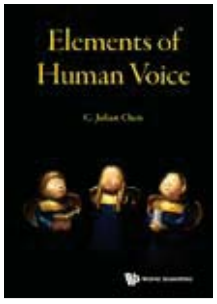
Secure and Limited-Access Code Generators, Efficiency Code Generators, Prescribed Property Generators, Mathematical Models
by **Solomon W Golomb**
(University of Southern California, USA)

This book is the third, revised edition of the original definitive book on shift register sequences which was published in 1967, which has been widely distributed, read, and cited. It has stood the test of time, and provides a clear, comprehensive, and readily applicable description of both linear and non-linear shift register sequences.

Readership: Graduate students and researchers working on communications, radar signal design, pseudorandom number generator, digital wireless telephony, and many other areas which require understanding of shift register sequences.

247pp	**Jul 2016**	
978-981-4632-00-3	**US$114**	**£82**
978-981-4632-01-0(ebook)	**US$148**	**£107**

ELEMENTS OF HUMAN VOICE



by **C Julian Chen** *(Columbia University, USA)*

Key Features:

- This is a unique book about a new theory and new mathematical models of human voice, and its applications in speech and voice technology
- There are no competing books
- The vitality of the new science and new technology is evidenced by five (5) issued US patents
- Another unique feature of that book is: all figures are new and are specially designed for the book

Readership: Graduate students, academics and professionals in the field of computer science especially voice interface, physiology and medicine especially otolaryngology, linguistics especially phonetics, and vocal music.

220pp	**Jul 2016**	
978-981-4733-89-2	**US$114**	**£82**
978-981-4733-90-8(ebook)	**US$148**	**£107**

GALLIUM NITRIDE AND SILICON CARBIDE POWER DEVICES

by **B Jayant Baliga** *(North Carolina State University, USA)*

This comprehensive book discusses the physics of operation and design of gallium nitride and silicon carbide power devices. It can be used as a reference by practicing engineers in the power electronics industry and as a textbook for a power device or power electronics course in universities.

Readership: Researchers, academics, and graduate students in electrical & electronic engineering, semiconductors, materials engineering and energy research.

600pp	**Dec 2016**	
978-981-3109-40-7	**US$128**	**£84**

ENGINEERING OPTICS WITH MATLAB® 2nd Edition

2nd Edition

by **Ting-Chung Poon** *(Virginia Tech, USA)* &
Taegeun Kim *(Sejong University, South Korea)*

v**Readership:** First-year/senior graudate students in engineering and physics; scientists and engineers keen in the basics of acousto-optics and electro-optics.

300pp	**Apr 2017**	
978-981-3100-00-8	**US$98**	**£65**
978-981-3100-01-5(pbk)	**US$48**	**£32**

Selected Topics in Electronics and Systems - Vol 56

FUNDAMENTAL & APPLIED PROBLEMS OF TERAHERTZ DEVICES AND TECHNOLOGIES

Selected Papers from the Russia – Japan – USA Symposium (RJUS TeraTech-2014)
edited by **Michael Shur**
(Rensselaer Polytechnic Institute, USA)

This book, covering issues ranging from basic Thz-related phenomena to applications in sensing, imaging, and communications, contains some ground-breaking works in the industry, and will be a useful reference for device and electronics engineers and scientists.

Readership: Scientists, engineers and researchers interested in terahertz materials, devices, systems and applications, as well as graduate students working on terahertz science and technology.

104pp	**Oct 2015**	
978-981-4725-19-4	**US$120**	**£86**
978-981-4725-20-0(ebook)	**US$156**	**£112**

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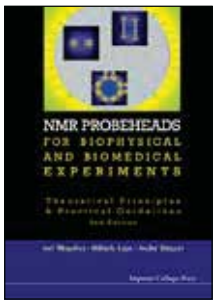
NMR PROBEHEADS FOR BIOPHYSICAL AND BIOMEDICAL EXPERIMENTS (2nd Edition)



2nd Edition

Theoretical Principles and Practical Guidelines

by **Joël Mispelter** *(INSERM, France & Curie Institute, France)*, **Mihaela Lupu** *(Curie Institute, France)* & **André Briguet** *(University Claude Bernard Lyon 1, France)*

This new edition has been revised and updated to include a chapter dedicated to RF components, which are commonly used for probes realization and their frequency-dependent characteristics. Another completely revised chapter concerns the multiple coil systems and discusses arrays coils, different decoupling methods, and some principles for interfacing coils with low-noise preamplifiers. The principles of linear circuit analysis are presented in a dedicated chapter. Last but not least, accompanying files containing updated software for probe design have been made available from the publisher's website.

Readership: Bioengineers, biomedical researchers and non-experts in RF technology willing to acquire basic knowledge on RF sensors design; inquisitive user of an NMR spectrometer could be interested in some "knowing-how" about this "black box".

756pp	**Jul 2015**	
978-1-84816-662-2	**US$165**	**£109**

Series on Bioengineering and Biomedical Engineering - Vol 8

DYNAMICS OF THE VASCULAR SYSTEM: INTERACTION OF THE HEART (2nd Edition)

2nd Edition

by **John K-J Li** *(Rutgers University, USA)*

This current and self-contained second edition updates many of the new findings since its first edition a decade ago. It also includes a new chapter on the "Interaction with the Heart". The dynamics of the arterial system, the venous system, the microcirculation and their interaction with the heart are quantitatively described in terms of their structures and functions. Clinical measurements, applications to the cardiovascular field and physiological mechanisms are clearly identified throughout the text. Most importantly, worked examples are provided, such that the readers can appreciate the application aspects of the underlying formulation.

Readership: Researchers, academics, professionals, undergraduate and graduate students in bioengineering, electrical & mechanical engineering, cardiology and biophysics.

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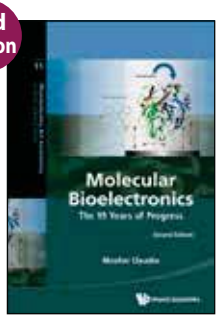
MOLECULAR BIOELECTRONICS

2nd Edition



The 19 Years of Progress (2nd Edition)

by **Nicolini Claudio** *(University of Genoa, Italy)*

Molecular bioelectronics is a field in strong evolution at the frontier of life and materials sciences. The term is utilized in a broad context to emphasize a unique blend of electronics and biotechnology which is seen as the best way to achieve many objectives of industrial and scientific relevance, including biomolecular engineering, bioelectronic devices, materials and sensors capable of optimal hardware efficiency and intelligence and molecular miniaturization.

Readership: Students and scientists in bioelectronics and materials science.

336pp	**May 2016**	
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978-981-4725-85-9(ebook)	**US$195**	**£140**

Circuits and Systems

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)*

This book provides a comprehensive overview of the recent development of flexible electronics. This is a fast evolving research field and tremendous progress has been made in the past decade. In this book, new material development and novel flexible device, circuit design, fabrication and characterizations will be introduced. Particularly, recent progress of nanomaterials, including carbon nanotubes, graphene, semiconductor nanowires, nanofibers, for flexible electronic applications, assembly of nanomaterials for large scale device and circuitry, flexible energy devices, such as solar cells and batteries, etc, will be introduced. And through reviewing these cutting edge research, the readers will be able to see the key advantages and challenges of flexible electronics both from material and device perspectives, as well as identify future directions of the field.

Readership: Academics, researcher and graduate students in electrical & electronic engineering, microelectronics and nanomaterials & nanostructures.

476pp	**Jun 2016**	
978-981-4651-98-1	**US$178**	**£128**
978-981-4651-99-8(ebook)	**US$231**	**£166**

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INTRODUCTION TO ELECTRONIC CIRCUITS

A Design-Oriented Approach

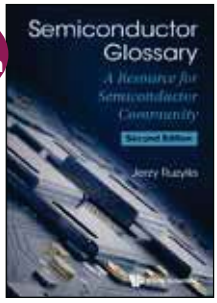
by **Jose Silva-Martinez** *(Texas A & M University, USA)* & **Marvin Onabajo** *(Northeastern University, USA)*

This book provides a compact and practical presentation of microelectronics circuits for a one-semester introductory course. Contrary to textbooks that are written for comprehensive two-semester electronics courses, the focus of this book is on the basic concepts and immediate discussion of application examples to instill more interest. The theoretical concepts are introduced by explaining the methods to analyze elementary electronic circuits with design considerations, design procedures, and simulation examples.

Readership: Reseachers, academics, professionals, graduate and undergraduate students in electrical & electronic engineering and computer engineering.

350pp	**Jan 2017**	
978-981-4656-88-7	**US$120**	**£79**
978-981-4678-52-0(pbk)	**US$58**	**£38**

SEMICONDUCTOR GLOSSARY



2nd Edition

A Resource for Semiconductor Community (2nd Edition)

by **Jerzy Ruzyllo** *(Penn State University, USA)*

With over 2,000 terms in the area of semiconductor science and engineering are defined and explained. It is a second edition of *Semiconductor Glossary* replacing the first edition published 2004 with some 600 new terms defined including many which were only recently introduced to the semiconductor terminology

Readership: Undergraduate, graduate student, practitioners, academia in electrical & electronic engineering, materials engineering, semiconductors and related areas, as well as innovation/technology.

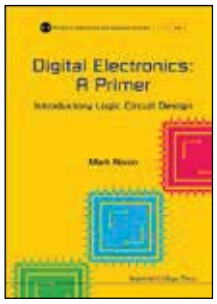
270pp	**Jan 2017**	
978-981-4749-53-4	**US$96**	**£69**
978-981-4749-54-1(pbk)	**US$46**	**£33**
978-981-4749-55-8(ebook)	**US$125**	**£90**

ICP Primers in Electronics and Computer Science - Vol 1

DIGITAL ELECTRONICS: A PRIME

Introductory Logic Circuit Design

by **Mark Nixon** *(University of Southampton, UK)*



This practical introduction explains exactly how digital circuits are designed, from the basic circuit to the advanced system. It covers combinational logic circuits, which collect logic signals, to sequential logic circuits, which embody time and memory to progress through sequences of states. The primer also highlights digital arithmetic and the integrated circuits that implement the logic functions.

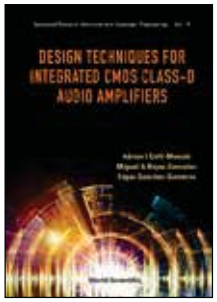
Readership: First year BEng and MEng students (Electrical Engineering), undergraduate Computer Science & Electronics students, Physics students taking Electronics modules.

236pp	**Mar 2015**	
978-1-78326-489-6	**US$78**	**£51**
978-1-78326-490-2(pbk)	**US$38**	**£25**

Advanced Series in Electrical and Computer Engineering - Vol 16

DESIGN TECHNIQUES FOR INTEGRATED CMOS CLASS-D AUDIO AMPLIFIERS

by **Adrian I Colli-Menchi**, **Miguel A Rojas-Gonzalez** & **Edgar Sanchez-Sinencio** *(Texas A&M University, USA)*



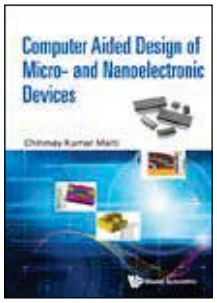
The first part of the book introduces the motivation and fundamentals of audio amplification. The loudspeaker's operation and main audio performance metrics explains the limitations in the amplification process. The second part of this book presents the operating principle and design procedure of the class-D amplifier main architectures to provide the performance tradeoffs. The circuit design procedures involved in each block of the class-D amplifier architecture are highlighted. The third part of this book discusses several important design examples introducing state-of-the-art architectures and circuit design techniques to improve the audio performance, power consumption, and efficiency of standard class-D audio amplifiers.

Readership: Researchers, academics, professionals, graduate and undergraduate students in electrical & electronic engineering, computer engineering and systems engineering.

500pp	**Sep 2016**	
978-981-4704-24-3	**US$145**	**£96**
978-981-4699-42-6(pbk)	**US$72**	**£48**

COMPUTER AIDED DESIGN OF MICRO- AND NANOELECTRONIC DEVICES

by **Chinmay Kumar Maiti** *(Siksha 'O' Anusandhan University, India)*



Micro and nanoelectronic devices are the prime movers for electronics, which is essential for the current information age. This unique monograph identifies the key stages of advanced device design and integration in semiconductor manufacturing. It brings into one resource a comprehensive device design using simulation. The book presents state-of-the-art semiconductor device design using the latest TCAD tools.

Readership: Professionals, researchers, academics, and graduate students in electrical & electronic engineering and microelectronics.

350pp	**Oct 2016**	
978-981-4713-07-8	**US$162**	**£117**
978-981-4713-08-5(ebook)	**US$211**	**£152**

PHOTONICS IN SPACE

Advanced Photonic Devices and Systems

by **Caterina Ciminelli**, **Mario Nicola Armenise** & **Francesco Dell'Olio** *(Politecnico di Bari, Italy)*

The book focuses on photonic devices and systems for space applications and critically reviews the most promising research advances in the field of photonic technologies, which may have a significant impact on the performance of space systems.

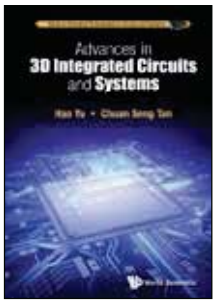
Readership: Graduate students, researchers and professionals in the field of aerospace engineering, electrical & electronic engineering, nanophotonics and optics.

300pp	**Jul 2016**	
978-981-4725-10-1	**US$118**	**£85**
978-981-4725-11-8(ebook)	**US$153**	**£111**

Series on Emerging Technologies in Circuits and Systems

ADVANCES IN 3D INTEGRATED CIRCUITS AND SYSTEMS

by **Hao Yu** & **Chuan-Seng Tan** *(NTU, Singapore)*



This book that presents a comprehensive overview on the subject of 3D integrated circuits focusing on the design of circuits and systems. It covers multiple topics about 3D integrated circuits, starting from fabrication, to modeling; then moving to system level power, thermal and I/O management techniques; and finally, the design examples of emerging technologies

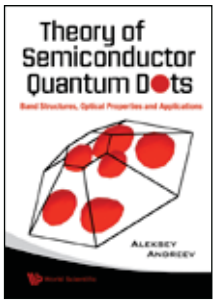
Readership: Advanced undergraduates, graduate students, researchers and professionals dealing with 3D Integrated Circuits and Systems.

392pp	**Oct 2015**	
978-981-4699-00-6	**US$138**	**£99**
978-981-4699-01-3(pbk)	**US$58**	**£38**
978-981-4699-02-0(ebook)	**US$179**	**£129**

THEORY OF SEMICONDUCTOR QUANTUM DOTS

Band Structure, Optical Properties and Applications

edited by **Aleksey Andreev** *(Hitachi Cambridge Laboratory, UK)*



The first book on the market that provides a detailed theory of the basic properties of quantum dots. Provides a unique collection of data on quantum dots not available elsewhere. Gives step-by-step instructions on how to calculate the main properties of realistic quantum dots made from a wide range of materials

Readership: Researchers in the area of semiconductor dots and nanocrystals, including fundamental research and applications, experiment and theory, and students and researchers in physics and electrical engineering, including biological and medical application areas. Some chapters are suitable for postgraduate courses.

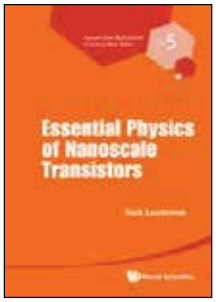
400pp	**Feb 2017**	
978-981-256-881-6	**US$160**	**£115**
978-981-283-534-5(ebook)	**US$208**	**£150**

For more information, visit: www.worldscientific.com

Lessons from Nanoscience: A Lecture Notes Series

ESSENTIAL PHYSICS OF NANOSCALE TRANSISTORS

by **Mark Lundstrom** *(Purdue University, USA)*



Key Features:

- The lectures take a unique approach that is physically insightful, mathematically simple, and that works for nano-devices as well as for micro and macro devices
- The lectures are designed to be broadly accessible to anyone with an undergraduate degree in the physical sciences or engineering
- The lectures are complemented by an extensive set of on-line resources

Readership: Any student and professional with an undergraduate degree in the physical sciences or engineering.

300pp	**Jan 2017**	
978-981-4571-72-2	**US$85**	**£56**
978-981-4571-73-9(pbk)	**US$48**	**£32**

ELECTRICAL AND GEOMETRICAL PROPERTIES OF ORGANIC MONOLAYERS

by **Mitsumasa Iwamoto** *(Tokyo Institute of Technology, Japan)*, **Tetsuya Yamamoto** *(Tokyo Institute of Technology, Japan)* & **Zhong-Can Ou-Yang** *(Chinese Academy of Science, China)*

This book addresses the physical mechanisms involved in the characteristic electrical properties and the geometrical structures that are observed from dipolar monolayers composed of organic molecules by using dielectric physics, electrostatics, the physics of liquid crystal, and soft matter physics.

Readership: This book would be useful for physicists, chemists and electronic engineers of the field to understand their experimental results and to develop new theories.

250pp	**Jun 2017**	
978-981-4602-97-6	**US$106**	**£76**
978-981-4602-98-3(ebook)	**US$138**	**£99**

World Scientific Series in Applications of Superconductivity and Related Phenomena - Vol 1

RESEARCH, FABRICATION AND APPLICATIONS OF BI-2223 HTS WIRES

edited by **Kenichi Sato**
(Sumitomo Electric Industries Ltd, Japan)

The purpose of this book is to cover all aspects of Bi-2223 superconducting wires from fundamental research, fabrication process to applications. This book contains many chapters written by distinguished experts in the world.

Readership: This book is suitable for students, researchers and industry experts who are interested in research, fabrication and application of Bi-2223 HTS superconducting wires.

508pp	**Apr 2016**	
978-981-4749-25-1	**US$186**	**£134**
978-981-4749-26-8(ebook)	**US$242**	**£174**

PDF Sample Chapters
Offers a selection of titles with sample chapters in Adobe PDF

Communications and Signal Processing

INTRODUCTION TO SIGNAL PROCESSING, INSTRUMENTATION, AND CONTROL

An Integrative Approach

by **Joseph Bentsman** *(University of Illinois at Urbana-Champaign, USA)*

The material is presented in a visually rich, mathematically and graphically well supported, but not analytically overburdened format. By incorporating software testbed into homework and project assignments, the book fully brings out the excitement of going through the adventure of exploring and solving a mold oscillator distortion problem, while covering the key signal processing, diagnostics, instrumentation, modeling, control, and system integration concepts.

Readership: Researchers, academics, professionals, undergraduate and graduate students in signal processing.

772pp	**Apr 2016**	
978-981-4733-12-0	**US$145**	**£96**
978-981-4733-13-7(pbk)	**US$88**	**£58**

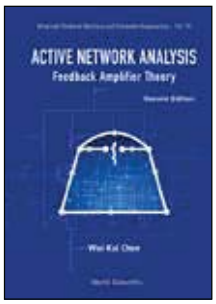
Advanced Series in Electrical and Computer Engineering

2nd Edition

ACTIVE NETWORK ANALYSIS

Feedback Amplifier Theory **(2nd Edition)**

by **Wai-Kai Chen** *(University of Illinois, Chicago, USA)*



This 2nd edition provides an in-depth, up-to-date, unified, and comprehensive treatment of the fundamentals of the theory of active networks and its applications to feedback amplifier design. The main purpose is to discuss the topics that are of fundamental importance that transcends the advent of new devices and design tools. Intended primarily as a text in circuit theory in electrical engineering for senior and/or first year graduate students, the book also serve as a reference for researchers and practicing engineers in industry.

Readership: Researchers, academics, graduate and undergraduate students in electrical & electronic engineering, computer engineering, communications & systems engineering.

800pp	**Oct 2016**	
978-981-4675-88-8	**US$226**	**£163**
978-981-4704-46-5(pbk)	**US$98**	**£71**
978-981-4675-89-5(ebook)	**US$294**	**£212**

Advanced Series on Ocean Engineering

SATELLITE SAR DETECTION OF SUB-MESOSCALE OCEAN DYNAMIC PROCESSES

by **Quanan Zheng** *(University of Maryland, College Park, USA)*

Key Features:

- Differing from general ocean remote sensing books, this book focuses on one subject only, i.e., SAR detection of the ocean. Thus it is more specified and more concentrated. The fundamental material for the book is the research results obtained by the author during the last two decades and also includes the contributions from other investigators

Readership: Graduate, academics and professionals in the field of satellite oceanography, ocean engineering, geophysics, electrical and electronic engineering, and earth science.

300pp	**Dec 2016**	
978-981-4749-00-8	**US$132**	**£95**
978-981-4749-01-5(ebook)	**US$172**	**£124**

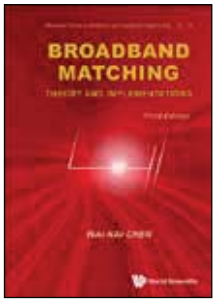
Advanced Series in Electrical and Computer Engineering - Vol 18

3rd Edition

BROADBAND MATCHING

Theory and Implementations **(3rd Edition)**

by **Wai-Kai Chen** *(University of Illinois at Chicago, USA)*



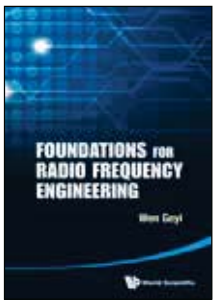
The third edition presents a unified, up-to-date and detailed account of broadband matching theory and its applications to the design of broadband matching networks and amplifiers. A special feature is the addition of results that are of direct practical value. They are design curves, tables and explicit formulas for designing networks having Butterworth, Chebyshev or elliptic, Bessel or maximally flat group-delay response. These results are extremely useful as the design procedures can be reduced to simple arithmetic. Two case studies towards the end of the book are intended to demonstrate the applications to the practical design of modern filter circuits.

Readership: Students in Electrical and Electronics Engineering, Network Engineering, Broadband Engineering.

880pp	**Dec 2015**	
978-981-4619-06-6	**US$128**	**£84**
978-981-4619-07-3(ebook)	**US$166**	**£109**

FOUNDATIONS FOR RADIO FREQUENCY ENGINEERING

by **Geyi Wen** *(Nanjing University of Information Science & Technology, China)*



The book provides a comprehensive coverage of the fundamental topics in microwave engineering, antennas and wave propagation, and electromagnetic compatibility, including electromagnetic boundary value problems, waveguide theory, microwave resonators, antennas and wave propagation, microwave circuits, principles of electromagnetic compatibility designs, information theory and systems.

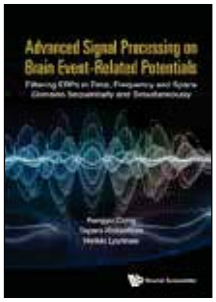
Readership: Academics, researchers, postgraduates and undergraduates in electrical & electronic engineering and applied physics.

668pp	**May 2015**	
978-981-4578-70-7	**US$149**	**£107**
978-981-4578-71-4(ebook)	**US$194**	**£139**

ADVANCED SIGNAL PROCESSING ON BRAIN EVENT-RELATED POTENTIALS

Filtering ERPs in Time, Frequency and Space Domains Sequentially and Simultaneously

by **Fengyu Cong** *(Dalian University of Technology, China)*, **Tapani Ristaniemi** *(University of Jyväskylä, Finland)* & **Heikki Lyytinen** *(University of Jyväskylä, Finland)*



Key Features:

- Advanced signal processing approaches can be applied on averaged EEG to extract ERPs' components
- Filtering ERPs in time, frequency and space domains sequentially and simultaneously
- Demo of ERP data and MATLAB codes are open-access for the advanced signal processing approaches on ERPs

Readership: Undergraduate, graduate, researchers and professionals in the field of neurology/neuroscience, medical imaging, psychology, biomedical engineering and computer science.

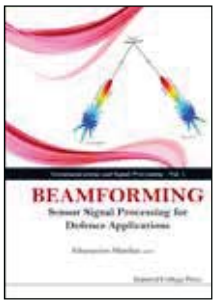
224pp	**Jun 2015**	
978-981-4623-08-7	**US$110**	**£79**
978-981-4623-09-4(ebook)	**US$143**	**£103**

Communications and Signal Processing - Vol 5

BEAMFORMING

Sensor Signal Processing for Defence Applications

edited by **Athanassios Manikas** *(Imperial College London, UK)*



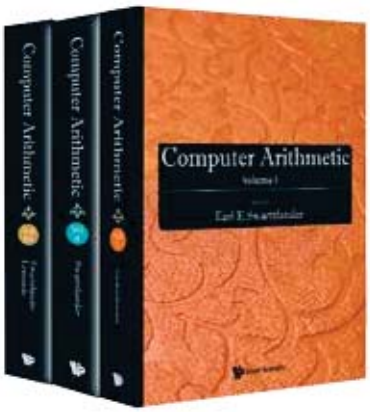
Key Features:

- Unique treatment of beamforming
- Unique modelling techniques using array processing of modern radar systems suchs as MIMO, SAR, etc.
- New material related to the research carried out at UDRC. This book is considered as one of the academic outcomes of the UDRC in Signal Processing

Readership: Postgraduate students and researchers working in the area of signal processing as well researchers working in the defence industry. The UDRC runs a series of short courses in signal processing for PhD students and industrial researchers and this book is recommended reading.

312pp	**May 2015**	
978-1-78326-274-8	**US$119**	**£86**
978-1-78326-275-5(ebook)	**US$155**	**£112**

Computer Engineering



COMPUTER ARITHMETIC: VOLUME I, II, III

edited by **Earl E Swartzlander** *(University of Texas at Austin, USA)* & **Carl E Lemonds** *(Qualcomm, Austin, USA)*

Volume I provides many of the basic papers in computer arithmetic. These papers describe the concepts and basic operations (in the words of the original developers) that would be useful to the designers of computers and embedded systems. Although the main focus is on the basic operations of addition, multiplication and division, advanced concepts such as logarithmic arithmetic and the calculations of elementary functions are also covered.

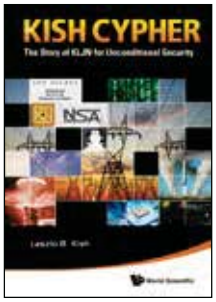
Volume II contains many classic papers treating advanced concepts in computer arithmetic, which is very suitable as stand-alone textbooks or complementary materials to textbooks on computer arithmetic for graduate students and research professionals interested in the field.

Volume III is a compilation of key papers in computer arithmetic on floating-point arithmetic and design. The intent is to show progress, evolution, and novelty in the area of floating-point arithmetic. This field has made extraordinary progress since the initial software routines on mainframe computers have evolved into hardware implementations in processors spanning a wide range of performance.

Readership: Graduate students and research professionals interested in computer arithmetic.

396pp	**Jun 2015**	
978-981-4704-14-4(Set)	**US$408**	**£294**

THE KISH CYPHER



The Story of KLJN for Unconditional Security

by **Laszlo B Kish** *(Texas A& M University, USA)*

Designed to offer a thorough account of the KLJN key exchange system (also known as the Kish Cypher, the Kish Key Distribution, etc.) and its unconditional security, this book explains the scheme's foundation in classical statistical physics and its superiority to its quantum-based competitors for particular applications.

This book clarifies the misinformation behind heated debates on the "Kish Cypher" (the popular but incorrect name for the Kirchhoff–Law–Johnson–Noise, KLJN, scheme), and debunks common misconceptions by using simple and clear-cut treatments to explain the protocol's working principle — an understanding that has eluded (even) several experts of computer science, quantum security, and electrical engineering. The work also explains how the scheme can provide the same (or higher) level of security as quantum communicators at a thousandth of the cost.

Readership: Scientists, engineers, members of the general public interested in how things work and all who are interested in today's history of secure communication, science and technology.

456pp	**Jan 2017**	
978-981-4449-45-8	**US$138**	**£99**
978-981-4449-46-5(ebook)	**US$179**	**£129**

TRANSFORMING RECONFIGURABLE SYSTEMS

A Festschrift Celebrating the 60th Birthday of Professor Peter Cheung

edited by **Wayne Luk** & **George A Constantinides** *(Imperial College London, UK)*

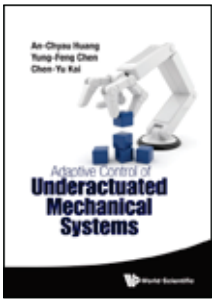
Focuses on reconfigurable systems, an area where Professor Peter Cheung has contributed much to its progress.

Readership: Graduates and researchers in the fields of programming and computer engineering.

284pp	**Apr 2015**	
978-1-78326-696-8	**US$118**	**£85**
978-1-78326-697-5(ebook)	**US$153**	**£111**

Control Engineering

ADAPTIVE CONTROL OF UNDERACTUATED MECHANICAL SYSTEMS



by **An-Chyau Huang**, **Yung-Feng Chen** & **Chen-Yu Kai** *(National Taiwan University of Science and Technology, Taiwan)*

In this book, we collected recent results on the control of underactuated mechanical systems subject to internal uncertainties and external disturbances. The strategy developed is so universal that it is not restricted to a specific system but a large class of underactuated systems. Several benchmark systems are studied in this book, including detailed literature review, system dynamics derivation, control problem formulation, and simulation verification.

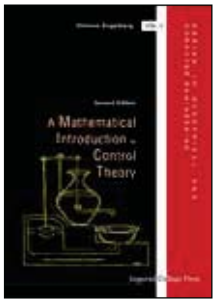
Readership: Graduate students, researchers, and academics in control engineering, mechanical engineering, electrical & electronic engineering, and optimization and control theory.

228pp	**Mar 2015**	
978-981-4663-54-0	**US$98**	**£71**
978-981-4663-55-7(ebook)	**US$127**	**£92**

Series in Electrical and Computer Engineering - Vol 4

2nd Edition

A MATHEMATICAL INTRODUCTION TO CONTROL THEORY (2nd Edition)



by **Shlomo Engelberg** *(Jerusalem College of Technology, Israel)*

This invaluable book makes effective use of MATLAB®as a tool in design and analysis. Containing 75 solved problems and 200 figures, this edition will be useful for junior and senior level university students in engineering who have a good knowledge of complex variables and linear algebra.

Readership: Researchers, academics, professionals, undergraduate and graduate students in electrical & electronic engineering, computer engineering, mechanical engineering & chemical engineering.

456pp	**Jun 2015**	
978-1-78326-779-8	**US$98**	**£65**

Electromagnetism

RESEARCH MAGNET TECHNOLOGY

Forty Years of Creating High Magnetic Fields

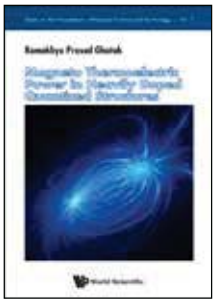
edited by **Harry Jones** *(Oxford)*

Research Magnet Technology presents an overview of the technologies necessary to provide high magnetic fields as a research tool mainly, but by no means exclusively, for condensed matter physics. Taken from the perspective of the author's career spanning four decades, it contains a historical component while at the same time deals with state-of-the-art and future developments.

Readership: Magnet technologists, engineers, physicists (especially in condensed matter physics), science historians and informed generalists.

300pp	**Feb 2018**	
978-1-84816-326-3	**US$130**	**£94**
978-1-84816-327-0(ebook)	**US$169**	**£122**

Series on the Foundations of Natural Science and Technology - Vol 7



MAGNETO THERMOELECTRIC POWER IN HEAVILY DOPED QUANTIZED STRUCTURES

by **Kamakhya Prasad Ghatak**

Institute of Engineering and Management, India)

This pioneering monograph solely deals with the *Magneto Thermoelectric Power (MTP) in Heavily Doped (HD) Quantized Structures*. The materials considered range from HD quantum confined nonlinear optical materials to HgTe/CdTe HD superlattices with graded interfaces and HD effective mass superlattices under magnetic quantization.

Readership: Graduate students, researchers and academics interested in advanced solid state physics and nanoelectronics.

828pp	**Apr 2016**	
978-981-4713-19-1	**US$202**	**£145**
978-981-4713-20-7(ebook)	**US$263**	**£189**

Conferences
www.worldscientific.com/page/events

Electronics and Thermal Packaging

WSPC Series in Advanced Integration and Packaging

CO-DESIGN AND MODELLING FOR ADVANCED INTEGRATION AND PACKAGING

Manufacturing and Reliability

by **Christopher Bailey**, **Stoyan Stoyanov** & **Hua Lu** *(University of Greenwich, UK)*

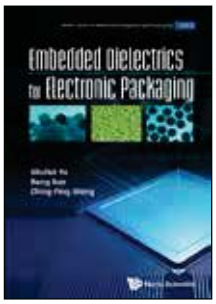
Key Features:

- Multi-domain modeling for advanced packaging and manufacturing technologies. Demonstration of how modeling manufacturing/assembly processes can be used to inform subsequent modeling/design analysis for reliability
- Written by world leading experts in multi-physics/domain modeling, who have worked for many years in this field both on government funded research projects and consultancy projects with industry
- Design and modelling challenges and solutions for implementing advanced packaging and integration technologies in high reliability applications

Readership: Graduate students, researchers professionals, and electrical and mechanical engineers in advanced packaging of micro and power electronic systems, design and modelling community.

300pp	**Feb 2017**	
978-981-4740-20-3	**US$138**	**£99**
978-981-4740-21-0(ebook)	**US$179**	**£129**

WSPC Series in Advanced Integration and Packaging



EMBEDDED DIELECTRICS FOR ELECTRONIC PACKAGING

by **Shuhui Yu** *(Shenzhen Institutes of Advanced Technology, China & Chinese Academy of Sciences, China)*, **Rong Sun** *(Shenzhen Institutes of Advanced Technology, China & Chinese Academy of Sciences, China)* & **Ching-Ping Wong** *(The Chinese University of Hong Kong, Hong Kong & Georgia Institute of Technology, USA)*

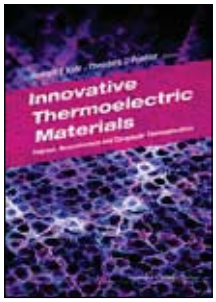
Key Features:

- One of the authors of this book is Prof. Ching Ping WONG, a world-renowned scholar in electronic engineering and a member of the US National Academy of Engineering
- This book for the first time introduces the design of the synthesizing methods of ceramic-metal hybrid particles used as dielectric filler in the polymer matrix
- Focuses on the dielectric composites for embedded capacitor applications, instead of covering broad contents

Readership: Graduate students and researchers in electronic packaging, engineers dealing with reliability of microelectronics and computer systems, as well as short courses given at microelectronics / computer manufacturing companies and conferences.

300pp	**Feb 2017**	
978-981-4619-41-7	**US$138**	**£99**
978-981-4619-42-4(ebook)	**US$179**	**£129**

INNOVATIVE THERMOELECTRIC MATERIALS



Polymer, Nanostructure and Composite Thermoelectrics

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

Key Features:

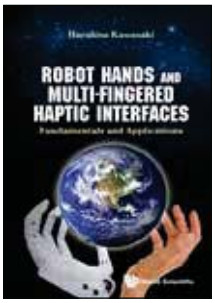
- Presents a highly authoritative picture of the field with contemporary information by prominent contributors to the field
- First book that highlights the potential of polymers in thermoelectrics
- Substantial theoretical analysis included to justify the experimental approaches reported and proposed at a level of detail that is both comprehensive and accessible

Readership: Researchers and post-graduate students in the field of thermoelectrics.

292pp	**Apr 2016**	
978-1-78326-605-0	**US$130**	**£94**
978-1-78326-606-7(ebook)	**US$169**	**£122**

Robotics

ROBOT HANDS AND MULTI-FINGERED HAPTIC INTERFACES



Fundamentals and Applications

by **Haruhisa Kawasaki** *(Gifu University, Japan)*

Key Features:

- Most available books only focus on "robot" and "robot control" for robot arms. This book treats multi-fingered robot hands
- Multi-fingered haptic interface: this is a novel research area in robot hand application and there is no book on multi-fingered haptic interfaces
- Teleoperation for multi-fingered robot hands will be realized by using multi-fingered haptic interfaces

Readership: Academic and Professional, Researchers, Graduate and Post-Graduate Engineering students specializing in robotics.

352pp	**May 2015**	
978-981-4635-60-8	**US$154**	**£111**
978-981-4635-61-5(ebook)	**US$200**	**£144**

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http://www.worldscientific.com/page/ws-online

World Scientific
Connecting Great Minds

ENCYCLOPEDIA OF TWO-PHASE HEAT TRANSFER AND FLOW I

Fundamentals and Methods **(A 4-Volume Set)**

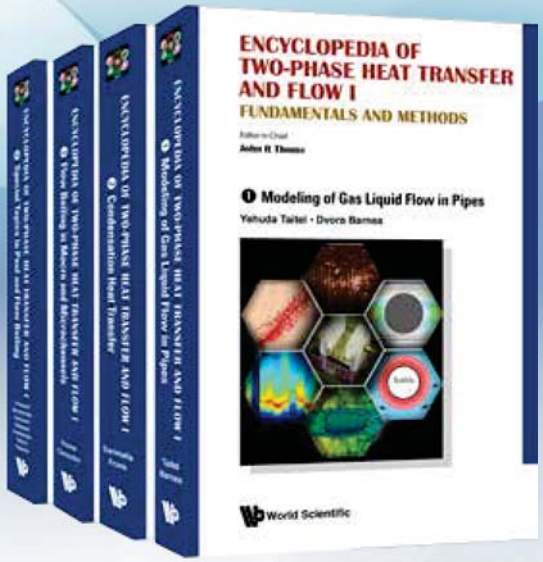
edited by **John R Thome**
(Laboratory of Heat and Mass Transfer (LTCM), Switzerland & Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland)

ENCYCLOPEDIA OF TWO-PHASE HEAT TRANSFER AND FLOW II

Special Topics and Applications (A 4-Volume Set)

edited by **John R Thome** *(Laboratory of Heat and Mass Transfer (LTCM), Switzerland & Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland)* & **Jungho Kim** *(University of Maryland, USA)*

New 2600-page reference edited by Prof. John Thome, one of the world's leading experts on two-phase heat transfer and its numerous applications.



Pub. Date: Oct 2015

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Notable aspects of all these volumes include: comprehensive coverage of the fundamentals, experimental results and measurement/test techniques, empirical and mechanistic models, a pragmatic numerical model for microchannel evaporation and condensation, high level numerical modeling of two-phase flows and heat transfer, simulator codes for micro-two-phase cooling systems, and numerous other special topics. No effort has been made to "homogenize" the content of chapters on overlapping topics, such that the reader can gain the insights of all the experts and see their different approaches and solutions to important problems.

Readership: Graduate students, researchers and professional in the fields of mechanical, refrigeration, chemical, nuclear and electronics engineering on the important topics of two-phase heat transfer and two-phase flow.

Key Features:

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- The twin-set provides a comprehensive treatment of the subject with contributions from 55 top researchers and experts
- The twin-set is relevant to researchers and engineers working on all types of heat transfer and cooling problems in a myriad of industries
- The twin-set covers not only conventional-sized cooling systems but also include a detailed focus on two-phase heat transfer and flow in microchannels, micro-evaporators, etc.

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About IJHSES: Aims & Scope

Launched in 1990, the International Journal of High Speed Electronics and Systems (IJHSES) has served graduate students and those in R&D, managerial and marketing positions by giving state-of-the-art data, and the latest research trends. Its main charter is to promote engineering education by advancing interdisciplinary science between electronics and systems in the light of high speed technology development.

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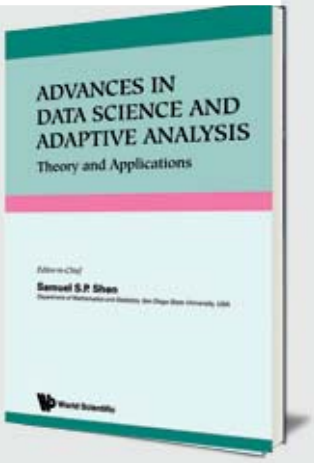

Editor-in-Chief: Samuel S.P. Shen *(San Diego State University)*

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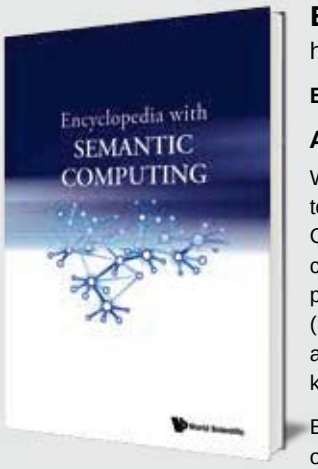

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http://www.worldscientific.com/esc

Editor-in-Chief: Phillip C-Y Sheu *(University of California, Irvine, USA)*

About ESC: Aims & Scope

While the current society is information centric, the future will be knowledge centric. The challenge is how to structure, deliver, share and make use of the large amounts of knowledge effectively and productively. On the other hand, given the dynamic nature of semantic web, new information, and hence, knowledge are constantly evolving, as a result, the concept of this encyclopedia will inadvertently need to evolve to keep pace with the development and revised to meet the challenge. The Encyclopedia with Semantic Computing (ESC) incorporates the recent technological advances in semantic computing (based on meaning, context and intention) which aims to develop a new model of encyclopedia that delivers quality and dynamic knowledge to both professionals and laymen.

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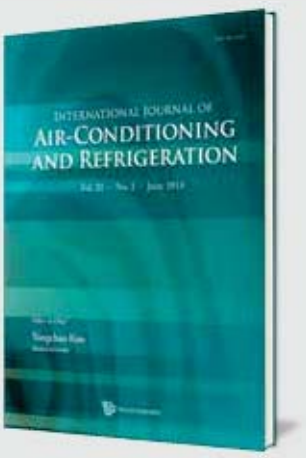

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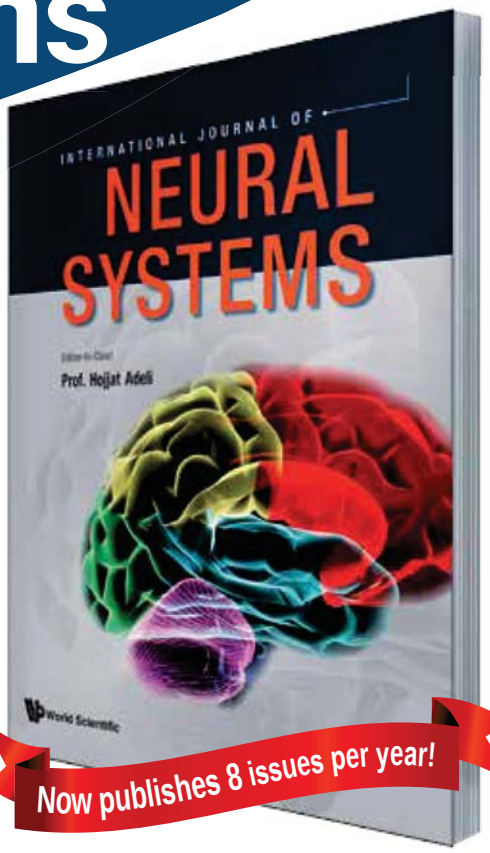

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To honor the extraordinary leadership and impactful and inventive research contributions of the Editor-in-Chief of IJNS, World Scientific established the *Hojjat Adeli Award for Outstanding Contributions in Neural Systems* in 2011 with a cash prize of $500 to be given annually to the author(s) of the best paper published in the previous volume year. The recipient of the award is selected by the Editor-in-Chief in consultation with members of the Editorial Advisory Board and is announced in the August issue of the journal.

Hojjat Adeli is Professor of Biomedical Engineering, Biomedical Informatics, Neuroscience, Neurology, Electrical and Computer Engineering, and Civil, Environmental, and Geodetic Engineering at The Ohio State University. He has authored over 540 scientific publications including 15 books since he received his Ph.D. from Stanford University in 1976 at the age of 26. His penetrating research has appeared in over 100 journals. He has presented Keynote/Plenary Lectures at 101 research conferences held in 43 different countries. In 1998 he received the University Distinguished Scholar Award from The Ohio State University "in recognition of extraordinary accomplishment in research and scholarship". He is the quadruple-winner of the OSU College of Engineering Lumley Outstanding Research Award. In 2007 he received the Peter L. and Clara M. Scott Award for Excellence in Engineering and Charles E. MacQuigg Outstanding Teaching Award from OSU. Among his numerous awards include a Special Medal in Recognition of Outstanding Contribution to the Development of Computational Intelligence from The Polish Neural Network Society, Eduardo Renato Caianiello Award for Excellence in Scientific Research from Italian Society of Neural Networks, an Honorary Doctorate from Vilnius Gediminas Technical University, Lithuania, and membership in the Spanish Royal Academy of Engineering. He is a Thomson Reuters **Highly Cited Researcher** in two categories of **Engineering** and **Computer Science**. In 2010, he was profiled as **Engineering Legend** in ASCE journal of Leadership and Management in Engineering. He is a Distinguished Member of ASCE, and a Fellow of AAAS, IEEE, AIMBE, and the American Neurological Association.

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Nature

Top papers: Hojjat Adeli Awards for Outstanding Contribution in Neural Systems

- **2011 winner:** A. Shoeb, J. Guttag, T. Pang, and S. Schachter (2009), "Non-invasive Computerized System for Automatically Initiating Vagus Nerve Stimulation Following Patient-Specific Detection of Seizures or Epileptiform Discharges," *IJNS,* 19:3 *(Massachusetts Institute of Technology and Harvard University).*
- **2012 winner:** L. Ronan, R. Pienaar, G. Williams, E. Bullmore, T.J Crow, N. Roberts, P.B Jones, J. Suckling, and P.C. Fletcher (2011), "Intrinsic Curvature: A Marker of Millimeter-Scale Cortico-Cortical Connectivity?, *IJNS,* 21:5 *(University of Cambridge, Massachusetts General Hospital, University of Oxford, and University of Edinburgh)*
- **2013 winner:** G. Van Dijck, K. Seidl, O. Paul, P. Ruther, M.M. Van Hulle and R. Maex, "Enhancing the yield of high-density electrode arrays through automated electrode selection," *IJNS,* 22:1 *(Catholic University of Leuven, Belgium, University of Freiburg, Germany, and University of Hertfordshire, United Kingdom).*
- **2014 winner:** J. D. Enderle and D. A. Sierra, "A New Linear Muscle Fiber Model for Neural Control of Saccades," *IJNS,* 23:2, 2013 *(University of Connecticut, U.S.A.).*
- **2015 winner:** J. Friedrich, R. Urbanczik, and W. Senn, "Code-specific Learning Rules Improve Action Selection by Populations of Spiking Neurons," *IIJNS,* 24:5, 2014 *(University of Cambridge, UK, University of Bern, Switzerland, and Columbia University)*

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Lihua Xie *(Nanyang Technological University, Singapore)* &
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Aims and Scope

Unmanned Systems (US) aims to cover all subjects related to the development of automatic machine systems, which include advanced technologies in unmanned hardware platforms (aerial, ground, underwater and unconventional platforms), unmanned software systems, energy systems, modeling and control, communications systems, computer vision systems, sensing and information processing, navigation and path planning, computing, information fusion, multi-agent systems, mission management, machine intelligence, artificial intelligence, and innovative application case studies.

Abstracted & Indexed in Emerging Sources Citation Index

Selected Papers in Autonomous Agents

Extractor X — Autonomous Tilt Rotor UAV
Joshua Jang En Chao

Synthesis of Control Protocols for Autonomous Systems
Tichakorn Wongpiromsarn, Ufuk Topcu, Richard M. Murray

Distributed Filtering-Based Autonomous Navigation System of UAV
Long Zhao, Ding Wang, Baoqi Huang, Lihua Xie

Nonuniform Deployment of Autonomous Agents in Harbor-Like Environments
Suruz Miah, Bao Nguyen, François-Alex Bourque, Davide Spinello

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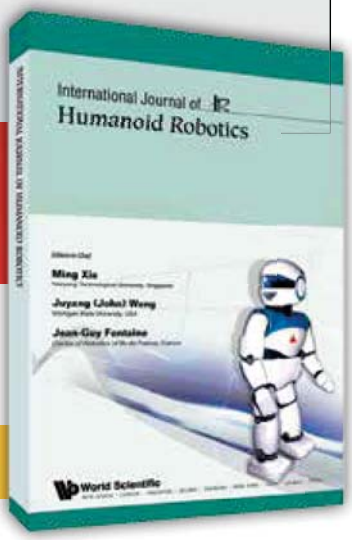
Nicholas Ernest, Kelly Cohen, Elad Kivelevitch, Corey Schumacher, David Casbeer

International Journal of Humanoid Robotics



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Editors-in-Chief: Ming Xie *(NanyangTechnological University Singapore)*, **Juyang (John) Weng** *(Michigan State University, USA)* & **Jean-Guy Fontaine** *(C.R.I.I.F., Robotic Centre of Ile de France, France)*

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Guest Editors: Jangmyung Lee, Min Cheol Lee, Xiangyang Zhu and Honghai Liu

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Xiaoying Cheng, Chunxin Gu, Weiting Liu, Xin Fu

Sliding Perturbation Observer Based Reaction Force Estimation Method of Surgical Robot Instrument for Haptic Realization
Sung Min Yoon, Min Cheol Lee, Chi Yen Kim

Visual Stimulus Background Effects on SSVEP-Based BCI Towards a Practical Robot Car Control
Xiaokang Shu, Lin Yao, Jianjun Meng, Xinjun Sheng, Xiangyang Zhu

Extended RMRC and its Application to the Motion of a Mobile Manipulator
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A Multichannel Surface EMG System for Hand Motion Recognition
Yinfeng Fang, Honghai Liu, Gongfa Li, Xiangyang Zhu

Combining Two Control Techniques for the Fast Movement of a Two-Wheel Mobile Robot
Sung Taek Cho, Seul Jung

A Balance Control Strategy for a Walking Biped Robot under Unknown Lateral External Force using a Genetic Algorithm
Yeoun-Jae Kim, Joon-Yong Lee, Ju-Jang Lee

Aims and Scope

This journal covers all subjects on the mind and body of humanoid robots. It is dedicated to advancing new theories, new techniques, and new implementations contributing to the successful achievement of future robots which not only imitate human beings, but also serve human beings. While IJHR encourages the contribution of original papers which are solidly grounded on proven theories or experimental procedures, the journal also encourages the contribution of innovative papers which venture into the new, frontier areas in robotics. Such papers need not necessarily demonstrate, in the early stages of research and development, the full potential of new findings on a physical or virtual robot.

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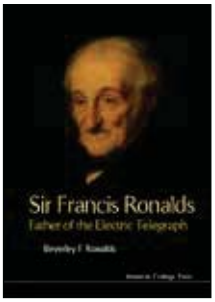

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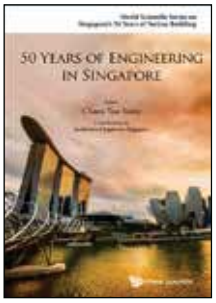

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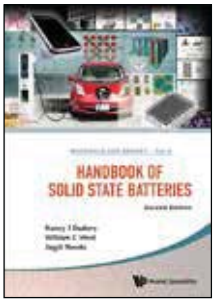

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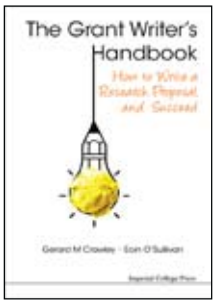

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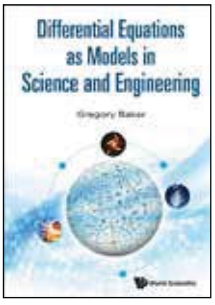

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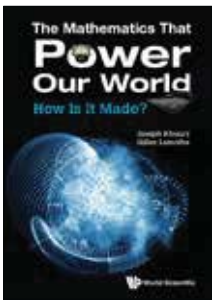

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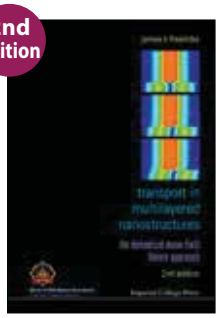

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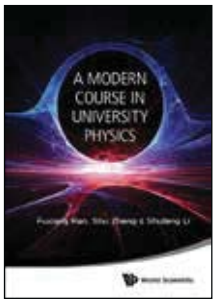

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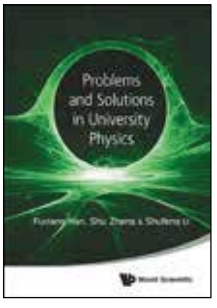

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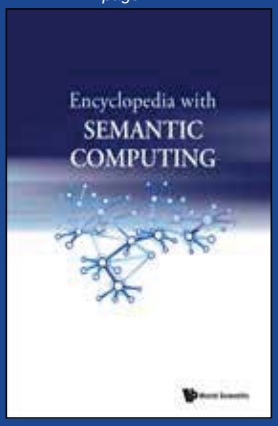

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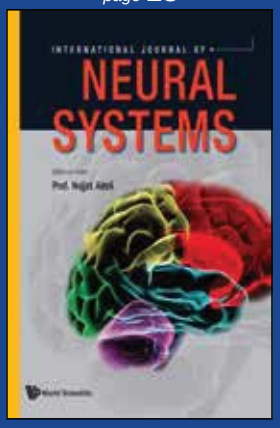

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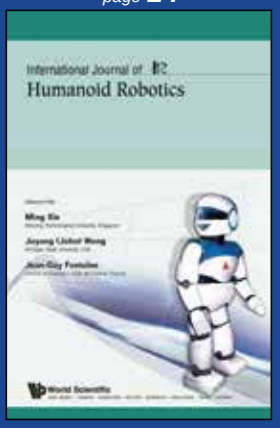

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