

2017

Catalogue

MECHANICAL ENGINEERING



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Highlights

Mechanical Engineering Catalogue 2017

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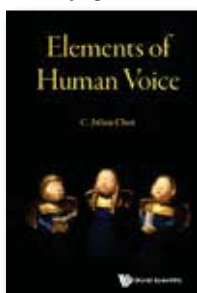
by **Ignazio Dimino**
(CIRA, The Italian Aerospace
Research Centre, Italy)
& **Ferri Aliabadi**
(Imperial College London, UK)

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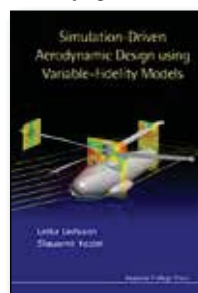
by **Junru Wu**
(University of Vermont, USA)

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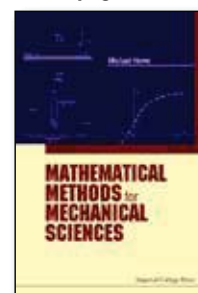
by **C Julian Chen**
(Columbia University, USA)

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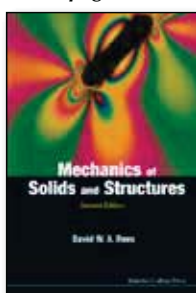
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(Reykjavik University, Iceland)

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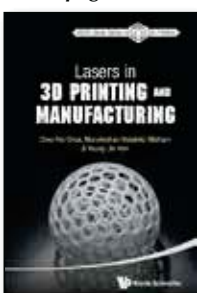
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(Boston University, USA)

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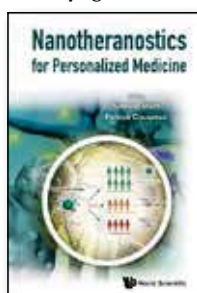
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(Brunel University, UK)

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by **Chee Kai Chua, Murukeshan
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(NTU, Singapore)

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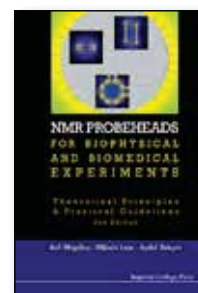
edited by **Simona Mura &
Patrick Couvreur**
(University Paris Sud XI, France)

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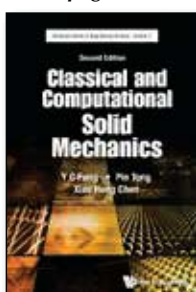
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**Dominic F L Southgate,
Peter R N Childs &
Anthony M J Bull**
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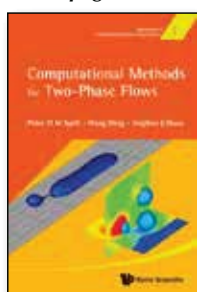
by **Joël Mispelter** (INSERM, France &
Curie Institute, France),
Mihaela Lupu (Curie Institute, France)
& **André Brugué** (University Claude
Bernard Lyon 1, France)

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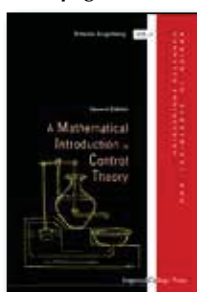
by **Y C Fung** (UC San Diego),
Pin Tong (UC San Diego &
Hong Kong University of Science
and Technology, Hong Kong)
& **Xiao Hong Chen**
(UTC Aerospace Systems, USA)

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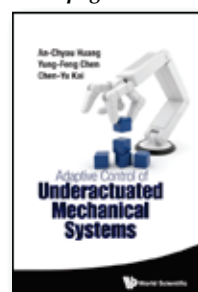
by **Peter D M Spelt**
(Imperial College London, UK),
Stephen J Shaw (Xi'an Jiaotong —
University of Liverpool, Suzhou, China)
& **Hang Ding** (UC Santa Barbara)

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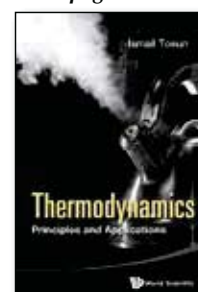
by **Shlomo Engelberg**
(Jerusalem College of
Technology, Israel)

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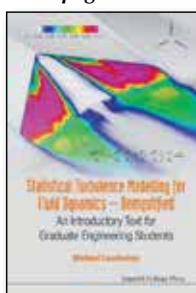
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Yung-Feng Chen
& Chen-Yu Kai**
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(Middle East Technical
University, Turkey)

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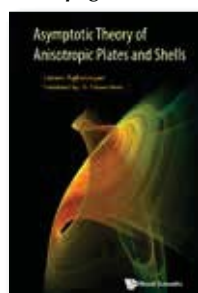
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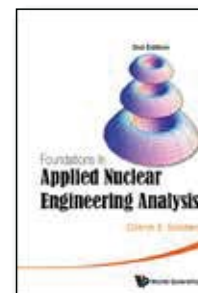
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(Laboratory of Heat and Mass
Transfer (LTCM), Switzerland &
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de Lausanne (EPFL),
Switzerland)

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by **Lenser Aghalovyan**
(National Academy of
Sciences, Armenia)
translated by **D Prikazchikov**

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by **Glenn E Sjoden**
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Acoustics / Noise

Computational and Experimental Methods in Structures - Vol 7

ACTIVE CONTROL OF AIRCRAFT CABIN NOISE

by **Ignazio Dimino** (CIRA, The Italian Aerospace Research Centre, Italy) & **Ferri Aliabadi** (Imperial College London, UK)

Key Features:

- Introduces theories to design piezoelectric-based smart systems for active control of noise and vibration in passenger aircraft cabins
- Considers sound transmission of normally and obliquely incident plane waves through homogeneous and unbounded double and triple panel partitions by using analytical and numerical tools
- Focuses on comfort subjective response of passengers and predicts the associated benefits in comfort-related parameters perceived by passengers

Readership: Researchers, advanced undergraduate and graduate students in aeronautical engineering.

304pp	Sep 2015	
978-1-78326-657-9	US\$128	£92
978-1-78326-658-6(ebook)	US\$166	£120



NONLINEAR WAVES IN BOUNDED MEDIA THE MATHEMATICS OF RESONANCE

by **Michael P Mortell** (University College Cork, Ireland) & **Brian R Seymour** (University of British Columbia, Canada)

Key Features:

- The only book dealing with nonlinear waves in bounded media
- Highlights the introduction and analysis of solutions of a nonlinear difference equation — the standard mapping — that connects shocked resonance to chaos
- Introduces many concepts and publishes extensively in the literature of nonlinear waves and nonlinear resonance

Readership: Advanced undergraduate and graduate students, researchers and practitioners in the field of acoustics, fluid mechanics and applied physics.

320pp	Feb 2017	
978-981-3100-33-6	US\$130	£94
978-981-3100-34-3(ebook)	US\$169	£122

Frontier Research in Computation and Mechanics of Materials and Biology - Vol 3

ACOUSTIC METAMATERIALS AND WAVE CONTROL

by **Xiaoming Zhou** (Beijing Institute of Technology, China), **Gengkai Hu** (Beijing Institute of Technology, China)

As an emerging interdisciplinary field, acoustic metamaterials have generated increasing interests for diverse engineering applications, from noise and vibration alleviation to super-resolution imaging.

This comprehensive title gives a broad overview on different aspects of acoustic metamaterials with a balance of theory and experiment. It is not only a collection of the authors' original works to these interesting topics, but also the main achievements in this field.

Readership: Researchers, academics, professionals and graduate students in mechanical engineering, condensed matter physics, new materials, classical mechanics and applied physics.

300pp	Feb 2017	
978-981-4641-68-5	US\$130	£94
978-981-4641-69-2(ebook)	US\$169	£122

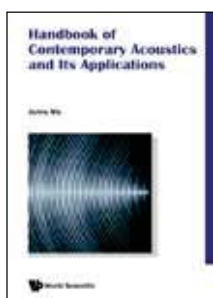
HANDBOOK OF CONTEMPORARY ACOUSTICS AND ITS APPLICATIONS

by **Junru Wu** (University of Vermont, USA)

This Handbook systematically covers the theoretical principle and analytical methodology of generation, propagation and reception of acoustic waves in an ideal (inviscid) and non-ideal fluid media. The topics include the transduction, radiation, scattering, diffraction and reception of the acoustic wave. It also discusses the acoustic field in a duct/pipe, waveguide and cavity, the wave propagation in the multi-layers, nonlinear finite amplitude wave propagation and the mechanisms of physical and biological effects and their broad modern applications such as sonoporation, targeted drug delivery, acoustic tweezers, noninvasive high intensity focused ultrasound (HIFU) surgery, as well as sonoluminescence.

Readership: Academic and professional, senior undergraduate and graduate students reading Acoustics, as well as specialists working in relevant fields.

500pp	Feb 2016	
978-981-4651-27-1	US\$495	£327
978-981-4651-29-5(ebook)	US\$644	£425



ELEMENTS OF HUMAN VOICE

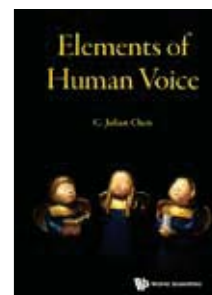
by **C Julian Chen** (Columbia University, USA)

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	Aug 2016	
978-981-4733-89-2	US\$114	£82
978-981-4733-90-8(ebook)	US\$148	£107



Aerodynamics / Aerospace Engineering

SIMULATION-DRIVEN AERODYNAMIC DESIGN USING VARIABLE-FIDELITY MODELS

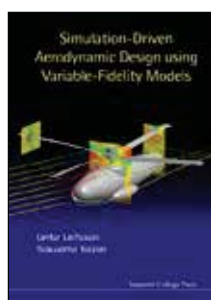
by **Leifur Leifsson & Slawomir Koziel**
(Reykjavik University, Iceland)

Key Features:

- Gathers a number of relevant techniques that were never compiled in one publication before, and certain state-of-the-art techniques have never been published in book form
- Compact and self-contained introduction to the area of surrogate-based optimization and variable-fidelity optimization
- At present, this is the only book available on the market that offers coverage of variable-fidelity optimization methods

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



Applications

MECHANICS OF SOLIDS AND STRUCTURES

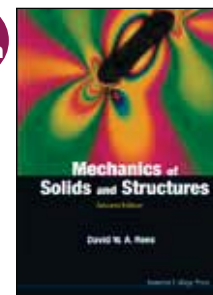
2nd Edition

by **David W A Rees** (Brunel University, UK)

This edition includes new material and an extended exercise section for each of the fifteen chapters, as well as three appendices. The broad text ensures its suitability for undergraduate and postgraduate courses in which the mechanics of solids and structures form a part including: mechanical, aeronautical, civil, design and materials engineering.

Readership: Undergraduate and graduate students of mechanical, aeronautical, civil, materials and design engineering.

840pp	Aug 2016	
978-1-78326-395-0	US\$155	£102
978-1-78326-396-7(pbk)	US\$88	£58



PHOTONICS IN SPACE

Advanced Photonic Devices and Systems

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

Key Features:

- Novelty and high quality of the scientific content
- Authors expertise
- Unique treatment of optical velocity sensors, gyro systems, and optical signal processors

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

INTRODUCTION TO MICROMECHANICS AND NANOMECHANICS

2nd Edition

by **Shaofan Li** (UC Berkeley) & **Gang Wang**
(Hong Kong University of Science and Technology, China)

Review of the First Edition:

In this second edition, some previous chapters are revised, and some new chapters added — crystal plasticity, multiscale crystal defect dynamics, quantum force and stress, micromechanics of metamaterials, and micromorphic theory.

Readership: Researchers and educators in academics, and graduate students in engineering mechanics, nanomechanics, nanomaterials and nanostructure and mechanical engineering.

700pp	Dec 2016	
978-981-4436-75-5	US\$114	£75
978-981-4436-76-2(pbk)	US\$64	£42

2nd Edition

MATHEMATICAL METHODS FOR MECHANICAL SCIENCES

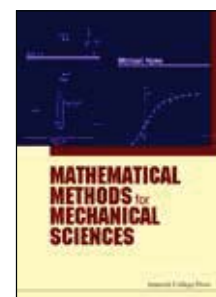
by **Michael Howe** (Boston University, USA)

Key Features:

- Equips the undergraduate engineer with the basic mathematical tools for developing and understanding mathematical models of physical systems
- Enables the working engineer to understand, write and effectively utilise technical reports and papers
- Forms a compact review suitable for first-year engineering graduate students

Readership: Engineering graduate and undergraduate students, and working engineers.

332pp	Oct 2015	
978-1-78326-664-7	US\$88	£58



World Scientific Series in 3D Printing

LASERS IN 3D PRINTING AND MANUFACTURING

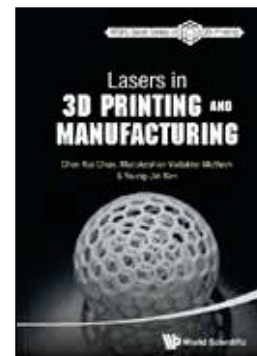
by **Chee Kai Chua, Murukeshan Vadakke Matham & Young-Jin Kim** (NTU, Singapore)

Key Features:

- Gain overall understanding of the multidisciplinary nature of laser-assisted 3D printing and its potential
- Have fundamental knowledge of the Lasers in 3D Printing and Manufacturing
- Learn various fabrication techniques for applications of the Lasers in 3D Printing and Manufacturing
- Understand the strengths and shortcomings of each technique

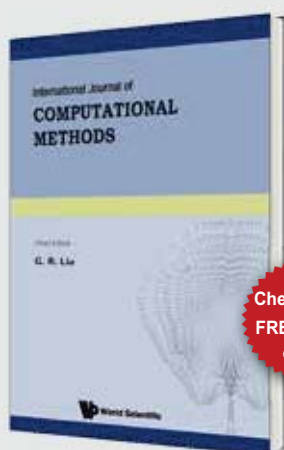
Readership: Students, professionals, and research staff working on 3D printing.

400pp	Dec 2016	
978-981-4656-41-2	US\$128	£84
978-981-4656-42-9(pbk)	US\$68	£45
978-981-4656-43-6(ebook)	US\$166	£109



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INTERNATIONAL JOURNAL OF COMPUTATIONAL METHODS (IJCM)

<http://www.worldscientific.com/ijcm>

Chief Editor: G R Liu (*University of Cincinnati, USA*)

About IJCM: Aims and Scope

The purpose of this journal is to provide a unique forum for the fast publication and rapid dissemination of original research results and innovative ideas on the state-of-the-art on computational methods. The methods should be innovative and of high scholarly, academic and practical value.

The journal is devoted to all aspects of modern computational methods and the articles can involve theory, algorithm, programming, coding, numerical simulation and/or novel application of computational techniques to problems in engineering, science, and other disciplines related to computations. The journal places a great emphasis on creativity, novelty and innovation of computational methods. It aims to become the major platform that archives the history of the technical development of new generations of computational methods.

Abstracting/Indexing: Compendex | Ebsco Discovery Service | ExLibris Primo Central | Google Scholar | INSPEC | Journal Citation Reports/Science Edition | OCLC WorldCat® | Proquest Summon | Science Citation Index Expanded (also known as SciSearch®) | Scopus | Zentralblatt MATH



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INTERNATIONAL JOURNAL OF MODELING, SIMULATION, AND SCIENTIFIC COMPUTING (IJMSSC)

<http://www.worldscientific.com/ijmssc>

About IJMSSC: Aims and Scope

This is a quarterly journal which deals with the fields of system modeling, simulation and scientific computing. The scope of the journal covers, but is not limited to:

- Modeling theory and methodology for complex systems, system simulation theory and methodology
- Complex applications of high level simulation languages, Multi-parameter Optimization in simulation
- Verification, validation and accreditation of theory and technology
- Finite element methods, finite difference methods, Approximation theory
- Distributed/High-Performance/Pervasive/Grid/Cloud Computing, Bioinformatics/Data-Mining, High Performance simulation technology
- Computational electromagnetics, electrodynamics, fluid dynamics, computational heat, mass, and momentum transfer
- M&S technology of continuous systems/discrete systems/hybrid systems/ Intelligent systems, complex systems/open systems/huge systems
- SBA/virtual prototyping engineering technology
- Simulation language methodology, supporting platforms, application techniques

Abstracting/Indexing: Compendex | Ebsco Discovery Service | ExLibris Primo Central | Google Scholar | OCLC WorldCat® | Proquest Summon | Scopus

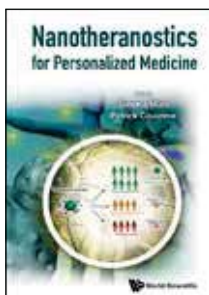
Bioengineering

NANOTHERANOSTICS FOR PERSONALIZED MEDICINE

edited by **Simona Mura & Patrick Couvreur**
(University Paris Sud XI, France)

Key Features:

- This book presents an integrated and transdisciplinary description of an emerging concept in the world of nanomedicine: nanotheranostics
- This work is one of the few dedicated to nanotheranostics and its applications



Readership: Advanced undergraduates, graduates, as well as experimental researchers in academia or the industry with an interest in this emerging concept in the nanomedicine world.

348pp	Apr 2016	
978-981-4713-52-8	US\$154	£111
978-981-4713-53-5(ebook)	US\$200	£144

SPORTS INNOVATION, TECHNOLOGY AND RESEARCH

edited by **Dominic F L Southgate, Peter R N Childs & Anthony M J Bull**
(Imperial College London, UK)

It presents the on-going development of a diverse range of areas from elite rowing performance to impact protection to sporting amenities in communities. Also included are descriptions of some of the latest innovations that have been developed as part of the Rio Tinto Sports Innovation Challenge, an initiative that tasked engineering students to design, build and implement Paralympic and other sporting equipment. It offers a glimpse at the breadth of creativity that can be achieved when human centred design is applied to an area such as disabled sport. It also shows the potential that design and engineering have to contribute to healthy lifestyles and the generation of whole new sporting domains.



Readership: Anyone with an interest in design and sports technology, including those in industry, academia, sports organizations and athletes themselves.

230pp	Aug 2016	
978-1-78634-041-2	US\$114	£82
978-1-78634-042-9(ebook)	US\$148	£107

Series on Bioengineering and Biomedical Engineering - Vol 8

DYNAMICS OF THE VASCULAR SYSTEM

Interaction of the Heart

2nd Edition

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

2nd Edition

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.

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

300pp	Dec 2016	
978-981-4723-74-9	US\$114	£82
978-981-4723-75-6(ebook)	US\$148	£107

BIOENGINEERING FLUID MECHANICS

by **Tin-Kan Hung** (University of Pittsburgh, USA)

Key Features:

- Relates the conventional fluid engineering to the different phenomena in bioengineering system
- Provides a systematic framework for life scientists to comprehend the mechanics of biological flow processes

Readership: Researchers, professionals, academics, graduate and advanced undergraduate students in biomedical engineering, engineering mechanics, mechanical & aerospace engineering, chemical engineering and civil & environmental engineering.

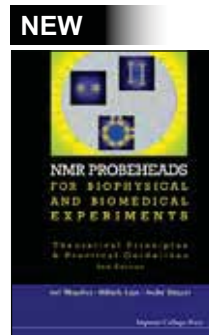
200pp	Mar 2017	
978-981-4295-15-4	US\$68	£45

NMR PROBEHEADS FOR BIOPHYSICAL AND BIOMEDICAL EXPERIMENTS

Theoretical Principles and Practical Guidelines (2nd Edition)

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

2nd Edition



Key Features:

- A unique "standalone" document that describes in full the design and properties of NMR probeheads
- Entirely dedicated to the RF probes, with detailed calculations and practical illustrations
- Considers in greater details some topics partially addressed in the first edition, including parallel imaging and the distribution of electric fields
- Accompanied by improved versions of the software that was already present in the first edition

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".

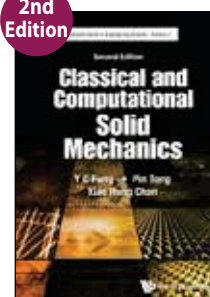
756pp	Jul 2015	
978-1-84816-662-2	US\$165	£109

Advanced Series in Engineering Science - Vol 2

CLASSICAL AND COMPUTATIONAL SOLID MECHANICS (2nd Edition)

by **Y C Fung** (UC San Diego), **Pin Tong** (UC San Diego & Hong Kong University of Science and Technology, Hong Kong) & **Xiao Hong Chen** (UTC Aerospace Systems, USA)

2nd Edition



The second edition provides an update of the recent developments in classical and computational solid mechanics. The structure of the book is also updated to include five new areas: Fundamental Principles of Thermodynamics and Coupled Thermoelastic Constitutive Equations at Large Deformations, Functional Thermodynamics and Thermoelastoplasticity, Thermodynamics with Internal State Variables and Thermo-Elasto-Viscoplasticity, Electro-Thermo-Viscoelasticity/Viscoplasticity, and Meshless Method. These new topics are added as self-contained sections or chapters. Many books in the market do not cover these topics.

Readership: Researchers, academics, graduate and senior undergraduates in biomedical engineering, mechanical engineering, aeronautical and aerospace engineering, civil engineering and applied mechanics.

900pp	Nov 2016	
978-981-4713-64-1	US\$178	£117
978-981-4713-65-8(pbk)	US\$95	£63

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Intelligence is 2 of 130)

Editor-In-Chief

Hojjat Adeli

The Ohio State University, USA
adeli.1@osu.edu

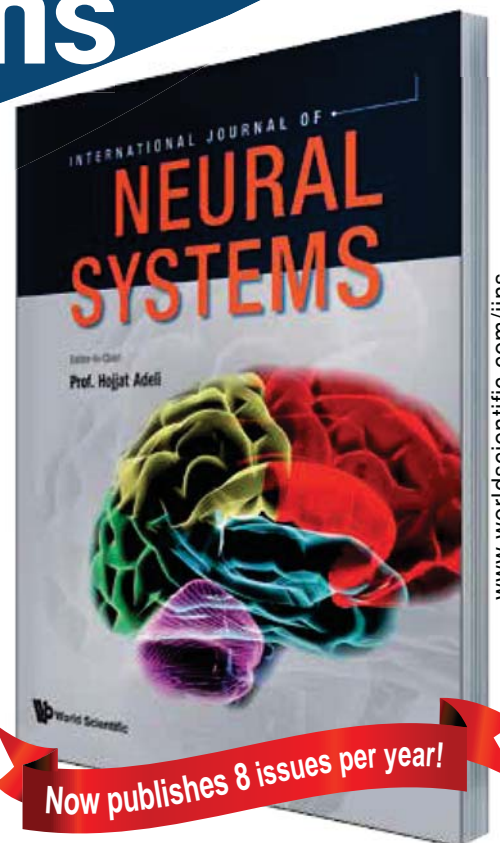
Hojjat Adeli Award for Outstanding Contributions in Neural Systems

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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Igor Aleksander

Imperial College of London
Nature

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

- **2011 winner:** A. Shoeb, J. Gutttag, 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. Urbanczyk, and W. Senn, "Code-specific Learning Rules Improve Action Selection by Populations of Spiking Neurons," *IJNS*, 24:5, 2014 (University of Cambridge, UK, University of Bern, Switzerland, and Columbia University)

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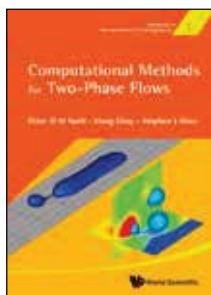


Chemical Engineering

Advances in Computational Fluid Dynamics - Vol 1

COMPUTATIONAL METHODS FOR TWO-PHASE FLOWS

by **Peter D M Spelt** (*Imperial College London, UK*), **Stephen J Shaw** (*Xi'an Jiaotong — University of Liverpool, Suzhou, China*) & **Hang Ding** (*UC Santa Barbara*)



Computational Methods for Two-Phase Flows is self-contained, and aims to elucidate and analyze the strong relations between the various numerical methods, beyond merely giving detailed summary of the various methods. A unique enhanced feature of the book is that the sample codes that come with the book provide further benefits and ease of use to readers to implement the various numerical methods.

Readership: Scientists and engineers in the field of computational fluid dynamics of two-phase flows.

350pp	May 2017	
978-981-4280-97-6	US\$138	£99
978-981-4280-98-3(ebook)	US\$179	£129

Advances in Chemical and Process Engineering - Vol 2

GAS HYDRATES AND FLOW ASSURANCE

by **Bahman Tohidi** (*Heriot-Watt University, UK*)

This definitive text, while providing an absorbing overview on gas hydrates, their properties and potential applications (for example, gas separation, storage and transport, heat storage, source of energy), also places special emphasis on flow assurance and how it can be used to prevent gas hydrates problems in oil and gas transport pipelines. It also covers experimental techniques in determining gas hydrate phase boundary in bulk and porous media, thermodynamic modelling and various predictive techniques, and novel techniques that tackle gas hydrate and flow assurance problems. Real-life case studies are included for discussion.

Readership: Postgraduates, researchers and industrialists in the oil and gas sector.

150pp	Feb 2018	
978-1-84816-594-6	US\$82	£59
978-1-84816-595-3(ebook)	US\$107	£77

FUNDAMENTALS OF ELECTROCHEMICAL ENERGY DEVICES

by **Yogeshwar Sahai & Jia Ma** (*Ohio State University, USA*)

Fundamentals of Electrochemical Energy Devices is a multidisciplinary textbook designed to put across to the readers a comprehensive view covering the subjects of electrochemical devices for energy — from the concepts and underpinning technologies to the peripheral devices such as batteries, fuel cells, and electrochemical capacitors of electrochemistry, thermodynamics, reaction kinetics, interfacial and transport phenomena — paying particular attention to the correlation between concepts as well as the similarity and differences between various electrochemical energy devices.

Readership: Engineering Students studying chemical engineering, electrochemistry and energy, and professionals who are working on or will do research on electrochemical energy devices.

300pp	Nov 2017	
978-981-4616-15-7	US\$98	£65

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Editor-in-Chief

Wang, Jaw-Lin

(*National Taiwan University, Taiwan*)

About BME: Aims and Scope

Biomedical Engineering: Applications, Basis and Communications is an international, interdisciplinary journal aiming at publishing up-to-date contributions on original clinical and basic research in the biomedical engineering. Research of biomedical engineering has grown tremendously in the past few decades. Meanwhile, several outstanding journals in the field have emerged, with different emphases and objectives. We hope this journal will serve as a new forum for both scientists and clinicians to share their ideas and the results of their studies.

Biomedical Engineering: Applications, Basis and Communications explores all facets of biomedical engineering, with emphasis on both the clinical and scientific aspects of the study. It covers the fields of bioelectronics, biomaterials, biomechanics, bioinformatics, nano-biological sciences and clinical engineering. The journal fulfils this aim by publishing regular research / clinical articles, short communications, technical notes and review papers. Papers from both basic research and clinical investigations will be considered.

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Control Engineering

Series in Electrical and Computer Engineering — Vol. 4

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2nd Edition

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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**

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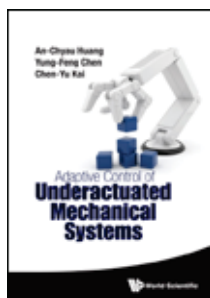
ADAPTIVE CONTROL OF UNDERACTUATED MECHANICAL SYSTEMS

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. The control strategy developed in chapter 4 is able to stabilize all these benchmark systems with satisfactory performance regardless of the underactuated dynamics and various uncertainties.

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**
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THERMODYNAMICS

Principles and Applications

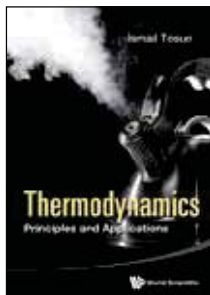
by **Ismail Tosun**

(*Middle East Technical University, Turkey*)

This eminently readable introductory text provides a sound foundation to understand the abstract concepts used to express the laws of thermodynamics. The emphasis is on the fundamentals rather than spoon-feeding the subject matter. The concepts are explained with utmost clarity in simple and elegant language. It provides the background material needed for students to solve practical problems related to thermodynamics. Answers to all problems are provided.

Readership: Researchers, academics, professionals, undergraduate and graduate students in chemical engineering, mechanical engineering and energy studies.

376pp **Aug 2015**
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Fluid Dynamics / Two-Phase Flow

NEW

STATISTICAL TURBULENCE MODELLING FOR FLUID DYNAMICS — DEMYSTIFIED

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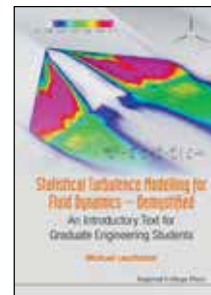
"Overall, the book is a well-conceived and a welcome addition to the turbulence-modelling library." **The Aeronautical Journal**

Key Features:

- Emphasis on physical and phenomenological interpretation
- Broad range of models covered
- Strong emphasis on understanding the concepts and the rationale behind assumptions
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Readership: Researchers and post-graduate students in the field of fluid dynamics.

424pp **Oct 2015**
978-1-78326-660-9 **US\$124** **£82**
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ADVANCES IN COMPUTATION, MODELING AND CONTROL OF TRANSITIONAL AND TURBULENT FLOWS

edited by **Tapan K Sengupta** (*Indian Institute of Technology, Kanpur, India*), **Sanjiva K Lele** (*Stanford*), **Katepalli R Sreenivasan** (*New York University, USA*) & **Peter A Davidson** (*Cambridge*)

The role of high performance computing in current research on transitional and turbulent flows is undoubtedly very important. This review volume provides a good platform for leading experts and researchers in various fields of fluid mechanics dealing with transitional and turbulent flows to synergistically exchange ideas and present the state of the art in the fields.

Readership: Researchers, professionals, academics, graduate and senior undergraduates in aerospace engineering, mechanical engineering, engineering mechanics, geophysics and fluid mechanics.

560pp **Jan 2016**
978-981-4635-15-8 **US\$178** **£128**
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ENCYCLOPEDIA OF TWO-PHASE HEAT TRANSFER AND FLOW I

Fundamentals and Methods (A 4-Volume Set)

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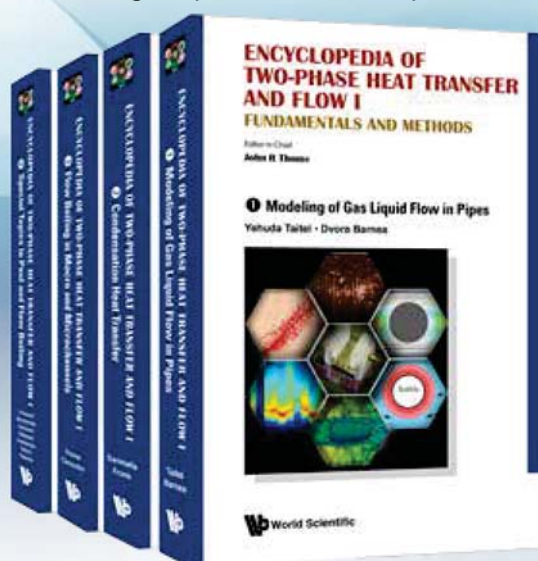
(Laboratory of Heat and Mass Transfer (LTCM), Switzerland &
Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland)

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

978-981-4623-20-9 (Set I, 1,112pp) US\$1,350 £891
978-981-4623-21-6 (Set I, ebook) US\$1,755 £1,158

Pub. Date: Oct 2015

978-981-4623-27-8 (Set II, 1,324pp) US\$1,350 £891
978-981-4623-28-5 (Set II, ebook) US\$1,755 £1,158

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:

- The twin-set offers an all-in-one reference for two-phase heat transfer and flows
- 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.

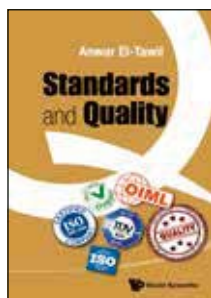
Industrial and Systems Engineering

NEW

STANDARDS AND QUALITY

by Anwar El-Tawil

The book brings together a number of subjects of prime importance for any practicing engineer and, students of engineering. The book explains the concepts and functions of voluntary standards, mandatory technical regulations, conformity assessment (testing and measurement of products), certification, quality and quality management systems as well as other management systems such as environmental, social responsibility and food safety management systems.



The book also gives a comprehensive description of the role of metrology systems that underpin conformity assessment. A description is given of typical national systems of standards, quality and metrology and how they relate directly or through regional structures to international systems. The book also covers the relation between standards and trade and explains the context and stipulations of the Technical Barriers to Trade Agreement of the World Trade Organization (WTO).

Contents:

- Standards and Their Benefits
- The Standardization Process
- The National Standards Body
- International Standardization
- Conformity to Standards — Certification and Accreditation
- Standards and Trade
- Quality and Quality Management Systems
- Environmental Management Systems
- Overview of Other Management Systems
- The Role of Metrology — The Quality Infrastructure

Readership: Practicing engineers and managers in industry who wish to understand quality infrastructure and quality management, and their relation to regional and international standards.

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Hoang Pham (*Rutgers University*)

About IJRQSE: Aims and Scope

IJRQSE is a refereed journal focusing on both the theoretical and practical aspects of reliability, quality, and safety in engineering. The journal is intended to cover a broad spectrum of issues in manufacturing, computing, software, aerospace, control, nuclear systems, power systems, communication systems, and electronics. Papers are sought in the theoretical domain as well as in such practical fields as industry and laboratory research. The journal is published quarterly, March, June, September and December. It is intended to bridge the gap between the theoretical experts and practitioners in the academic, scientific, government, and business communities. Review articles and case studies are also welcome in addition to innovative works in all key areas of the journal.

Submission topics include but are not limited to the following: Reliability, quality assurance and engineering, software, algorithms, design and manufacturing, fuzzy logic, reliability growth and prediction, safety engineering, software testing and reliability, modeling and control issues, concurrent engineering, optimization of system reliability, performance analysis of systems, quality planning and measurements, risk assessment and analysis, fault-tolerant computing, and critical systems design.

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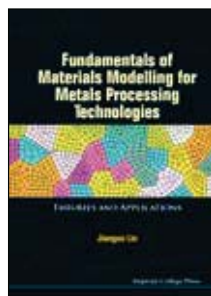
Theories and Applications

by **Jianguo Lin** (*Imperial College London, UK*)

This book provides a comprehensive introduction to the unique theory developed over years of research on materials and process modelling and its application in metal forming technologies. It starts with the introduction of fundamental theories on the mechanics of materials, computational mechanics and the formulation of unified constitutive equations. Particular attention is paid to elastic – plastic formulations for cold metal forming and unified elastic – viscoplastic constitutive equations for warm/hot metals processing. Damage in metal forming and numerical techniques to solve and determine the unified constitutive equations are also detailed.

Readership: Researchers, academics, professionals and postgraduate students in materials, mechanical engineering and industrial engineering.

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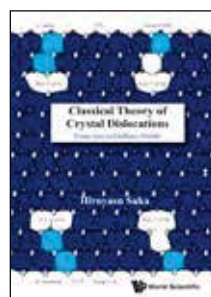
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by **Hiroyasu Saka** (*Nagoya University, Japan*)**Key Features:**

- The competing title is "Theory of dislocations" by Hirth and Lothe: In this book, while fundamental aspects are fully described, nothing or only little is mentioned about functional materials such as GaN and SiC, nor about dislocations in a thin crystal such as epilayer, which is essential in modern semiconductor technology
- Many original pictures
- Many exercises, which the author found useful when he was teaching in Department of Materials Science and Engineering of Nagoya University to stimulate their interests in dislocation theory

Readership: Graduate students, academics and professionals interested in dislocation theory, crystal dislocations.

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From Theory to Applications

by **Alexander K Tagantsev & Petr V Yudin**(*Swiss Federal Institute of Technology (EPFL), Switzerland*)

This unique compendium is devoted to flexoelectricity – the response of polarization to a strain gradient. The effect is analogous to piezoelectricity which is the response of polarization to strain itself. In contrast to piezoelectricity, which appears only in non-centrosymmetric materials, flexoelectric effect is allowed by symmetry in any materials. It becomes appreciable in nano-scale systems, where large strain gradients arise. The book discusses different nano-scale manifestations of the effect ranging from repulsion of acoustic and optic branches of materials to flexoelectricity in domain walls. It mainly caters for scientists, engineers and students.

Readership: Researchers, academics, professionals and graduate students in materials engineering, mechanical engineering and chemical engineering.

200pp	Aug 2016	
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978-981-4719-32-2(ebook)	US\$148	£107



World Scientific Series in Applications of Superconductivity and Related Phenomena - Vol 2

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Basics and Applications

edited by **René Flükiger** (University of Geneva, Switzerland)

The compendium gives a complete overview of the properties of MgB_2 (Magnesium Diboride), a superconducting compound with a transition temperature of $T_c = 39K$, from the fundamental properties to the fabrication of multifilamentary wires and to the presentation of various applications. Written by eminent researchers in the field, this indispensable volume not only discusses superconducting properties of MgB_2 compounds, but also describes known preparation methods of thin films and of bulk samples obtained under high pressure methods.

Readership: Researchers, academics, professionals and graduate students in materials engineering, materials science, and solid state physics.

350pp	Jul 2016	
978-981-4725-58-3	US\$150	£108
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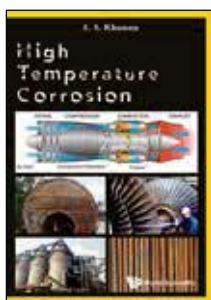
HIGH TEMPERATURE CORROSION

edited by **A S Khanna** (Indian Institute of Technology, Bombay, India)

The book begins with fundamentals of oxidation and corrosion. Various concepts relating to the modification or deterioration of mechanical properties when material is exposed to an aggressive environment compared to an inert environment or vacuum are also covered. Other chapters highlight the behavior of various advanced materials to high temperature conditions, an important high temperature effect called Active Element Effect, and many high temperature coatings and their behavior.

Readership: Researchers, academics, and professionals in surface science and new materials.

304pp	Jun 2016	
978-981-4675-22-2	US\$115	£83
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INNOVATIVE THERMOELECTRIC MATERIALS

Polymer, Nanostructure and Composite Thermoelectrics

edited by **Howard E Katz & Theodore O Poehler**

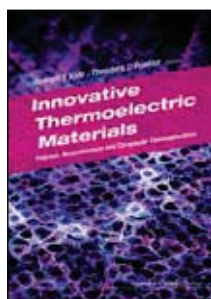
(Johns Hopkins University, USA)

Key Features:

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- 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



THE CUTTING EDGE OF TRIBOLOGY

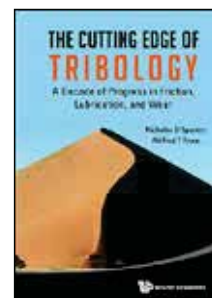
A Decade of Progress in Friction, Lubrication and Wear

by **Nicholas D Spencer** (ETH Zürich, Switzerland) & **Wilfred T Tysoe** (University of Wisconsin-Milwaukee, USA)

"The book covers a pretty wide variety of topics for a small book, thus providing the reader with a cognizant perspective on subjects that the reader might have only encountered in passing but about which he might yet be curious. This book makes for a delightful read and, while certainly technical in nature, a person with a minimal knowledge of the world of tribology can readily follow and understand the particular subject being discussed. Eddy and Nic are masters of simple, clear explanations as exhibited in their columns and often with a little humor, interjected for good measure." Society of Tribologists and Lubrication Engineers

Readership: Researchers, scientists and students in tribology, materials study, friction and lubrication research.

300pp	Jun 2015	
978-981-4656-55-9	US\$68	£45
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About JAMS: Aims and Scope

The journal addresses: Manufacturing Systems, Collaborative Design, Collaborative Decision Making, Product Simulation, In-Process Modeling, Resource Planning, Resource Simulation, Tooling Design, Planning and Scheduling, Virtual Reality Technologies and Applications, CAD/CAE/CAM Systems, Networking and Distribution, Supply Chain Management.

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WORLD SCIENTIFIC HANDBOOK OF EXPERIMENTAL RESULTS ON HIGH SPEED PENETRATION INTO METALS, CONCRETE AND SOILS

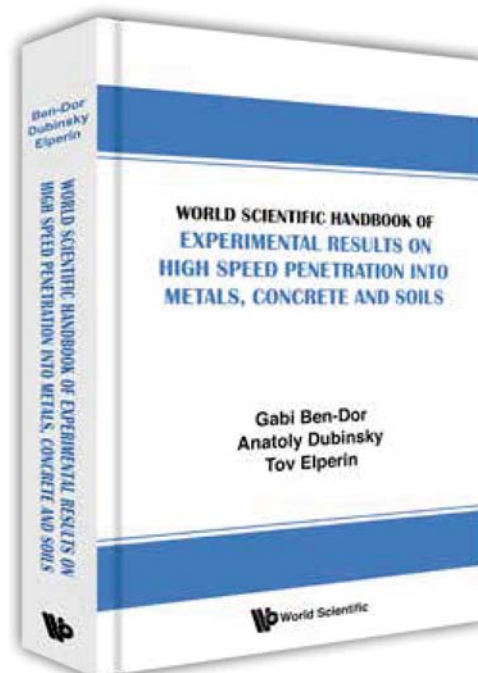
by Gabi Ben-Dor, Anatoly Dubinsky & Tov Elperin (University of the Negev, Israel)

This unique compendium contains a vast systematized data of 14,000 experiments on high-velocity penetration into metals, concrete, reinforced concrete, and geological media which were published in the open literature (journal papers, reports, conference proceedings) during the last 70 years. Data presented in this edition are related to the initial and final stages of penetration and include: parameters which characterize mechanical and geometric properties of the striker and the shield; striking and residual velocities of projectile or depth of penetration; changes of mass and size of projectile; angles that determine the initial and residual position of the projectile; ballistic limit velocity; basic characteristics of plug and deformation of the shield.

Unified form of data representation and common notations are used throughout the book. All information is presented in numerical form in SI units. The book also contains indices which allow a fast search of the authors' publications and related experiments. Theoreticians, design engineers and experimentalists will find this handbook a valuable reference material.

Contents: Preface; Introduction; Nomenclature and Notations; Some Shapes of Projectiles Used in Experiments; Penetration into Metals and Alloys; Penetration into Concrete and Reinforced Concrete; Penetration into Geological Media; Bibliography; Author Index;

Readership: Researchers, academics, and professionals in mechanical engineering, engineering mechanics, experimental physics and civil engineering.



620pp	Sep 2016	
978-981-3109-34-6	US\$198	£131
978-981-3109-35-3(ebook)	US\$257	£170

International Journal of Applied Mechanics

<http://www.worldscientific.com/ijam>

2015 Impact Factor:
1.468

AIMS AND SCOPE

In addition to cover the classical branches of applied mechanics, namely solid mechanics, fluid mechanics, thermodynamics, and material science, the journal encourages contributions from the newly emerging areas such as biomechanics, electromechanics, the mechanical behavior of advanced materials, nanomechanics, and many other inter-disciplinary research areas in which the concepts of applied mechanics are extensively applied and developed. It explores analytical, computational and experimental progresses in all the above mentioned areas.

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ABOUT THE EDITOR-IN-CHIEF

Dr. Zishun Liu is a SANQING Professor at Int. Center for Applied Mechanics (ICAM) in Xi'an Jiaotong University. He also holds Adjunct Professorships at National University of Singapore and Institute of High Performance Computing, Singapore. His research interests are in the areas of Computational Solid Mechanics & Biomechanics, Mechanics of Soft Materials, Nanomechanics, Vibro-Acoustic. He has authored and co-authored more than 100 scientific articles. Dr.

Liu is an Editor-In-Chief of Int. Journal of Applied Mechanics (IJAM) and Editor-In-Chief of Int. Journal of Computational Materials Science and Engineering (IJCMSE). He also serves on a few editorial boards, including Int. Journal of Computational Method; Guest editor of Computational Materials Science; Chinese Journal of Applied Mechanics; Multidisciplinary Modeling in Materials and Structures. Dr. Liu is the President of Singapore Association of Computational Mechanics and Chairman of organizing committee of 5th Asian Pacific Congress on Computational Mechanics 2013 (APCOM2013).

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Mechanical Engineering

ASYMPTOTIC THEORY OF ANISOTROPIC PLATES AND SHELLS

by **Lenser Aghalovyan** (*National Academy of Sciences, Armenia*)

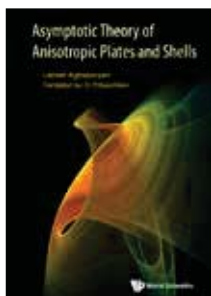
translated by **D Prikazchikov**

Key Features:

- The book expositis consistent theory for composite thin walled elastic structures. The obtained results are applied to justification and refinement of ad hoc engineering structural theories
- The effective solutions of a variety of boundary value problems are obtained
- There is a clear potential for numerous advanced industrial applications

Readership: Researchers and specialists in applied mathematics and mechanical engineering, undergraduates and graduate students.

376pp	May 2015	
978-981-4579-02-5	US\$150	£108
978-981-4579-03-2(ebook)	US\$195	£140



INTRODUCTION TO SIGNAL PROCESSING, INSTRUMENTATION, AND CONTROL

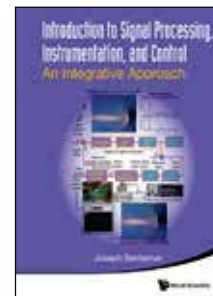
An Integrative Approach

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



Frontier Research in Computation and Mechanics of Materials and Biology - Vol 1

INTRODUCTION TO PRACTICAL PERIDYNAMICS

Computational Solid Mechanics Without Stress and Strain

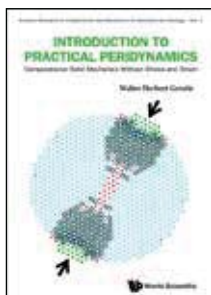
by **Walter Herbert Gerstle** (*University of New Mexico, USA*)

Key Features:

- Introduction to Practical Peridynamics provides the background necessary for students to understand and appreciate the peridynamic approach
- This is the first treatment of peridynamics as a lattice model, rather than as a continuum model
- This book presents the classical papers of Navier and Cauchy for the first time, annotated and in English
- This is the first book on peridynamics written as a textbook, appropriate for a graduate-level course, complete with exercises

Readership: Academic & professional; graduate students and professionals in the field of Engineering who deal with the computational simulation of solids — in particular those who would like to do so using a state-based peridynamic model that is applied directly to particle lattices.

428pp	Sep 2015	
978-981-4699-54-9	US\$85	£56



Series on Advances in Mathematics for Applied Sciences

ROAD VEHICLE DYNAMICS

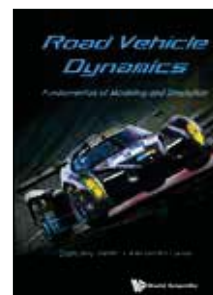
Fundamentals of Modeling and Simulation

by **Giancarlo Genta** (*Politecnico di Torino, Italy*) & **Alessandro Genta** (*AnKers, Italy*)

Road Vehicle Dynamics supplies the reader with both the theoretical background of the subject and the know-how needed to perform numerical simulations. It is structured in three parts: it begins with a historical overview of road vehicles; then deals with the forces exchanged between the vehicle and the road, and the vehicle and the air; and finally, deals with the dynamic behavior of the vehicle in normal driving conditions with some extensions towards conditions encountered in high-speed racing. Coverage of contemporary automatic controls is included in this edition.

Readership: Students & Professionals dealing with Mechanical engineers.

980pp	Nov 2016	
978-981-4713-43-6	US\$226	£163
978-981-4713-44-3(ebook)	US\$294	£212

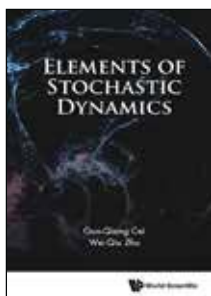


ELEMENTS OF STOCHASTIC DYNAMICSby **Guo-Qiang Cai** (*Florida Atlantic University, USA*) & **Weiqiu Zhu** (*Zhejiang University, China*)

The book describes the basic concepts and theories of random variables and stochastic processes in detail; provides various solution procedures for systems subjected to stochastic excitations; introduces stochastic stability and bifurcation; and explores failures of stochastic systems. The book also incorporates some latest research results in modeling stochastic processes; in reducing the system degrees of freedom; and in solving nonlinear problems. The book also provides numerical simulation procedures of widely-used random variables and stochastic processes.

Readership: Students & Professionals; graduate students in various areas involving stochastic uncertainties and researchers who want to explore stochastic dynamics in their fields.

450pp	Aug 2016	
978-981-4723-32-9	US\$118	£85
978-981-4723-33-6(ebook)	US\$153	£111

**SYNCHRONIZATION IN NATURE AND TECHNOLOGY**

Theory and Applications

by **Iliya I Blekhnman** (*Laboratory of Vibrational Mechanics, Russia*)

The author is one of well-recognized pioneer in the subject, who published one of the classic in the subject, 30 years ago. Inside this new edition, includes a section devoted to an additional amplification of the concept of synchronization and contains a general definition of synchronization and studies of various special cases.

Readership: Graduate students and professional in the topics of synchronization in science and technology.

350pp	Dec 2017	
978-981-4719-28-5	US\$138	£99
978-981-4719-29-2(ebook)	US\$179	£129

ELEMENTARY MECHANICS**(In 2 Volumes)**by **John G Papastavridis** (*Georgia Institute of Technology, USA*)

This is a comprehensive and state-of-the-art compendium of Newtonian-Eulerian (momentum/vectorial) mechanics, from an advanced and unified (i.e. *continuum*) viewpoint — “elementary” simply means no Lagrangean and no Hamiltonian theories / methods, otherwise the level is graduate and beyond; yet, the presentation is eminently readable and inclusive.

Readership: Teachers, and Researchers in most areas of engineering (especially aerospace, mechanical, and engineering mechanics), physics, and applied mathematics.

1680pp	Jun 2017	
978-981-4603-04-1(Set)	US\$384	£276
978-981-4603-05-8(Set)(ebook)	US\$499	£359

WORLD SCIENTIFIC HANDBOOK OF EXPERIMENTAL RESULTS ON HIGH SPEED PENETRATION INTO METALS, CONCRETE AND SOILSby **Gabi Ben-Dor** (*University of the Negev, Israel*), **Anatoly Dubinsky** (*University of the Negev, Israel*) & **Tov Elperin** (*University of the Negev, Israel*)

This unique compendium contains a vast systematized data of 14, 000 experiments on high-velocity penetration into metals, concrete, reinforced concrete, and geological media which were published in the open literature (journal papers, reports, conference proceedings) during the last 70 years. Data presented in this edition are related to the initial and final stages of penetration and include: parameters which characterize mechanical and geometric properties of the striker and the shield; striking and residual velocities of projectile or depth of penetration; changes of mass and size of projectile; angles that determine the initial and residual position of the projectile; ballistic limit velocity; basic characteristics of plug and deformation of the shield.

Readership: Researchers, academics, and professionals in mechanical engineering, engineering mechanics, experimental physics and civil engineering.

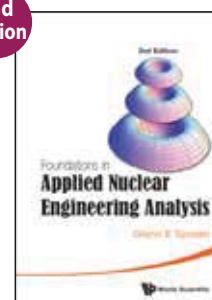
620pp	Sep 2016	
978-981-3109-34-6	US\$198	£131
978-981-3109-35-3(ebook)	US\$257	£170

**FOUNDATIONS IN APPLIED NUCLEAR ENGINEERING ANALYSIS (2nd Edition)**by **Glenn E Sjoeden** (*Georgia Institute of Technology, USA*)**Key Features:**

- New in this edition are expanded fundamentals of nuclear physics principles, essential elements of parallel programming, more coverage of basic probability principles and distributions, limits of detection, expanded presentations of applications highlighting real world examples in nuclear science and medical physics, including counting, detection, mixing, criticality safety, flow induced vibration, anisotropic Legendre moments for cross sections, and introductory transport theory and diffusion theory with numerics

Readership: Students of Nuclear Engineering; advanced undergraduate students familiar with undergraduate mathematics and physics.

404pp	Mar 2015	
978-981-4630-92-4	US\$128	£84
978-981-4630-93-1(pbk)	US\$78	£51

2nd Edition
<http://www.worldscientific.com/page/ws-online>

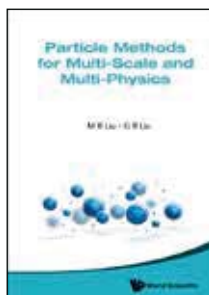
Multiscale / Multiphysics

PARTICLE METHODS FOR MULTI-SCALE AND MULTI-PHYSICS

by **M B Liu** (*Peking University, China*) & **G R Liu** (*University of Cincinnati, USA*)

This book covers the theoretical background, numerical techniques and many interesting applications of the particle methods discussed in this text, especially in: micro-fluidics and bio-fluidics (e.g., micro drop dynamics, movement and suspension of macro-molecules, cell deformation and migration); environmental and geophysical flows (e.g., saturated and unsaturated flows in porous media and fractures); and free surface flows with possible interacting solid objects (e.g., wave impact, liquid sloshing, water entry and exit, oil spill and boom movement).

Readership: Undergraduates, graduates, researchers, and professionals studying/dealing with fluid mechanics, numerical analysis and computational mathematics, engineering mechanics, ocean engineering, mechanical engineering.



400pp	Feb 2016	
978-981-4571-69-2	US\$162	£117
978-981-4571-70-8(ebook)	US\$211	£152

Ocean Engineering

Advanced Series on Ocean Engineering - Vol 40

DESIGN AND CONSTRUCTION OF BERM BREAKWATERS

by **Jentsje van der Meer** (*Van der Meer Consulting BV, The Netherlands & UNESCO-IHE, The Netherlands*) & **Sigurdur Sigurdarson** (*IceBreak Consulting Engineers ehf, Iceland*)

Written for researchers and practitioners, the volume consists of chapters on geometrical designs of the berm breakwater cross-section, including berm reshaping and wave overtopping, quarry and project management, as well as blasting and sorting techniques, designs for various wave conditions and available rock classes, and case studies of already constructed berm breakwaters.

Readership: Professionals: designers, owners and contractors; Graduate students and researchers in coastal engineering.



300pp	Sep 2016	
978-981-4749-60-2	US\$118	£85
978-981-4749-61-9(ebook)	US\$153	£111

Advanced Series on Ocean Engineering

DYNAMICS OF FLOATING OFFSHORE STRUCTURES

by **Subrata K Chakrabarti** (*Offshore Structure Analysis, Inc., USA*)

Key Features:

- The basic theory of the hydrodynamics and fluid-structure interaction in ocean environment is described in a simple straightforward manner
- Extensive validations of the theory along with limits of their application will be discussed
- Practical aspects of the theoretical and numerical results in the design of ocean/offshore structures are shown
- Examples are included to illustrate easy application of the theory and formulas

Readership: Senior undergraduate, graduates and researchers in offshore and ocean engineering.

600pp	Jun 2017	
978-981-4280-55-6	US\$95	£63
978-981-4280-56-3(pbk)	US\$55	£36

Journal



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JOURNAL OF MULTISCALE MODELLING (JMM)

<http://www.worldscientific.com/jmm>

Editor-in-Chief

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About JMM: Aims and Scope

Multiscale Modelling is a relatively new research field which has in a short time had a significant impact on many scientific and engineering disciplines including material science, fluid dynamics, chemistry, and biology. In these areas problems are often multiphysics and have important features at multiple scales, particularly multiple spatial scales.

Multiscale Modelling is an international peer-reviewed journal that presents forefront fundamental works in the above field of research. It features timely scientific reports of advances in modelling and computation, theoretical breakthroughs and also contains interesting review articles about emerging issues.

Multiscale Modelling provides a common platform for exchange of views and presentation of original papers (theoretical, computational and experimental) with a general emphasis on Multiscale issues in this rapidly developing field. Papers reporting advancement of the theory and applications of single scale problems (i.e. Nano, Micro, etc.) which pave the way for multiscale implementation are also appropriate for the journal.

Research areas of interest include for example multiscale modelling and computation in: composite and polymer materials, crystalline microstructures, nanomaterials, opto electronics for the development of materials with particular optical, magnetic and electrical properties, flow through porous media, dendritic solidification, turbulent transport in high Reynolds number flows, spray combustion, large-scale molecular dynamic simulation, environmental applications such as separation of gas, toxicological properties, environmental impact, chemistry and biological systems.

Abstracting/Indexing: Abstracting/Indexing: Astrophysics Data System (ADS) Abstract Service | CNKI | Chemical Abstracts Service | Compendex | Ebsco Discovery Service | ExLibris Primo Central | Google Scholar | INSPEC | OCLC WorldCat® | Proquest Summon | Scopus

COASTAL MANAGEMENT IN THE FACE OF CLIMATE CHANGE

by **Dominic Reeve** (*University of Plymouth, UK*)

The book is aimed at practicing coastal managers and engineers; to provide some practical guide to using the results of research efforts over the last decade. The material is also suitable for final year undergraduates and MSc students. It brings together in one book material that is currently dispersed across many sources which are not easy for the non-expert to access.

Readership: Graduate students, practitioners, and researchers in coastal engineering, civil engineering, environmental management and planning and environmental engineering.

200pp	May 2017	
978-1-84816-583-0	US\$106	£76
978-1-84816-584-7(ebook)	US\$138	£99

Advanced Series on Ocean Engineering

DYNAMICS OF COASTAL SYSTEMS (2nd Edition)

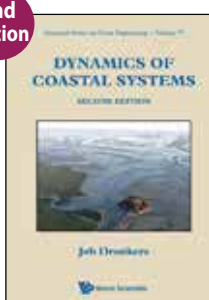
by **Job Dronkers** (*Netherlands Centre of Coastal Research, The Netherlands*)

The book provides a comprehensive and up-to-date overview of the physical processes which, according to the present state of knowledge, determine the evolution of coastal systems and their response to human interventions. This response depends to a large degree on the self-organising properties of coastal dynamics, which form a leading theme throughout the book. The basic theoretical ideas are explained in text and figures and also in formulas for the more mathematically inclined reader.

Readership: Researchers, academics, professionals, undergraduate and graduate students in ocean/coastal engineering, oceanography and geology.

600pp	Apr 2017	
978-981-4725-13-2	US\$186	£134
978-981-4725-15-6(ebook)	US\$242	£174

2nd Edition



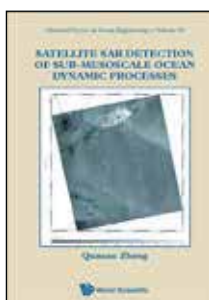
SATELLITE SAR DETECTION OF SUB-MESOSCALE OCEAN DYNAMIC PROCESSES

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

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



HYDRAULIC CONTROL SYSTEMS

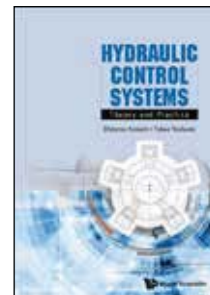
Practice and Theory

by **Shizurou Konami & Takao Nishiumi** (*National Defense Academy of Japan, Japan*)

The book is written as a text explaining comprehensively hydraulic components and hydraulic control systems by providing fluid mechanics and control theories concerning on the hydraulic technology. It provides a guidance to apply hydraulic control systems to linear control theories although they have intrinsically nonlinear characteristics. It provides a new technical policy to identify the dynamic characteristics of a hydraulic control object or a component as an approximated second order system.

Readership: Undergraduate students in advance mechanical engineering course, graduate students in the field of hydraulic control systems as well practitioners in the industry.

320pp	Aug 2016	
978-981-4759-63-2	US\$115	£76
978-981-4759-64-9(pbk)	US\$58	£38



MODELLING COASTAL AND MARINE PROCESSES

2nd Edition

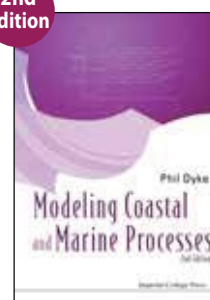
by **Phil Dyke** (*University of Plymouth, UK*)

New to this revised edition is a chapter on tides, tsunamis and the prediction of sea level, and additional material on the new application of the numerical techniques: flux corrected transport, finite volumes and adaptive grids to coastal and marine modelling.

Readership: Undergraduate and graduate students in the fields of civil, marine or coastal engineering.

616pp	Apr 2016	
978-1-78326-769-9	US\$118	£78
978-1-78326-770-5(pbk)	US\$78	£51

2nd Edition



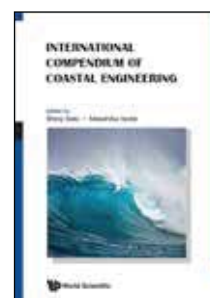
INTERNATIONAL COMPENDIUM OF COASTAL ENGINEERING

edited by **Shinji Sato** (*The University of Tokyo, Japan*) & **Masahiko Isobe** (*Kochi University of Technology, Japan*)

This book focuses on important topics in coastal region. It covers topics from theories of waves and sand transport to coastal engineering practice such as beach protection.

Readership: Undergraduates and graduate students in coastal engineering or environmental science, researchers and professionals.

532pp	Jun 2015	
978-981-4449-42-7	US\$150	£99
978-981-4449-43-4(ebook)	US\$195	£129



Robotics

ARTIFICIAL INTELLIGENCE

A Guide to Intelligent Vehicle

by **Ming Xie** (NTU, Singapore), **Hui Chen** (Tongji University, China) & **Zhencheng Hu** (Kumamoto University, Japan)

Key Features:

- The book exposes readers to the fundamentals of perception, decision and action
- The book contains original publications of the authors
- It is an original book by experts in the field
- It is a book accessible to students, and of interest to young researchers and experts

Readership: Advanced undergraduate and graduate students in automotive engineering, mechanical engineering and computer science; researchers and practitioners in automotive industries.

300pp **Feb 2017**
978-981-4271-63-9 **US\$88** **£61**

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**



TELEXISTENCE

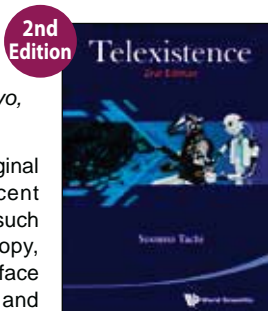
2nd Edition

by **Susumu Tachi** (The University of Tokyo, Japan & Keio University, Japan)

This book is the second edition of the original *Telexistence*; new contents cover recent advancements of the technology in areas such as human augmentation, autostereoscopy, tangible visuo-haptic 3D display, face-to-face communication, and haptic sensations and technologies. Case studies of the mobile mutual telexistence system TELESAR IV and haptic telexistence avatar system TELESAR V are also included. Written by the inventor of the concept of this emerging technology, it introduces the concept of telexistence, explains how this concept can be realized, illustrates precisely real examples of the realization of the concept, and determines its future advancement. Readers will be inspired by the concept, and acquire appropriate knowledge on this emerging technology and the fundamental skills to contribute in further development of telexistence.

Readership: Academics; Researchers and Graduate students in robotics and automated systems, computer engineering, mechanical engineering, systems engineering and electrical & electronic engineering.

296pp **Feb 2015**
978-981-4618-06-9 **US\$98** **£65**
978-981-4618-07-6(ebook) **US\$127** **£85**



Stability and Structures

MECHANICS OF FUNCTIONALLY GRADED MATERIAL STRUCTURES

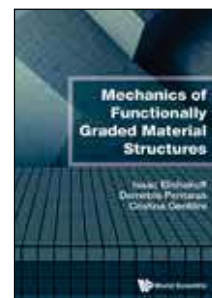
by **Isaac Elishakoff** (Florida Atlantic University, USA), **Demetris Pentaras** (Cyprus University of Technology, Cyprus) & **Cristina Gentilini** (University of Bologna, Italy)

Key Features:

- This book deals with material grading of structures in (a) thickness, (b) axial and (c) polar directions
- It derives novel closed-form solutions that can serve as benchmarks with which numerical solutions can be compared with
- It contains extensive bibliography in this fascinating topic

Readership: Graduate students, academics, professional and researchers interested in the effects of various grading mechanisms on structural behavior as well as vibration and buckling.

340pp **Dec 2015**
978-981-4656-58-0 **US\$150** **£108**
978-981-4656-59-7(ebook) **US\$195** **£140**



UNCERTAINTY QUANTIFICATION IN COMPUTATIONAL SCIENCE

Theory and Application in Fluids and Structural Mechanics

edited by **Sunetra Sarkar** (Indian Institute of Technology Madras, India) & **Jeroen A S Witteveen** (Center for Mathematics and Computer Science (CWI), The Netherlands)

During the last decade, research in Uncertainty Quantification (UC) has received a tremendous boost, in fluid engineering and coupled structural-fluids systems. New algorithms and adaptive variants have also emerged. This timely compendium overviews in detail the current state of the art of the field, including advances in structural engineering, along with the recent focus on fluids and coupled systems. Such a strong compilation of these vibrant research areas will certainly be an inspirational reference material for the scientific community.

Readership: Researchers, academics, professionals and graduate students in mechanical engineering, engineering mechanics, aerospace engineering, civil engineering & ocean engineering.

200pp **Jan 2017**
978-981-4730-57-0 **US\$118** **£85**
978-981-4730-58-7(ebook) **US\$153** **£111**



STRUCTURAL INTEGRITY CONSIDERATIONS IN ENGINEERING DESIGN

Introduction to Structural Integrity and Basic Fatigue Design

Volume I

by **David W Hoepfner** (University of Utah, USA)

Key Features:

- Discusses the systems-oriented, holistic approach to structural integrity-based design, which has not been written about in any known book to this date, but is being employed in various industries and is gaining more applications daily
- Significantly improves on the knowledge base available to engineers and scientists throughout the world, as common engineering education does not deal adequately with the subjects covered in this book

Readership: Upper-class undergraduate and graduate students, academics, and industry professionals in the field of structural integrity, and general management of reliability and quality.

500pp **Jan 2017**
978-1-86094-950-0 **US\$162** **£117**
978-1-86094-951-7(ebook) **US\$211** **£152**

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UNMANNED SYSTEMS

<http://www.worldscientific.com/us>

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Lihua Xie (*Nanyang Technological University, Singapore*) &
Siva S. Banda (*Air Force Research Laboratory, USA*)

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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.

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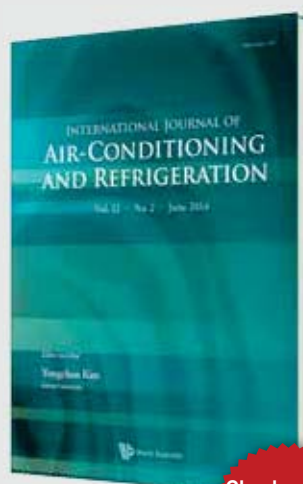
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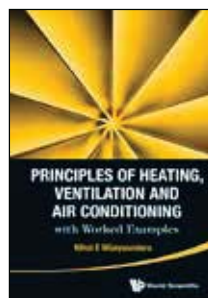
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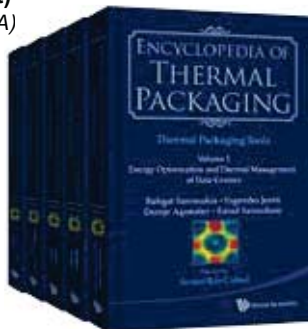


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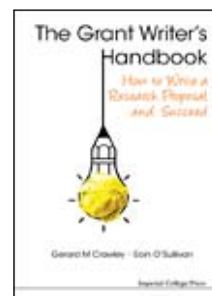
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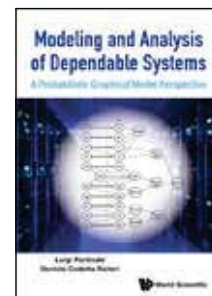
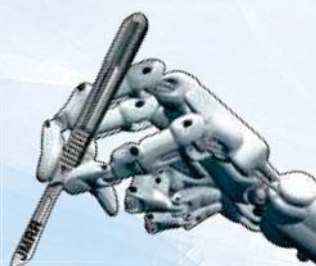
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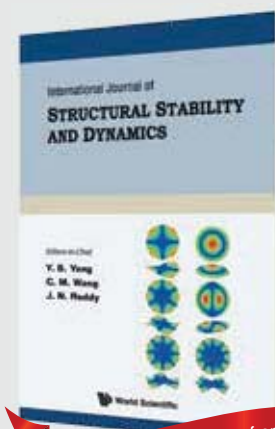
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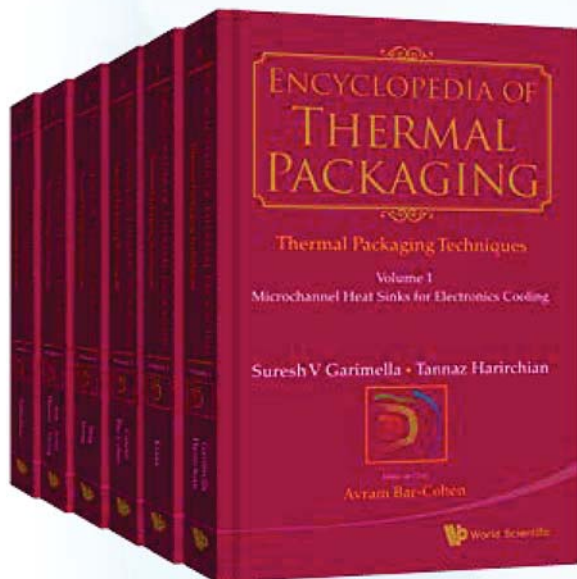
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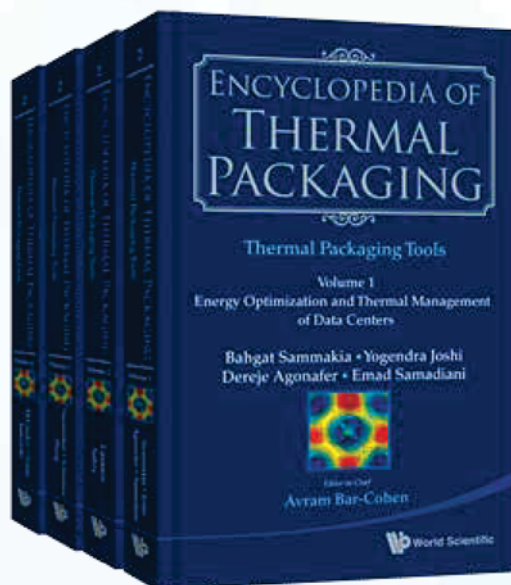
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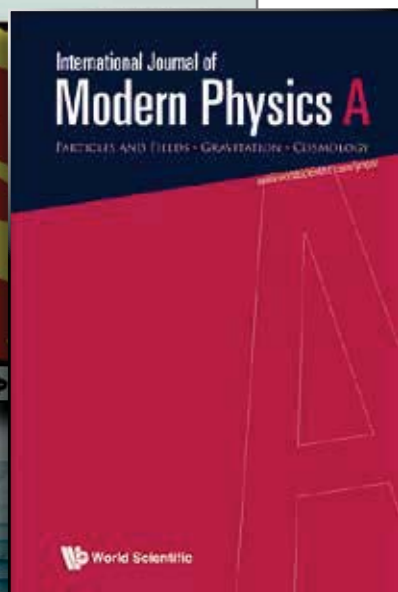
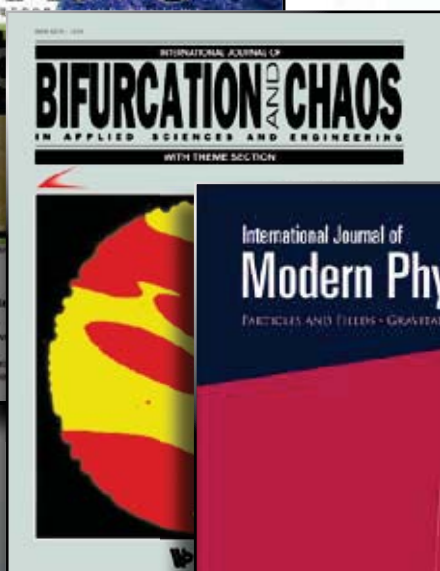
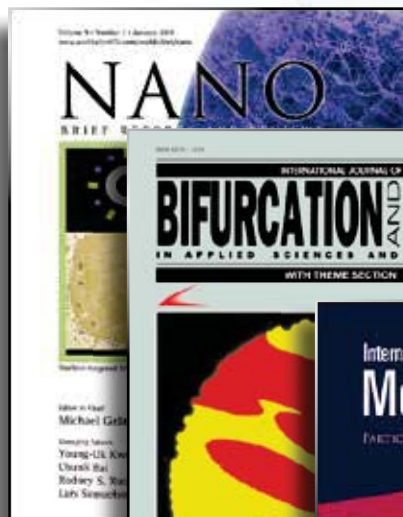
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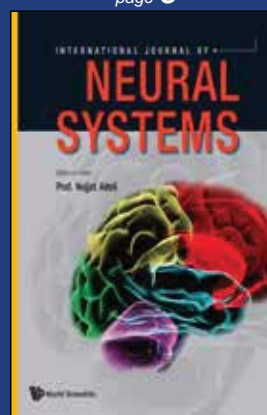
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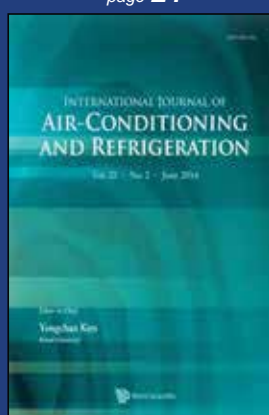
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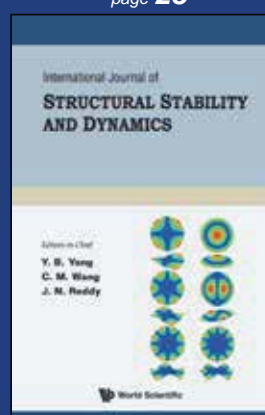


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