

The 4th quarter 2013 catalog

Naturalsciences



Biomedicine

J. Gómez Ramirez, Universidad Politécnica de Madrid, Madrid, Spain

A New Foundation for Representation in Cognitive and Brain Science

Category Theory and the Hippocampus

The purpose of the book is to advance in the understanding of brain function by defining a general framework for representation based on category theory. The idea is to bring this mathematical formalism into the domain of neural representation of physical spaces, setting the basis for a theory of mental representation, able to relate empirical findings, uniting them into a sound theoretical corpus. The innovative approach presented in the book provides a horizon of interdisciplinary collaboration that aims to set up a common agenda that synthesizes mathematical formalization and empirical procedures in a systemic way. Category theory has been successfully applied to qualitative[...]

Features

The purpose of the book is to advance in the understanding of brain function by defining a general framework for representation based on category theory. The idea is to bring this mathematical formalism into the domain of neural representation of physical spaces, setting the basis for a theory of mental representation, able to relate empirical findings, uniting them into a sound theoretical [...]

Contents

Preface.- Research tools and paradigms.- State of the Art: Mathematical approaches in brain science.- The Categorical Imperative: Category theory in Cognitive and Brain Science.- Elementary principles in cognitive systems modeling.- The shift towards structure.- A general framework for representation.- Towards a Theory of Brain Structure and Function.- A theory of hippocampus structure and function based on Category Theory.- From Cells to Memories. A Categorical Approach.- Epilogue.

Fields of interest

Neurosciences; Category Theory, Homological Algebra; Philosophy (general); Neurology; Artificial Intelligence (incl. Robotics); Biological Psychology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7737-8

Hardcover

2014. X, 246 p. 73 illus., 40 illus. in color. (Springer Series in Cognitive and Neural Systems, Vol. 7)
ISBN 978-94-007-7737-8

Due: November 30, 2013

R. Bajpai, A. Prokop, M. Zappi, University of Louisiana at Lafayette, Lafayette, USA (Eds.)

Algal Biorefineries

Volume 1: Cultivation of Cells and Products

Over the past century, the majority of chemical and energy needs of our industrial society has originated from fossilized carbon sources (coal, crude oil, natural gas). Increasingly, there is a realization that utilization of the fossilized carbon sources has adverse environmental consequences in the form of increasing concentration of greenhouse gases. We are also becoming aware of the limited nature of these resources. As a result, considerable efforts are being made to produce chemicals and fuels from renewable resources such as forest products, agricultural residues and plant products. All of these systems capture solar energy and atmospheric carbon dioxide as a part of the[...]

Features

Over the past century, the majority of chemical and energy needs of our industrial society has originated from fossilized carbon sources (coal, crude oil, natural gas). Increasingly, there is a realization that utilization of the fossilized carbon sources has adverse environmental consequences in the form of increasing concentration of greenhouse gases. We are also becoming aware of the limited nature of these [...]

Contents

Status of Algae as Vehicles for Commercial Production of Fuels and Chemicals.- Algal Reactor Design Based on Comprehensive Modeling of Light and Mixing.- Low Cost Nutrients for Algae Cultivation.- Microalgae Bioreactors.- Micro Algae in Open Raceways.- High Density Outdoor Algae Culture.- Mixotrophic Algae Cultivation for Energy Production and Other Applications.- Engineering Photobiological H₂-production.- Starch Overproduction by Means of Algae.- Oil Overproduction by Means of Microalgae.- Commercial Products from Algae.- Recovery of Lipids from Algae.

Fields of interest

Biomedicine (general); Biotechnology; Applied Microbiology; Renewable and Green Energy; Engineering Design; Plant Biochemistry

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-94-007-7493-3

Hardcover

2014. XIII, 324 p. 62 illus., 34 illus. in color.
ISBN 978-94-007-7493-3

Due: October 31, 2013

P.C. Burcham, The University of Western Australia, Perth, Australia

An Introduction to Toxicology

This book provides a readable introduction to modern toxicology with a particular focus on the mechanisms underlying the induction of toxicity by foreign substances. Since bioactivation is central to many toxic syndromes, special interest is devoted to chemicals that undergo conversion to toxic metabolites that induce toxic effects as diverse as cancer, birth defects and organ injury. The molecular consequences accompanying damage to cellular DNA and proteins is explored together with the relevance of toxicological paradigms to human diseases caused by alcohol and tobacco. The discipline of toxicology has developed rapidly since the thalidomide disaster in the 1960's as scientists[...]

Features

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Contents

The Emergence of Modern Toxicology.- Core Concepts in Toxicology.- Toxicokinetics - The Fate of Chemicals within the Body.- Toxicodynamics - How Chemicals Induce Toxicity.- Fightback - Adaptive Responses to Toxicant Exposure.- Target Organ Toxicity: Liver and Kidney.- Chemical Toxicity to the Unborn.- Chemicals and Cancer.- Everyday Toxicology I - Alcohol.- Everyday Toxicology II - Tobacco.

Fields of interest

Pharmacology / Toxicology; Molecular Medicine; Biomedicine (general)

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4471-5552-2

Hardcover

2014. XII, 339 p. 94 illus., 1 illus. in color.
ISBN 978-1-4471-5552-2

Due: December 31, 2013

F. Marinelli, Università degli Studi dell'Insubria, Varese, Italy; O. Genilloud, Fundación MEDINA, Armilla, Granada, Spain (Eds.)

Antimicrobials

New and Old Molecules in the Fight Against Multi-resistant Bacteria

Reports on the emergence and prevalence of resistant bacterial infections in hospitals and communities raise concerns that we may soon no longer be able to rely on antibiotics as a way to control infectious diseases. Effective medical care would require the constant introduction of novel antibiotics to keep up in the "arms race" with resistant pathogens. This book closely examines the latest developments in the field of antibacterial research and development. It starts with an overview of the growing prevalence of resistant Gram-positive and Gram-negative pathogens, including their various resistance mechanisms, prevalence, risk factors and therapeutic options. The focus then shifts to [...]

Features

Reports on the emergence and prevalence of resistant bacterial infections in hospitals and communities raise concerns that we may soon no longer be able to rely on antibiotics as a way to control infectious diseases. Effective medical care would require the constant introduction of novel antibiotics to keep up in the "arms race" with resistant pathogens. This book closely examines the latest [...]

Contents

Part I Current trends in antibiotics, pathogens and medical needs.- Part II Families of novel candidates and conventional antibiotics.

Fields of interest

Medical Microbiology; Drug Resistance; Infectious Diseases; Applied Microbiology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39967-1

Hardcover

2014. VIII, 365 p. 71 illus., 10 illus. in color.
ISBN 978-3-642-39967-1

Due: October 31, 2013

V.V. Gurevich, Vanderbilt University Medical Center, Nashville, USA (Ed.)

Arrestins - Pharmacology and Therapeutic Potential

This volume describes our current understanding of the biological role of visual and non-visual arrestins in different cells and tissues, focusing on the mechanisms of arrestin-mediated regulation of GPCRs and non-receptor signaling proteins in health and disease. The book covers wide range of arrestin functions, emphasizing therapeutic potential of targeting arrestin interactions with individual partners.

Features

This volume describes our current understanding of the biological role of visual and non-visual arrestins in different cells and tissues, focusing on the mechanisms of arrestin-mediated regulation of GPCRs and non-receptor signaling proteins in health and disease. The book covers wide range of arrestin functions, emphasizing therapeutic potential of targeting arrestin interactions with individual partners.

Contents

Therapeutic Potential of Small Molecules and Engineered Proteins.- Arrestin Interactions with G Protein-coupled Receptors.- Arrestin-biased GPCR Agonists.- Arrestin-1 Expression Levels, Rod Function and Health.- Protective Functions of Arrestin-1 in Photoreceptors.- Arrestin-4 and Cone Function.- Enhanced Phosphorylation-independent Arrestins and Gene Therapy.- Targeting Particular Receptors with Redesigned Non-visual Arrestins.- Arrestins binding to clathrin, AP2 and Role in GPCR trafficking.- Arrestins in Ubiquitination and Deubiquitination.- Arrestin Self-association.- [...]

Fields of interest

Pharmacology / Toxicology; Biochemistry; Protein Structure; Gene Therapy; Cell Physiology; Receptors

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-3-642-41198-4

Hardcover

2014. X, 462 p. 53 illus., 42 illus. in color. (Handbook of Experimental Pharmacology, Vol. 219)
ISBN 978-3-642-41198-4

Due: November 30, 2013

H. Xiong, University of Nebraska Medical Center, Omaha, USA; H.E. Gendelman, University of Nebraska Medical Center, Omaha, USA (Eds.)

Current Laboratory Methods in Neuroscience Research

Current Laboratory Methods in Neuroscience Research is a research manual for both students and seasoned researchers. It focuses on commonly-used techniques employed in neuroscience research, presented in a simple, step-by-step manner for laboratory use. The manual also offers a "blueprint" for bench-to-bedside research designed to facilitate multidisciplinary neuroscience pursuits. Sections include coverage of neurohistological techniques, in vitro preparations, leukocyte isolation and application in neuroscience, standard laboratory nucleic acid and protein detections, nanomedicine, bioimaging, neuroelectrophysiology, immunohistochemistry and autoradiography, analysis of gene [...]

Features

Current Laboratory Methods in Neuroscience Research is a research manual for both students and seasoned researchers. It focuses on commonly-used techniques employed in neuroscience research, presented in a simple, step-by-step manner for laboratory use. The manual also offers a "blueprint" for bench-to-bedside research designed to facilitate multidisciplinary neuroscience pursuits. Sections include [...]

Contents

Section 1: Neurohistological techniques.- 1. Brain tissue preparation, sectioning and staining.- 2. Brain stereotactic injections.- 3. Tract tracing at light and electron microscopy.- 4. Stereological analysis of neurological tissues.- Section 2: In vitro preparations.- 5. Preparation and use of rodent hippocampal brain slices.- 6. Single-Cell Neuronal Dissociation For Electrophysiological Studies.- 7. Isolation and Culture of Human Neurons, Microglia and Astrocytes.- 8. Isolation and Culture of Neural Stem/progenitor Cells.- 9. Isolation of mitochondria from brain tissue and cells.- [...]

Fields of interest

Neurosciences; Neurology; Neurobiology

Target groups

Graduate

Type of publication

Contributed volume

More on www.springer.com/978-1-4614-8793-7

Hardcover

2013. X, 1091 p. 189 illus., 122 illus. in color. (Springer Protocols Handbooks)
ISBN 978-1-4614-8793-7

Due: October 31, 2013

R. Gieschke, F. Hoffmann-La Roche Ltd, Basel, Switzerland; D. Serafin, F. Hoffmann-La Roche Ltd, Basel, Switzerland

Development of Innovative Drugs via Modeling with MATLAB

A Practical Guide

The development of innovative drugs is becoming more difficult while relying on empirical approaches. This inspired all major pharmaceutical companies to pursue alternative model-based paradigms. The key question is: How to find innovative compounds and, subsequently, appropriate dosage regimens? Written from the industry perspective and based on many years of experience, this book offers: Concepts for creation of drug-disease models, introduced and supplemented with extensive MATLAB programs-Guidance for exploration and modification of these programs to enhance the understanding of key principles- Usage of differential equations to pharmacokinetic, pharmacodynamic and (patho-)[...]

Features

The development of innovative drugs is becoming more difficult while relying on empirical approaches. This inspired all major pharmaceutical companies to pursue alternative model-based paradigms. The key question is: How to find innovative compounds and, subsequently, appropriate dosage regimens? Written from the industry perspective and based on many years of experience, this book offers: [..]

Contents

Background of pharmacologic modeling.- First example of a computational model.- Differential equations in MATLAB.- Pharmacologic modeling.- Drug-disease modeling.- Population analyses.- Clinical trial simulation.- Graphics-based modeling.- Outlook.- Appendix A: Hints to MATLAB programs.- Appendix B: Solution to exercises.

Fields of interest

Pharmacology / Toxicology; Pharmaceutical Sciences / Technology; Simulation and Modeling; Computer Applications in Life Sciences

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39764-6

Hardcover

2013. XV, 402 p. 192 illus., 112 illus. in color. ISBN 978-3-642-39764-6

Due: October 31, 2013

G. Klebe, Universität Marburg, Marburg, Germany

Drug Design

Methodology, Concepts, and Mode-of-Action

Unique work on structure-based drug design, covering multiple aspects of drug discovery and development. Fully colored, many images, computer animations of 3D structures (these only in electronic form). Makes the spatial aspects of interacting molecules clear to the reader, covers multiple applications and methods in drug design. Structures by mode of action, no therapeutic areas. Of high relevance for academia and industrial research. Focus on gene technology in drug design, omics-technologies computational methods experimental techniques of structure determination multiple examples on mode of action of current drugs, ADME-tox properties in drug development, QSAR methods.[...]

Features

Unique work on structure-based drug design, covering multiple aspects of drug discovery and development. Fully colored, many images, computer animations of 3D structures (these only in electronic form). Makes the spatial aspects of interacting molecules clear to the reader, covers multiple applications and methods in drug design. Structures by mode of action, no therapeutic areas. Of high relevance for [..]

Contents

Part I Fundamentals in Drug Research.- 1. Drug Research Yesterday, Today and Tomorrow.- 2. The Role of Serendipity in Drug Research.- 3. Classical Drug Research.- 4. Protein-Ligand Interactions as the Basis for Drug Action.- 5. Optical Activity and Biological Effects.- Part II Discovery and Optimization of Lead Compounds.- 6. Screening for Lead Structures.- 7. Screening Technologies for Lead Discovery.- 8. Optimization of Lead Structures.- 9. Designing prodrugs.- 10. Peptidomimetics.- Part III Experimental and Theoretical Methods.- 11. Combinatorics: Chemistry With Big Numbers.- 12. Gene[...]

Fields of interest

Biomedicine (general); Pharmacology / Toxicology; Pharmaceutical Sciences / Technology; Medicinal Chemistry; Pharmacy; Medicine (general)

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-3-642-17906-8

Hardcover

Original German Edition published by Spektrum Akademischer Verlag, 2009
2013. XV, 901 p. 496 illus., 333 illus. in color. ISBN 978-3-642-17906-8

usually dispatched within 3 to 5 business days

Original German Edition published by Spektrum Akademischer Verlag, 2009
2013. XV, 901 p. 496 illus., 333 illus. in color. eReference. ISBN 978-3-642-17907-5

Online orders shipping within 2-3 days.

Hardcover

Original German Edition published by Spektrum Akademischer Verlag, 2009
2013. XV, 901 p. 496 illus., 333 illus. in color. Print + eReference. ISBN 978-3-642-17908-2

Online orders shipping within 2-3 days.

P. Thorn, University of Queensland, St. Lucia, Australia (Ed.)

Exocytosis Methods

Bringing together techniques and methods currently being applied to the study of exocytosis, *Exocytosis Methods* collects chapters from experts in the field, examining this fundamental process essential to functions ranging from protein secretion to hormone release and neurotransmission. The book begins with a section covering a range of techniques being applied to the study of single-vesicle fusion events, which are key in order to gain insight into the final steps of vesicle fusion. The volume continues with several model systems that are being employed to unravel the complexities of exocytosis. Written for the *NeuroMethods* series, chapters included in this work present the kind[...]

Features

Bringing together techniques and methods currently being applied to the study of exocytosis, *Exocytosis Methods* collects chapters from experts in the field, examining this fundamental process essential to functions ranging from protein secretion to hormone release and neurotransmission. The book begins with a section covering a range of techniques being applied to the study of single-vesicle fusion [...]

Contents

Solution Single-Vesicle Fusion Assay by Single-Molecule Alternating Laser Excitation.- Imaging the Stages of Exocytosis in Epithelial Type II Pneumocytes.- Carbon-Fibre Amperometry in the Study of Exocytosis.- Imaging of Insulin Exocytosis from Pancreatic Beta Cells.- Functional, Quantitative, and Super-Resolution Imaging and Spectroscopic Approaches for Studying Exocytosis.- Electrophysiologic Measurements of Membrane Capacitance in Hormone-Secreting Cells.- Measuring Exocytosis in Endocrine Tissue Slices.- Intravital Microscopy and Its Application to Study Regulated Exocytosis in the[...]

Fields of interest

Neurosciences; Neurobiology

Target groups

Professional/practitioner

Type of publication

Contributed volume

More on www.springer.com/978-1-62703-675-7

Hardcover

2014. X, 215 p. 70 illus., 36 illus. in color. (NeuroMethods, Vol. 83)

ISBN 978-1-62703-675-7

Due: November 30, 2013

X. Li, Intelligent Systems Research Centre, Londonderry, United Kingdom

Functional Magnetic Resonance Imaging Processing

With strong numerical and computational focus, this book serves as an essential resource on the methods for functional neuroimaging analysis, diffusion weighted image analysis, and longitudinal VBM analysis. It includes four MRI image modalities analysis methods. The first covers the PWI methods, which is the basis for understanding cerebral flow in human brain. The second part, the book's core, covers fMRI methods in three specific domains: first level analysis, second level analysis, and effective connectivity study. The third part covers the analysis of Diffusion weighted image, i.e. DTI, QBI and DSI image analysis. Finally, the book covers (longitudinal) VBM methods and its[...]

Features

With strong numerical and computational focus, this book serves as an essential resource on the methods for functional neuroimaging analysis, diffusion weighted image analysis, and longitudinal VBM analysis. It includes four MRI image modalities analysis methods. The first covers the PWI methods, which is the basis for understanding cerebral flow in human brain. The second part, the book's core, covers MRI [...]

Contents

Preface.- MRI perfusion weighted imaging analysis.- Perfusion imaging.- Gamma-variate fitting.- AIF selection.- Dispersion effects in DSC-MRI.- Summary of the PWI algorithm.- First level fMRI data analysis for activation detection.- fMRI experimental design.- fMRI data pre-processing.- Activation detection: model free and model based methods.- Models for hemodynamic response function and drift.- General linear model (GLM) for activation detect.- Hypothesis test and threshold correction.- Summary of algorithm for 1st level fMRI data analysis.- 2nd level fMRI data analysis using mixed[...]

Fields of interest

Neurosciences; Computer Imaging, Vision, Pattern Recognition and Graphics; Statistics and Computing / Statistics Programs; Cognitive Psychology; Imaging / Radiology; Numerical and Computational Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7301-1

Hardcover

2014. XIII, 221 p. 72 illus., 58 illus. in color.

ISBN 978-94-007-7301-1

**usually dispatched within 3 to 5 business days
October 31, 2013**

J.L. Workman, Stowers Institute for Medical Research, Kansas City, USA; S.M. Abmayr, Stowers Institute for Medical Research, Kansas City, USA (Eds.)

Fundamentals of Chromatin

While there has been an increasing number of books on various aspects of epigenetics, there has been a gap over the years in books that provide a comprehensive understanding of the fundamentals of chromatin. Chromatin is the combination of DNA and proteins that make up the genetic material of chromosomes. Its primary function is to package DNA to fit into the cell, to strengthen the DNA to prevent damage, to allow mitosis and meiosis, and to control the expression of genes and DNA replication.

The audience for this book is mainly newly established scientists and graduate students. Rather than going into the more specific areas of recent research on chromatin the[...]

Features

Chromatin is the combination of DNA and proteins that make up the genetic material of chromosomes. It is essential for packaging DNA, regulation of gene expression, DNA replication and repair. The audience for this book includes newly established scientists, graduate students and scientists seeking detailed overviews of various aspects of chromatin structure and function to gain entry into this field. The [...]

Contents

Preface.- Histone, Nucleosome and Chromatin Structure.- Histone Chaperones in the Assembly and Disassembly of Chromatin.- Chromatin Remodeling Complexes.- Regulating Chromatin by Histone Acetylation.- Histone Methylation in Chromatin Signaling.- Histone Ubiquitylation Control of Gene Expression.- Regulation of Chromatin Structure and Function by PARP-1 and ADP-ribosylation.- Histone phosphorylation and chromatin dynamics.- Reading histone modifications.- Properties and functions of histone variants.- Transcription through Chromatin.- Chromatin remodeling in DNA repair and replication.-[...]

Fields of interest

Human Genetics; Biomedicine (general); Gene Expression

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-1-4614-8623-7

Hardcover

2013. VIII, 656 p. 92 illus., 90 illus. in color.

ISBN 978-1-4614-8623-7

Due: October 31, 2013

I.F. Uchegbu, University of London, London, United Kingdom; A. Schätzlein, University College London, London, United Kingdom; W.P. Cheng, A. Lalatsa, University of Portsmouth, Portsmouth, United Kingdom (Eds.)

Fundamentals of Pharmaceutical Nanoscience

Nanoscience or the science of the very small offers the pharmaceutical scientist a wealth of opportunities. By fabricating at the nanoscale, it is possible to exert unprecedented control on drug activity. This textbook will showcase a variety of nanosystems working from their design and construction to their application in the field of drug delivery. The book is intended for graduate students in drug delivery, physical and polymer chemistry, and applied pharmaceutical sciences courses that involve fundamental nanoscience. The purpose of the text is to present physicochemical and biomedical properties of synthetic polymers with an emphasis on their application in polymer therapeutics[...]

Features

The emerging discipline of nanoscience has resulted in a number of new technologies. These groundbreaking advances are firing the imagination of a generation of scientists and leading to new materials with a wealth of functionality. In the biomedical sciences these technological advances are finally translating into clinically relevant products and bringing patients exciting new therapies and [...]

Contents

Nanoscience and nanotechnology overview.- Liposome preparation and characterization.- Solid polymeric nanoparticles.- Lipid nanoparticles.- Polymeric vesicles.- Low molecular weight amphiphile micelles.- Polymeric micelles.- Niosomes.- Quantum dots.- Magnetic particles.- Drug nanoparticles.- Polymeric pro-drugs.- Therapeutic Applications of pharmaceutical nanosystems.- Drug solubilisation.- Gene therapy.- Chemotherapy.- Tissue engineering.- Anti-infectives.- Vaccination.- Anti-arthritis drugs.- Imaging agents.- Commercial exploitation of pharmaceutical nanosystems.- Future[...]

Fields of interest

Pharmacology / Toxicology; Pharmacy; Nanotechnology; Physical Chemistry; Polymer Sciences; Biotechnology

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-9163-7

Hardcover

2014. XXI, 666 p. 154 illus., 98 illus. in color. ISBN 978-1-4614-9163-7

Due: November 30, 2013

R.M. Kostrzewa, East Tennessee State University, JOHNSON CITY, USA (Ed.)

Handbook of Neurotoxicity

The Handbook of Neurotoxicity is a reference source for identifying, characterizing, instructing on use, and describing outcomes of neurotoxin treatments – to understand mechanisms associated with toxin use; to project outcomes of neurotoxin treatments; to gauge neurotoxins as predictors of events leading to neurodegenerative disorders and as aids to rational use of neurotoxins to model disease entities. Neuroprotection is approached in different manners including those 1) afforded by therapeutic agents – clinical and preclinical; or 2) by non-drug means, such as exercise. The amorphous term ‘neurotoxin’ is discussed in terms of the possible eventuality of a neuroprotectant producing[...]

Features

The Handbook of Neurotoxicity is a reference source for identifying, characterizing, instructing on use, and describing outcomes of neurotoxin treatments – to understand mechanisms associated with toxin use; to project outcomes of neurotoxin treatments; to gauge neurotoxins as predictors of events leading to neurodegenerative disorders and as aids to rational use of neurotoxins to model disease entities. [...]

Contents

Glutamate as a Neurotoxin.- Methamphetamine and MDMA neurotoxicity: Biochemical and molecular mechanisms.- Microglia: Neuroprotective and Neurodestructive Properties.- Neuroprotection in Demyelinating Diseases: the therapeutic potential of the neurotrophins.- Neurotrophic Factors and Ethanol Neurotoxicity.- Neurotrophic factors and NeuroAIDS: a lesson from brain-derived neurotrophic factor.- Neurotrophins and p75NTR in axonal regeneration and myelination.- Neurotrophins and pain.- Neurotrophin signalling in Cancer.- NGF and immune regulation.- NGF/P75 in cell cycle and tetraploidy.- P75[...]

Fields of interest

Neurosciences

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-1-4614-5835-7

Hardcover

2014. 1200 p. ISBN 978-1-4614-5835-7

Due: November 2013

2014. 1200 p. eReference.

ISBN 978-1-4614-5836-4

Due: November 2013

Hardcover

2014. 1200 p. Print + eReference. ISBN 978-1-4614-7458-6

Due: November 2013

A. Shonhai, University of Zululand, Empangeni, South Africa; G. Blatch, Victoria University, Melbourne, Australia (Eds.)

Heat Shock Proteins of Malaria

This book describes the role of heat shock proteins in the life cycle of malaria parasites. The work includes a general introduction on the structural and functional features of heat shock proteins. The main focus is on the role of heat shock protein families from *Plasmodium falciparum*, their role in protein folding and in the development of malaria pathology. The functions of individual families of heat shock proteins from plasmodium species and their cooperation in functional networks is described. Subcellular and extracellular organelles such as the apicoplast and the Maurer's Clefts which are associated with plasmodium species, are discussed in detail. The role of heat shock[...]

Features

This book describes the role of heat shock proteins in the life cycle of malaria parasites. The work includes a general introduction on the structural and functional features of heat shock proteins. The main focus is on the role of heat shock protein families from *Plasmodium falciparum*, their role in protein folding and in the development of malaria pathology. The functions of individual families of [...]

Contents

Introduction: The importance of molecular chaperones in survival and pathogenesis of the malaria parasite *Plasmodium falciparum*.- General structural and functional features of molecular chaperones.- The role of Hsp70s in the development and pathogenicity of *Plasmodium* species.- Role of the Hsp40 family of proteins in the survival and pathogenesis of the malaria parasite.- Role of Hsp90 in *Plasmodium falciparum* malaria.- The role of parasite heat shock proteins in protein trafficking and host cell remodeling.- Role of heat shock proteins in immune modulation in malaria.- Establishment[...]

Fields of interest

Biomedicine (general); Parasitology; Protein Science; Infectious Diseases

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-94-007-7437-7

Hardcover

2014. VIII, 223 p. 35 illus., 33 illus. in color. ISBN 978-94-007-7437-7

**usually dispatched within 3 to 5 business days
October 31, 2013**

G. Banfalvi, University of Debrecen, Debrecen, Hungary

Homeostasis - Tumor - Metastasis

Homeostasis. The health of an organism is influenced by external and internal changes that may lead to the loss of homeostasis. Under healthy conditions organisms compensate these changes. If compensation fails disease ensues. Attention will be paid to lifestyle, environmental changes, genetic makeup and health system. It will be answered how lifestyle, environment, genetic makeup and social conditions help to maintain or upset the biological balance and lead to cancer. Tumor formation. To understand this process the transfer of intracellular and the pathways of extracellular information (signal transduction) will be reviewed briefly. Loss of cellular balance may lead to cell death[...]

Features

Human homeostasis refers to complex interactions to regulate and maintain the internal conditions of the organism under stable condition. In spite of the progress made on cell growth and division, the circuits that coordinate these processes and maintain the homeostatic balance between cell growth and cell death have not been clarified. Deregulation of homeostatic processes results in different forms of [...]

Contents

Preface.- Homeostasis.- Cell cultures.- Loss of homeostasis.- Tumor development.- Metastasis.- References.- Abbreviations.

Fields of interest

Cancer Research; Cell Biology; Biomedicine (general); Higher Education; Science; Environmental Health

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7334-9

Hardcover

2014. VIII, 279 p. 71 illus., 16 illus. in color.
ISBN 978-94-007-7334-9

Due: September 30, 2013

O. Kurzai, Friedrich Schiller University of Jena, Jena, Germany (Ed.)

Human Fungal Pathogens

Whereas plant and insect infections are commonly caused by fungi, only a small minority of the vast diversity of fungal species is pathogenic to humans. Despite this, fungal infections cause considerable morbidity and mortality worldwide. This volume is dedicated to the biology, clinical presentation and management of invasive fungal infections. Major pathogenic fungi are introduced by world-leading experts and the basic principles of fungal virulence are reviewed in the light of new results and experimental technologies that offer unprecedented insights into invasive infections caused by *Aspergillus*, *Candida*, *Cryptococcus*, *Pneumocystis* and *Mucorales*. In parallel, the clinical[...]

Features

Whereas plant and insect infections are commonly caused by fungi, only a small minority of the vast diversity of fungal species is pathogenic to humans. Despite this, fungal infections cause considerable morbidity and mortality worldwide. This volume is dedicated to the biology, clinical presentation and management of invasive fungal infections. Major pathogenic fungi are introduced by world-leading experts [...]

Contents

From Commensal to Pathogen: *Candida albicans*.- *Aspergillus fumigatus*: Saprophyte to Pathogen.- Systems Biology Approaches to Understand and Predict Fungal Virulence.- Receptor-Ligand Interactions in Fungal Infections.- Macrophages in the Immune Response against *Cryptococcus*.- T Cell Responses in Fungal Infections.- Molecular Mechanisms of *Histoplasma* Pathogenesis.- Visualizing Immune Responses in Fungal Infections – Established and Novel Methods.- Mucosal Immunology in *Candida albicans* Infection.- Invasive *Aspergillosis* in the Intensive Care Unit.- Molecular Epidemiology of *Pneumocystis*[...]

Fields of interest

Medical Microbiology; Immunology; Allergology; Cell Biology; Eukaryotic Microbiology; Microbial Genetics and Genomics

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-3-642-39431-7

Hardcover

2014. X, 415 p. 55 illus., 34 illus. in color. (The Mycota, Vol. 12)
ISBN 978-3-642-39431-7

Due: October 31, 2013

A. Trifilieff, Novartis Pharma AG, Basel, Switzerland (Ed.)

Indacaterol

The First Once-daily Long-acting Beta2 Agonist for COPD

Chronic obstructive pulmonary disease (COPD) is a multi-component condition that results in increasingly limited airflow, usually associated with an abnormal inflammatory response of the lung. It constitutes a major public health burden worldwide, while only very few effective therapies are available. This book provides a comprehensive overview of the development of Onbrez Breezhaler, a newly approved once-daily inhaled β_2 agonist for the treatment of COPD. It reviews the current pharmacotherapy for COPD and discusses topics such as the chemical design and the pre-clinical pharmacology of the molecule, the early clinical development, the INHANCE study (which provides a successful[...])

Features

Chronic obstructive pulmonary disease (COPD) is a multi-component condition that results in increasingly limited airflow, usually associated with an abnormal inflammatory response of the lung. It constitutes a major public health burden worldwide, while only very few effective therapies are available. This book provides a comprehensive overview of the development of Onbrez Breezhaler, a newly approved [...]

Contents

Current Pharmacotherapy for COPD.- The preclinical pharmacology of indacaterol.- The design of the indacaterol molecule.- The early clinical development of Indacaterol.- INHANCE: An adaptive confirmatory study with dose selection at interim.- Phase III clinical efficacy studies – lung function.- Phase III Clinical Efficacy of Indacaterol.- Patient-centered Outcomes.- The history and performance of the Breezhaler device.- What does the future hold for the therapy of COPD?

Fields of interest

Pharmacology / Toxicology; Pneumology/Respiratory System

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-3-0348-0708-1

Hardcover

2014. VIII, 229 p. 41 illus., 21 illus. in color. (Milestones in Drug Therapy)
ISBN 978-3-0348-0708-1

Due: November 30, 2013

E. Spangenburg, University of Maryland, College Park, USA (Ed.)

Integrative Biology of Women's Health

Defining and understanding cellular and molecular mechanisms that are relevant to women's health has become a critical area of scientific pursuit. Until recently, very little effort has been placed on defining or understanding critical differences between women and men that may be critical to the overall health of the woman. In 1990, the National Institutes of Health recognized this gap in knowledge resulting in the creation of the Office of Research on Women's Health. One of the purposes of this office was to advance the understanding of health issues from the women's perspective from both a basic and clinical scientific perspective. From a scientific evolution of understanding, the[...]

Features

The purpose of Integrative Biology of Women's Health is to discuss and identify perspective areas from basic science to clinical interventions that are critical to the future of women's health. As of now there are critical knowledge gaps that exist in our understanding of physiological and cellular function in women that make the prediction of responses to specific interventions daunting. From a [...]

Contents

1. Influence of ovarian hormones on skeletal muscle contractility.- 2. Novel Findings in Bone biology: impact on bone health for women.- 3. Estrogen Effects on Skeletal Muscle.- 4. The contribution of ovarian hormones to the cellular regulation of lipid metabolism.- 5. The role of estrogens in the regulation of peripheral glucose dynamics.- 6. The Impact of Estrogen Receptor Expression in the Pathogenesis of Metabolic Syndrome- 7. Metabolic Health in the Aging Female: Human Perspective.- 8. Transitions Across a Lifetime: Unique Cardiovascular Physiology of Women and Relationship to[...]

Fields of interest

Human Physiology; Cell Biology; Endocrinology; Receptors; Cardiology; Developmental Biology

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-1-4614-8629-9

Hardcover

2013. X, 276 p. 28 illus., 17 illus. in color.
ISBN 978-1-4614-8629-9

Due: October 31, 2013

I. Wakabayashi, Hyogo College of Medicine, Hyogo, Japan; K. Groschner, Medical University of Graz, Graz, Austria (Eds.)

Interdisciplinary Concepts in Cardiovascular Health

This book provides an introduction to the principles of both cardiovascular epidemiology and molecular pathophysiology; as a unique aspect, it also outlines and discusses the molecular concepts underlying epidemiological observations. Further, it promotes the use of interdisciplinary approaches in the field of preventive medicine based on recent advances in molecular and cellular pathophysiology. The book offers a valuable resource work for researchers in basic biomedical fields and clinical scientists alike, as well as guidelines for novel avenues of research in both basic pathophysiology and cardiovascular therapy and prevention.

Features

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Fields of interest

Molecular Medicine; Metabolic Diseases; Health Promotion and Disease Prevention

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-3-319-01416-6

Hardcover

2013. Approx. 650 p. 82 illus., 50 illus. in color. 3 volume-set.
ISBN 978-3-319-01416-6

Due: August 31, 2013

N. Durán, Universidade Estadual de Campinas, Campinas, Brazil; S.S. Guterres, Universidade Federal do Rio Grande do, Porto Alegre, Brazil; O.L. Alves, Universidade Estadual de Campinas, Campinas, Brazil (Eds.)

Nanotoxicology

Materials, Methodologies, and Assessments

This book takes a systematic approach to nanotoxicology and the developing risk factors associated with nanosized particles during manufacture and use of nanotechnology. Beginning with a detailed introduction to engineered nanostructures, the first part of the book presents concepts and definitions of nanomaterials from quantum dots to graphene to fullerenes, with detailed discussion of functionalization, stability, and medical and biological applications. The second part critically examines methodologies used to assess cytotoxicity and genotoxicity. Coverage includes interactions with blood (erythrocytes), combinatorial and microarray techniques, cellular mechanisms, and[...]

Features

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Contents

Foreword.- Preface.- Chapter 1: Nanomaterials.- Chapter 2: Concepts and Methodology of Interaction of Carbon Nanostructures with Cellular Systems.- Chapter 3: Nanostability.- Chapter 4: Pharmacokinetics and Pharmacodynamics of Nanomaterials.- Chapter 5: In Vitro Cytotoxicity Assays of Nanoparticles on Different Cell Lines.- Chapter 6: Carbon Nanotubes: From Synthesis to Genotoxicity.- Chapter 7: From Combinatorial Display Techniques to Microarray Technology: New Approaches to the Development and Toxicological Profiling of Targeted Nanomedicines.- Chapter 8: Genetic Studies on the Effects[...]

Fields of interest

Pharmacology / Toxicology; Nanochemistry; Ecotoxicology; Nanotechnology; Nanoscale Science and Technology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8992-4

Hardcover

2014. XV, 366 p. 41 illus., 17 illus. in color. (Nanomedicine and Nanotoxicology)
ISBN 978-1-4614-8992-4

Due: November 30, 2013

A. Suzumura, K. Ikenaka, National Inst of Physiological Science, Aichi, Japan (Eds.)

Neuron-Glia Interaction in Neuroinflammation

Accumulation on glia is an active pathological element in many neurological disorders. Gliosis produces neuroinflammation through both neurotrophic and inflammatory means, but the exact mechanism through which this happens remain unclear. It is suspected that damage to neurons activates the growth of glial cells. The proposed book focuses on the interaction between neurons and glia to help elucidate the pathophysiology of neuroinflammation in neurological disorders.

Features

Accumulation of glia, gliosis, in various neurological disorders is not a static scar, but actively involved in pathogenesis of various neurological and psychiatric disorders, where glial cells produce both inflammatory and neurotrophic factors. These factors may play a role in neuronal damage, but also have a protective and reparative function by inducing neuroinflammation. However, definition as well as [..]

Contents

Acute, Chronic, and Non-classical Neuroinflammation: Definitions in a Changing Scientific Environment.- Neuroinflammation in Neurological Disorders.- Factors from Intact and Damaged Neurons.- Interactions between Neurons and Microglia During Neuroinflammation.- Neuron-Astrocyte Interactions in Neuroinflammation.- Neuron-oligodendrocyte Interactions in Neuroinflammation.- Neuron-glia Interaction via Neurotrophins.- Glial Communication via Gap Junction in Neuroinflammation.- Toll-Like Receptors and Neuroinflammation.- The Blood-Brain-Barrier in Neuroinflammation.

Fields of interest

Neurosciences; Neurology

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-1-4614-8312-0

Hardcover

2013. X, 187 p. 25 illus., 24 illus. in color. (Advances in Neurobiology, Vol. 7)
ISBN 978-1-4614-8312-0

usually dispatched within 3 to 5 business days
October 31, 2013

N. Weiss, University of Calgary, Calgary, Canada; A. Koschak, Medical University Vienna, Vienna, Austria (Eds.)

Pathologies of Calcium Channels

Calcium ions represent Mother Nature's 'ion-of-choice' for regulating fundamental physiological functions, as they initiate a new life at the time of fertilization and guide subsequent developmental and physiological functions of the human body. Calcium channels, which act as gated pathways for the movement of calcium ions across the membranes, play a central part in the initiation of calcium signals, and defects in calcium channel function have been found to result in a plethora of human diseases, referred to as the calcium channelopathies. Pathologies of Calcium Channels brings together leading international experts to discuss our current understanding of human diseases associated[...]

Features

Calcium ions represent Mother Nature's 'ion-of-choice' for regulating fundamental physiological functions, as they initiate a new life at the time of fertilization and guide subsequent developmental and physiological functions of the human body. Calcium channels, which act as gated pathways for the movement of calcium ions across the membranes, play a central part in the initiation of calcium signals, and [..]

Contents

Part I Pathologies of Voltage-Gated Calcium Channels.- Part II Pathologies of Transient Receptor Potential Channels.- Part III Pathologies of Ligand-Gated Calcium Channels.

Fields of interest

Human Physiology; Receptors; Neurochemistry; Internal Medicine

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40281-4

Hardcover

2014. XVII, 920 p. 83 illus., 54 illus. in color.
ISBN 978-3-642-40281-4

Due: October 31, 2013

K.E. Palmer, Y. Gleba, Icon Genetics GmbH, Halle, Germany (Eds.)

Plant Viral Vectors

In this volume, the authors provide an excellent overview of how far the plant viral vector field has come. The discipline is no longer exclusively in the domain of academics—there is a small, but growing number of small biotechnology companies that exploit plant viruses as the platform for commercial innovation in crop improvement, industrial product manufacturing, and human and veterinary health care.

Features

In this volume, the authors provide an excellent overview of how far the plant viral vector field has come. This discipline is no longer exclusively the domain of academics – there is a small, but growing number of small biotechnology companies that exploit plant viruses as a platform for commercial innovation in crop improvement, industrial product manufacturing, and human and veterinary health care. [..]

Contents

Preface.- A personal history of virus-based vector construction by William O. Dawson.- Virus-derived ssDNA vectors for the expression of foreign proteins in plants by Edward P. Rybicki and Darrin P. Martin.- Plant Viral Epitope Display Systems for Vaccine Development by Denis Leclerc.- Applications of plant viruses in bionanotechnology by George P. Lomonosoff and David J. Evans.- Milestones in the development and applications of plant virus vector as gene silencing platforms.- by Christophe Lacomme.- Emerging Antibody-based Products by Kevin J. Whaley, Josh Morton, Steve Hume, Ernie[...]

Fields of interest

Virology; Vaccine

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-3-642-40828-1

Hardcover

2013. X, 194 p. 33 illus., 19 illus. in color. (Current Topics in Microbiology and Immunology, Vol. 375)
ISBN 978-3-642-40828-1

Due: October 31, 2013

S.R. Garg, Lala Lajpat Rai University of, Hisar, India

Rabies in Man and Animals

Rabies is the deadliest zoonotic disease that threatens humans and animals on all continents except Antarctica. Asia and Africa are worst affected as more than 95 per cent of rabies associated human deaths occur in these regions. India alone bears about 36 per cent of the global human rabies burden. Dogs are the main transmitters of rabies that potentially threaten over 3 billion people in Asia and Africa. Many developed nations have been able to successfully control dog rabies but continue to face the risk from wildlife including bats. Bat rabies is responsible for most human rabies deaths in the United States of America and Canada but has emerged as a public health threat in[...]

Features

Rabies is the deadliest zoonotic disease that threatens humans and animals on all continents except Antarctica. Asia and Africa are worst affected as more than 95 per cent of rabies associated human deaths occur in these regions. India alone bears about 36 per cent of the global human rabies burden. Dogs are the main transmitters of rabies that potentially threaten over 3 billion people in Asia and Africa. [...]

Contents

1. Introduction.- 2. Causation of Disease.- 3. Epidemiology.- 4. Rabies Manifestations and Diagnosis.- 5. Risk Assessment and Management of Exposures.- 6. Vaccines and Other Biologicals.- 7. Rabies Prevention and Control.- 8. Frequently Asked Questions.- Subject Index.

Fields of interest

Molecular Medicine; Drug Resistance; Medicine (general); Biomedicine (general)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-81-322-1604-9

Hardcover

2014. XVI, 148 p. 34 illus., 25 illus. in color.
ISBN 978-81-322-1604-9

Due: October 31, 2013

A. Szende, Covance, Leeds, United Kingdom; B. Janssen, J. Cabases (Eds.)

Self-Reported Population Health: An International Perspective based on EQ-5D

The EQ-5D instrument, as a standardized, cross-culturally validated measure of self-assessed health has a hugely important role in understanding population health within and across countries. Over the past two decades a wealth of international population health survey data have been accumulated by the EuroQol Group from research conducted in many countries across four continents. One of the success factors of the EQ-5D instruments has been the easy availability of national or international sets of EQ-5D data, as well as clear explanations and guidance for users. There is an unmet need to produce a comprehensive book that captures up-to-date and expanded information of EQ-5D[...]

Features

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Contents

Preface.- Data and Methods.- Population Norms for the EQ-5D.- Cross-Country Analysis of EQ-5D Data.- Socio-demographic Indicators based on EQ-5D.- Annex 1.- Annex 2.

Fields of interest

Biomedicine (general); Public Health; Health and Quality of Life

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-94-007-7595-4

Hardcover

2014. XV, 170 p. 15 illus., 9 illus. in color.
ISBN 978-94-007-7595-4

Due: October 31, 2013

Y. Nagai, CRNID, Chiyoda-ku, Japan (Ed.)

Sendai Virus Vector

Advantages and Applications

Sendai virus (SeV) is not just a mouse pathogen but is evolving into a cutting-edge component of biotechnology. SeV reverse genetics originating from a pure academic need to settle long-held questions in the biology and pathogenicity of nonsegmented negative strand RNA viruses (Mononegavirales) is about to bear the impressive fruit of multipurpose cytoplasmic (non-integrating) RNA vectors. This book brings together in one source the SeV biology revealed by conventional approaches and reverse genetics, the methods to construct the first-generation SeV vector and to generate safer versions, and the applications in medical settings that have left or are about to leave the laboratory[...]

Features

Sendai virus (SeV) is not just a mouse pathogen but is evolving into a cutting-edge component of biotechnology. SeV reverse genetics originating from a pure academic need to settle long-held questions in the biology and pathogenicity of nonsegmented negative strand RNA viruses (Mononegavirales) is about to bear the impressive fruit of multipurpose cytoplasmic (non-integrating) RNA vectors. This book [...]

Contents

1. Reverse genetics of Mononegavirales: the rabies virus paradigm Karl-Klaus Conzelmann.- 2. Sendai virus biology and engineering leading up to the development of a novel class of expression vector Yoshiyuki Nagai and Atsushi Kato.- 3. Concept and technology underlying Sendai virus (SeV) vector development Akihiro Iida and Makoto Inoue.- 4. Roadmap for development of a replication-deficient Sendai virus vaccine vector (provisional) Marian Wiegand and Wolfgang Neubert.- 5. Development of vaccines using SeV vectors against AIDS and other infectious diseases Sayuri Seki and Tetsuro Matano.- 6.[...]

Fields of interest

Virology; Gene Therapy; Gene Expression

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-4-431-54555-2

Hardcover

2014. XII, 248 p. 33 illus., 17 illus. in color.
ISBN 978-4-431-54555-2

Due: November 30, 2013

M. Al-Rubeai, University College, Dublin, Dublin, Ireland; M. Naciri, University College Dublin, Dublin, Ireland (Eds.)

Stem Cells and Cell Therapy

With the discovery of stem cells capable of multiplying indefinitely in culture and differentiating into many other cell types in appropriate conditions, new hopes were born in repair and replacement of damaged cells and tissues. The features of stem cells may provide treatment for some incurable diseases with some therapies already in clinics, particularly those from adult stem cells. Some treatments will require large number of cells and may also require multiple doses, generating a growing demand for generating and processing large numbers of cells to meet the need of clinical applications. With this in mind, our aim is to provide a book on the subject of stem cells and cell[...]

Features

With the discovery of stem cells capable of multiplying indefinitely in culture and differentiating into many other cell types in appropriate conditions, new hopes were born in repair and replacement of damaged cells and tissues. The features of stem cells may provide treatment for some incurable diseases with some therapies already in clinics, particularly those from adult stem cells. Some treatments will [..]

Contents

Use of Human Embryonic Stem Cells in Therapy.- Human Neural Stem Cell-based Cell- and Gene-therapy for Neurological Diseases.- Vascular Stem Cell Therapy.- Bioprocessing of Human Pluripotent Stem Cells for Cell Therapy Applications.- Blood Cell Bioprocessing: The Haematopoietic System and Current Status of In-vitro Production of Red Blood Cells.- Bioprocessing Challenges Associated with the Purification of Cellular Therapies.- Separation Technologies for Stem Cell Bioprocessing.

Fields of interest

Biomedicine (general); Cell Biology; Stem Cells; Cell Culture

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-94-007-7195-6

Hardcover

2014. VIII, 189 p. 27 illus., 20 illus. in color. (Cell Engineering, Vol. 8)
ISBN 978-94-007-7195-6

Due: October 31, 2013

V.S. Smentkowski, GE Global Research, Niskayuna, USA (Ed.)

Surface Analysis and Techniques in Biology

The outer layer of bulk solid or liquid samples is referred to as the surface of the sample/material. At the surface, the composition, microstructure, phase, chemical bonding, electronic states, and/or texture is often different than that of the bulk material. The outer surface is where many material interactions/reactions take place. This is especially true biomaterials which may be fabricated into bio-devices and in turn implanted into tissues and organs. Surfaces of biomaterials (synthetic or modified natural materials) are of critical importance since the surface is typically the only part of the biomaterial/bio-device that comes in contact with the biological system.[...]

Features

The outer layer of bulk solid or liquid samples is referred to as the surface of the sample/material. At the surface, the composition, microstructure, phase, chemical bonding, electronic states, and/or texture is often different than that of the bulk material. The outer surface is where many material interactions/reactions take place. This is especially true biomaterials which may be fabricated into [..]

Contents

Introduction.- Applications of XPS in Biology and Biointerface Analysis.- Biomolecular Analysis by Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS).- Cluster Secondary Ion Mass Spectrometry.- Biological Tissue Imaging at Different Levels: MALDI and SIMS Imaging Combined.- Molecular Structure and Identification Through G-SIMS and SMILES.- Imaging with the Helium Ion Microscope.- Sum Frequency Generation Vibrational Spectroscopy: A Sensitive Technique for the Study of Biological Molecules at Interfaces.- Near-Field Scanning Optical Microscopy: A New Tool for Exploring Biological[...]

Fields of interest

Molecular Medicine; Systems Biology; Biological Techniques

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-3-319-01359-6

Hardcover

2013. X, 306 p. 151 illus., 82 illus. in color.
ISBN 978-3-319-01359-6

Due: October 31, 2013

M.A. Tabrizi, Merck & CO Inc., Palo Alto, USA; I. Figueroa, Merck & CO Inc., Palo Alto, USA

Surrogate Approaches in Development of Antibody-Based Therapeutics

A Quantitative Evaluation

Fields of interest

Pharmacology / Toxicology; Biochemistry; Pharmacy

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4419-5776-4

Hardcover

2013. 400 p.
ISBN 978-1-4419-5776-4

Due: November 28, 2013

L. Konieczny, Jagiellonian University, Krakow, Poland; I. Roter-
man-Konieczna, Jagiellonian University, Krakow, Poland; P. Spół-
nik, Jagiellonian University, Krakow, Poland

Systems Biology

Functional Strategies of Living Organisms

The objective of this book is to present the strategies employed by living organisms on a molecular level and to help understand the basics of Systems Biology. Its content is organized in a way to meet the exponential growth in the volume of biological knowledge, and the need for a multidisciplinary approach in the practice of teaching modern biology. For this reason, the whole material is divided into five chapters, each devoted to a fundamental concept: Structure-Function, Energy, Information, Regulation and Interrelationships. The book describes generic mechanisms which occur in biology and promotes a simulation-based approach to the subject of Systems Biology. The use of basic[...]

Features

The objective of this book is to present the strategies employed by living organisms on a molecular level and to help understand the basics of Systems Biology. Its content is organized in a way to meet the exponential growth in the volume of biological knowledge, and the need for a multidisciplinary approach in the practice of teaching modern biology. For this reason, the whole material is divided into five [...]

Contents

The Structure and Function of Living Organisms.- General physiochemical properties of biological structures.- Self-organization.- Hypothesis - Protein folding simulation hypothesis - late stage intermediate - role of water.- Energy in Biology - Demand and Use.- General principles of thermodynamics.- Biological energy sources - synthesis of water.- ATP synthesis.- Photosynthesis.- Direct and indirect exploitation of energy sources.- Energy conversion efficiency in biological processes.- Entropic effects.- Energy requirements of organisms.- Information - Its Role and Meaning in[...]

Fields of interest

Biomedicine (general); Systems Biology; Cell Biology; Bioinformatics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01335-0

Hardcover

2014. XIII, 202 p. 157 illus., 91 illus. in color.
ISBN 978-3-319-01335-0

Due: September 30, 2013

L.D. Longo, Loma Linda University School of Medicine, Loma
Linda, USA

The Rise of Fetal and Neonatal Physiology

Basic Science to Clinical Care

During the mid- to late-twentieth century, study of the physiology of the developing fetus and newborn infant evolved rapidly to become a major discipline in the biomedical sciences. Initially of interest from a standpoint of function of the placenta and oxygenation of the fetus, the field advanced to explore both normal functional mechanisms as well as pathophysiologic aspects of their regulation. Examples include studying the role and regulation of circulatory vascular anatomic shunts in oxygenation, cardiac function, certain aspects of asphyxia in the fetus and newborn infant, the role of fetal "breathing" movements, cyclic electroencephalographic activity, and analysis of[...]

Features

During the mid- to late-twentieth century, study of the physiology of the developing fetus and newborn infant evolved rapidly to become a major discipline in the biomedical sciences. Initially of interest from a standpoint of function of the placenta and oxygenation of the fetus, the field advanced to explore both normal functional mechanisms as well as pathophysiologic aspects of their regulation. Examples [...]

Contents

Introduction.- A Scientific Genealogy: The Development of Fetal-Neonatal Research.- Oxford and the Development of Physiology, with Notes on the Nuffield Institute.- Geoffrey S. Dawes: A Life in Science.- Dawes and Fetal Asphyxia: The Primate Colony in Puerto Rico.- Dawes, the Pulmonary Vasculature and his Foetal and Neonatal Physiology.- Embryology and Early Developmental Physiology.- Some Aspects of the Physiology of the Placenta.- Governmental Support of Research in Fetal and Newborn Physiology.- Fetal-Neonatal Growth and Metabolism.- Epigenetics and the Fetal Origins of Adult Health[...]

Fields of interest

Human Physiology; History of Medicine; Reproductive Medicine; Obstetrics / Perinatology; Biomedicine (general)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-7920-8

Hardcover

2013. XXVII, 533 p. 52 illus., 18 illus. in color. (Perspectives in Physiology)
ISBN 978-1-4614-7920-8

usually dispatched within 3 to 5 business days
September 30, 2013

N. Daw

Visual Development

The only book on the market to cover the psychophysics, anatomy, physiology, and clinical deficits of the developing visual system in an accessible format and length. The visual system is the most commonly studied aspect of the nervous system and is the primary model for the study of both normal development and the effects of environment and sensory deprivation on development. This third edition highlights new research and features a large number of illustrations, many in color. It can be used as a supplementary text in neuroscience and ophthalmology courses. This book is a great resource for both novice and advanced researchers in the field of vision.

Features

The only book on the market to cover the psychophysics, anatomy, physiology, and clinical deficits of the developing visual system in an accessible format and length. The visual system is the most commonly studied aspect of the nervous system and is the primary model for the study of both normal development and the effects of environment and sensory deprivation on development. This third edition highlights new [...]

Contents

Introduction.- Functional Organization of the Visual System.- Part I: Development of the Visual System.- Development of Visual Capabilities.- Anatomical Development of the Visual System.- Development of Receptive Field Properties.- Part II: Amblyopia and the Effects of Visual Deprivation.- Modifications to the Visual Input that lead to Nervous System changes.- Known Physiological and Anatomical changes from optical and motor deficits.- What is Amblyopia?.- Critical Periods.- Treatment of Amblyopia.- Part III: Mechanisms of Plasticity.- Concepts of Plasticity.- Mechanisms of Plasticity[...]

Fields of interest

Neurosciences; Ophthalmology; Biomedical Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-9058-6

Hardcover

2013. XV, 325 p. 165 illus., 43 illus. in color.
ISBN 978-1-4614-9058-6

Due: October 31, 2013

S. Baltan, Cleveland Clinic Foundation, Cleveland, USA; S.Th. Carmichael, David Geffen School of Medicine at UCLA, Los Angeles, USA; C. Matute, University of Pais Vasco (UPV/EHU), Leioa, Spain; G. Xi, University of Michigan, Ann Arbor, USA; J.H. Zhang, Loma Linda University, Loma Linda, USA (Eds.)

White Matter Injury in Stroke and CNS Disease

White matter injury can result from both ischemic and hemorrhagic stroke as well as a host of other CNS diseases and conditions such as neonatal injuries, neurodegenerative disorders including Alzheimer's disease, traumatic brain injuries, carbon monoxide poisoning, and drug or alcohol overdoses. The extent of white matter injury is extremely important to patient outcomes. Several recent technological developments including advanced neuroimaging and the breeding of new rodent models of white matter injury have provided growing insight into initial damage and repair after a stroke or other damaging event. The proposed book will be the first to provide a systematic expert summary of [...]

Features

The first book to provide a systematic expert summary of normal white matter morphology as well as white matter injury following stroke and other CNS injuries. White matter injury can result from both ischemic and hemorrhagic stroke as well as a host of other CNS diseases and conditions such as neonatal injuries, neurodegenerative disorders including Alzheimer's disease, traumatic brain injuries, carbon [...]

Contents

White matter: Basic principles of axonal organization and function.- Electrophysiology evaluation of white matter injury.- CADASIL and animal models.- Neuroimaging of White Matter Injury: A Multimodal Approach to Vascular Disease.- Diffusion MRI Biomarkers of White Matter Damage in Traumatic Brain Injury.- Mechanisms underlying the selective vulnerability of developing white matter.- Neonatal experimental white matter injury.- Focal ischemic white matter injury in experimental models.- Global ischemic white matter injury in patients.- Experimental global ischemia and white matter [...]

Fields of interest

Neurosciences; Neurology; Neurobiology

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-1-4614-9122-4

Hardcover

2014. XII, 696 p. 126 illus., 81 illus. in color. (Springer Series in Translational Stroke Research, Vol. 4)
ISBN 978-1-4614-9122-4

Due: November 30, 2013

Chemistry

N.G. Ashar, Navdeep Enviro and Technical, Ambernath (E), India; K.R. Golwalkar

A Practical Guide to the Manufacture of Sulfuric Acid, Oleums, and Sulphonating Agents

This critical volume provides practical insights on sulfuric acid and related plant design and on techniques to improve and enhance substantially the efficiency of an existing plant by means of small modifications. The book provides readers with a better understanding of the state-of-art in sulfuric acid manufacture as well as, importantly, in the manufacture of value-added products based on sulfur that are also associated with the manufacture of sulfuric acid. Overall, engineers and plant managers will be introduced to technologies for making their sulfuric acid enterprises more productive, remunerative, and environmentally friendly. A Practical Guide to the Manufacture of Sulfuric [...]

Features

This critical volume provides practical insights on sulfuric acid and related plant design and on techniques to improve and enhance substantially the efficiency of an existing plant by means of small modifications. The book provides readers with a better understanding of the state-of-art in sulfuric acid manufacture as well as, importantly, in the manufacture of value-added products based on sulfur that are [...]

Contents

Current Status of Manufacture of Sulfuric Acid.- Sulfuric Acid Plant with Co-Generation of Power.- Sulphonating Agents and Derivatives based on Sulfuric Acid.- Innovations / Modifications in Technology.- Equipments Required for the Manufacture of Sulfuric Acid, Oleums and Liquid Sulphur Trioxide.- Materials of Construction of Main Equipments.- Safety Precautions.- Economic Considerations.- Future Developments.- Cold Process of Manufacturing Sulfuric Acid and Sulphonating Agents Patented by NEAT.- Storage, Handling and Properties of Sulphur, Sulfuric Acid, oleum and Liquid [...]

Fields of interest

Industrial Chemistry / Chemical Engineering; Industrial and Production Engineering; Quality Control, Reliability, Safety and Risk; Facility Management; Manufacturing, Machines, Tools

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-3-319-02041-9

Hardcover

2014. XV, 140 p. 7 illus., 4 illus. in color.
ISBN 978-3-319-02041-9

Due: November 30, 2013

K.K. Jain, Jain PharmaBiotech, Basel, Switzerland

Applications of Biotechnology in Oncology

Applications of Biotechnology in Oncology collects key writings by Kewal K. Jain on the most important contributions of biotechnology to cancer research, particularly to the molecular diagnosis of cancer and drug delivery in cancer for personalized management of patients. Basics of various "omics" technologies and their application in oncology are described as oncogenomics and oncoproteomics. This detailed volume also explores molecular diagnostics, nanobiotechnology, cell and gene therapies, as well as personalized oncology. With approximately one thousand selected references from recent literature on this topic and numerous tables and figures, Applications of Biotechnology in [...]

Features

Applications of Biotechnology in Oncology collects key writings by Kewal K. Jain on the most important contributions of biotechnology to cancer research, particularly to the molecular diagnosis of cancer and drug delivery in cancer for personalized management of patients. Basics of various "omics" technologies and their application in oncology are described as oncogenomics and oncoproteomics. This [...]

Contents

Molecular Biology of Cancer.- Oncogenomics.- Sequencing in Cancer.- Oncoproteomics.- Biomarkers of Cancer.- Molecular Diagnosis of Cancer.

Fields of interest

Biotechnology; Oncology; Cancer Research

Target groups

Professional/practitioner

Type of publication

Monograph

More on www.springer.com/978-1-4614-9244-3

Hardcover

2014. X, 1204 p. 10 illus.
ISBN 978-1-4614-9244-3

Due: December 31, 2013

G. Evtugyn, Kazan Federal University, Kazan, Russian Federation

Biosensors: Essentials

Today, biosensors are broadly applied in research, clinical diagnosis and monitoring, as well as in pharmaceutical, environmental or food analysis. In this work, the author presents the essentials that advanced students and researchers need to know in order to make full use of this technology. This includes a description of biochemical recognition elements, such as enzymes, antibodies, aptamers or even whole cells. Various signal transducers such as electrochemical and optical transducers, luminescence devices and advanced techniques such as quartz crystal microbalances and MEMS systems are covered as well. Current applications are introduced through various case studies, rounded out[...]

Features

Today, biosensors are broadly applied in research, clinical diagnosis and monitoring, as well as in pharmaceutical, environmental or food analysis. In this work, the author presents the essentials that advanced students and researchers need to know in order to make full use of this technology. This includes a description of biochemical recognition elements, such as enzymes, antibodies, aptamers or even [...]

Contents

Introduction and Historic Overview.- Biochemical Components Used in Biosensor Assemblies: Enzymes.- Antibodies.- Protein / Peptide Receptors.- Nucleic Acids.- Whole Cells as Biosensing Elements.- Immobilization of Biochemical Elements of Biosensors.- Biosensor Signal Transducers: Electrochemical Transducers.- Optical Transducers.- Other Techniques.- How does it Work? – Case Studies.- Biosensors Prospects: Quo vadis? (Conclusion).

Fields of interest

Analytical Chemistry; Laboratory Medicine; Monitoring / Environmental Analysis; Nanotechnology and Microengineering

Target groups

Graduate

Type of publication

Monograph

More on www.springer.com/978-3-642-40240-1

Hardcover

2014. VIII, 267 p. 133 illus. (Lecture Notes in Chemistry, Vol. 84)

ISBN 978-3-642-40240-1

Due: November 30, 2013

R. Simpson, Universidad Técnica Federico Santa María, Valparaíso, Chile; S.K. Sastry, The Ohio State University, Columbus, USA

Chemical and Bioprocess Engineering

Fundamental Concepts for First-Year Students

The goal of this textbook is to provide first-year engineering students with a firm grounding in the fundamentals of chemical and bioprocess engineering. However, instead of being a general overview of the two topics, Fundamentals of Chemical and Bioprocess Engineering will identify and focus on specific areas in which attaining a solid competency is desired. This strategy is the direct result of studies showing that broad-based courses at the freshman level often leave students grappling with a lot of material, which results in a low rate of retention. Specifically, strong emphasis will be placed on the topic of material balances, with the intent that students exiting a course based[...]

Features

This is a unique introductory textbook that covers all aspects of both chemical and bioprocess engineering and provides a thorough grounding in the fundamentals so that the background may be used in future work. Included are more than 400 proposed and solved exercises, each classified by its level of difficulty. Each chapter contains references and selected web pages to vividly illustrate examples. To aid [...]

Contents

Introduction.- Fundamentals of Magnitudes, Units Systems, and Their Applications in Process Engineering.- Fundamentals of Process Control, Communication, and Instrumentation.- Learning from Nature and its Applications in Chemical and Bioprocess Engineering.- Challenging and Solving Problems with Basic Tools, Testing Student's Attitude.- A Glimpse of Thermodynamics and Transport Phenomena.- Fundamentals of Material Balances (Non-reactive Systems).- Fundamentals of Material Balances (Reactive Systems).- Fundamentals of Mathematical Modeling, Simulation, and Process Control.- Scale Up in [...]

Fields of interest

Biochemical Engineering; Chemistry (general); Engineering (general)

Target groups

Lower undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-1-4614-9125-5

Hardcover

2014. X, 340 p. 208 illus., 84 illus. in color.

ISBN 978-1-4614-9125-5

Due: November 30, 2013

J.Y. Park, KAIST, Yuseong Gu, Daejeon, Korea(Rep.) (Ed.)

Current Trends of Surface Science and Catalysis

This unique book covers the latest surface science studies on model catalysts, including single crystals, non-colloidal nanocatalysts, and nanoparticles in various forms with the control of size, shape and composition. This book addresses the issue of bridging "materials and pressure gaps" and also discusses the important issue of metal-oxide interface and hot electron flows in heterogeneous catalysis. The current development of in-situ surface techniques that is relevant to bridging "pressure gaps" is also highlighted.

Features

This unique book covers the latest surface science studies on model catalysts, including single crystals, non-colloidal nanocatalysts, and nanoparticles in various forms with the control of size, shape and composition. This book addresses the issue of bridging "materials and pressure gaps" and also discusses the important issue of metal-oxide interface and hot electron flows in heterogeneous catalysis. The [...]

Contents

Part I: Introduction.- Bridging Materials and Pressure Gaps in Surface Science and Heterogeneous Catalysis.- Part II: Model Systems for Nanocatalysts to Bridge Materials Gap.- Shape-Controlled Nanoparticles: Effect of Shape on Catalytic Activity, Selectivity, and Long-term Stability.- Non-Colloidal Nanocatalysts Fabricated with Nanolithography and Arc Plasma Deposition.- Dendrimer Encapsulated Metal Nanoparticles: Synthesis and Application in Catalysis.- Core-Shell Nanoarchitectures as Stable Nanocatalysts.- Shape-Controlled Bimetallic Nanocatalysts in Fuel Cells: Synthesis and [...]

Fields of interest

Catalysis; Surfaces and Interfaces, Thin Films; Renewable and Green Energy; Energy Technology; Surface and Interface Science, Thin Films

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8741-8

Hardcover

2013. XI, 262 p. 160 illus., 124 illus. in color.

ISBN 978-1-4614-8741-8

Due: October 31, 2013

H. Corti, E. Gonzalez, IQSC-USP., San Carlos, SP 13560970, Brazil (Eds.)

Direct Alcohol Fuel Cells

Materials, Performance, Durability and Applications

Direct Alcohol Fuel Cells: Materials, Performance, Durability and Applications begins with an introductory overview of direct alcohol fuel cells (DAFC); it focuses on the main goals and challenges in the areas of materials development, performance, and commercialization. The preparation and the properties of the anodic catalysts used for the oxidation of methanol, higher alcohols, and alcohol tolerant cathodes are then described. The membranes used as proton conductors in DAFC are examined, as well as alkaline membranes, focusing on the electrical conductivity and alcohol permeability. The use of different kinds of carbon materials as catalyst supports, gas diffusion layers, and[...]

Features

Direct Alcohol Fuel Cells: Materials, Performance, Durability and Applications begins with an introductory overview of direct alcohol fuel cells (DAFC); it focuses on the main goals and challenges in the areas of materials development, performance, and commercialization. The preparation and the properties of the anodic catalysts used for the oxidation of methanol, higher alcohols, and alcohol [...]

Contents

Introduction to Direct Alcohol Fuel Cells.- Catalysts for methanol oxidation.- Pt and Pd-based electrocatalysts for ethanol and ethylene glycol fuel cells.- Electro-oxidation of 3-carbon alcohols and its viability for fuel cell application.- Nanostructured Electrocatalysts for Methanol and Ethanol-Tolerant Cathodes.- Membranes for Direct Alcohol Fuel Cells.- Carbon materials for fuel cells.- Physical modeling and numerical simulation of Direct Alcohol Fuel Cells.- Scales, mechanisms and approaches.- Applications and durability of direct methanol fuel cells.

Fields of interest

Catalysis; Electrochemistry; Renewable and Green Energy

Target groups

Graduate

Type of publication

Contributed volume

More on www.springer.com/978-94-007-7707-1

Hardcover

2014. II, 484 p. 151 illus., 81 illus. in color.
ISBN 978-94-007-7707-1

Due: November 30, 2013

A. Lasia, Université de Sherbrooke, Sherbrooke, Canada

Electrochemical Impedance Spectroscopy and its Applications

This book presents a complete overview of the powerful but often misused technique of Electrochemical Impedance Spectroscopy (EIS). The book presents a systematic and complete overview of EIS. The book carefully describes EIS and its application in studies of electrocatalytic reactions and other electrochemical processes of practical interest. This book is directed towards graduate students and researchers in Electrochemistry. Concepts are illustrated through detailed graphics and numerous examples. The book also includes practice problems. Additional materials and solutions are available online.

Features

This book presents a complete overview of the powerful but often misused technique of Electrochemical Impedance Spectroscopy (EIS). The book presents a systematic and complete overview of EIS. The book carefully describes EIS and its application in studies of electrocatalytic reactions and other electrochemical processes of practical interest. This book is directed towards graduate students and researchers [...]

Contents

Introduction.- Definition of the impedance and impedance of electrical circuits.- Determination of impedances.- Impedance of the faradaic reactions in the presence of mass transfer.- Impedance of the faradaic reactions in the presence of adsorption.- General method of obtaining impedance of complex reactions.- Electrocatalytic reactions involving hydrogen.- Dispersion if impedances at solid electrodes.- Impedance of porous electrodes.- Semiconductors and Mott-Schottky plots.- Coatings and paints.- Self-assembled monolayers, biological membranes, and biosensors.- Conditions for obtaining[...]

Fields of interest

Electrochemistry; Spectroscopy / Spectrometry

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-8932-0

Hardcover

2014. XII, 308 p. 224 illus., 48 illus. in color. With online files/update.

ISBN 978-1-4614-8932-0

Due: November 30, 2013

A. Naipally, K. Rosselot

Environmental Engineering: Review for the Professional Engineering Examination

This book will help the reader expand further into chemical engineering and become a licensed professional engineer (PE), which can offer a tremendous boost to one's career, as there are certain career opportunities available only to licensed engineers. Licensure demonstrates high standards of professionalism, knowledge, and ability. Because of the work experience requirement, PE examinees have generally been out of school for some time. This book summarizes the theoretical background of topics covered in the exam, which will help potential examinees refresh their memories on subjects they may not have been exposed to since their undergraduate classes. Another advantage of using this[...]

Features

This review will help candidates prepare for the Principles and Practice of Engineering Examination in the area of Environmental Engineering by refreshing their memory of key concepts and theory. In addition to a review of theory, two practice exams following the multiple choice format used by the PE exam are supplied with solutions to every problem. The material covered in the book and tested in the [...]

Contents

Water and wastewater.- Groundwater, soils, and remediation.- Air.- Solid waste.- Hazardous waste.- Environmental assessments and emergency response.- Error and uncertainty in environmental measurements.- Exam 1.- Exam 1 Solutions.- Exam 2.- Exam 2 Solutions.

Fields of interest

Industrial Chemistry / Chemical Engineering; Engineering (general)

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-0-387-29072-0

Hardcover

2013. IX, 274 p. 34 illus.
ISBN 978-0-387-29072-0

usually dispatched within 3 to 5 business days

V.A. Vaclavik, University of Texas, Dallas, USA; E.W. Christian

Essentials of Food Science

The fourth edition of this classic text continues to use a multidisciplinary approach to expose the non-major food science student to the physical and chemical composition of foods. Additionally, food preparation and processing, food safety, food chemistry, and food technology applications are discussed in this single source of information. The book begins with an Introduction to Food Components, Quality and Water. Next, it addresses Carbohydrates in Food, Starches, Pectins and Gums. Grains: Cereals, Flour, Rice and Pasta, and Vegetables and Fruits follow. Proteins in Food, Meat, Poultry, Fish, and Dry Beans; Eggs and Egg Products, Milk and Milk Products as well as Fats and Oil [...]

Features

The fourth edition of this classic text continues to use a multidisciplinary approach to expose the non-major food science student to the physical and chemical composition of foods. Additionally, food preparation and processing, food safety, food chemistry, and food technology applications are discussed in this single source of information. A new section entitled Aspects of Food Processing covers [...]

Contents

Part I. Introduction to Food Components.- Evaluation of Food Quality.- Water.- Part II. Carbohydrates in Food.- Carbohydrates in Food: An Introduction.- Starches in Food.- Pectins and Gums.- Grains: Cereals, Flour, Rice, and Pasta.- Vegetables and Fruits.- Part III. Proteins in Food.- Proteins in Foods: An Introduction.- Meat, Poultry, Fish, and Dry Beans.- Eggs and Egg Products.- Milk and Milk Products.- Part IV. Fats in Food.- Fats and Oils in Products.- Food Emulsions and Foams.- Part V. Sugars, Sweeteners.- Sugars, Sweeteners, and Confections.- Part VI. Baked Products.- Baked [...]

Fields of interest

Food Science

Target groups

Lower undergraduate

Type of publication

Monograph

More on www.springer.com/978-1-4614-9137-8

Softcover

2014. XVI, 478 p. 111 illus., 27 illus. in color. (Food Science Text Series)

ISBN 978-1-4614-9137-8

Due: December 31, 2013

D. Inamuddin, Aligarh Muslim University, Aligarh, India; A. Mohammad, Aligarh Muslim University, Aligarh, India (Eds.)

Green Chromatographic Techniques

Separation and Purification of Organic and Inorganic Analytes

This book presents a unified outlook on counter-current, ion size exclusion, supercritical fluids, high-performance thin layers, and gas and size exclusion chromatographic techniques used for the separation and purification of organic and inorganic analytes. It also describes a number of green techniques, green sample preparation methods and optimization of solvent consumption in the chromatographic analysis of organic and inorganic analytes. This book offers a valuable resource not only for learners, but also for more experienced chromatographers, conveying a deeper understanding of green chromatographic techniques, green solvents and preparation methods.

Features

Green analytical chemistry research calls for the use of green solvents and characterization techniques that can be used for the separation, identification and purification of organic and inorganic analytes. This book presents a unified outlook on counter-current, ion size exclusion, supercritical fluids, high-performance thin layers, and gas and size exclusion chromatographic techniques used for the [...]

Contents

Saving Solvents in Chromatographic Purifications: The Counter-current Chromatography Technique.- Ion Size Exclusion Chromatography on Hypercrosslinked Polystyrene Sorbents as a Green Technology of Separating Mineral Electrolytes.- Supercritical Fluid Chromatography: A Green Approach for Separation and Purification of Organic and Inorganic Analytes.- High Performance Thin-layer Chromatography.- Green Techniques in Gas Chromatography.- Preparation and Purification of Garlic-Derived Organosulfur Compound Allicin by Green Methodologies.- Green Sample Preparation Focusing on Organic Analytes [...]

Fields of interest

Chromatography; Analytical Chemistry; Environmental Chemistry

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-94-007-7734-7

Hardcover

2014. I, 323 p. 58 illus., 17 illus. in color.

ISBN 978-94-007-7734-7

Due: November 30, 2013

J.K. Pandey, The University of Tokushima, Tokushima, Japan; K.R. Reddy, Toyota Technological Institute, Nagoya, Japan; A.K. Mohanty, University of Guelph, Guelph, Canada; M. Misra, University of Guelph, Guelph, Canada (Eds.)

Handbook of Polymer Nanocomposites. Processing, Performance and Application

Volume A: Layered Silicates

Volume A of Handbook of Polymer Nanocomposites deals with Layered Silicates. In some 20 chapters the preparation, architecture, characterisation, properties and application of polymer nanocomposites are discussed by experts in their respective fields

Features

Volume A of Handbook of Polymer Nanocomposites deals with Layered Silicates. In some 20 chapters the preparation, architecture, characterisation, properties and application of polymer nanocomposites are discussed by experts in their respective fields

Contents

Polypropylene Clay Nanocomposites. - Preparation and characterization of poly(trimethylene terephthalate) nanocomposites. - Recent developments in poly(butylene terephthalate) nanocomposites. - Structure-Property Correlations in Poly(ethylene-oxide)/Clay/Silica Nanohybrids. - Crystallization and Polymorphic Behavior of Nylon - Clay Nanocomposites. - ABS Based Nanocomposites. - Development of TGDDM based layered silicate nanocomposites for high performance applications - Analysis of the mechanical, thermo-mechanical, flame retardancy, water absorption and morphological properties. [...]

Fields of interest

Polymer Sciences; Physics (general)

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-3-642-38648-0

Hardcover

2014. 200 p.

ISBN 978-3-642-38648-0

Due: October 31, 2013

U. Gaya, Bayero University Kano, Kano, Nigeria

Heterogeneous Photocatalysis Using Inorganic Semiconductor Solids

This book underscores the essential principles of photocatalysis and provides an update on its scientific foundations, research advances, and current opinions, and interpretations. It consists of an introduction to the concepts that form the backbone of photocatalysis, from the principles of solid-state chemistry and physics to the role of reactive oxidizing species. Having recognised the organic link with chemical kinetics, part of the book describes kinetic concepts as they apply to photocatalysis. The dependence of rate on the reaction conditions and parameters is detailed, the retrospective and prospective aspects of the mechanism of photocatalysis are highlighted, and the[...]

Features

This book underscores the essential principles of photocatalysis and provides an update on its scientific foundations, research advances, and current opinions, and interpretations. It consists of an introduction to the concepts that form the backbone of photocatalysis, from the principles of solid-state chemistry and physics to the role of reactive oxidizing species. Having recognised the organic link with [...]

Contents

Principles of Heterogeneous Photocatalysis.- Kinetic Concepts of Heterogeneous Photocatalysis.- Mechanistic Principles of Photocatalytic reaction.- Origin of the Activity of Semiconductor Photocatalysts.- Perspectives and Advances in Photocatalysis.- Photocatalytic Routes to Organic Compounds.

Fields of interest

Catalysis; Physical Chemistry; Semiconductors; Inorganic Chemistry; Nanochemistry

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7774-3

Hardcover

2014. I, 223 p. 39 illus., 1 illus. in color.
ISBN 978-94-007-7774-3

Due: November 30, 2013

E. Ochiai

Hiroshima to Fukushima

Biohazards of Radiation

Set against a backdrop of the recent disaster at the Fukushima nuclear power plant, "Hiroshima to Fukushima" examines the issue of radiation safety. The author provides important and accurate scientific information about the radioactive substances arising from nuclear power plants and weapons, including the effects of this radiation on living organisms. Currently, humankind is at a crossroads and must decide whether to phase out or increase its reliance on nuclear power as weapons and an energy source. Although a few countries, mostly European, have vowed to abolish nuclear power as an energy source, many other countries are about to increase their nuclear power programs. This book is[...]

Features

Set against a backdrop of the recent disaster at the Fukushima nuclear power plant, "Hiroshima to Fukushima" examines the issue of radiation safety. The author provides important and accurate scientific information about the radioactive substances arising from nuclear power plants and weapons, including the effects of this radiation on living organisms. Currently, humankind is at a crossroads and must decide [...]

Contents

Part I The Scientific Bases of Nuclear World, Radiation and Chemical World.- The Nuclear World and Nuclear Power.- Radiation.- The Chemical World.- Part II The Military Uses of Nuclear Power.- The Development of the Atomic Bomb.- Dropping of Atomic Bombs on Hiroshima and Nagasaki - The Devastation.- Depleted Uranium Bombs.- Part III The "Peaceful" Uses of Nuclear Power.- Development of Nuclear Power Reactors.- Examples of Major Failures at Nuclear Power Plants.- Part IV The Scientific Basis of Interaction of Radiation with the Chemical World.- General Consideration of Interactions of[...]

Fields of interest

Nuclear Chemistry; Effects of Radiation / Radiation Protection; Energy Policy, Economics and Management; Nuclear Energy

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-38726-5

Hardcover

2014. XVI, 225 p. 90 illus., 46 illus. in color. (Science Policy Reports)
ISBN 978-3-642-38726-5

**usually dispatched within 3 to 5 business days
October 31, 2013**

T. Allaf, ABCAR-DIC Process, La Rochelle, France; K. Allaf, University of La Rochelle, La Rochelle, France (Eds.)

Instant Controlled Pressure Drop (D.I.C.) in Food Processing

From Fundamental to Industrial Applications

The use of Instant Controlled Pressure Drop (D.I.C.) in food processing operations is relatively new when compared with other conventional or innovative technologies. In addition to existing applications such as drying, texturing and decontamination, D.I.C. technology has been shown to be highly appropriate for an ever-growing number of uses and with a wide range of raw materials. Some examples are post-harvesting and drying of fruits and vegetables; cereal steaming; extraction of essential oils and active molecules, where D.I.C. may be combined with supercritical fluids, ultrasound or microwaves; and the hydrolysis of cellulose and the transesterification of lipids. This book[...]

Features

The use of Instant Controlled Pressure Drop (D.I.C.) in food processing operations is relatively new when compared with other conventional or innovative technologies. In addition to existing applications such as drying, texturing and decontamination, D.I.C. technology has been shown to be highly appropriate for an ever-growing number of uses and with a wide range of raw materials. Some examples are [...]

Contents

Preface.- Part I Drying.- Chapter 1.Swell-Drying.- Chapter 2.D.I.C. assisted hot air drying of post-harvest paddy rice.- Chapter 3. D.I.C. assisted parboiling of paddy rice.- Part II Allergens and Decontamination.- Chapter 4. Effect of D.I.C. on the allergenicity of legume proteins.- Chapter 5. D.I.C. Decontamination of Solid and Powder.- Part III Extraction.- Chapter 6. Extraction of Essential Oils & Volatile Molecules.- Chapter 7. D.I.C. texturing for Solvent Extraction.- Chapter 8. Coupling D.I.C. and ultrasound in solvent extraction processes.- Chapter 9. D.I.C. intensification of[...]

Fields of interest

Food Science; Biochemical Engineering; Chemistry (general)

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-1-4614-8668-8

Hardcover

2014. XV, 210 p. 48 illus., 37 illus. in color. (Food Engineering Series)
ISBN 978-1-4614-8668-8

Due: November 30, 2013

N.C. Polfer, P. Dugourd (Eds.)

Laser Photodissociation and Spectroscopy of Mass-separated Biomolecular Ions

This lecture notes book presents how enhanced structural information of biomolecular ions can be obtained from interaction with photons of specific frequency - laser light. The methods described in the book "Laser photodissociation and spectroscopy of mass-separated biomolecular ions" make use of the fact that the discrete energy and fast time scale of photoexcitation can provide more control in ion activation. This activation is the crucial process producing structure-informative product ions that cannot be generated with more conventional heating methods, such as collisional activation. The book describes how the powerful separation capabilities and sensitivity of mass spectrometry[...]

Features

This lecture notes book presents how enhanced structural information of biomolecular ions can be obtained from interaction with photons of specific frequency - laser light. The methods described in the book "Laser photodissociation and spectroscopy of mass-separated biomolecular ions" make use of the fact that the discrete energy and fast time scale of photoexcitation can provide more [..]

Contents

Spectroscopy and the electromagnetic spectrum.- Light sources.- Ion traps.- Infrared photodissociation of biomolecular ions.- UV-visible activation of biomolecular ions.

Fields of interest

Mass Spectrometry; Spectroscopy and Microscopy; Physical Chemistry; Spectroscopy / Spectrometry; Biophysics and Biological Physics; Atomic/Molecular Structure and Spectra

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01251-3

Hardcover

2013. XI, 119 p. 79 illus., 36 illus. in color. (Lecture Notes in Chemistry, Vol. 83)
ISBN 978-3-319-01251-3

usually dispatched within 3 to 5 business days

M. Bertau, H. Offermanns, L. Plass, F. Schmidt, H.-J. Wernicke (Eds.)

Methanol: The Basic Chemical and Energy Feedstock of the Future

Asinger's Vision Today

Methanol - The Chemical and Energy Feedstock of the Future offers a visionary yet unbiased view of methanol technology. Based on the groundbreaking 1986 publication "Methanol" by Friedrich Asinger, this book includes contributions by more than 40 experts from industry and academia. The authors and editors provide a comprehensive exposition of methanol chemistry and technology which is useful for a wide variety of scientists working in chemistry and energy related industries as well as academic researchers and even decision-makers and organizations concerned with the future of chemical and energy feedstocks.

Features

This compendium offers a visionary yet unbiased view of modern methanol technology. Based on the groundbreaking 1986 publication Methanol by Friedrich Asinger, this book includes contributions by more than 40 experts from industry and academia. The authors and editors provide a comprehensive exposition of methanol chemistry and technology which is useful for a wide variety of scientists working in [..]

Contents

Fossil Feedstocks: What Comes After?.- Asinger's Vision "Technical Photosynthesis".- Methanol Generation.- Substance Property Data of Methanol.- Methanol Utilisation Technologies.- Methanol Generation Economics: Economical Evaluation of the State-of-the-art of Methanol Production Technologies.

Fields of interest

Industrial Chemistry / Chemical Engineering; Energy Technology; Renewable and Green Energy

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39708-0

Hardcover

2014. XVIII, 651 p. 421 illus., 168 illus. in color.
ISBN 978-3-642-39708-0

Due: January 10, 2014

M. Weidenbörner

Mycotoxins in Foodstuffs

Mycotoxin contamination of food occurs as a result of crop invasion by field fungi such as *Fusarium* spp., *Alternaria* spp., *Aspergillus* spp., and *Penicillium* spp., which start their growth while in storage (storage fungi). In the worst case, these fungi produce secondary metabolites called mycotoxins. They can be very harmful to humans and animals when for example they are consumed through food. Mycotoxins have various negative effects on several organs in humans and animals. The present book gives a basic overview of the main mycotoxins in food. It lists the predisposition of a foodstuff for mycotoxin contamination, the degree of contamination, concentration, and country of[...]

Features

Mycotoxin contamination of food occurs as a result of crop invasion by field fungi such as *Fusarium* spp. and *Alternaria* spp., or storage fungi such as *Aspergillus* spp. and *Penicillium* spp., which can grow on/in stored commodities and are able to produce mycotoxins. In the worst case, these fungi produce secondary metabolites called mycotoxins, which can be very harmful to humans [..]

Contents

Introduction to Mycotoxins in Foodstuffs.- Abbreviations.- Chapter 1.Acha.

Fields of interest

Food Science; Pharmacology / Toxicology; Microbiology

Target groups

Professional/practitioner

Type of publication

Monograph

More on www.springer.com/978-1-4614-8726-5

Hardcover

2013. XV, 1035 p.
ISBN 978-1-4614-8726-5

Due: November 29, 2013

T. Osaka, Waseda University, Tokyo, Japan; Z. Ogumi, Kyoto University, Kyoto, Japan (Eds.)

Nanoscale Technology for Advanced Lithium Batteries

The unfortunate and serious accident at the nuclear power plants in Fukushima, Japan caused by the earthquake and tsunami in March 2011 left Japan with a serious blow. Japan was deprived of electric power. This problem further accelerated the introduction of renewable energies. This book surveys the new materials and technologies needed to welcome the next generation of energy conversion and storage devices, such as lithium secondary batteries on the basis of nanotechnology. Most of the contributors for this book are from institutions researching lithium batteries. This book provides an overview of nanotechnology for lithium batteries from basic to applied research in selected high[...]

Features

The unfortunate and serious accident at the nuclear power plants in Fukushima, Japan caused by the earthquake and tsunami in March 2011 left Japan with a serious blow. Japan was deprived of electric power. This problem further accelerated the introduction of renewable energies. This book surveys the new materials and technologies needed to welcome the next generation of energy conversion and storage [...]

Contents

Energy systems for green community.- Positive electrodes of Nano-scale for lithium ion batteries (focusing on nan-size effects).- Nano-aspects of Advanced Positive Electrodes for Lithium Ion Batteries.- Nano-aspects of Carbon Negative Electrodes for Li-ion Batteries.- Advanced negative electrodes of Nano-scale for Li-ion Batteries.- Polymer and Ionic Liquid Electrolytes for Advanced Lithium Batteries.- Development of glass-based solid electrolytes for lithium ion batteries.- 3DOM Structure for Battery Electrode and Electrolyte.- DC methods for Battery evaluation.- Characterization of[...]

Fields of interest

Electrochemistry; Nanotechnology; Energy Technology

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-1-4614-8674-9

Hardcover

2014. X, 317 p. 176 illus., 79 illus. in color. (Nanostructure Science and Technology, Vol. 182)
ISBN 978-1-4614-8674-9

Due: November 30, 2013

M.H. Abdel-Kader (Ed.)

Photodynamic Therapy

From Theory to Application

Photodynamic Therapy: From Theory to Application brings attention to this exceptional treatment strategy, which until now has not achieved the recognition and breadth of applications it deserves. The authors, all experts and pioneers in their field, discuss the history and basic principles of PDT, as well as the fundamentals of the theory, methods, and instrumentation of clinical diagnosis and treatment of cancer. Non-oncological applications such as the control of parasites and noxious insects are also discussed. This book serves as a standard reference for researchers and students at all levels, as well as clinical specialists interested in the topic and those in industry exploring[...]

Features

Photodynamic Therapy: From Theory to Application brings attention to the this exceptional treatment strategy which until now has not achieved the recognition and breadth of applications it deserves. The authors, all experts and pioneers in their field, discuss the history and basic principles of PDT, as well as the fundamentals of the theory, methods, and instrumentation of clinical diagnosis and treatment [...]

Contents

Part I History.- History of Photodynamic Therapy.- Part II Theory and Mechanism.- Fundamentals of Photophysics, Photochemistry and Photobiology.- Molecular Biological Mechanisms in Photodynamic Therapy.- Part III Methods and Instrumentation.- Diagnostic and Laser Measurements in PDT.- Implementation of Laser Technologies in Clinical PDT.- Photochemical Internatlisation(PCI).- A Novel Technology for Targeted Macromolecule Therapy.- Part IV Oncological Applications.- PDT in Dermatology.- Photodynamic Diagnosis and Therapy for Brain Malignancies: From the Bench to Clinical Application.-[...]

Fields of interest

Physical Chemistry; Medical and Radiation Physics; Cancer Research; Oncology; Microwaves, RF and Optical Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39628-1

Hardcover

2014. XV, 342 p. 184 illus., 142 illus. in color.
ISBN 978-3-642-39628-1

Due: October 31, 2013

S. Brøndsted Nielsen, Aarhus University, Aarhus, Denmark; J.A. Wyer, Aarhus University, Aarhus C, Denmark (Eds.)

Photophysics of Ionic Biochromophores

This book provides a concise overview of the photophysics and spectroscopy of bio chromophore ions. The book "Photophysics of Ionic Biochromophores" summarizes important recent advances in the spectroscopy of isolated biomolecular ions in vacuo, which has within the last decade become a highly active research field. Advanced instrumental apparatus and the steady increase in more and more powerful computers have made this development possible, both for experimentalists and theoreticians. Applied techniques described here include absorption and fluorescence spectroscopy, which are excellent indicators of environmental effects and can thus shed light on the intrinsic electronic[...]

Features

This book provides a concise overview of the photophysics and spectroscopy of biochromophore ions. The book "Photophysics of Ionic Biochromophores" summarizes important recent advances in the spectroscopy of isolated biomolecular ions in vacuo, which has within the last decade become a highly active research field. Advanced instrumental apparatus and the steady increase in more and more powerful computers have [...]

Contents

Concepts.- Introduction and new aspects.- Experimental techniques.- Theoretical Methods.- Photo-initiated Dynamics and Spectroscopy of the Deprotonated Green Fluorescent Protein Chromophore.- Fluorescence from Gas-phase Biomolecular Ions.- Spectroscopy of Ferric Heme and Protoporphyrin IX Ions in vacuo.- UV-Visible Absorption Spectroscopy of Protein Ions.- Excited-state Dynamics of Protonated Aromatic Amino Acids.- UV Photophysics of DNA and RNA Nucleotides in vacuo: Dissociation Channels, Time Scales, and Electronic Spectra.- Action Spectroscopy of Gas-phase Peptide Ions with Energetic[...]

Fields of interest

Physical Chemistry; Biophysics and Biological Physics; Spectroscopy / Spectrometry; Bioorganic Chemistry; Biochemistry

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40189-3

Hardcover

2013. XIII, 226 p. 125 illus., 102 illus. in color. (Physical Chemistry in Action)
ISBN 978-3-642-40189-3

Due: October 31, 2013

H. Kricheldorf

Polycondensation

History and New Results

This book reports on origin and history of polycondensation chemistry beginning in the first half of the 19th century. Furthermore, history and inventors of the most important polycondensates, such as Nylons, PET or polycarbonates, are described. The classical theory of step-growth polymerizations is discussed in the light of the latest experimental and theoretical results. Particular emphasis is laid on the role of cyclization reactions. Special categories of polycondensation processes are discussed in more detail: syntheses of hyperbranched and multicyclic polymers, non-stoichiometric polycondensations, interfacial polycondensations, solid state polycondensations, condensative chain[...]

Features

This book reports on origin and history of polycondensation chemistry beginning in the first half of the 19th century. Furthermore, history and inventors of the most important polycondensates, such as Nylons, PET or polycarbonates, are described. The classical theory of step-growth polymerizations is discussed in the light of the latest experimental and theoretical results. Particular emphasis is laid on the [...]

Contents

Experiments before World War I.- W.H. Carothers - Life and Work.- P.J. Flory and the Theory of Step-Growth Polymerization.- W. Stockmayer and the Role of Equilibration.- Important Polycondensates.- The Role of Cyclization and a new Theory of Step-Growth Polymerization.- Non-Stoichiometric Polycondensations.- Ring-Opening Polycondensation.- Multibranching Polymers by $a_2 + b_n$ Polycondensations.- Hyperbranched Polymers by ab_n Polycondensations.- Multicyclic Polymers.- Polycondensations via Electrostatic Interactions.- Solid State Polycondensations.- Combined Ring-Opening Polymerization and[...]

Fields of interest

Polymer Sciences; Organic Chemistry

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39428-7

Hardcover

2013. XI, 279 p. 103 illus.
ISBN 978-3-642-39428-7

Due: October 31, 2013

W.-F. Su, National Taiwan University, Taipei, Taiwan (R.O.C.)

Principles of Polymer Design and Synthesis

How can a scientist or engineer synthesize and utilize polymers to solve our daily problems? This introductory text, aimed at the advanced undergraduate or graduate student, provides future scientists and engineers with the fundamental knowledge of polymer design and synthesis to achieve specific properties required in everyday applications. In the first five chapters, this book discusses the properties and characterization of polymers, since designing a polymer initially requires us to understand the effects of chemical structure on physical and chemical characteristics. Six further chapters discuss the principles of polymerization reactions including step, radical chain, ionic[...]

Features

How can a scientist or engineer synthesize and utilize polymers to solve our daily problems? This introductory text, aimed at the advanced undergraduate or graduate student, provides future scientists and engineers with the fundamental knowledge of polymer design and synthesis to achieve specific properties required in everyday applications. In the first five chapters, this book discusses the properties and [...]

Contents

Introduction.- Polymer Size and Polymer Solutions.- Structure, Morphology and Flow of Polymers.- Chemical and Physical Properties of Polymers.- Characterization of Polymers.- Step Polymerization.- Radical Chain Polymerization.- Ionic Chain Polymerization.- Coordination Polymerization.- Chain Co-Polymerization.- Ring-Opening Polymerization.

Fields of interest

Polymer Sciences; Industrial and Production Engineering; Characterization and Evaluation of Materials

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-38729-6

Hardcover

2013. XI, 306 p. 480 illus., 7 illus. in color. (Lecture Notes in Chemistry, Vol. 82)
ISBN 978-3-642-38729-6

Due: October 31, 2013

M.A. Rao, Cornell University, Geneva, USA

Rheology of Fluid, Semisolid, and Solid Foods

Principles and Applications

This revised third edition of Rheology of Fluid, Semisolid, and Solid Foods includes the following important additions: · A section on microstructure · Discussion of the quantitative characterization of nanometer-scale milk protein fibrils in terms of persistence and contour length. · A phase diagram of a colloidal glass of hard spheres and its relationship to milk protein dispersions · Microrheology, including detailed descriptions of single particle and multi-particle microrheological measurements · Diffusive Wave Spectroscopy · Correlation of Bostwick consistometer data with property-based dimensionless groups · A section on the[...]

Features

This revised third edition includes the following important additions: · A section on microstructure · Discussion of the quantitative characterization of nanometer-scale milk protein fibrils in terms of persistence and contour length. · A phase diagram of a colloidal glass of hard spheres and its relationship to milk protein dispersions · [...]

Contents

Introduction: Food Rheology and Structure.- Flow and Functional Models for Rheological Properties of Fluid Foods.- Measurement of Flow and Viscoelastic Properties.- Rheology of Food Gum and Starch Dispersions.- Rheological Behavior of Processed Fluid and Semisolid Foods.- Rheological Behavior of Food Gels.- Role of Rheological Behavior in Sensory Assessment of Foods and Swallowing.- Application of Rheology to Fluid Food Handling and Processing.

Fields of interest

Food Science; Biotechnology; Theoretical and Applied Mechanics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-9229-0

Hardcover

2014. I, 366 p. 198 illus., 1 illus. in color. (Food Engineering Series)
ISBN 978-1-4614-9229-0

Due: December 31, 2013

C.S.S.R. Kumar, Center for Advanced Microstructures and, Baton Rouge, USA (Ed.)

Transmission Electron Microscopy Characterization of Nanomaterials

Third volume of a 40-volume series on nanoscience and nanotechnology, edited by the renowned scientist Challa S.S.R. Kumar. This handbook gives a comprehensive overview about Transmission Electron Microscopy characterization of nanomaterials. Modern applications and state-of-the-art techniques are covered and make this volume essential reading for research scientists in academia and industry.

Features

Third volume of a 40-volume series on nanoscience and nanotechnology, edited by the renowned scientist Challa S.S.R. Kumar. This handbook gives a comprehensive overview about Transmission Electron Microscopy characterization of nanomaterials. Modern applications and state-of-the-art techniques are covered and make this volume essential reading for research scientists in academia and industry.

Contents

Characterization of biological and inorganic nanocomposites by TEM.- Electron Microscopy techniques for solar cell characterization.- TEM for Characterization of Semiconductor nanomaterials.- 3D-TEM Characterization of Nanomaterials.- TEM for Characterization of Nanowires and Nanorods.- TEM for Characterization of core-shell nanoparticles.- Valence Electron spectroscopy by TEM.- Transmission Electron Microscopy of Nanocomposites.- High Resolution in STEM mode: individual atom analysis in Semiconductor Nanowires.- TEM for Characterization of Thermoelectric nanomaterials.- TEM for [...]

Fields of interest

Chemistry (general); Materials Science (general); Nanochemistry; Nanoscale Science and Technology

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-3-642-38933-7

Hardcover

2014. Approx. 600 p. 396 illus., 264 illus. in color. ISBN 978-3-642-38933-7

Due: November 30, 2013

R. Nalda, National Research Council, Madrid, Spain; L. Bañares, Universidad Complutense de Madrid, Madrid, Spain (Eds.)

Ultrafast Phenomena in Molecular Sciences

Femtosecond Physics and Chemistry

This book presents the latest developments in Femtosecond Chemistry and Physics for the study of ultrafast photo-induced molecular processes. Molecular systems, from the simplest H₂ molecule to polymers or biological macromolecules, constitute central objects of interest for Physics, Chemistry and Biology, and despite the broad range of phenomena that they exhibit, they share some common behaviors. One of the most significant of those is that many of the processes involving chemical transformation (nuclear reorganization, bond breaking, bond making) take place in an extraordinarily short time, in or around the femtosecond temporal scale (1 fs = 10⁻¹⁵ s). A number of experimental [...]

Features

This book presents the latest developments in Femtosecond Chemistry and Physics for the study of ultrafast photo-induced molecular processes. Molecular systems, from the simplest H₂ molecule to polymers or biological macromolecules, constitute central objects of interest for Physics, Chemistry and Biology, and despite the broad range of phenomena that they exhibit, they share some common behaviors. One of [...]

Contents

From the Contents: Molecular movies from molecular frame photoelectron angular distribution (MF# PAD) measurements.- XUV lasers for ultrafast electronic control in H₂.- Ultrafast dynamics of hydrogen atoms in hydrocarbon molecules in intense laser fields: Hydrogen atom migration and scrambling in methylacetylene.

Fields of interest

Physical Chemistry; Laser Technology and Physics, Photonics; Spectroscopy / Spectrometry; Classical Electrodynamics, Wave Phenomena; Atomic/Molecular Structure and Spectra

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02050-1

Hardcover

2014. XVI, 346 p. 122 illus., 50 illus. in color. (Springer Series in Chemical Physics, Vol. 107) ISBN 978-3-319-02050-1

Due: November 30, 2013

T. Nakano, Hokkaido University, Sapporo, Japan (Ed.)

π -Stacked Polymers and Molecules

Theory, Synthesis, and Properties

This book covers broad aspects of the chemistry of π -stacked polymers and low-molecular-weight molecules, from synthesis through theory. It is intended for graduate students and researchers in academia and industry and consists of chapters written by renowned scientists who have made significant contributions to this field in the past decade. π -Stacked polymers and low-molecular-weight molecules are expected to replace main-chain conjugated polymers such as polyacetylenes and polythiophenes as organic conducting and energy-transferring substances that are important as materials for photoelectronic applications. π -Stacked polymers and molecules have significant advantages over [...]

Features

This book covers broad aspects of the chemistry of π -stacked polymers and low-molecular-weight molecules, from synthesis through theory. It is intended for graduate students and researchers in academia and industry and consists of chapters written by renowned scientists who have made significant contributions to this field in the past decade. π -Stacked polymers and low-molecular-weight molecules are [...]

Contents

Synthesis and Properties of π -Stacked Vinyl Polymers.- Reversible Polymerization Techniques Leading to π -Stacked Polymers.- Cyclophane-based π -Stacked Polymers.- π -STACKED OLIGOMERS AS MODELS FOR SEMICONDUCTING CONJUGATED ORGANIC MATERIALS.- Stacking on Density Functional Theory: A review.

Fields of interest

Polymer Sciences; Optical and Electronic Materials; Electrochemistry; Energy Efficiency (incl. Buildings)

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-4-431-54128-8

Hardcover

2014. XII, 278 p. 185 illus., 64 illus. in color. ISBN 978-4-431-54128-8

Due: November 30, 2013

Engineering

A. Kondoz, University of Surrey, Guildford, United Kingdom; T. Dagiuklas, Hellenic Open University, Patras, Greece (Eds.)

3D Future Internet Media

This book describes recent innovations in 3D media and technologies, with coverage of 3D media capturing, processing, encoding, and adaptation, networking aspects for 3D Media, and quality of user experience (QoE). The main contributions are based on the results of the FP7 European Projects ROMEO, which focus on new methods for the compression and delivery of 3D multi-view video and spatial audio, as well as the optimization of networking and compression jointly across the Future Internet (www.ict-romeo.eu). The delivery of 3D media to individual users remains a highly challenging problem due to the large amount of data involved, diverse network characteristics and user terminal[...]

Features

This book describes recent innovations in 3D media and technologies, with coverage of 3D media capturing, processing, encoding, and adaptation, networking aspects for 3D Media, and quality of user experience (QoE). The main contributions are based on the results of the FP7 European Projects ROMEO, which focus on new methods for the compression and delivery of 3D multi-view video and spatial audio, as well [...]

Contents

Chapter 1: Introduction.- Part I.- Chapter 2: 3D media representation and coding.- Chapter 3: Merging the real and the synthetic in augmented 3D worlds: A brief survey of applications and challenges.- Chapter 4: Multi-view acquisition and advanced depth map processing techniques.- Chapter 5: Object-based spatial audio: concept, advantages and challenges.- Part II.- Chapter 6: Transport Protocols for 3D Video.- Chapter 7: Media-Aware Networks in Future Internet Media.- Chapter 8: P2P Video Streaming Technologies.- Chapter 9: IP-based Mobility Scheme Supporting 3D Video Streaming[...]

Fields of interest

Signal, Image and Speech Processing; Computer Imaging, Vision, Pattern Recognition and Graphics; Applied Optics, Optoelectronics, Optical Devices; Computer Communication Networks; Computer Graphics; System Performance and Evaluation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8372-4

Hardcover

2014. X, 285 p. 153 illus., 113 illus. in color.
ISBN 978-1-4614-8372-4

Due: November 30, 2013

A. Oliveira, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

A History of the Work Concept

From Physics to Economics

This book traces the history of the concept of work from its earliest stages and shows that its further formalization leads to equilibrium principle and to the principle of virtual works, and so pointing the way ahead for future research and applications. The idea that something remains constant in a machine operation is very old and has been expressed by many mathematicians and philosophers such as, for instance, Aristotle. Thus, a concept of energy developed. Another important idea in machine operation is Archimedes' lever principle. In modern times the concept of work is analyzed in the context of applied mechanics mainly in Lazare Carnot mechanics and the mechanics of the new[...]

Features

This book traces the history of the concept of work from its earliest stages and shows that its further formalization leads to equilibrium principle and to the principle of virtual works, and so pointing the way ahead for future research and applications. The idea that something remains constant in a machine operation is very old and has been expressed by many mathematicians and philosophers such as, for [...]

Contents

Preface by Raffaele Pisano.- Introduction.- Chapter 1: Theoretical Framework.- Marxism.- Genetic epistemology.- Ecological economics.- Theory of history and general historiography.- Science historiography.- PART I: The Conceptual Genesis.- Chapter 2: The Conceptual Basis To Work Studies.- Historical character of physical concepts construction.- The evolution of space concepts.- The development of time concept.- The concept of force and its controversies.- The concept of mass.- Chapter 3: The Ideas Of Work And Energy In Mechanics.- General considerations.- The work concept and its[...]

Fields of interest

Theoretical and Applied Mechanics; Thermodynamics; History of Mathematics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7704-0

Hardcover

2014. XIX, 216 p. 40 illus. (History of Mechanism and Machine Science, Vol. 24)
ISBN 978-94-007-7704-0

Due: November 30, 2013

S. Ambroszkiewicz, Polish Academy of Sciences, Warsaw, Poland; J. Brzeziński, Poznan University of Technology, Poznan, Poland; W. Cellary, Poznan University of Economics, Poznań, Poland; A. Grzech, Institute of Informatics, Wrocław, Poland; K. Zieliński, AGH University of Science and Technology, Cracow, Poland (Eds.)

Advanced SOA Tools and Applications

This book presents advanced software development tools for construction, deployment and governance of Service Oriented Architecture (SOA) applications. Novel technical concepts and paradigms, formulated during the research stage and during development of such tools are presented and illustrated by practical usage examples. Hence this book will be of interest not only to theoreticians but also to engineers who cope with real-life problems. Additionally, each chapter contains an overview of related work, enabling comparison of the proposed concepts with existing solutions in various areas of the SOA development process. This makes the book interesting also for students and scientists who[...]

Features

This book presents advanced software development tools for construction, deployment and governance of Service Oriented Architecture (SOA) applications. Novel technical concepts and paradigms, formulated during the research stage and during development of such tools are presented and illustrated by practical usage examples. Hence this book will be of interest not only to theoreticians but also to engineers [...]

Contents

Specifications and deployment of SOA business applications within a configurable framework provided as a service.- A platform for development of electronic markets of sophisticated business services.- Application of the Service-Oriented Architecture at the Inter-Organizational Level.- Dependability Infrastructure for SOA Applications.- Implementation, Deployment and Governance of SOA Adaptive Systems.

Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-38956-6

Hardcover

2014. VII, 323 p. 114 illus. (Studies in Computational Intelligence, Vol. 499)
ISBN 978-3-642-38956-6

Due: October 15, 2013

P. Gourbesville, University of Nice-Sophia Antipolis, Sophia Antipolis, France; J. Cunge, G. Caignaert, Society Hydrotechnique of France, Paris, France (Eds.)

Advances in Hydroinformatics

SIMHYDRO 2012 – New Frontiers of Simulation

The book is a collection of extended papers which have been selected for presentation during the SIMHYDRO 2012 conference held in Sophia Antipolis in September 2012. The papers present the state of the art numerical simulation in domains such as (1) New trends in modelling for marine, river & urban hydraulics; (2) Stakeholders & practitioners of simulation; (3) 3D CFD & applications. All papers have been peer reviewed and by scientific committee members with report about quality, content and originality. The target audience for this book includes scientists, engineers and practitioners involved in the field of numerical modelling in the water sector: flood management, natural[...]

Features

The book is a collection of extended papers which have been selected for presentation during the SIMHYDRO 2012 conference held in Sophia Antipolis in September 2012. The papers present the state of the art numerical simulation in domains such as (1) New trends in modelling for marine, river & urban hydraulics; (2) Stakeholders & practitioners of simulation; (3) 3D CFD & applications. All papers [...]

Contents

Data & uncertainties in hydraulic modelling for engineering, specific applications of modelling.- New numerical methods and approaches for modelling systems.- 3D CFD and applications.

Fields of interest

Geoengineering, Foundations, Hydraulics; Hydrology/Water Resources; Engineering Fluid Dynamics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-981-4451-41-3

Hardcover

2014. XI, 559 p. 324 illus., 273 illus. in color. (Springer Hydrogeology)
ISBN 978-981-4451-41-3

Due: September 30, 2013

L. Wang, The University of Hong Kong, Hong Kong, China (P.R.) (Ed.)

Advances in Transport Phenomena 2011

This new volume of the annual review "Advances in Transport Phenomena" series contains three in-depth review articles on the microfluidic fabrication of vesicles, the dielectrophoresis field-flow fractionation for continuous-flow separation of particles and cells in microfluidic devices, and the thermodynamic analysis and optimization of heat exchangers, respectively.

Features

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Contents

Microfluidic fabrication of vesicles.- Dielectrophoresis Field-Flow Fractionation for Continuous-Flow Separation of Particles and Cells in Microfluidic Devices.- Thermodynamic Analysis and Optimization Design of Heat Exchanger.- Dielectrophoresis Field-Flow Fractionation for Continuous-Flow Separation of Particles and Cells in Microfluidic Devices.- Thermodynamic Analysis and Optimization Design of Heat Exchanger.- Thermodynamic Analysis and Optimization Design of Heat Exchanger.- Dielectrophoresis Field-Flow Fractionation for Continuous-Flow Separation of Particles and Cells in[...]

Fields of interest

Engineering Thermodynamics, Heat and Mass Transfer; Engineering Fluid Dynamics; Thermodynamics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01792-1

Hardcover

2014. XI, 169 p. 76 illus., 25 illus. in color. (Advances in Transport Phenomena, Vol. 3)
ISBN 978-3-319-01792-1

Due: October 31, 2013

J. Provis, University of Sheffield, Sheffield, United Kingdom; J. Deventer, Zeobond Pty. Ltd., Docklands, Melbourne, Australia (Eds.)

Alkali Activated Materials

State-of-the-Art Report, RILEM TC 224-AAM

This is a State of the Art Report resulting from the work of RILEM Technical Committee 224-AAM in the period 2007-2013. The Report summarises research to date in the area of alkali-activated binders and concretes, with a particular focus on the following areas: binder design and characterisation, durability testing, commercialisation, standardisation, and providing a historical context for this rapidly-growing research field.

Features

This is a State of the Art Report resulting from the work of RILEM Technical Committee 224-AAM in the period 2007-2013. The Report summarises research to date in the area of alkali-activated binders and concretes, with a particular focus on the following areas: binder design and characterisation, durability testing, commercialisation, standardisation, and providing a historical context for this rapidly-growing [...]

Contents

Preface and listing of TC members.- 1. Introduction and Scope, by John L. Provis.- 2. Historical aspects and overview, by John L. Provis, Peter Duxson, Elena Kavalerova, Pavel V. Krivenko, Zhihua Pan, Francisca Puertas, and Jannie S.J. van Deventer.- 3. Binder chemistry - High-calcium alkali-activated materials, by Susan A. Bernal, John L. Provis, Ana Fernández-Jiménez, Pavel V. Krivenko, Elena Kavalerova, Marta Palacios, and Caijun Shi.- 4. Binder chemistry - Low-calcium alkali-activated materials, by John L. Provis, Ana Fernández-Jiménez, Elie Kamseu, Cristina Leonelli, and Angel[...]

Fields of interest

Building Materials; Structural Materials; Continuum Mechanics and Mechanics of Materials

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7671-5

Hardcover

2014. VIII, 410 p. 90 illus., 30 illus. in color. (RILEM State-of-the-Art Reports, Vol. 13)
ISBN 978-94-007-7671-5

Due: November 30, 2013

G. Ferreira, Circe / Centre of Research for Energy, Zaragoza, Spain (Ed.)

Alternative Energies

Updates on Progress

This book presents nine chapters based on fundamental and applied research of alternative energies. At the present time, the challenge is that technology has to come up with solutions that can provide environmentally friendly energy supply options that are able to cover the current world energy demand. Experts around the world are working on these issues for providing new solutions that will break the existing technological barriers. This book aims to address key pillars in the alternative energy field, such as: biomass energy, hydrogen energy, solar energy, wind energy, hydroelectric power, geothermal energy and their environmental implications, with the most updated progress for[...]

Features

This book presents nine chapters based on fundamental and applied research of alternative energies. At the present time, the challenge is that technology has to come up with solutions that can provide environmentally friendly energy supply options that are able to cover the current world energy demand. Experts around the world are working on these issues for providing new solutions that will break the existing [...]

Contents

Biomass Energy.- Hydrogen Energy (Fuel Cell).- Solar Energy.- Wind Energy.- Hydroelectric Power.- Geothermal Energy.- Nuclear Energy.- Environmental Implications.

Fields of interest

Renewable and Green Energy; Energy Harvesting; Catalysis; Nanotechnology; Classical Electrodynamics, Wave Phenomena; Industrial Chemistry / Chemical Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40679-9

Hardcover

2014. IV, 286 p. 88 illus., 53 illus. in color. (Advanced Structured Materials, Vol. 34)
ISBN 978-3-642-40679-9

Due: November 30, 2013

M.H. Chaudhry

Applied Hydraulic Transients

Applied Hydraulic Transients, 3rd Edition covers hydraulic transients in a comprehensive and systematic manner from introduction to advanced level and presents various methods of analysis for computer solution. The book is suitable as a textbook for senior-level undergraduate and graduate students as well as a reference for practicing engineers and researchers. The field of application of the book is very broad and diverse and covers areas such as hydroelectric projects, pumped storage schemes, water-supply systems, cooling-water systems, oil pipelines and industrial piping systems. A strong emphasis is given to practical applications: several case studies, problems of applied nature.[...]

Features

This book covers hydraulic transients in a comprehensive and systematic manner from introduction to advanced level and presents various methods of analysis for computer solution. The field of application of the book is very broad and diverse and covers areas such as hydroelectric projects, pumped storage schemes, water-supply systems, cooling-water systems, oil pipelines and industrial piping systems. [...]

Contents

Basic Concepts.- Transient-Flow Equations.- Characteristics and Finite-Difference Methods.- Transients in Pumping Systems.- Transients in Hydroelectric Power Plants.- Transients in Cooling Water Systems.- Transients in Long Oil Pipelines.- Periodic Flows and Resonance.- Cavitation and Column Separation.- Transient Control.- Surge Tanks.- Leak and Partial Blockage Detection.- Transient Open-Channel Flows.- Appendix A. Design Charts.- Appendix B. Transients Caused by Opening or Closing a Valve.- Appendix C. Transients Caused by Power Failure to Pumps.- Appendix D. Frequency Response of a [...]

Fields of interest

Engineering Fluid Dynamics; Civil Engineering; Engineering Design

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-8537-7

Hardcover

2014. XIV, 583 p. 221 illus., 9 illus. in color.
ISBN 978-1-4614-8537-7

**usually dispatched within 3 to 5 business days
October 31, 2013**

H. Duan, Beihang University, Beijing, China (P.R.); P. Li, Beihang University, Beijing, China (P.R.)

Bio-inspired Computation in Unmanned Aerial Vehicle

Bio-inspired Computation in Unmanned Aerial Vehicle focuses on the aspects of path planning, formation control, heterogeneous cooperative control and vision-based surveillance and navigation in Unmanned Aerial Vehicles (UAVs) from the perspective of bio-inspired computation. It helps readers to gain a comprehensive understanding of control-related problems in UAVs, presenting the latest advances in bio-inspired computation. By combining bio-inspired computation and UAV control problems, key questions are explored in depth, and each piece is content-rich while remaining accessible. With abundant illustrations of simulation work, this book links theory, algorithms and implementation[...]

Features

Bio-inspired Computation in Unmanned Aerial Vehicle focuses on the aspects of path planning, formation control, heterogeneous cooperative control and vision-based surveillance and navigation in Unmanned Aerial Vehicles (UAVs) from the perspective of bio-inspired computation. It helps readers to gain a comprehensive understanding of control-related problems in UAVs, presenting the latest advances in [...]

Contents

Introduction.- Bio-inspired Computation Algorithms.- UAV Modeling and Controller Design.- UAV Path Planning.- Multiple UAVs Formation Control.- Multiple UAV/UGVs Heterogeneous Cooperative Control.- Biological Vision-based Surveillance and Navigation.- Conclusions and Outlook.

Fields of interest

Control, Robotics, Mechatronics; Aerospace Technology and Astronautics; Automotive Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-41195-3

Hardcover

2014. XV, 192 p. 138 illus., 94 illus. in color.
ISBN 978-3-642-41195-3

Due: October 31, 2013

W. Goldsmith, Bioengineering Group, Salem, USA; D. Gray, The University of Michigan, Ann Arbor, USA; J. McCullah, Salix Applied Earthcare, Redding, USA

Bioengineering Case Studies

Sustainable Stream Bank and Slope Stabilization

"Bio-Stabilization Case Studies: Treatment and Performance Evaluation" describes and evaluates 30 projects from across the United States where bio-stabilization was employed to address a detrimental naturally occurring process or byproduct of the built environment. Bio-stabilization (or soil bioengineering) refers to the use of plant materials, primarily live cuttings, arranged in the ground in different arrays to reinforce soils and protect upland slopes and/or stream banks against surficial erosion and shallow slope failures. Examples included in the collection represent different regions of the country and their specific conditions and challenges. Each project is illustrated with a[...]

Features

This unique volume describes and evaluates 30 projects from across the United States where bio-stabilization was employed to address a detrimental naturally occurring process or byproduct of the built environment. Bio-stabilization (or soil bioengineering) refers to the use of plant materials, primarily live cuttings, arranged in the ground in different arrays to reinforce soils and protect [...]

Contents

Introduction.- Project 1: Fleming Creek.- Project 2: Gateway Garden.- Project 3: School Girls Glen.- Project 4: River Landing.- Project 5: Nichols Drive.- Project 6: Harvard Road.- Project 7: Malletts Creek.- Project 8: Toboggan Hill.- Project 9: Argo Cascades.- Project 10: Asaayi Lake.- Project 11: Hollywood Hills.- Project 12: Geyserville.- Project 13: Buckhorn Mtn.- Project 14: Buckhorn Summit.- Project 15: Stafford.- Project 16: Pacifica.- Project 17: Branciforte Creek.- Project 18: San Vicente Creek.- Project 19: Opal Cliffs.- Project 20: Lower Sulphur Creek.- Project 21: Secret[...]

Fields of interest

Geoengineering, Foundations, Hydraulics; Geotechnical Engineering & Applied Earth Sciences; Applied Ecology; Soil Science & Conservation; Waste Water Technology / Water Pollution Control / Water Management / Aquatic Pollution; Environmental Engineering / Biotechnology

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-1-4614-7995-6

Hardcover

2014. X, 202 p. 241 illus., 85 illus. in color.
ISBN 978-1-4614-7995-6

Due: November 30, 2013

O. Jamin, NXP Semiconductors, Caen cedex 9, France

Broadband Direct RF Digitization Receivers

This book discusses the trade-offs involved in designing direct RF digitization receivers for the radio frequency and digital signal processing domains. A system-level framework is developed, quantifying the relevant impairments of the signal processing chain, through a comprehensive system-level analysis. Special focus is given to noise analysis (thermal noise, quantization noise, saturation noise, signal-dependent noise), broadband non-linear distortion analysis, including the impact of the sampling strategy (low-pass, band-pass), analysis of time-interleaved ADC channel mismatches, sampling clock purity and digital channel selection. The system-level framework described is[...]

Features

This book discusses the trade-offs involved in designing direct RF digitization receivers for the radio frequency and digital signal processing domains. A system-level framework is developed, quantifying the relevant impairments of the signal processing chain, through a comprehensive system-level analysis. Special focus is given to noise analysis (thermal noise, quantization noise, saturation noise, [...])

Contents

RF Receiver Architecture State-of-the-Art.- System-Level Design Framework for Direct RF Digitization Receivers.- Application to the System Design of a Multi-Channel Cable Receiver.- Realization & Measurements.- Conclusions & Perspectives.

Fields of interest

Circuits and Systems; Signal, Image and Speech Processing; Processor Architectures

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01149-3

Hardcover

2014. XVI, 162 p. 166 illus., 68 illus. in color. (Analog Circuits and Signal Processing, Vol. 121)
ISBN 978-3-319-01149-3

usually dispatched within 3 to 5 business days

J.F. Gülich

Centrifugal Pumps

This book gives an unparalleled, up-to-date, in-depth treatment of all kinds of flow phenomena encountered in centrifugal pumps including the complex interactions of fluid flow with vibrations and wear of materials. The scope includes all aspects of hydraulic design, 3D-flow phenomena and partload operation, cavitation, numerical flow calculations, hydraulic forces, pressure pulsations, noise, pump vibrations (notably bearing housing vibration diagnostics and remedies), pipe vibrations, pump characteristics and pump operation, design of intake structures, the effects of highly viscous flows, pumping of gas-liquid mixtures, hydraulic transport of solids, fatigue damage to impellers or[...]

Features

This book gives an unparalleled, up-to-date, in-depth treatment of all kinds of flow phenomena encountered in centrifugal pumps including the complex interactions of fluid flow with vibrations and wear of materials. The scope includes all aspects of hydraulic design, 3D-flow phenomena and partload operation, cavitation, numerical flow calculations, hydraulic forces, pressure pulsations, noise, pump vibrations [...]

Contents

Fluid dynamic principles.- Pump types and performance data.- Pump hydraulics and physical concepts.- Performance characteristics.- Partload operation, impact of 3-D flow phenomena performance.- Suction capability and cavitation.- Design of the hydraulic components.- Numerical flow calculations.- Hydraulic forces.- Noise and Vibrations.- Operation of centrifugal pumps.- Turbine operation, general characteristics.- Influence of the medium on performance.- Selection of materials exposed to high flow velocities.- Pump selection and quality considerations.- Pump testing.

Fields of interest

Machinery and Machine Elements; Engineering Fluid Dynamics; Energy Technology; Industrial and Production Engineering; Energy (general)

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-3-642-40113-8

Hardcover

2014. XLV, 1245 p.
ISBN 978-3-642-40113-8

Due: November 30, 2013

V. Vullo

Circular Cylinders and Pressure Vessels

Stress Analysis and Design

This book provides comprehensive coverage of stress and strain analysis of circular cylinders and pressure vessels, one of the classic topics of machine design theory and methodology. Whereas other books offer only a partial treatment of the subject and frequently consider stress analysis solely in the elastic field, Circular Cylinders and Pressure Vessels broadens the design horizons, analyzing theoretically what happens at pressures that stress the material beyond its yield point and at thermal loads that give rise to creep. The consideration of both traditional and advanced topics ensures that the book will be of value for a broad spectrum of readers, including students in[...]

Features

This book provides comprehensive coverage of stress and strain analysis of circular cylinders and pressure vessels, one of the classic topics of machine design theory and methodology. Whereas other books offer only a partial treatment of the subject and frequently consider stress analysis solely in the elastic field, Circular Cylinders and Pressure Vessels broadens the design horizons, analyzing theoretically [...]

Contents

From the Contents: Thin-Walled Circular Cylinders under Internal/External Pressure and Stressed in the Linear Elastic Field.- Instability of Thin-Walled Circular Cylinders under External Pressure.- Other Types of Instability in Thin-Walled Circular Cylinders.- Thick-Walled Circular Cylinders under Internal/External Pressure Stressed in the Elastic Field.

Fields of interest

Engineering Design; Machinery and Machine Elements; Continuum Mechanics and Mechanics of Materials

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-00689-5

Hardcover

2014. XXIX, 376 p. 115 illus. (Springer Series in Solid and Structural Mechanics, Vol. 3)
ISBN 978-3-319-00689-5

Due: November 30, 2013

M.D. Kotsivos

Compressive Force-Path Method

Unified Ultimate Limit-State Design of Concrete Structures

This book presents a method which simplifies and unifies the design of reinforced concrete (RC) structures and is applicable to any structural element under both normal and seismic loading conditions. The proposed method has a sound theoretical basis and is expressed in a unified form applicable to all structural members, as well as their connections. It is applied in practice through the use of simple failure criteria derived from first principles without the need for calibration through the use of experimental data. The method is capable of predicting not only load-carrying capacity but also the locations and modes of failure, as well as safeguarding the structural performance code[...]

Features

This book presents a method which simplifies and unifies the design of reinforced concrete (RC) structures and is applicable to any structural element under both normal and seismic loading conditions. The proposed method has a sound theoretical basis and is expressed in a unified form applicable to all structural members, as well as their connections. It is applied in practice through the use of simple failure [...]

Contents

Reappraisal of concepts underlying reinforced concrete design.- The concept of the compressive-force path.- Modelling of simply-supported beams.- Design of simply supported beams.- Design for punching of flat slabs.- Design of skeletal structures with beam-like elements.- Earthquake-resistant design.- Design examples.

Fields of interest

Building Materials; Structural Materials; Building Construction, HVAC, Refrigeration

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-3-319-00487-7

Hardcover

2014. XVI, 219 p. 191 illus. (Engineering Materials)
ISBN 978-3-319-00487-7

Due: October 31, 2013

K. Suzuki, University of Chicago, Chicago, USA (Ed.)

Computational Intelligence in Biomedical Imaging

Computational Intelligence in Biomedical Imaging is a comprehensive overview of the state-of-the-art computational intelligence research and technologies in biomedical images with emphasis on biomedical decision making. Biomedical imaging offers useful information on patients' medical conditions and clues to causes of their symptoms and diseases. Biomedical images, however, provide a large number of images which physicians must interpret. Therefore, computer aids are demanded and become indispensable in physicians' decision making. This book discusses major technical advancements and research findings in the field of computational intelligence in biomedical imaging, for example, [...]

Features

This book provides a comprehensive overview of the state-of-the-art computational intelligence research and technologies in biomedical images with emphasis on biomedical decision making. Biomedical imaging offers useful information on patients' medical conditions and clues to causes of their symptoms and diseases. Biomedical images, however, provide a large number of images which physicians must interpret. [...]

Contents

Brain Disease Classification and Progression using Machine Learning Techniques.- The Role of Content-Based Image Retrieval in Mammography CAD.- A Novel Image-based Approach for Early Detection of Prostate Cancer using DCE-MRI.- Computational Intelligent Image Analysis for Assisting Radiation Oncologists' Decision Making in Radiation Treatment Planning.- Computational Anatomy in the Abdomen: Automated Multi-Organ and Tumor Analysis from Computed Tomography.- Liver Volumetry in MRI by using Fast Marching Algorithm Coupled with 3D Geodesic Active Contour Segmentation.- Computer-aided Image[...]

Fields of interest

Computational Intelligence; Biomedical Engineering; Computer Imaging, Vision, Pattern Recognition and Graphics; Signal, Image and Speech Processing; Imaging / Radiology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-7244-5

Hardcover

2014. XV, 451 p. 202 illus., 107 illus. in color.
ISBN 978-1-4614-7244-5

Due: November 30, 2013

M. Garbey, University of Houston, Houston, USA; B.L. Bass, The Methodist Hospital Research Institut, Houston, USA; S. Berceci, University of Florida, Gainesville, USA; C. Collet, Université Strasbourg I, Illkirch, France; P. Cerveri, Politecnico di Milano, Milano, Italy (Eds.)

Computational Surgery and Dual Training

Computing, Robotics and Imaging

This critical volume focuses on the use of medical imaging, medical robotics, simulation, and information technology in surgery. Part I discusses computational surgery and disease management and specifically breast conservative therapy, abdominal surgery for cancer, vascular occlusive disease and trauma medicine. Part II covers the role of image processing and visualization in surgical intervention with a focus on case studies. Part III presents the important role of robotics in image driven intervention. Part IV provides a road map for modeling, simulation and experimental data. Part V deals specifically with the importance of training in the computational surgery area.

Features

This critical volume focuses on the use of medical imaging, medical robotics, simulation, and information technology in surgery. Part I discusses computational surgery and disease management and specifically breast conservative therapy, abdominal surgery for cancer, vascular occlusive disease and trauma medicine. Part II covers the role of image processing and visualization in surgical intervention with a [...]

Contents

Part 1: Introduction.- A Road Map for Computational Surgery: Challenges and Opportunities.- Part 2: Computer Assisted Management of Disease and Surgery.- Plato's CAVE - A Multidimensional, Image Guided Radiation Therapy Cross Reality Platform with Advanced Surgical Planning, Simulation and Visualization Techniques using (native) DICOM Patient Image Studies.- Stereotactic Body Radiotherapy (SBRT) / Stereotactic Ablative Body Radiotherapy (SABR) for Lung Cancer.- Computer Aided Management in Scoliosis Surgery.- Computational Modeling of Breast Conserving Surgery(BCS) starting from MRI[...]

Fields of interest

Biomedical Engineering; Surgery

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8647-3

Hardcover

2014. XII, 360 p. 156 illus., 114 illus. in color. ISBN 978-1-4614-8647-3

Due: October 31, 2013

J. Scharcanski, Federal University of, Porto Alegre, Brazil; M.E. Celebi, Louisiana State University Shreveport, Shreveport, USA (Eds.)

Computer Vision Techniques for the Diagnosis of Skin Cancer

The goal of this volume is to summarize the state-of-the-art in the utilization of computer vision techniques in the diagnosis of skin cancer. Malignant melanoma is one of the most rapidly increasing cancers in the world. Early diagnosis is particularly important since melanoma can be cured with a simple excision if detected early. In recent years, dermoscopy has proved valuable in visualizing the morphological structures in pigmented lesions. However, it has also been shown that dermoscopy is difficult to learn and subjective. Newer technologies such as infrared imaging, multispectral imaging, and confocal microscopy, have recently come to the forefront in providing greater[...]

Features

The goal of this volume is to summarize the state-of-the-art in the utilization of computer vision techniques in the diagnosis of skin cancer. Malignant melanoma is one of the most rapidly increasing cancers in the world. Early diagnosis is particularly important since melanoma can be cured with a simple excision if detected early. In recent years, dermoscopy has proved valuable in visualizing the [...]

Contents

Enhancement of skin images.- Registration of skin images.- Segmentation of skin images.- Feature extraction from skin images.- Classification of skin images.

Fields of interest

Biomedical Engineering; Image Processing and Computer Vision; Signal, Image and Speech Processing; Medical and Radiation Physics; Dermatology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39607-6

Hardcover

2014. X, 282 p. 136 illus., 120 illus. in color. (Series in BioEngineering) ISBN 978-3-642-39607-6

Due: October 31, 2013

S. Paul, Intel Labs, Hillsboro, USA; S. Bhunia, Case Western Reserve University, Cleveland, USA

Computing with Memory for Energy-Efficient Robust Systems

This book analyzes energy and reliability as major challenges faced by designers of computing frameworks in the nanometer technology regime. The authors describe the existing solutions to address these challenges and then reveal a new reconfigurable computing platform, which leverages high-density nanoscale memory for both data storage and computation to maximize the energy-efficiency and reliability. The energy and reliability benefits of this new paradigm are illustrated and the design challenges are discussed. Various hardware and software aspects of this exciting computing paradigm are described, particularly with respect to hardware-software co-designed frameworks, where the[...]

Features

This book analyzes energy and reliability as major challenges faced by designers of computing frameworks in the nanometer technology regime. The authors describe the existing solutions to address these challenges and then reveal a new reconfigurable computing platform, which leverages high-density nanoscale memory for both data storage and computation to maximize the energy-efficiency and reliability. The [...]

Contents

Part I Introduction.- Challenges in Computing for Nanoscale Technologies.- A Survey of Computing Architectures.- Motivation for a Memory-Based Computing Hardware.- Part II Memory Based Computing.- Key Features of Memory-Based Computing.- Overview of Hardware and Software Architectures.- Application of Memory-Based Computing.- Part III Hardware Framework.- A Memory Based Generic Reconfigurable Framework.- MAHA Hardware Architecture.- Part IV Software Framework.- Application Analysis.- Application Mapping to MBC Hardware.

Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Processor Architectures

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-7797-6

Hardcover

2014. XIII, 210 p. 73 illus., 41 illus. in color. ISBN 978-1-4614-7797-6

usually dispatched within 3 to 5 business days

W.W. Chu, University of California, Los Angeles, USA (Ed.)

Data Mining and Knowledge Discovery for Big Data

Methodologies, Challenge and Opportunities

The field of data mining has made significant and far-reaching advances over the past three decades. Because of its potential power for solving complex problems, data mining has been successfully applied to diverse areas such as business, engineering, social media, and biological science. Many of these applications search for patterns in complex structural information. In biomedicine for example, modeling complex biological systems requires linking knowledge across many levels of science, from genes to disease. Further, the data characteristics of the problems have also grown from static to dynamic and spatiotemporal, complete to incomplete, and centralized to distributed, and grow in [...]

Features

The field of data mining has made significant and far-reaching advances over the past three decades. Because of its potential power for solving complex problems, data mining has been successfully applied to diverse areas such as business, engineering, social media, and biological science. Many of these applications search for patterns in complex structural information. In biomedicine for example, modeling [...]

Contents

Aspect and Entity Extraction for Opinion Mining.- Mining Periodicity from Dynamic and Incomplete Spatiotemporal Data.- Spatio-Temporal Data Mining for Climate Data: Advances, Challenges.- Mining Discriminative Subgraph Patterns from Structural Data.- Path Knowledge Discovery: Multi-level Text Mining as a Methodology for Phenomics.- InfoSearch: A Social Search Engine.- Social Media in Disaster Relief: Usage Patterns, Data Mining Tools, and Current Research Directions.- A Generalized Approach for Social Network Integration and Analysis with Privacy Preservation.- A Clustering Approach to [...]

Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40836-6

Hardcover

2014. X, 305 p. 99 illus., 29 illus. in color. (Studies in Big Data, Vol. 1)

ISBN 978-3-642-40836-6

usually dispatched within 3 to 5 business days

October 31, 2013

D.-F. Li, Fuzhou University, Fuzhou, China (P.R.)

Decision and Game Theory in Management With Intuitionistic Fuzzy Sets

The focus of this book is on establishing theories and methods of both decision and game analysis in management using intuitionistic fuzzy sets. It proposes a series of innovative theories, models and methods such as the representation theorem and extension principle of intuitionistic fuzzy sets, ranking methods of intuitionistic fuzzy numbers, non-linear and linear programming methods for intuitionistic fuzzy multi-attribute decision making and (interval-valued) intuitionistic fuzzy matrix games. These theories and methods form the theory system of intuitionistic fuzzy decision making and games, which is not only remarkably different from those of the traditional, Bayes and/or fuzzy [...]

Features

The focus of this book is on establishing theories and methods of both decision and game analysis in management using intuitionistic fuzzy sets. It proposes a series of innovative theories, models and methods such as the representation theorem and extension principle of intuitionistic fuzzy sets, ranking methods of intuitionistic fuzzy numbers, non-linear and linear programming methods for intuitionistic [...]

Contents

Chapter 1 Intuitionistic Fuzzy Set Theories.- Chapter 2 Intuitionistic Fuzzy Set Aggregation Operators and Multiattribute Decision Making Methods.- Chapter 3 Intuitionistic Fuzzy Set Multiattribute Decision Making Methods.- Chapter 4 Interval-Valued Intuitionistic Fuzzy Set Multiattribute Decision Making Methods.- Chapter 5 Multiattribute Decision Making Methods Using Intuitionistic Fuzzy Numbers.- Chapter 6 Intuitionistic Fuzzy Set Multiattribute Group Decision Making Methods.- Chapter 7 Intuitionistic Fuzzy Set Matrix Games and Linear or Nonlinear Programming Methods.- Chapter 8 [...]

Fields of interest

Computational Intelligence; Control; Algorithms; Game Theory / Mathematical Methods; Operation Research / Decision Theory; Game Theory, Economics, Social and Behav. Sciences

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40711-6

Hardcover

2014. XXI, 448 p. 23 illus. (Studies in Fuzziness and Soft Computing, Vol. 308)

ISBN 978-3-642-40711-6

Due: October 31, 2013

T. Vyhldal, Czech Technical University, Prague, Czech Republic; J.-F. Lafay, R. Sipahi (Eds.)

Delay Systems

From Theory to Numerics and Applications

This volume is the first of the new series Advances in Dynamics and Delays. It offers the latest advances in the research of analyzing and controlling dynamical systems with delays, which arise in many real-world problems. The contributions in this series are a collection across various disciplines, encompassing engineering, physics, biology, and economics, and some are extensions of those presented at the IFAC (International Federation of Automatic Control) conferences since 2011. The series is categorized in five parts covering the main themes of the contributions: Stability Analysis and Control Design · Networks and Graphs · Time Delay and Sampled-Data [...]

Features

This volume is the first of the new series Advances in Dynamics and Delays. It offers the latest advances in the research of analyzing and controlling dynamical systems with delays, which arise in many real-world problems. The contributions in this series are a collection across various disciplines, encompassing engineering, physics, biology, and economics, and some are extensions of those presented [...]

Contents

Part I Stability Analysis and Control Design.- Part II Networks and Graphs.- Part III Time-Delay and Sampled-Data Systems.- Part IV Computational and software tools.- Part V Applications.

Fields of interest

Control; Computational Intelligence; Nonlinear Dynamics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01694-8

Hardcover

2014. XXIV, 404 p. 130 illus., 4 illus. in color. (Advances in Delays and Dynamics, Vol. 1)

ISBN 978-3-319-01694-8

usually dispatched within 3 to 5 business days

C.E.L. Nóbrega, Centro Federal de Educação, Rio de Janeiro, Brazil; N.C.L. Brum, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil (Eds.)

Desiccant-Assisted Cooling

Fundamentals and Applications

The increasing concern with indoor air quality has led to air-quality standards with increased ventilation rates. Although increasing the volume flow rate of outside air is advisable from the perspective of air-quality, it is detrimental to energy consumption, since the outside air has to be brought to the comfort condition before it is insufflated to the conditioned ambient. Moreover, the humidity load carried within outside air has challenging HVAC engineers to design cooling units which are able to satisfactorily handle both sensible and latent contributions to the thermal load. This constitutes a favorable scenario for the use of solid desiccants to assist the cooling units. In[...]

Features

The increasing concern with indoor air quality has led to air-quality standards with increased ventilation rates. Although increasing the volume flow rate of outside air is advisable from the perspective of air-quality, it is detrimental to energy consumption, since the outside air has to be brought to the comfort condition before it is insufflated to the conditioned ambient. Moreover, the humidity load [...]

Contents

An Introduction To Solid Desiccant Cooling Technology.- Status of Liquid Desiccant Technologies and Systems.- Mathematical Modeling of Heat and Mass Transfer in Regenerators with Desiccant Materials.- Influence of Altitude on the Behavior of Solid Desiccant Dehumidification System.- The Performance of Desiccant Wheels for Desiccant Air-Conditioning.- Separate Sensible and Latent Cooling.- Membrane-based liquid-to-air energy exchangers.- Adsorption/Desorption Characteristics of Solid Particles in Desiccant Bed for Different Design Configurations.- Desiccant dehumidification integrated[...]

Fields of interest

Building Physics, HVAC; Atmospheric Protection / Air Quality Control / Air Pollution; Industrial Chemistry / Chemical Engineering

Target groups

Professional/practitioner

Type of publication

Monograph

More on www.springer.com/978-1-4471-5564-5

Hardcover

2014. V, 247 p. 202 illus., 45 illus. in color. ISBN 978-1-4471-5564-5

Due: October 31, 2013

J.A.T. Machado, Polytechnic of Porto, Porto, Portugal; D. Baleanu, Cankaya University, Ankara, Turkey; A.C.J. Luo, Southern Illinois University, Edwardsville, USA (Eds.)

Discontinuity and Complexity in Nonlinear Physical Systems

Discontinuity in Nonlinear Physical Systems explores recent developments in experimental research in this broad field, organized in four distinct sections. Part I introduces the reader to the fractional dynamics and Lie group analysis for nonlinear partial differential equations. Part II covers chaos and complexity in nonlinear Hamiltonian systems, important to understand the resonance interactions in nonlinear dynamical systems, such as Tsunami waves and wildfire propagations; as well as Lev flights in chaotic trajectories, dynamical system synchronization and DNA information complexity analysis. Part III examines chaos and periodic motions in discontinuous dynamical systems,[...]

Features

This unique book explores recent developments in experimental research in this broad field, organized in four distinct sections. Part I introduces the reader to the fractional dynamics and Lie group analysis for nonlinear partial differential equations. Part II covers chaos and complexity in nonlinear Hamiltonian systems, important to understand the resonance interactions in nonlinear dynamical systems, [...]

Contents

Part I: Fractional Dynamics and Nonlinearity.- Nonlinear Self-Adjointness for Some Generalized KdV Equations.- Weak Self-Adjointness and Conservation Laws for a Family of Benjamin-Bona-Mahony-Burgers Equations.- Some Analytical Techniques in Fractional Calculus: Realities and Challenges.- Application of the Local Fractional Fourier Series to Fractal Signals.- Parameter Optimization of Fractional Order PID Controller Using Response Surface Methodology.- Dynamical Response of a Van der Pol System with an External Harmonic Excitation and Fractional Derivative.- Fractional Calculus: From[...]

Fields of interest

Complexity; Statistical Physics, Dynamical Systems and Complexity; Theoretical, Mathematical and Computational Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01410-4

Hardcover

2014. XII, 442 p. 163 illus., 82 illus. in color. (Nonlinear Systems and Complexity, Vol. 6) ISBN 978-3-319-01410-4

Due: November 30, 2013

D.G. Green, Monash University, Clayton, Australia; J. Liu, Xidian University, Xi'an, China (P.R.); H.A. Abbass, University of New South Wales, Canberra, Australia

Dual Phase Evolution

The aim of the book is to lay out the foundations and provide a detailed treatment of the subject. It will focus on two main elements in dual phase evolution: the relationship between dual phase evolution and other phase transition phenomena and the advantages of dual phase evolution in evolutionary computation and complex adaptive systems. The book will provide a coherent picture of dual phase evolution that encompasses these two elements and frameworks, methods and techniques to use this concept for problem solving.

Features

This book explains how dual phase evolution operates in all these settings and provides a detailed treatment of the subject. The authors discuss the theoretical foundations for the theory, how it relates to other phase transition phenomena and its advantages in evolutionary computation and complex adaptive systems. The book provides methods and techniques to use this concept for problem solving. Dual phase [...]

Contents

Dual Phase Evolution.- Network Theory.- Problem Solving and Evolutionary Computation.- DPE for Network Generation.- DPE Networks and Evolutionary Dynamics.- DPE for Problem Solving.- Conclusion and Future Work.

Fields of interest

Appl. Mathematics / Computational Methods of Engineering; Complexity; Computer Systems Organization and Communication Networks

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4419-8422-7

Hardcover

2014. XXVI, 196 p. 69 illus., 15 illus. in color. ISBN 978-1-4419-8422-7

Due: November 30, 2013

R. Seifried, University of Stuttgart, Stuttgart, Germany

Dynamics of Underactuated Multibody Systems

Modeling, Control and Optimal Design

Underactuated multibody systems are intriguing mechatronic systems, as they possess fewer control inputs than degrees of freedom. Some examples are modern light-weight flexible robots and articulated manipulators with passive joints. This book investigates such underactuated multibody systems from an integrated perspective. This includes all major steps from the modeling of rigid and flexible multibody systems, through nonlinear control theory, to optimal system design. The underlying theories and techniques from these different fields are presented using a self-contained and unified approach and notation system. Subsequently, the book focuses on applications to large multibody systems[...]

Features

Underactuated multibody systems are intriguing mechatronic systems, as they possess fewer control inputs than degrees of freedom. Some examples are modern light-weight flexible robots and articulated manipulators with passive joints. This book investigates such underactuated multibody systems from an integrated perspective. This includes all major steps from the modeling of rigid and flexible multibody [...]

Contents

1 Introduction.- 2 Multibody Systems.- 3 Feedback Linearization and Model Inversion of Nonlinear Systems.- 4 Trajectory Tracking of Multibody Systems.- 5 Model Inversion Using Servo-Constraints.- 6 Trajectory Tracking of Flexible Multibody Systems.- 7 Optimal System Design.- 8 Concluding Remarks.- Index.

Fields of interest

Vibration, Dynamical Systems, Control; Control, Robotics, Mechatronics; Mechanics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01227-8

Hardcover

2014. XI, 247 p. 81 illus., 5 illus. in color. (Solid Mechanics and Its Applications, Vol. 205)
ISBN 978-3-319-01227-8

Due: September 30, 2013

R. Gupta, University of Calcutta, Kolkata, India; M. Mitra, University of Calcutta, Kolkata, India; J. Bera, University of Calcutta, Kolkata, India

ECG Acquisition and Automated Remote Processing

The book is focused on the area of remote processing of ECG in the context of telecardiology, an emerging area in the field of Biomedical Engineering Application. Considering the poor infrastructure and inadequate numbers of physicians in rural health-care clinics in India and other developing nations, telemedicine services assume special importance. Telecardiology, a specialized area of telemedicine, is taken up in this book considering the importance of cardiac diseases, which is prevalent in the population under discussion. The main focus of this book is to discuss different aspects of ECG acquisition, its remote transmission and computerized ECG signal analysis for feature[...]

Features

The book is focused on the area of remote processing of ECG in the context of telecardiology, an emerging area in the field of Biomedical Engineering Application. Considering the poor infrastructure and inadequate numbers of physicians in rural health-care clinics in India and other developing nations, telemedicine services assume special importance. Telecardiology, a specialized area of telemedicine, is taken [...]

Contents

Introduction.- ECG Signal Analysis.- ECG acquisition in a Computer.- ECG Transmission.- ECG Compression.- Challenges and Future Trends in Tele-health Services.

Fields of interest

Biomedical Engineering; Signal, Image and Speech Processing; Cardiology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-81-322-1556-1

Hardcover

2014. XVII, 131 p. 65 illus.
ISBN 978-81-322-1556-1

usually dispatched within 3 to 5 business days

P. Podio-Guidugli, A. Favata, Technical University of Hamburg, Hamburg, Germany

Elasticity for Geotechnicians

A Modern Exposition of Kelvin, Boussinesq, Flamant, Cerruti, Melan, and Mindlin Problems

This book deals in a modern manner with a family of named problems from an old and mature subject, classical elasticity. These problems are formulated over either a half or the whole of a linearly elastic and isotropic two- or three-dimensional space, subject to loads concentrated at points or lines. The discussion of each problem begins with a careful examination of the prevailing symmetries, and proceeds with inverting the canonical order, in that it moves from a search for balanced stress fields to the associated strain and displacement fields. The book, although slim, is fairly well self-contained; the only prerequisite is a reasonable familiarity with linear algebra (in[...])

Features

This book deals in a modern manner with a family of named problems from an old and mature subject, classical elasticity. These problems are formulated over either a half or the whole of a linearly elastic and isotropic two- or three-dimensional space, subject to loads concentrated at points or lines. The discussion of each problem begins with a careful examination of the prevailing symmetries, and proceeds [...]

Contents

About this book.- Preface.- References.- 1 One-Dimensional Paradigms.- Part I Preliminaries.- 2 Elements of Linear Elasticity.- 3 Geometric and Analytic Tools.- Part II Three Classical Problems: Flamant's, Boussinesq's, and Kelvin's.- 4 The Flamant Problem.- 5 The Boussinesq Problem.- 6 The Kelvin Problem.- Part III Three Other Problems: Melan's, Mindlin's, and Cerruti's.- 7 The Melan and Mindlin Problems.- 8 The Cerruti Problem.- Appendix.- Index of frequently used symbols.- Index.

Fields of interest

Theoretical and Applied Mechanics; Geomechanics, Foundations, Hydraulics; Mechanics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01257-5

Hardcover

2014. XVI, 178 p. 51 illus. (Solid Mechanics and Its Applications, Vol. 204)
ISBN 978-3-319-01257-5

usually dispatched within 3 to 5 business days

October 31, 2013

D. Gerling, Universität der Bundeswehr München, Neubiberg, Germany

Electrical Machines and Drives

Mathematical Fundamentals of Machine Topologies

Electrical Machines and Drives play a vital role in industry with an ever increasing importance. This fact necessitates the understanding of machine and drive principles by engineers of many different disciplines. Therefore, this book is intended to give a comprehensive deduction of these principles. Special attention is given to the precise mathematical deduction of the necessary formulae to calculate machines and drives, and to the discussion of simplifications (if applied) with the associated limits. So the book shows how the different machine topologies can be deduced from general fundamentals, and how they are linked. This book addresses graduate students, researchers and [...]

Features

Electrical Machines and Drives play a powerful role in industry with an ever increasing importance. This fact requires the understanding of machine and drive principles by engineers of many different disciplines. Therefore, this book is intended to give a comprehensive deduction of these principles. Special attention is given to the precise mathematical derivation of the necessary formulae to calculate [...]

Contents

Part I: Steady-State Operation.- 1. Fundamentals 2. DC Machines.- 3. Rotating Field Theory.- 4. Induction Machines.- 5. Synchronous Machines.- 6. Permanent Magnet Machines.- 7. Switched Reluctance Machines.- 8. Fractional Horsepower Machines for Single-Phase Operation (optional).- Part II: Dynamic Operation.- 9. Fundamentals 10. DC Machines.- 11. Space Vector Theory.- 12. Induction Machines.- 13. Synchronous Machines.- 14. Permanent Magnet Machines.

Fields of interest

Power Electronics, Electrical Machines and Networks; Engineering Design; Mathematical Modeling and Industrial Mathematics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-17583-1

Hardcover

2014. XV, 190p. 308 illus., 201 illus. in color. (Mathematical Engineering)
ISBN 978-3-642-17583-1

Due: November 14, 2013

B. Mohammad

Embedded Memory Design for Multi-Core and Systems on Chip

This book describes the various tradeoffs systems designers face when designing embedded memory. Readers designing multi-core systems and systems on chip will benefit from the discussion of different topics from memory architecture, array organization, circuit design techniques and design for test. The presentation enables a multi-disciplinary approach to chip design, which bridges the gap between the architecture level and circuit level, in order to address yield, reliability and power-related issues for embedded memory.

Features

This book describes the various tradeoffs systems designers face when designing embedded memory. Readers designing multi-core systems and systems on chip will benefit from the discussion of different topics from memory architecture, array organization, circuit design techniques and design for test. The presentation enables a multi-disciplinary approach to chip design, which bridges the gap between the [...]

Contents

Introduction.- Cache Architecture and Main Blocks.- Embedded Memory Hierarchy.- SRAM Memory Operation and Yield.- Low Power and High Yield SRAM Memory.- Leakage Reduction.- Embedded Memory Verification.- Embedded Memory Design Validation and Design For Test.- Emerging Memory Technology Opportunities and Challenges.

Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Processor Architectures

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8880-4

Hardcover

2014. XIII, 95 p. 64 illus., 37 illus. in color. (Analog Circuits and Signal Processing, Vol. 116)
ISBN 978-1-4614-8880-4

Due: October 31, 2013

W. Cai, University of Wisconsin, Madison, USA (Ed.)

Engineering in Translational Medicine

This book covers a broad area of engineering research in translational medicine. Leaders in academic institutions around the world contributed focused chapters on a broad array of topics such as: cell and tissue engineering (6 chapters), genetic and protein engineering (10 chapters), nanoengineering (10 chapters), biomedical instrumentation (4 chapters), and theranostics and other novel approaches (4 chapters). Each chapter is a stand-alone review that summarizes the state-of-the-art of the specific research area. Engineering in Translational Medicine gives readers a comprehensive and in-depth overview of a broad array of related research areas, making this an excellent reference book [...]

Features

This book covers a broad area of engineering research in translational medicine. Leaders in academic institutions around the world contributed focused chapters on a broad array of topics such as: cell and tissue engineering (6 chapters), genetic and protein engineering (10 chapters), nanoengineering (10 chapters), biomedical instrumentation (4 chapters), and theranostics and other novel approaches (4 [...]

Contents

1. Engineering in Translational Medicine: An Introduction.- 2. Stem Cells: The Holy Grail of Regenerative Medicine.- 3. Engineering T Cells to Target Tumor Cells.- 4. Engineering Biomaterials for Anchorage-Dependent and Non-Anchorage-Dependent Therapeutic Cell Delivery in Translational Medicine.- 5. Tissue Engineering Applications for Peripheral Nerve Repair.- 6. Structure, Function and Development of Blood Vessels: Lessons for Tissue engineering.- 7. Engineering Gene Activated Matrices for the Repair of Articular Cartilage Defect.- 8. Engineering Luciferases for Assays and Imaging.- 9. [...]

Fields of interest

Biomedical Engineering; Imaging / Radiology; Biomaterials; Biophysics and Biological Physics; Medical and Radiation Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4471-4371-0

Hardcover

2014. XII, 1128 p. 267 illus., 130 illus. in color.
ISBN 978-1-4471-4371-0

Due: October 31, 2013

F. Almeida, INESC Porto Campus da FEUP, Porto, Portugal; M.T. Andrade, INESC Porto Campus da FEUP, Porto, Portugal; N. Melazzi, Università degli Studi di Roma, Roma, Italy; R. Walker, H. Hussmann, LMU Medieninformatik, München, Germany; I.S. Venieris, National Technical University of Athens, Athens, Greece (Eds.)

Enhancing the Internet with the CONVERGENCE System

An Information-centric Network Coupled with a Standard Middleware

Convergence proposes the enhancement of the Internet with a novel, content-centric, publish–subscribe service model based on the versatile digital item (VDI): a common container for all kinds of digital content, including digital representations of real-world resources. VDIs will serve the needs of the future Internet, providing a homogeneous method for handling structured information, incorporating security and privacy mechanisms. CONVERGENCE subsumes the following areas of research: definition of the VDI as a new fundamental unit of distribution and transaction; content-centric networking functionality to complement or replace IP-address-based routing; security and privacy [...]

Features

Convergence proposes the enhancement of the Internet with a novel, content-centric, publish–subscribe service model based on the versatile digital item (VDI): a common container for all kinds of digital content, including digital representations of real-world resources. VDIs will serve the needs of the future Internet, providing a homogeneous method for handling structured information, incorporating [...]

Contents

Approaches for the Development of Information-Centric Networks.- Convergence Architecture: A Concise Overview.- The Network Level (CoNet).- The Content Level (CoMid).- The Versatile Digital Item (VDI).- The Convergence Security Infrastructure.- The Adoption of Rights Expression Language in CONVERGENCE.- Scenarios and Trials for CONVERGENCE.- Business Models and Exploitation.- Conclusions and Future Research Topics.

Fields of interest

Communications Engineering, Networks; Computer Communication Networks; Information Systems Applications (incl.Internet)

Target groups

Professional/practitioner

Type of publication

Monograph

More on www.springer.com/978-1-4471-5372-6

Hardcover

2014. XV, 297 p. 98 illus., 92 illus. in color. (Signals and Communication Technology)
ISBN 978-1-4471-5372-6

Due: November 30, 2013

A. Öchsner, Technical University of Malaysia, Skudai, Malaysia; H. Altenbach, Otto-von-Guericke-Universität, Magdeburg, Germany (Eds.)

Experimental and Numerical Investigation of Advanced Materials and Structures

The idea of this monograph is to present the latest results related to experimental and numerical investigations of advanced materials and structures. The contributions cover the field of mechanical, civil and materials engineering, ranging from new modelling and simulation techniques, advanced analysis techniques, optimization of structures and materials and constitutive modelling. Well known experts present their research on damage and fracture of material and structures, materials modelling and evaluation up to image processing and visualization for advanced analyses and evaluation.

Features

The idea of this monograph is to present the latest results related to experimental and numerical investigations of advanced materials and structures. The contributions cover the field of mechanical, civil and materials engineering, ranging from new modelling and simulation techniques, advanced analysis techniques, optimization of structures and materials and constitutive modelling. Well known experts present [...]

Contents

Neural Model for Prediction of Tires Eigenfrequencies.- Effect of Steady Ampoule Rotation on Radial Dopant Segregation in Vertical Bridgman Growth.- Discontinuity Detection in the Vibration Signal of Turning Machines.- Visualization of Global Illumination Variations in Motion Segmentation.- Evaluation of Fatigue Behavior of SAE 9254 Steel Suspension Springs Manufactured by Two Different Processes: Hot and Cold Winding.-Yield Criteria for Incompressible Materials in the Shear Stress Space V. A. Kolupaev, A. Bolchoun, H. Altenbach.- The Optimum Design of Laminated Slender Beams with [...]

Fields of interest

Continuum Mechanics and Mechanics of Materials; Characterization and Evaluation of Materials; Computational Science and Engineering; Structural Mechanics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-00505-8

Hardcover

2013. VIII, 270 p. 183 illus., 125 illus. in color. (Advanced Structured Materials, Vol. 41)
ISBN 978-3-319-00505-8

usually dispatched within 3 to 5 business days

G. Sun, Peking University, Haidian District, Beijing, China (P.R.)

Exploring Memory Hierarchy Design with Emerging Memory Technologies

This book equips readers with tools for computer architecture of high performance, low power, and high reliability memory hierarchy in computer systems based on emerging memory technologies, such as STTRAM, PCM, FBD RAM, etc. The techniques described offer advantages of high density, near-zero static power, and immunity to soft errors, which have the potential of overcoming the “memory wall.”

The authors discuss memory design from various perspectives: emerging memory technologies are employed in the memory hierarchy with novel architecture modification; hybrid memory structure is introduced to leverage advantages from multiple memory technologies; an analytical model named “Moguls” [...]

Features

This book equips readers with tools for computer architecture of high performance, low power, and high reliability memory hierarchy in computer systems based on emerging memory technologies, such as STTRAM, PCM, FBD RAM, etc. The techniques described offer advantages of high density, near-zero static power, and immunity to soft errors, which have the potential of overcoming the “memory wall.” The authors [...]

Contents

Introduction.- Replacing Different Levels of the Memory Hierarchy with NVMs.- Moguls: a Model to Explore the Memory Hierarchy for Throughput Computing.- Exploring the Vulnerability of CMPs to Soft Errors with 3D Stacked Non-Volatile Memory.

Fields of interest

Circuits and Systems; Processor Architectures; Semiconductors

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-00680-2

Hardcover

2014. VII, 122 p. 71 illus., 57 illus. in color. (Lecture Notes in Electrical Engineering, Vol. 267)
ISBN 978-3-319-00680-2

usually dispatched within 3 to 5 business days
September 28, 2013

A. Rahut, Kyenetic, Santa Clara, USA

FPGAs Under the Hood

Hardware Design, Software Flows and Applications

This book explains how FPGAs are designed by their vendors, the software that drives the technology, and what are some of the key challenges/constraints while integrating FPGAs into semiconductor design flows. The author appeals to designers' intuition to describe the internals of FPGA hardware and the important aspects of the design software necessary to leverage this exciting technology. By understanding the thinking behind FPGAs from the ground up, readers will gain facility with FPGA core technology that will enable them to make better decisions when integrating FPGAs into their products.

Features

This book explains how FPGAs are designed by their vendors, the software that drives the technology, and what are some of the key challenges/constraints while integrating FPGAs into semiconductor design flows. The author appeals to designers' intuition to describe the internals of FPGA hardware and the important aspects of the design software necessary to leverage this exciting technology. By understanding [..]

Contents

FPGAs : A key building block for semiconductor flows.- FPGA applications.- Island Style FPGAs.- Programming an FPGA.- Design Software for FPGAs.- Advanced Design Software.- IPs and FPGA flows.- New trends in FPGAs.- FPGA Applications in Depth.- Advanced Topics.

Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Processor Architectures

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-1-4614-8294-9

Hardcover

2013. 300 p. 125 illus.
ISBN 978-1-4614-8294-9

Due: January 28, 2014

B. Özbek, Izmir Institute of Technology, Izmir, Turkey; D. Le Ruyet

Feedback Strategies for Wireless Communication

This book explores the different strategies regarding limited feedback information. The book analyzes the impact of quantization and the delay of CSI on the performance. The author shows the effect of the reduced feedback information and gives an overview about the feedback strategies in the standards. This volume presents theoretical analysis as well as practical algorithms for the required feedback information at the base stations to perform adaptive resource algorithms efficiently and mitigate interference coming from other cells.

Features

This book explores the different strategies regarding the feedback information for wireless communication systems. The text analyzes the impact of quantization and correlation of channel state information (CSI) on the system performance. The authors show the effect of the reduced and limited feedback information and gives an overview about the feedback strategies in the standards. This volume presents [..]

Contents

Introduction.- Background on wireless communication.- Feedback in SISO Single User Wireless Communication.- Feedback in MIMO Wireless Communication.- Feedback Strategies for Multiuser Systems.- Feedback Strategies for Multiantenna Multiuser Systems.- Feedback Strategies for Multicell Systems.- Feedback strategies in LTE systems.- Conclusions.

Fields of interest

Communications Engineering, Networks; Signal, Image and Speech Processing; Information Systems and Communication Service

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-7740-2

Hardcover

2014. XIX, 336 p. 105 illus., 51 illus. in color.
ISBN 978-1-4614-7740-2

Due: October 31, 2013

K. Sugioka, RIKEN, Saitama, Japan; Y. Cheng, Shanghai Institute of Optics and Fine Me, Shanghai, China (P.R.)

Femtosecond Laser 3D Micromachining for Microfluidic and Optofluidic Applications

Femtosecond lasers opened up new avenue in materials processing due to its unique features of ultra-short pulse width and extremely high peak intensity. One of the most important features of femtosecond laser processing is that strong absorption can be induced even by materials which are transparent to the femtosecond laser beam due to nonlinear multiphoton absorption. The multiphoton absorption allows us to perform not only surface but also three-dimensionally internal microfabrication of transparent materials such as glass. This capability makes it possible to directly fabricate three-dimensional microfluidics, micromechanics, microelectronics, and microoptics embedded in the glass.[...]

Features

Femtosecond lasers opened up new avenue in materials processing due to its unique features of ultra-short pulse width and extremely high peak intensity. One of the most important features of femtosecond laser processing is that strong absorption can be induced even by materials which are transparent to the femtosecond laser beam due to nonlinear multiphoton absorption. The multiphoton absorption allows us to [..]

Contents

Fundamentals of femtosecond laser processing.- Fabrication of microfluidic structures in glass.- Fabrication of micromechanics.- Fabrication of microoptical components in glass.- Fabrication of microelectronics in glass.- Integration of microcomponents.- Applications of microfluidics and optofluidics fabricated by femtosecond laser.- Summary and outlook.

Fields of interest

Nanotechnology and Microengineering; Laser Technology and Physics, Photonics; Optical and Electronic Materials; Applied Optics, Optoelectronics, Optical Devices

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4471-5540-9

Softcover

2014. IX, 129 p. 81 illus., 59 illus. in color. (SpringerBriefs in Applied Sciences and Technology)
ISBN 978-1-4471-5540-9

Due: October 31, 2013

B. León, Universitat Jaume I, Castellon, Spain; A. Morales, Universitat Jaume I, Castellon, Spain; J. Sancho-Bru, Universitat Jaume I, Castellon, Spain

From Robot to Human Grasping Simulation

The human hand and its dexterity in grasping and manipulating objects are some of the hallmarks of the human species. For years, anatomic and biomechanical studies have deepened the understanding of the human hand's functioning and, in parallel, the robotics community has been working on the design of robotic hands capable of manipulating objects with a performance similar to that of the human hand. However, although many researchers have partially studied various aspects, to date there has been no comprehensive characterization of the human hand's function for grasping and manipulation of everyday life objects. This monograph explores the hypothesis that the confluence of both [...]

Features

The human hand and its dexterity in grasping and manipulating objects are some of the hallmarks of the human species. For years, anatomic and biomechanical studies have deepened the understanding of the human hand's functioning and, in parallel, the robotics community has been working on the design of robotic hands capable of manipulating objects with a performance similar to that of the human hand. [...]

Contents

Robot Grasping Simulation.- Human Grasping Simulation.

Fields of interest

Robotics and Automation; Computational Intelligence; Computational Biology / Bioinformatics; Biomedical Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01832-4

Hardcover

2014. X, 261 p. 132 illus., 120 illus. in color. (Cognitive Systems Monographs, Vol. 19)
ISBN 978-3-319-01832-4

Due: October 31, 2013

V. Ter-Mikirtychev

Fundamentals of Fiber Lasers and Fiber Amplifiers

This book covers the fundamental aspects of fiber lasers and fiber amplifiers, and includes a wide range of material from laser physics fundamentals to state-of-the-art topics, as well as industrial applications in the rapidly growing field of quantum electronics. Emphasis is placed on the nonlinear processes taking place in fiber lasers and amplifiers, their similarities, differences to, and their advantages over other solid-state lasers. The reader will learn basic principles of solid-state physics and optical spectroscopy of laser active centers in fibers, main operational laser regimes, and practical recommendations and suggestions on fiber laser research, laser applications, and [...]

Features

This book covers the fundamental aspects of fiber lasers and fiber amplifiers, and includes a wide range of material from laser physics fundamentals to state-of-the-art topics in this rapidly growing field of quantum electronics. Emphasis is placed on the nonlinear processes taking place in fiber lasers and amplifiers, their similarities, differences to, and their advantages over other solid-state [...]

Contents

From the Contents: Optical properties and optical spectroscopy of rare-earth ions in solids.- Electron-phonon coupling in solids.- Physical and optical properties of laser glass.- Mechanical and thermal properties of glass.- Fiber fabrication and high quality glasses for gain fibers.- Spectroscopic properties of and gain fibers.- Propagation of light and spatial modes in optical fibers.- Fiber laser physics fundamentals.- Main fiber laser operational regimes.- Main optical components for fiber lasers and fiber amplifiers design.- High power fiber lasers.- Fiber lasers' industrial applications.

Fields of interest

Microwaves, RF and Optical Engineering; Laser Technology and Physics, Photonics; Quantum Optics, Quantum Electronics, Nonlinear Optics; Solid State Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02337-3

Hardcover

2014. XIV, 487 p. 132 illus. (Springer Series in Optical Sciences, Vol. 181)
ISBN 978-3-319-02337-3

Due: November 30, 2013

J. Angeles, McGill University, Montreal, Canada

Fundamentals of Robotic Mechanical Systems

Theory, Methods, and Algorithms

The 4th edition includes updated and additional examples and exercises on the core fundamental concepts of mechanics, robots, and kinematics of serial robots. New images of CAD models and physical robots help to motivate concepts being introduced. Each chapter of the book can be read independently of others as it addresses a separate issue in robotics.

Features

The 4th edition includes updated and additional examples and exercises on the core fundamental concepts of mechanics, robots, and kinematics of serial robots. New images of CAD models and physical robots help to motivate concepts being introduced. Each chapter of the book can be read independently of others as it addresses a separate issue in robotics.

Contents

An Overview of Robotic Mechanical Systems.- Mathematical Background.- Fundamentals of Rigid-Body Mechanics.- Geometry of Decoupled Serial Robots.- Kinestatics of Serial Robots.- Trajectory Planning: Pick-and-Place Operations.- Dynamics of Serial Robotic Manipulators.- Special Topics in Rigid-Body Kinematics.- Geometry of General Serial Robots.- Kinematics of Alternative Robotic Mechanical Systems.- Trajectory Planning: Continuous-Path Operations.- Dynamics of Complete Robotic Mechanical Systems.- Kinematics of Rotations: A Summary.- Numerical Equation-Solving.

Fields of interest

Mechanical Engineering; Robotics and Automation

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-3-319-01850-8

Hardcover

2014. XVI, 566 p. 157 illus., 18 illus. in color. (Mechanical Engineering Series, Vol. 124)
ISBN 978-3-319-01850-8

Due: November 30, 2013

Z. Ma, F. Zhang, L. Yan, J. Cheng

Fuzzy Knowledge Management for the Semantic Web

This book goes to great depth concerning the fast growing topic of technologies and approaches of fuzzy logic in the Semantic Web. The topics of this book include fuzzy description logics and fuzzy ontologies, queries of fuzzy description logics and fuzzy ontology knowledge bases, extraction of fuzzy description logics and ontologies from fuzzy data models, storage of fuzzy ontology knowledge bases in fuzzy databases, fuzzy Semantic Web ontology mapping, and fuzzy rules and their interchange in the Semantic Web. The book aims to provide a single record of current research in the fuzzy knowledge representation and reasoning for the Semantic Web. The objective of the book is to provide[...]

Features

This book goes to great depth concerning the fast growing topic of technologies and approaches of fuzzy logic in the Semantic Web. The topics of this book include fuzzy description logics and fuzzy ontologies, queries of fuzzy description logics and fuzzy ontology knowledge bases, extraction of fuzzy description logics and ontologies from fuzzy data models, storage of fuzzy ontology knowledge bases in fuzzy [...]

Contents

Knowledge Representation and Reasoning in the Semantic Web.- Fuzzy Sets and Possibility Theory.- Fuzzy Data Models and Formal Descriptions.- Fuzzy Description Logics and Fuzzy Ontologies.- Fuzzy Description Logic and Ontology Extraction from Fuzzy Data Models.- Fuzzy Semantic Web Ontology Mapping.- Querying Fuzzy Description Logics and Ontology Knowledge Bases.- Fuzzy Ontology Knowledge Bases Storage in Fuzzy Databases.- Fuzzy Rules and Interchange in the Semantic Web.

Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39282-5

Hardcover

2014. XI, 275 p. 67 illus. (Studies in Fuzziness and Soft Computing, Vol. 306)

ISBN 978-3-642-39282-5

Due: October 31, 2013

H. Schoen

Handbook of Purified Gases

Technical gases are used in almost every field of industry, science and medicine and also as a means of control by government authorities and institutions and are regarded as indispensable means of assistance. In this complete handbook of purified gases the physical foundations of purified gases and mixtures as well as their manufacturing, purification, analysis, storage, handling and transport are presented in a comprehensive way. This important reference work is accompanied with a large number of Data Sheets dedicated to the most important purified gases.

Features

Technical gases are used in almost every field of industry, science and medicine and also as a means of control by government authorities and institutions and are regarded as indispensable means of assistance. In this complete handbook of purified gases the physical foundations of purified gases and mixtures as well as their manufacturing, purification, analysis, storage, handling and transport are [...]

Contents

Introduction.- Introduction to the physics of gases.- Manufacturing and purification.- Filling manifolds.- Mixtures of pure Gases.- Compressed gas cylinders.- Analysis of purity and composition.- Handling.- Data sheets.- Appendix.

Fields of interest

Industrial and Production Engineering; Industrial Chemistry / Chemical Engineering; Characterization and Evaluation of Materials

Target groups

Professional/practitioner

Type of publication

Handbook

More on www.springer.com/978-3-540-32598-7

Hardcover

2015. 470p. With online files/update.

ISBN 978-3-540-32598-7

Due: September 30, 2014

G.R. Baran, M.F. Kiani, S.P. Samuel, Albert Einstein Medical Center, Philadelphia, USA

Healthcare and Biomedical Technology in the 21st Century

An Introduction for Non-Science Majors

Healthcare and Biotechnology in the 21st Century: Concepts and Case Studies introduces students not pursuing degrees in science or engineering to the remarkable new applications of technology now available to physicians and their patients and discusses how these technologies are evolving to permit new treatments and procedures. The book also elucidates the societal and ethical impacts of advances in medical technology, such as extending life and end of life decisions, the role of genetic testing, confidentiality, costs of health care delivery, scrutiny of scientific claims, and provides background on the engineering approach in healthcare and the scientific method as a guiding [...]

Features

This textbook introduces students not pursuing degrees in science or engineering to the remarkable new applications of technology now available to physicians and their patients and discusses how these technologies are evolving to permit new treatments and procedures. The book also elucidates the societal and ethical impacts of advances in medical technology, such as extending life and end of life [...]

Contents

Is Technology the Cure for Soaring Demand and the High Costs of Healthcare?.- Science, Pseudoscience, and Not-Science: How do they Differ?.- Technology and Bioethics: What Can Scientists and Engineers Do, and What Should They Do?.- Inventing, Evaluating and Approving New Drugs and Devices.- A Visit to the Physician: Diagnoses and Enabling Technologies.- Properties of the Host (the Human Body).- Properties and Behavior of Materials, and Some Design Considerations Too.- Biomaterials Applications in Medicine and Case Studies.- Cardiovascular Devices: Getting to the Heart of the Matter.- [...]

Fields of interest

Biomedical Engineering; Biomaterials; Laboratory Medicine; Imaging / Radiology

Target groups

Lower undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-1-4614-8540-7

Softcover

2014. XVIII, 503 p. 254 illus., 207 illus. in color.

ISBN 978-1-4614-8540-7

Due: October 31, 2013

K. Nonami, Chiba University, Chiba, Japan; R.K. Barai, A.I. Hashim, Universiti Malaysia Pahang, Pahang, Malaysia; M.R.B. Daud, Universiti Malaysia Pahang, Pahang, Malaysia

Hydraulically Actuated Hexapod Robots

Design, Implementation and Control

Legged robots are a promising locomotion system, capable of performing tasks that conventional vehicles cannot. Even more exciting is the fact that this is a rapidly developing field of study for researchers from a variety of disciplines. However, only a few books have been published on the subject of multi-legged robots. The main objective of this book is to describe some of the major control issues concerning walking robots that the authors have faced over the past 10 years. A second objective is to focus especially on very large hydraulically driven hexapod robot locomotion weighing more than 2,000 kg, making this the first specialized book on this topic. The 10 chapters of the[...]

Features

Legged robots are a promising locomotion system, capable of performing tasks that conventional vehicles cannot. Even more exciting is the fact that this is a rapidly developing field of study for researchers from a variety of disciplines. However, only a few books have been published on the subject of multi-legged robots. The main objective of this book is to describe some of the major control issues [...]

Contents

Introduction.- Historical and Modern Perspective of Walking Robots.- Design and Optimization of Hydraulically Actuated Hexapod Robot COMET-IV.- Kinematics, Navigation and Path Planning of Hexapod Robot.- Position Based Robust Locomotion Control of Hexapod Robot.- Force Based Locomotion Control of Hexapod Robot.- Impedance Control and Its Adaptive for Hexapod Robot.- Tele-operated Locomotion Control of Hexapod Robot.- Fully Autonomous Locomotion Control of Hexapod Robot with LRF.- Challenges and New Frontiers of Hydraulically Actuated Hexapod Robots.

Fields of interest

Mechanical Engineering; Robotics and Automation; Computer System Implementation; Artificial Intelligence (incl. Robotics); Mathematical Software

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-4-431-54348-0

Hardcover

2014. X, 252 p. 224 illus., 198 illus. in color. (Intelligent Systems, Control and Automation: Science and Engineering, Vol. 66)
ISBN 978-4-431-54348-0

Due: November 30, 2013

C. Faucher, Aix-Marseille University (AMU), Marseille Cedex, France; L.C. Jain, University of Canberra, ACT, Australia (Eds.)

Innovations in Intelligent Machines-4

Recent Advances in Knowledge Engineering

This research volume is a continuation of previous volumes on intelligent machines of the same editors. It is divided into three parts. Part I deals with big data and ontologies. It includes examples related to the text mining, rule mining and ontology. Part II is on knowledge-based systems. It includes context-centered systems, knowledge discovery, interoperability, consistency and systems of systems. The final part is on applications. The applications involve prediction, decision optimization and assessment.

Features

This research volume is a continuation of previous volumes on intelligent machines of the same editors. It is divided into three parts. Part I deals with big data and ontologies. It includes examples related to the text mining, rule mining and ontology. Part II is on knowledge-based systems. It includes context-centered systems, knowledge discovery, interoperability, consistency and systems of systems. The [...]

Contents

Part I - Big data & ontologies.- Part II - Knowledge-based Systems.- Part III - Applications.

Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01865-2

Hardcover

2014. IX, 462 p. 148 illus. (Studies in Computational Intelligence, Vol. 514)
ISBN 978-3-319-01865-2

Due: October 15, 2013

M. Tehranipoor, University of Connecticut, Storrs, USA; H. Salmani, University of Connecticut, Storrs, USA; X. Zhang, University of Connecticut, Storrs, USA

Integrated Circuit Authentication

Hardware Trojans and Counterfeit Detection

This book describes techniques to verify the authenticity of integrated circuits (ICs). It focuses on hardware Trojan detection and prevention and counterfeit detection and prevention. The authors discuss a variety of detection schemes and design methodologies for improving Trojan detection techniques, as well as various attempts at developing hardware Trojans in IP cores and ICs. While describing existing Trojan detection methods, the authors also analyze their effectiveness in disclosing various types of Trojans, and demonstrate several architecture-level solutions.

Features

This book provides readers with a comprehensive introduction to hardware Trojans. The authors explain the hardware Trojan taxonomy in detail, while delivering deep understanding of the potential impacts throughout the integrated circuit (IC) lifecycle. While discussing the shortcomings of current, industrial IC testing techniques for hardware Trojans, the authors describe the details of emerging techniques [...]

Contents

Introduction.- Hardware Trojan Detection: Untrusted Third-party IP Cores.- Hardware Trojan Detection: Untrusted Manufactured Integrated Circuits.- Design for Hardware Trust: Dummy Scan Flip-flop Insertion.- Design for Hardware Trust: Layout-aware Scan Cell Reordering.- Design for Hardware Trust: Ring Oscillator Network.- Design Vulnerability Analysis.- Trojan Prevention: Built-In Self-Authentication.- Counterfeit Ics: Taxonomies, Assessment, and Challenges.- Counterfeit Ics: Detection and Prevention of Recycled Ics Using On-chip Sensors.- Counterfeit Ics: Pathy-Delay Fingerprinting.

Fields of interest

Circuits and Systems; Processor Architectures; Electronic Circuits and Devices

Target groups

Research

Type of publication

Professional book

More on www.springer.com/978-3-319-00815-8

Hardcover

2014. XVI, 222 p. 120 illus., 65 illus. in color.
ISBN 978-3-319-00815-8

Due: October 31, 2013

G.A. Anastassiou, University of Memphis, Memphis, USA; I.F. Iatan, Technical University, Bucharest, Romania

Intelligent Routines II

Solving Linear Algebra and Differential Geometry with Sage

"Intelligent Routines II: Solving Linear Algebra and Differential Geometry with Sage" contains numerous of examples and problems as well as many unsolved problems. This book extensively applies the successful software Sage, which can be found free online <http://www.sagemath.org/>. Sage is a recent and popular software for mathematical computation, available freely and simple to use. This book is useful to all applied scientists in mathematics, statistics and engineering, as well for late undergraduate and graduate students of above subjects. It is the first such book in solving symbolically with Sage problems in Linear Algebra and Differential Geometry. Plenty of SAGE applications are[...]

Features

"Intelligent Routines II: Solving Linear Algebra and Differential Geometry with Sage" contains numerous of examples and problems as well as many unsolved problems. This book extensively applies the successful software Sage, which can be found free online <http://www.sagemath.org/>. Sage is a recent and popular software for mathematical computation, available freely and simple to use. This book is useful to [...]

Contents

Vector Spaces.- Plane And Straight Line In E.- Linear Transformations.- Euclidean Vector Spaces.- Bilinear And Quadratic Forms.- Differential Geometry Of Curves And Surfaces.

Fields of interest

Computational Intelligence; Computational Mathematics and Numerical Analysis; Analysis

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01966-6

Hardcover

2014. XIV, 318 p. 211 illus. (Intelligent Systems Reference Library, Vol. 58)

ISBN 978-3-319-01966-6

Due: October 31, 2013

D.J. Klotzkin, Binghamton University, Binghamton, USA

Introduction to Semiconductor Lasers for Optical Communications

An Applied Approach

This textbook provides a thorough and accessible treatment of semiconductor lasers from a design and engineering perspective. It includes both the physics of devices as well as the engineering, designing and testing of practical lasers. The material is presented clearly with many examples provided. Readers of the book will come to understand the finer aspects of the theory, design, fabrication and test of these devices and have an excellent background for further study of optoelectronics. This book also: Provides a multifaceted approach to explaining the theories behind semiconductor lasers, utilizing mathematical examples, illustrations and written theoretical presentations Offers a [...]

Features

This textbook provides a thorough and accessible treatment of semiconductor lasers from a design and engineering perspective. It includes both the physics of devices as well as the engineering, designing and testing of practical lasers. The material is presented clearly with many examples provided. Readers of the book will come to understand the finer aspects of the theory, design, fabrication and [...]

Contents

Introduction: The Basics of Optical Communication.- The Basics of Lasers.- Semiconductors as Laser Material 1: Fundamentals and Fabrication.- Semiconductors as Laser Materials 2: Density of States, Quantum Wells and Gain.- Semiconductor Laser Cavity Operation.- The Optical Cavity.- Laser Modulation.- Distributed Feedback Lasers.- Assorted Miscellany: Dispersion, Fabrication, and Reliability.

Fields of interest

Microwaves, RF and Optical Engineering; Optical and Electronic Materials; Applied Optics, Optoelectronics, Optical Devices; Laser Technology and Physics, Photonics; Communications Engineering, Networks

Target groups

Research

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-9340-2

Hardcover

2014. X, 290 p. 75 illus., 10 illus. in color.

ISBN 978-1-4614-9340-2

Due: December 27, 2013

J.-B. Li, S.-C. Chu, J.-S. Pan, National Kaohsiung University of Applied, Sanmin District, Taiwan (R.O.C.)

Kernel Learning Algorithms for Face Recognition

Kernel Learning Algorithms for Face Recognition covers the framework of kernel based face recognition. This book discusses the advanced kernel learning algorithms and its application on face recognition. This book also focuses on the theoretical deviation, the system framework and experiments involving kernel based face recognition. Included within are algorithms of kernel based face recognition, and also the feasibility of the kernel based face recognition method. This book provides researchers in pattern recognition and machine learning area with advanced face recognition methods and its newest applications.

Features

This book discusses the advanced kernel learning algorithms and its application on face recognition. The book focuses on the theoretical deviation, the system framework and experiments involving kernel based face recognition. This authors aim to solve the parameter selection problems endured by kernel learning algorithms, and presents kernel optimization method with the data dependent kernel. This text [...]

Contents

Introduction.- Statistical Learning and Face Recognition.- Kernel Learning Foundation.- Kernel Principal Analysis Based Face Recognition.- Kernel Discriminant Analysis Based Face Recognition.- Kernel Manifold Learning Based Face Recognition.- Kernel Semi-supervised Based Face Recognition.- Kernel Learning Based Face Recognition for Smart Environment.- Kernel Optimization Based Face Recognition.- Kernel Construction for Face Recognition.

Fields of interest

Signal, Image and Speech Processing; Communications Engineering, Networks; Computational Intelligence; Image Processing and Computer Vision

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-0160-5

Hardcover

2014. XV, 225 p. 58 illus., 19 illus. in color.

ISBN 978-1-4614-0160-5

usually dispatched within 3 to 5 business days

H. Solar Ruiz, Centre of Technical Research (CEIT), San Sebastian, Spain; R. Berenguer Pérez, Centre of Technical Research (CEIT), San Sebastian, Spain

Linear CMOS RF Power Amplifiers

A Complete Design Workflow

The work establishes the design flow for the optimization of linear CMOS power amplifiers from the first steps of the design to the final IC implementation and tests. The authors also focus on design guidelines of the inductor's geometrical characteristics for power applications and covers their measurement and characterization. Additionally, a model is proposed which would facilitate designs in terms of transistor sizing, required inductor quality factors or minimum supply voltage. The model considers limitations that CMOS processes can impose on implementation. The book also provides different techniques and architectures that allow for optimization.

Features

This work describes the design flow for the optimization of linear CMOS power amplifiers from the first steps of the design to the final IC implementation and tests. The authors also focus on design guidelines for the inductor's geometrical characteristics for power applications and cover their measurement and characterization. Additionally, a model is proposed which facilitates design in terms of [...]

Contents

Introduction.- Power Amplifier Fundamentals: Metrics.- Power Amplifier Fundamentals: Classes.- CMOS Performance Issues.- Enhancement Techniques for CMOS Linear PAs.- Power Amplifier Design.- Test Setups and Results.- Conclusion.- Index.

Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Power Electronics, Electrical Machines and Networks; Energy Systems

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8656-5

Hardcover

2014. XIV, 185 p. 153 illus., 35 illus. in color. ISBN 978-1-4614-8656-5

usually dispatched within 3 to 5 business days

S. Brahnam, Missouri State University, Springfield, USA; L.C. Jain, University of Canberra, Canberra, Australia; L. Nanni, A. Lumini, Università di Bologna, Cesena, Italy (Eds.)

Local Binary Patterns: New Variants and Applications

This book introduces Local Binary Patterns (LBP), arguably one of the most powerful texture descriptors, and LBP variants. This volume provides the latest reviews of the literature and a presentation of some of the best LBP variants by researchers at the forefront of textual analysis research and research on LBP descriptors and variants. The value of LBP variants is illustrated with reported experiments using many databases representing a diversity of computer vision applications in medicine, biometrics, and other areas. There is also a chapter that provides an excellent theoretical foundation for texture analysis and LBP in particular. A special section focuses on LBP and LBP[...]

Features

This book introduces Local Binary Patterns (LBP), arguably one of the most powerful texture descriptors, and LBP variants. This volume provides the latest reviews of the literature and a presentation of some of the best LBP variants by researchers at the forefront of textual analysis research and research on LBP descriptors and variants. The value of LBP variants is illustrated with reported experiments using [...]

Contents

Introduction to LBP: New Variants and New Applications by Sheryl Brahnam, Lakhmi C. Jain, Alessandra Lumini, Loris Nanni.- A Unifying Framework for LBP and Related Methods, Francesco Bianconi and Antonio Fernández.- Local Phase Quantization for Blur Insensitive Texture Description, Janne Heikkilä, Esa Rahtu, and Ville Ojansivu.- The Geometric Local Textural Patterns (GLTP) Technique, S. A. Orjuela Vargas, J. P. Yañez Puentes, and W. Philips.- Local Configuration Features and Discriminative Learnt Features for Texture Description, Yimo Guo, Guoying Zhao, and Matti Pietikäinen.- [...]

Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Image Processing and Computer Vision

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39288-7

Hardcover

2014. X, 271 p. 93 illus., 5 illus. in color. (Studies in Computational Intelligence, Vol. 506) ISBN 978-3-642-39288-7

usually dispatched within 3 to 5 business days

B. Lewcio, TU Berlin, Berlin, Germany

Management of Speech and Video Telephony Quality in Heterogeneous Wireless Networks

This book shows how networking research and quality engineering can be combined to successfully manage the transmission quality when speech and video telephony is delivered in heterogeneous wireless networks. Nomadic use of services requires intelligent management of ongoing transmission, and to make the best of available resources many fundamental trade-offs must be considered. Network coverage versus throughput and reliability of a connection is one key aspect, efficiency versus robustness of signal compression is another. However, to successfully manage services, user-perceived Quality of Experience (QoE) in heterogeneous networks must be known, and the perception of quality[...]

Features

This book shows how networking research and quality engineering can be combined to successfully manage the transmission quality when speech and video telephony is delivered in heterogeneous wireless networks. Nomadic use of services requires intelligent management of ongoing transmission, and to make the best of available resources many fundamental trade-offs must be considered. Network coverage versus [...]

Contents

Introduction.- Experience of wireless telephony.- Heterogeneous testbed.- Experience of speech telephony.- Experience of video telephony.- Conclusions.

Fields of interest

Communications Engineering, Networks; Information Systems Applications (incl. Internet); Signal, Image and Speech Processing

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02101-0

Hardcover

2014. VIII, 150 p. 40 illus., 2 illus. in color. (T-Labs Series in Telecommunication Services) ISBN 978-3-319-02101-0

Due: October 31, 2013

K.-H. Hsiao, H.-S. Yan, National Cheng Kung University, Tainan, Taiwan (R.O.C.)

Mechanisms in Ancient Chinese Books with Illustrations

This book presents a unique approach for studying mechanisms and machines with drawings that were depicted unclearly in ancient Chinese books. The historical, cultural and technical backgrounds of the mechanisms are explained, and various mechanisms described and illustrated in ancient books are introduced. By utilizing the idea for the conceptual design of modern mechanisms, all feasible designs of ancient mechanisms with uncertain members and joints that meet the technical standards of the subjects' time periods are synthesized systematically. Ancient Chinese crossbows (the original crossbow and repeating crossbows), textile mechanisms (silk-reeling mechanism, spinning mechanisms, [...])

Features

This book presents a unique approach for studying mechanisms and machines with drawings that were depicted unclearly in ancient Chinese books. The historical, cultural and technical backgrounds of the mechanisms are explained, and various mechanisms described and illustrated in ancient books are introduced. By utilizing the idea for the conceptual design of modern mechanisms, all feasible designs of [...]

Contents

Preface.- Books.- 2.1 Nong Shu####by Wang Zhen (##) (AD 1313).- 2.1.1 Contents.- 2.1.2 Contents.- 1 Introduction.- 2 Mechanisms with Illustrations in Ancient Historical Background.- 2.2 Wu Bei Zhi####by Mao Yuan-yi (###) (AD 1621).- 2.2.1 Contents.- 2.2.2 Historical Background.- 2.3 Tian Gong Kai Wu####by Song Ying-xing (###) (AD 1637).- 2.3.1 Contents.- 2.3.2 Historical Background.- 2.4 Nong Zheng Quan Shu####by Xu Guang-qi (##) (AD 1639).- 2.4.1 Contents.- 2.4.2 Historical Background.- 2.5 Qin Ding Shou Shi Tong Kao####by Ortai, et al (###) (AD 1742).- 2.5.1 Contents.- 2.5.2 [...]

Fields of interest

Machinery and Machine Elements; Theoretical and Applied Mechanics; History of Science

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02008-2

Hardcover

2014. XIV, 304 p. 221 illus. (History of Mechanism and Machine Science, Vol. 23)
ISBN 978-3-319-02008-2

Due: November 30, 2013

R. Tetzlaff (Ed.)

Memristors and Memristive Systems

This book provides a comprehensive overview of current research on memristors, memcapacitors and meminductors. In addition to an historical overview of the research in this area, coverage includes the theory behind memristive circuits, as well as memcapacitance, and meminductance. Details are shown for recent applications of memristors for resistive random access memories, neuromorphic systems and hybrid CMOS/memristor circuits. Methods for the simulation of memristors are demonstrated and an introduction to neuromorphic modeling is provided.

Features

This book provides a comprehensive overview of current research on memristors, memcapacitors and meminductors. In addition to an historical overview of the research in this area, coverage includes the theory behind memristive circuits, as well as memcapacitance, and meminductance. Details are shown for recent applications of memristors for resistive random access memories, neuromorphic systems and hybrid [...]

Contents

Part I Introduction.- How We Found the Missing Memristor.- Vignettes from Memristor.- Part II Theory, Modeling and Simulation.- The Art and Science of Constructing a Memristor Model.- Fourth Fundamental Circuit Element: SPICE Modeling and Simulation.- Part III Memristive Devices and Applications.- Application of the Volterra Series Paradigm to Memristive Systems.- Memristive Devices: Switching Effects, Modeling, and Applications.- Redox-based Memristive Devices.- Silicon Nanowire-based Memristive Systems.- Spintronic Memristor as Interface Between DNA and Solid State Devices.

Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Electronic Circuits and Devices

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-9067-8

Hardcover

2014. XII, 394 p. 193 illus., 144 illus. in color.
ISBN 978-1-4614-9067-8

Due: December 31, 2013

K.-L. Du, Concordia University, Montreal, Canada; M.N.S. Swamy, Concordia University, Montreal, Canada

Neural Networks and Statistical Learning

Providing a broad but in-depth introduction to neural network and machine learning in a statistical framework, this book provides a single, comprehensive resource for study and further research. All the major popular neural network models and statistical learning approaches are covered with examples and exercises in every chapter to develop a practical working understanding of the content. Each of the twenty-five chapters includes state-of-the-art descriptions and important research results on the respective topics. The broad coverage includes the multilayer perceptron, the Hopfield network, associative memory models, clustering models and algorithms, the radial basis function network, [...]

Features

Providing a broad but in-depth introduction to neural network and machine learning in a statistical framework, this book provides a single, comprehensive resource for study and further research. All the major popular neural network models and statistical learning approaches are covered with examples and exercises in every chapter to develop a practical working understanding of the content. Each of the [...]

Contents

Introduction.- Fundamentals of Machine Learning.- Perceptrons.- Multilayer perceptrons: architecture and error backpropagation.- Multilayer perceptrons: other learning techniques.- Hopfield networks, simulated annealing and chaotic neural networks.- Associative memory networks.- Clustering I: Basic clustering models and algorithms.- Clustering II: topics in clustering.- Radial basis function networks.- Recurrent neural networks.- Principal component analysis.- Nonnegative matrix factorization and compressed sensing.- Independent component analysis.- Discriminant analysis.- Support vector [...]

Fields of interest

Computational Intelligence; Mathematical Models of Cognitive Processes and Neural Networks; Data Mining and Knowledge Discovery; Pattern Recognition

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4471-5570-6

Hardcover

2014. XXII, 860 p. 166 illus., 68 illus. in color.
ISBN 978-1-4471-5570-6

Due: October 31, 2013

M. Akhmet, Middle East Technical University (METU), Ankara, Turkey; E. Yilmaz

Neural Networks with Discontinuous/Impact Activations

This book presents as its main subject new models in mathematical neuroscience. A wide range of neural networks models with discontinuities are discussed, including impulsive differential equations, differential equations with piecewise constant arguments, and models of mixed type. These models involve discontinuities, which are natural because huge velocities and short distances are usually observed in devices modeling the networks. A discussion of the models, appropriate for the proposed applications, is also provided.

Features

This book presents as its main subject new models in mathematical neuroscience. A wide range of neural networks models with discontinuities are discussed, including impulsive differential equations, differential equations with piecewise constant arguments, and models of mixed type. These models involve discontinuities, which are natural because huge velocities and short distances are usually observed in [..]

Contents

Introduction.- Differential Equations with Piecewise Constant Argument of Generalized Type.- Impulsive Differential Equations.- Periodic Motions and Equilibria of Neural Networks with Piecewise Constant Argument.- Equilibria of Neural Networks with Impact Activation and Piecewise Constant Argument.- Periodic Motions of Neural Networks with Impact Activation and Piecewise Constant Argument.- The Method of Lyapunov Functions: RNNs.- The Lyapunov-Razumikhin Method: CNNs.

Fields of interest

Complexity; Artificial Intelligence (incl. Robotics); Biomedical Engineering; Ordinary Differential Equations; Mathematical Models of Cognitive Processes and Neural Networks

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8565-0

Hardcover

2014. X, 205 p. 27 illus., 22 illus. in color. (Nonlinear Systems and Complexity, Vol. 9)

ISBN 978-1-4614-8565-0

Due: October 31, 2013

M.S. Ansari, Aligarh Muslim University, Aligarh, India

Non-Linear Feedback Neural Networks

VLSI Implementations and Applications

This book aims to present a viable alternative to the Hopfield Neural Network (HNN) model for analog computation. It is well known the standard HNN suffers from problems of convergence to local minima, and requirement of a large number of neurons and synaptic weights. Therefore, improved solutions are needed. The non-linear synapse neural network (NoSyNN) is one such possibility and is discussed in detail in this book. This book also discusses the applications in computationally intensive tasks like graph coloring, ranking, and linear as well as quadratic programming. The material in the book is useful to students, researchers and academician working in the area of analog computation.

Features

This book aims to present a viable alternative to the Hopfield Neural Network (HNN) model for analog computation. It is well known that the standard HNN suffers from problems of convergence to local minima, and requirement of a large number of neurons and synaptic weights. Therefore, improved solutions are needed. The non-linear synapse neural network (NoSyNN) is one such possibility and is discussed in detail [..]

Contents

Introduction.- Background.- Voltage-mode Neural Network for the Solution of Linear Equations.- Mixed-mode Neural Circuit for Solving Linear Equations.- Non-Linear Feedback Neural Circuits for Linear and Quadratic Programming.- OTA-based Implementations of Mixed-mode Neural Circuits.- Appendix A: Mixed-mode Neural Network for Graph Colouring.- Appendix B: Mixed-mode Neural Network for Ranking.

Fields of interest

Computational Intelligence; Circuits and Systems; Mathematical Models of Cognitive Processes and Neural Networks; Electronics and Microelectronics, Instrumentation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-81-322-1562-2

Hardcover

2014. XXII, 201 p. 79 illus. (Studies in Computational Intelligence, Vol. 508)

ISBN 978-81-322-1562-2

usually dispatched within 3 to 5 business days

B.K. Shivamoggi, University of Central Florida, Orlando, USA

Nonlinear Dynamics and Chaotic Phenomena: An Introduction

This book starts with a discussion of nonlinear ordinary differential equations, bifurcation theory and Hamiltonian dynamics. It then embarks on a systematic discussion of the traditional topics of modern nonlinear dynamics -- integrable systems, Poincaré maps, chaos, fractals and strange attractors. The Baker's transformation, the logistic map and Lorenz system are discussed in detail in view of their central place in the subject. There is a detailed discussion of solitons centered around the Korteweg-deVries equation in view of its central place in integrable systems. Then, there is a discussion of the Painlevé property of nonlinear differential equations which seems to provide a[...]

Features

This book starts with a discussion of nonlinear ordinary differential equations, bifurcation theory and Hamiltonian dynamics. It then embarks on a systematic discussion of the traditional topics of modern nonlinear dynamics -- integrable systems, Poincaré maps, chaos, fractals and strange attractors. The Baker's transformation, the logistic map and Lorenz system are discussed in detail in view of their [..]

Contents

1 Nonlinear Ordinary Differential Equations.- 1.1 First-order Systems.- 1.1.1 Dynamical System.- 1.1.2 Lipschitz Condition.- 1.1.3 Gronwall's Lemma.- 1.1.4 Linear Equations.- 1.1.5 Autonomous Equations.- 1.1.6 Stability of Equilibrium Points.- 1.1.6.1 Liapunov and Asymptotic Stability.- 1.1.6.2 Liapunov Function Method.- 1.1.7 Center Manifold Theorem.- 1.2 Phase-plane Analysis.- 1.3 Fully Nonlinear Evolution.- 1.4 Non-autonomous Systems.- 2 Bifurcation Theory.- 2.1 Stability and Bifurcation.- 2.2 Saddle-Node, Transcritical and Pitchfork Bifurcations.- 2.3 Hopf Bifurcation.- 2.4 Break-up[...]

Fields of interest

Mechanical Engineering; Vibration, Dynamical Systems, Control; Engineering Fluid Dynamics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7093-5

Hardcover

2014. XXIII, 375 p. 121 illus. (Fluid Mechanics and Its Applications, Vol. 103)

ISBN 978-94-007-7093-5

Due: October 31, 2013

V. Afraimovich, San Luis Potosi University, Lomas 4a Seccion, San Luis Potosi, Mexico; A.C.J. Luo, X. Fu, Shandong Normal University, Ji'nan, China (P.R.) (Eds.)

Nonlinear Dynamics and Complexity

This important collection presents recent advances in nonlinear dynamics including analytical solutions, chaos in Hamiltonian systems, time-delay, uncertainty, and bio-network dynamics. Nonlinear Dynamics and Complexity equips readers to appreciate this increasingly main-stream approach to understanding complex phenomena in nonlinear systems as they are examined in a broad array of disciplines. The book facilitates a better understanding of the mechanisms and phenomena in nonlinear dynamics and develops the corresponding mathematical theory to apply nonlinear design to practical engineering.

Features

This important collection presents recent advances in nonlinear dynamics including analytical solutions, chaos in Hamiltonian systems, time-delay, uncertainty, and bio-network dynamics. Nonlinear Dynamics and Complexity equips readers to appreciate this increasingly main-stream approach to understanding complex phenomena in nonlinear systems as they are examined in a broad array of disciplines. The book [...]

Contents

From Long Range Order to Complex Networks, an Hamiltonian Dynamics Perspective.- Time-Varying Linearization: Perron Effects of Lyapunov Exponent Sign Inversion, Stability and Instability by the First Approximation.- Fractional Maps as Maps with Memory.- Complex Period- Motion in a Periodically Forced, Quadratic Nonlinear Oscillator.- Map-Based Approach to Problems of Spiking Neural Network Dynamics.- Adaptive Landscape with Singularity in Biological Processes.- Multiscale Scaffolding of Real World Data.- Treasure Hunting in Virtual Environments. Scaling Laws of Human Virtual Motions and [...]

Fields of interest

Complexity; Nonlinear Dynamics; Complex Systems

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-3-319-02352-6

Hardcover

2014. VIII, 264 p. 117 illus., 41 illus. in color. (Nonlinear Systems and Complexity, Vol. 8)
ISBN 978-3-319-02352-6

Due: November 30, 2013

S. Karmakar

Novel Three-state Quantum Dot Gate Field Effect Transistor

Fabrication, Modeling and Applications

The book presents the fabrication and circuit modeling of quantum dot gate field effect transistor (QDGFET) and quantum dot gate NMOS inverter (QDNMOS inverter). It also introduces the development of a circuit model of QDGFET based on Berkley Short Channel IGFET model (BSIM). Different ternary logic circuits based on QDGFET are also investigated in this book. Advanced circuit such as three-bit and six bit analog-to-digital converter (ADC) and digital-to-analog converter (DAC) were also simulated.

Features

The book presents the fabrication and circuit modeling of quantum dot gate field effect transistor (QDGFET) and quantum dot gate NMOS inverter (QDNMOS inverter). It also introduces the development of a circuit model of QDGFET based on Berkley Short Channel IGFET model (BSIM). Different ternary logic circuits based on QDGFET are also investigated in this book. Advanced circuit such as three-bit and six bit [...]

Contents

Introduction: Multi State Devices and Logic.- Quantum Dot Gate Field Effect Transistor Device Structures.- Quantum Dot Gate Field Effect Transistors Fabrication and Characterization.- Quantum DOT Gate Field Effect Transistors Theory and Device Modeling.- Quantum Dot Gate NMOS Inverter.- Quantum Dot Gate Field Effect Transistor (QDGFET): Circuit Model and Ternary Logic Inverter.- Analog-to-Digital Converter (ADC) and Digital-to-Analog Converter (DAC) Using Quantum DOT Gate Field Effect Transistor (QDGFET).- Performance in SUB-25nm Range.- Conclusions.

Fields of interest

Nanotechnology and Microengineering; Circuits and Systems; Electronic Circuits and Devices

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-81-322-1634-6

Hardcover

2014. XIV, 131 p. 121 illus., 49 illus. in color.
ISBN 978-81-322-1634-6

Due: October 31, 2013

M. Gobetto, Politecnico of Turin, Turin, Italy

Operations Management in Automotive Industries

From Industrial Strategies to Production Resources Management, Through the Industrialization Process and Supply Chain to Pursue Value Creation

This book has proved its worth over the years as a text for courses in Production Management at the Faculty of Automotive Engineering in Turin, Italy, but deserves a wider audience as it presents a compendium of basics on Industrial Management, since it covers all major topics required. It treats all subjects from product development and "make or buy"-decision strategies to the manufacturing systems setting and management through analysis of the main resources needed in production and finally exploring the supply chain management and the procurement techniques. The very last chapter recapitulates the previous ones by analysing key management indicators to pursue the value creation [...]

Features

This book has proved its worth over the years as a text for courses in Production Management at the Faculty of Automotive Engineering in Turin, Italy, but deserves a wider audience as it presents a compendium of basics on Industrial Management, since it covers all major topics required. It treats all subjects from product development and "make or buy"-decision strategies to the manufacturing systems setting [...]

Contents

Foreword.- About the author.- Introduction.- Acknowledgements.- 1 Historical Outlines and Industrial Strategies for Automotive Industries.- 1.1 Historical Outlines in Automotive Industries.- 1.2 Strategic Planning of Production Activities.- 1.3 Process Integration and "Make or Buy" Decision Making.- 1.4 Manufacturing Systems' Set-Up and Location Criteria.- 1.5 Technologies for Materials Applied to Vehicles' Construction Overview.- 1.6 Sketches for Manufacturing Systems Adopted in Cars Manufacturing.- 1.7 Systems' Strategical Prerogatives.- 2 From project to product.- 2.1 Standardization [...]

Fields of interest

Automotive Engineering; Manufacturing, Machines, Tools; Production / Logistics

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-94-007-7592-3

Hardcover

2014. XXII, 245 p. 81 illus. (Springer Series in Advanced Manufacturing)
ISBN 978-94-007-7592-3

Due: October 31, 2013

R. Poler, Polytechnic University of Valencia, Alcoy, Spain; J. Mula, Universidad Politécnica de Valencia, Alcoy, Spain; M. Díaz-Madroño, Universitat Politècnica de València, Alcoy, Spain

Operations Research Problems

Statements and Solutions

The objective of this book is to provide a valuable compendium of problems as a reference for undergraduate and graduate students, faculty, researchers and practitioners of operations research and management science. These problems can serve as a basis for the development or study of assignments and exams. Also, they can be useful as a guide for the first stage of the model formulation, i.e. the definition of a problem. The book is divided into 11 chapters that address the following topics: Linear programming, integer programming, non linear programming, network modeling, inventory theory, queue theory, tree decision, game theory, dynamic programming and markov processes. Readers are[...]

Features

The objective of this book is to provide a valuable compendium of problems as a reference for undergraduate and graduate students, faculty, researchers and practitioners of operations research and management science. These problems can serve as a basis for the development or study of assignments and exams. Also, they can be useful as a guide for the first stage of the model formulation, i.e. the definition of [...]

Contents

Linear programming.- Integer programming.- Non-linear programming.- Network Modelling.- Inventory theory.- Queuing theory.- Decision theory.- Game theory.- Dynamic programming.- Markov processes.

Fields of interest

Industrial and Production Engineering; Game Theory / Mathematical Methods; Game Theory, Economics, Social and Behav. Sciences; Operation Research / Decision Theory

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4471-5576-8

Hardcover

2014. XVII, 355 p. 87 illus., 55 illus. in color.

ISBN 978-1-4471-5576-8

Due: October 31, 2013

E. Madenci, University of Arizona, Tucson, USA; E. Oterkus, University of Strathclyde, Glasgow, United Kingdom

Peridynamic Theory and Its Applications

This book presents the peridynamic theory, which provides the capability for improved modeling of progressive failure in materials and structures, and paves the way for addressing multi-physics and multi-scale problems. The book provides students and researchers with a theoretical and practical knowledge of the peridynamic theory and the skills required to analyze engineering problems. The text may be used in courses such as Multi-physics and Multi-scale Analysis, Nonlocal Computational Mechanics, and Computational Damage Prediction. Sample algorithms for the solution of benchmark problems are available so that the reader can modify these algorithms, and develop their own solution[...]

Features

The peridynamic theory provides the capability for improved modeling of progressive failure in materials and structures, paving the way to address multi-physics and multi-scale problems. Because it is based on concepts not commonly used in the past, the purpose of this book is to explain the peridynamic theory in a single framework. It presents not only the theoretical basis but also its numerical [...]

Contents

Introduction.- Peridynamic Theory.- Peridynamics for Local Interactions.- Peridynamics for Isotropic Materials.- Peridynamics for Laminated Composite Materials.- Damage Prediction.- Numerical Solution Methods.- Benchmark Problems.- Nonimpact Problems.- Impact Problems.- Coupling of the Peridynamic Theory and Finite Element Methods.- Peridynamic Thermal Diffusion.- Fully Coupled Peridynamic Thermomechanics.

Fields of interest

Continuum Mechanics and Mechanics of Materials; Structural Materials; Engineering Thermodynamics, Heat and Mass Transfer

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-8464-6

Hardcover

2014. XII, 289 p. 152 illus.

ISBN 978-1-4614-8464-6

Due: November 28, 2013

K. Bergman, Columbia University, New York, USA; L.P. Carloni, Columbia University, New York, USA; A. Biberman, Columbia University, New York, USA; J. Chan, Columbia University, New York, USA; G. Hendry, Columbia University, New York, USA

Photonic Network-on-Chip Design

This book provides a comprehensive synthesis of the theory and practice of photonic devices for networks-on-chip. It outlines the issues in designing photonic network-on-chip architectures for future many-core high performance chip multiprocessors. The discussion is built from the bottom up: starting with the design and implementation of key photonic devices and building blocks, reviewing networking and network-on-chip theory and existing research, and finishing with describing various architectures, their characteristics, and the impact they will have on a computing system. After acquainting the reader with all the issues in the design space, the discussion concludes with design[...]

Features

This book is a product of an emerging interdisciplinary field that is bringing photonic communications to address many of the challenges associated with scaling computing systems performance. In addressing this cross-disciplinary topic the book bridges the gap among the devices, tools, and architectures for realizing photonic interconnection networks in future computing. This book provides:A [...]

Contents

Introduction.- Photonic Interconnects.- Silicon Photonics.- Photonic Simulation and Design Space.- Photonic Network Architectures I: Circuit Switching.- Photonic Network Architectures II: Wavelength Arbitration and Routing.- Photonic Network Architectures III: Advanced Photonic Architectures.- Conclusions.

Fields of interest

Circuits and Systems; Microwaves, RF and Optical Engineering; Classical Electrodynamics, Wave Phenomena

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4419-9334-2

Hardcover

2014. X, 213 p. 132 illus., 117 illus. in color. (Integrated

Circuits and Systems, Vol. 68)

ISBN 978-1-4419-9334-2

usually dispatched within 3 to 5 business days

J.C. Doll, Stanford University, Stanford, USA; B.L. Pruitt, Stanford University, Stanford, USA

Piezoresistor Design and Applications

Piezoresistor Design and Applications provides an overview of these MEMS devices and related physics. The text demonstrates how MEMS allows miniaturization and integration of sensing as well as efficient packaging and signal conditioning. This text for engineers working in MEMS design describes the piezoresistive phenomenon and optimization in several applications. Includes detailed discussion of such topics as; coupled models of mechanics, materials and electronic behavior in a variety of common geometric implementations including strain gages, beam bending, and membrane loading. The text concludes with an up-to-date discussion of the need for integrated MEMS design and [...]

Features

This book is a comprehensive guide to piezoresistive MEMS sensor design. Piezoresistors transduce mechanical loads into electrical signals via a resistance change, and comprise a substantial portion of the commercial MEMS sensors market. Applications of piezoresistors include strain gauges, accelerometers, pressure sensors, force sensors, chemical sensors and resonators. This book [...]

Contents

Introduction.- Piezoresistance fundamentals.- Sensitivity, noise and resolution.- Fabrication and process modeling.- Temperature effects.- Design optimization.- Alternative materials and transduction methods.

Fields of interest

Electronics and Microelectronics, Instrumentation; Optical and Electronic Materials; Theoretical and Applied Mechanics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8516-2

Hardcover

2013. XI, 245 p. 101 illus., 86 illus. in color. (Microsystems and Nanosystems, Vol. 1)
ISBN 978-1-4614-8516-2

Due: September 30, 2013

H. Javadi, University of New South Wales, Kensington, Australia; S. Parameswaran, University of New South Wales, Kensington, Australia

Pipelined Multiprocessor System-on-Chip for Multimedia

Analyses and Optimizations

This book describes analytical models and estimation methods to enhance performance estimation of pipelined multiprocessor systems-on-chip (MPSoCs). A framework is introduced for both design-time and run-time optimizations. For design space exploration, several algorithms are presented to minimize the area footprint of a pipelined MPSoC under a latency or a throughput constraint. A novel adaptive pipelined MPSoC architecture is described, where idle processors are transitioned into low-power states at run-time to reduce energy consumption. Multi-mode pipelined MPSoCs are introduced, where multiple pipelined MPSoCs optimized separately are merged into a single pipelined MPSoC, enabling [...]

Features

This book describes analytical models and estimation methods to enhance performance estimation of pipelined multiprocessor systems-on-chip (MPSoCs). A framework is introduced for both design-time and run-time optimizations. For design space exploration, several algorithms are presented to minimize the area footprint of a pipelined MPSoC under a latency or a throughput constraint. A novel adaptive [...]

Contents

Introduction.- Literature Survey.- Optimisation Framework.- Performance Estimation of Pipelined MPSoCs.- Design Space Exploration of Pipelined MPSoCs.- Adaptive Pipelined MPSoCs.- Power Management in Adaptive Pipelined MPSoCs.- Multi-mode Pipelined MPSoCs.- Conclusions and Future Work.

Fields of interest

Circuits and Systems; Processor Architectures; Electronics and Microelectronics, Instrumentation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01112-7

Hardcover

2014. VII, 172 p. 40 illus., 32 illus. in color.
ISBN 978-3-319-01112-7

Due: October 31, 2013

J.F.S.D. Lana, M.H. Andrade Santana, W. Dias Belangero, University of Campinas, Campinas-SP, Brazil; A.C. Malheiros Luzo (Eds.)

Platelet-Rich Plasma

Regenerative Medicine: Sports Medicine, Orthopedic, and Recovery of Musculoskeletal Injuries

Platelet-Rich Plasma (PRP) has gained tremendous popularity in recent years as a treatment option for specialties including Orthopedics, Dentistry, Sports Medicine, Otorhinolaryngology, Neurosurgery, Ophthalmology, Urology, Vascular, Cardiothoracic and Maxillofacial Surgery, and Veterinarian Medicine. Nowadays, PRP and Stem Cell Science have added an exciting dimension to tissue repair. This book begins by giving the reader a broad overview of current progress as well as a discussion of the technical aspects of preparation and therapeutic use of autologous PRP. It is followed by a review of platelet structure, function and major growth factors in PRP (PDGF and TGF β). The third chapter [...]

Features

Platelet-Rich Plasma (PRP) has gained tremendous popularity in recent years as a treatment option for specialties including Orthopedics, Dentistry, Sports Medicine, Otorhinolaryngology, Neurosurgery, Ophthalmology, Urology, Vascular, Cardiothoracic and Maxillofacial Surgery, and Veterinarian Medicine. Nowadays, PRP and Stem Cell Science have added an exciting dimension to tissue repair. This book [...]

Contents

Platelet Rich Plasma and its Growth Factors: The State of the Art.- Platelet-Rich Plasma (PRP) as a Therapeutic Agent: Platelet Biology, Growth Factors and a Review of the Literature.- Preparing the Soil: Practical Cellular Biochemistry for Regenerative Medicine.- Challenges and a Feasible Strategy for Studies and Standardization of Platelet-Rich Plasma.- Platelet-Rich Plasma and Tissue Engineering.- Therapy with Use of Platelet-Rich Plasma in Orthopedics and Sports Traumatology - Literature Review, Evidence and Personal Experience.- The Use of PRP Injections and Stem Cells in an Office [...]

Fields of interest

Biomedical Engineering; Cytokines and Growth Factors; Sports Medicine; Biomedicine (general)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40116-9

Hardcover

2014. XVI, 375 p. 89 illus., 77 illus. in color. (Lecture Notes in Bioengineering)
ISBN 978-3-642-40116-9

Due: November 30, 2013

A. Bahadori, Southern Cross University, East Lismore, Australia

Pollution Control in Oil, Gas and Chemical Plants

This book covers the fundamental requirements for air, soil and water pollution control in oil and gas refineries, chemical plants, oil terminals, petrochemical plants, and related facilities. In this concise volume, Dr. Bahadori elucidates design and operational considerations relevant to critical systems such as the waste water treatment units, solid waste disposal, and waste water sewer treatment as well as engineering/technological methods related to soil and air pollution control. Engineers and technical managers in a range of industries will benefit from detail on a diverse list of topics.

Features

This unique book covers the fundamental requirements for air, soil, noise and water pollution control in oil and gas refineries, chemical plants, oil terminals, petrochemical plants, and related facilities. Coverage includes design and operational considerations relevant to critical systems such as monitoring of water pollution control, equipment, and engineering techniques as well as [...]

Contents

Air Pollution Control.- Water Pollution Control.- Soil Pollution Control.- Noise Pollution Control.

Fields of interest

Engineering Design; Waste Water Technology / Water Pollution Control / Water Management / Aquatic Pollution; Waste Management / Waste Technology; Fossil Fuels (incl. Carbon Capture); Industrial Chemistry / Chemical Engineering; Water Quality/Water Pollution

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-3-319-01233-9

Hardcover

2014. XVII, 318 p. 64 illus., 39 illus. in color. ISBN 978-3-319-01233-9

Due: October 31, 2013

S. Bacha, Grenoble Electrical Engineering Lab., Saint Martin D'Herès, France; I. Munteanu, Grenoble Images Speech Signal Control La, Saint-Martin d'Herès, France; A.I. Bratcu, Grenoble ImagesSpeechSignal Ctrl. Lab, Saint-Martin d'Herès, France

Power Electronic Converters Modeling and Control

with Case Studies

Modern power electronic converters are involved in a very broad spectrum of applications: switched-mode power supplies, electrical-machine-motion-control, active power filters, distributed power generation, flexible AC transmission systems, renewable energy conversion systems and vehicular technology, among them. Power Electronics Converters Modeling and Control teaches the reader how to analyze and model the behavior of converters and so to improve their design and control. Dealing with a set of confirmed algorithms specifically developed for use with power converters, this text is in two parts: models and control methods. The first is a detailed exposition of the most usual power[...]

Features

Modern power electronic converters are involved in a very broad spectrum of applications: switched-mode power supplies, electrical-machine-motion-control, active power filters, distributed power generation, flexible AC transmission systems, renewable energy conversion systems and vehicular technology, among them. Power Electronics Converters Modeling and Control teaches the reader how to [...]

Contents

New Challenges in Power Electronics Systems.- Part I: Modelling of Power Electronics Systems.- Introduction to Power Electronics Modelling.- Switched Model.- Classical Average Model.- Equivalent Average Generator Model.- Generalized Average Model.- Part II: Control of Power Electronics Systems.- General Principles.- Linear Approach.- Linear Control Methods for Grid-connected Converters.- General Overview of Nonlinear Control Methods.- Linearization via Feedback Control.- Stabilization Control.- Passive Control.- Variable-structure Control and Its Associated Sliding Modes.- General Conclusion.

Fields of interest

Control; Power Electronics, Electrical Machines and Networks

Target groups

Professional/practitioner

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4471-5477-8

Softcover

2014. XXIII, 454 p. 297 illus. (Advanced Textbooks in Control and Signal Processing) ISBN 978-1-4471-5477-8

Due: October 31, 2013

J.F. Ferreira, J.M. Dias

Probabilistic Approaches to Robotic Perception

This book tries to address the following questions: How should the uncertainty and incompleteness inherent to sensing the environment be represented and modelled in a way that will increase the autonomy of a robot? How should a robotic system perceive, infer, decide and act efficiently? These are two of the challenging questions robotics community and robotic researchers have been facing. The development of robotic domain by the 1980s spurred the convergence of automation to autonomy, and the field of robotics has consequently converged towards the field of artificial intelligence (AI). Since the end of that decade, the general public's imagination has been stimulated by high[...]

Features

This book tries to address the following questions: How should the uncertainty and incompleteness inherent to sensing the environment be represented and modelled in a way that will increase the autonomy of a robot? How should a robotic system perceive, infer, decide and act efficiently? These are two of the challenging questions robotics community and robotic researchers have been facing. The [...]

Contents

Probabilistic Modelling for Robotic Perception.- Probabilistic Approaches for Robotic Perception in Practice.

Fields of interest

Robotics and Automation; Artificial Intelligence (incl. Robotics); Cognitive Psychology; Image Processing and Computer Vision; Signal, Image and Speech Processing

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02005-1

Hardcover

2014. XXX, 242 p. 89 illus., 79 illus. in color. (Springer Tracts in Advanced Robotics, Vol. 91) ISBN 978-3-319-02005-1

usually dispatched within 3 to 5 business days

G. Neuberger, Universidade Federal do, Porto Alegre, Brazil; G. Wirth, Universidade Federal do, Porto Alegre, Brazil; R. Reis, Universidade Federal do, Porto Alegre, Brazil

Protecting Chips Against Hold Time Violations Due to Variability

With the development of Very-Deep Sub-Micron technologies, process variability is becoming increasingly important and is a very important issue in the design of complex circuits. Process variability is the statistical variation of process parameters, meaning that these parameters do not have always the same value, but become a random variable, with a given mean value and standard deviation. This effect can lead to several issues in digital circuit design. The logical consequence of this parameter variation is that circuit characteristics, as delay and power, also become random variables. Because of the delay variability, not all circuits will now have the same performance, but some[...]

Features

This book presents physical understanding, modeling and simulation, on-chip characterization, layout solutions, and design techniques that are effective to enhance the reliability of various circuit units. The consequences of variability to several aspects of circuit design, such as logic gates, storage elements, clock distribution, and any other that can be affected by process variations are discussed, [...]

Contents

Introduction, Process Variations and Flip-Flops.- Process Variability.- Flip-Flops and Hold Time Violations.- Circuits Under Test.- Measurement Circuits.- Experimental Results.- Systematic and Random Variability.- Normality Tests.- Probability of Hold Time Violations.- Protecting Circuits Against Hold Time Violations.- Padding Efficiency Of the Proposed Padding Algorithm.- Final Remarks.

Fields of interest

Circuits and Systems; Processor Architectures

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-2426-6

Hardcover

2014. XI, 107 p. 76 illus., 51 illus. in color.
ISBN 978-94-007-2426-6

Due: September 30, 2013

J. Unpingco

Python for Signal Processing

Featuring IPython Notebooks

This book covers the fundamental concepts in signal processing illustrated with Python code and made available via IPython Notebooks, which are live, interactive, browser-based documents that allow one to change parameters, redraw plots, and tinker with the ideas presented in the text. Everything in the text is computable in this format and thereby invites readers to “experiment and learn” as they read. The book focuses on the core, fundamental principles of signal processing. The code corresponding to this book uses the core functionality of the scientific Python toolchain that should remain unchanged into the foreseeable future. For those looking to migrate their signal processing[...]

Features

This book covers the fundamental concepts in signal processing illustrated with Python code and made available via IPython Notebooks, which are live, interactive, browser-based documents that allow one to change parameters, redraw plots, and tinker with the ideas presented in the text. Everything in the text is computable in this format and thereby invites readers to “experiment and learn” as they read. The [...]

Contents

Introduction.- Sampling Theorem.- Discrete-Time Fourier Transform.- Introducing Spectral Analysis.- Finite Impulse Response Filters.

Fields of interest

Signal, Image and Speech Processing; Software Engineering / Programming and Operating Systems; Communications Engineering, Networks

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-3-319-01341-1

Hardcover

2014. X, 114 p. 50 illus. in color.
ISBN 978-3-319-01341-1

Due: September 30, 2013

A. Birolini

Reliability Engineering

Theory and Practice

This book shows how to build in, evaluate, and demonstrate reliability and availability of components, equipment, systems. It presents the state-of-the-art of reliability engineering, both in theory and practice, and is based on the author's more than 30 years experience in this field, half in industry and half as Professor of Reliability Engineering at the ETH, Zurich. The structure of the book allows rapid access to practical results. This final edition extend and replace all previous editions. New are, in particular, a strategy to mitigate incomplete coverage, a comprehensive introduction to human reliability with design guidelines and new models, and a refinement of reliability[...]

Features

This book shows how to build in, evaluate, and demonstrate reliability and availability of components, equipment, systems. It presents the state-of-the-art of reliability engineering, both in theory and practice, and is based on the author's more than 30 years experience in this field, half in industry and half as Professor of Reliability Engineering at the ETH, Zurich. The structure of the book allows rapid [...]

Contents

Basic Concepts, Quality & Reliability (RAMS) Assurance of Complex Equip. & Systems.- Reliability Analysis During the Design Phase.- Qualification Tests for Components and Assemblies.- Maintainability Analysis.- Design Guidelines for Reliability, Maintainability, and Software Quality.- Reliability and Availability of Repairable Systems.- Statistical Quality Control and Reliability Tests.- Quality & Reliability (RAMS) Assurance During Production Phase.

Fields of interest

Quality Control, Reliability, Safety and Risk; Organization / Planning; R & D / Technology Policy; Electronics and Microelectronics, Instrumentation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39534-5

Hardcover

2014. XV, 626 p. 250 illus.
ISBN 978-3-642-39534-5

usually dispatched within 3 to 5 business days

F.R.P. Cavalcanti, Federal University of Ceara, Fortaleza-CE, Brazil (Ed.)

Resource Allocation and MIMO for 4G and Beyond

This book will be a comprehensive collection of advanced concepts related to 4th generation wireless communication systems. It will be divided into two main parts: resource allocation and transceiver architectures. These two research areas are at the core of the recent advances experimented by wireless communication systems. Each chapter will cover a relevant, timely, topic with two focuses: a first part which is of tutorial and survey nature, reviews the state of the art in that topic, followed by a more deep treatment including current research topics, case studies and performance analysis.

Features

This book presents the underlying technological breakthroughs that allowed the current state of wireless technology development to evolve. The book focuses on the two lower layers of the ISO/OSI layered model, specifically the physical and data link layers including the media access control sub-layer. These two layers are of particular importance to wireless systems due to the spectrum shortage, the [...]

Contents

Radio Resource Management for Coordinated Multipoint Systems.- Resource Allocation for Improved User Satisfaction with Applications to LTE.- Radio Resource Management for Device-to-Device Communications in Long Term Evolution Networks.- Capacity, Fairness and QoS Trade-Offs in Wireless Networks with Applications to LTE.- The Design of Efficient, Low-Complexity Cooperative Diversity Schemes from Different Perspectives.- Distributed Optimization Techniques in Wireless Communication Networks.- A Genetic Algorithm for the Optimization of MIMO Antenna Arrays.- Multiantenna Multicarrier[...]

Fields of interest

Communications Engineering, Networks; Information Systems and Communication Service; Signal, Image and Speech Processing

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8056-3

Hardcover

2014. XXXVI, 531 p. 217 illus., 36 illus. in color. ISBN 978-1-4614-8056-3

Due: October 31, 2013

R.K. Yedavalli, The Ohio State University, Columbus, USA

Robust Control of Uncertain Dynamic Systems

A Linear State Space Approach

This textbook aims to provide a clear understanding of the various tools of analysis and design for robust stability and performance of uncertain dynamic systems. In model-based control design and analysis, mathematical models can never completely represent the “real world” system that is being modeled, and thus it is imperative to incorporate and accommodate a level of uncertainty into the models. This book directly addresses these issues from a deterministic uncertainty viewpoint and focuses on the interval parameter characterization of uncertain systems. Various tools of analysis and design are presented in a consolidated manner. This volume fills a current gap in published works[...]

Features

This textbook aims to provide a clear understanding of the various tools of analysis and design for robust stability and performance of uncertain dynamic systems. In model-based control design and analysis, mathematical models can never completely represent the “real world” system that is being modeled, and thus it is imperative to incorporate and accommodate a level of uncertainty into the models. This [...]

Contents

Introduction and Perspective.- Robust Stability Analysis of Linear State Space Systems.- Performance Robustness Analysis via Root Clustering (Robust D-Stability).- Robust Control Design for Linear Uncertain State Space Systems.- Applications to Engineering Systems.- Related and Emerging Topics.- A Appendix.

Fields of interest

Control; Control , Robotics, Mechatronics; Systems Theory, Control

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-9131-6

Hardcover

2014. VIII, 216 p. 8 illus., 1 illus. in color. ISBN 978-1-4614-9131-6

Due: November 30, 2013

M. Palesi, Università degli Studi di Enna, 'Kore', Enna, Italy; M. Daneshtalab, University of Turku, Turku, Finland (Eds.)

Routing Algorithms in Networks-on-Chip

This book provides a single-source reference to routing algorithms for Networks-on-Chip (NoCs), as well as in-depth discussions of advanced solutions applied to current and next generation, many core NoC-based Systems-on-Chip (SoCs). After a basic introduction to the NoC design paradigm and architectures, routing algorithms for NoC architectures are presented and discussed at all abstraction levels, from the algorithmic level to actual implementation.

Coverage emphasizes the role played by the routing algorithm and is organized around key problems affecting current and next generation, many-core SoCs. A selection of routing algorithms is included, specifically designed to address key[...]

Features

This book provides a single-source reference to routing algorithms for Networks-on-Chip (NoCs), as well as in-depth discussions of advanced solutions applied to current and next generation, many core NoC-based Systems-on-Chip (SoCs). After a basic introduction to the NoC design paradigm and architectures, routing algorithms for NoC architectures are presented and discussed at all abstraction levels, from [...]

Contents

Part I Performance Improvement.- Basic Concepts on On-Chip Networks.- A Heuristic Framework for Designing and Exploring Deterministic Routing Algorithm for NoCs.- Run-Time Deadlock Detection.- The Abacus Turn Model.- Learning-based Routing Algorithms for on-Chip Networks.- Part II Multicast Communication.- Efficient and Deadlock-Free Tree-based Multicast Routing Method for Network-on-Chip.- Path-based Multicast Routing for 2D and 3D Mesh Networks.- Part III Fault Tolerance and Reliability.- Fault-Tolerant Routing Algorithms in Networks-on-Chip.- Reliable and Adaptive Algorithms for 2D[...]

Fields of interest

Circuits and Systems; Processor Architectures; Electronics and Microelectronics, Instrumentation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8273-4

Hardcover

2014. XV, 410 p. 219 illus., 97 illus. in color. ISBN 978-1-4614-8273-4

Due: October 31, 2013

A. Mason, S.C. Mukhopadhyay, Massey University (Manawatu Campus), Palmerston North, New Zealand; K.P. Jayasundera, Institute of Fundamental Sciences, Palmerston North, New Zealand; N. Bhattacharyya, Centre for Development of, Kolkata, India (Eds.)

Sensing Technology: Current Status and Future Trends I

This book is written for academic and industry professionals working in the field of sensing, instrumentation and related fields, and is positioned to give a snapshot of the current state of the art in sensing technology, particularly from the applied perspective. The book is intended to give a broad overview of the latest developments, in addition to discussing the process through which researchers go through in order to develop sensors, or related systems, which will become more widespread in the future.

Features

This book is written for academic and industry professionals working in the field of sensing, instrumentation and related fields, and is positioned to give a snapshot of the current state of the art in sensing technology, particularly from the applied perspective. The book is intended to give a broad overview of the latest developments, in addition to discussing the process through which researchers go [...]

Contents

From the Contents: A Novel Smart Sensing Platform for Vital Signs and Motor Activity Monitoring.- Real-Time Monitoring of Respiratory Diseases of Distantly Located Elderly Impaired Patients.- Real-Time Position Sensing for Biofeedback-Based Gait Training.- A Comprehensive Seven Layer Sensor Model: Cyber-Physical System.- Small-Signal Analysis of the Nonlinear Acoustic Behavior of Vented Vessels.

Fields of interest

Electronics and Microelectronics, Instrumentation; Communications Engineering, Networks; Analytical Chemistry

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02317-5

Hardcover

2014. IX, 320 p. 221 illus. (Smart Sensors, Measurement and Instrumentation, Vol. 7)
ISBN 978-3-319-02317-5

Due: November 30, 2013

A. Mason, S.C. Mukhopadhyay, Massey University (Manawatu Campus), Palmerston North, New Zealand; K.P. Jayasundera, Institute of Fundamental Sciences, Palmerston North, New Zealand; N. Bhattacharyya (Eds.)

Sensing Technology: Current Status and Future Trends II

This book is written for academic and industry professionals working in the field of sensing, instrumentation and related fields, and is positioned to give a snapshot of the current state of the art in sensing technology, particularly from the applied perspective. The book is intended to give broad overview of the latest developments, in addition to discussing the process through which researchers go through in order to develop sensors, or related systems, which will become more widespread in the future.

Features

This book is written for academic and industry professionals working in the field of sensing, instrumentation and related fields, and is positioned to give a snapshot of the current state of the art in sensing technology, particularly from the applied perspective. The book is intended to give a broad overview of the latest developments, in addition to discussing the process through which researchers go [...]

Contents

From the Contents: Cochlear Implant Electrode Improvement for Stimulation and Sensing.- Machine Vision Based Techniques for Automatic Mango Fruit Sorting and Grading Based on Maturity Level and Size.- Region Adaptive, Unsharp Masking Based Lanczos-3 Interpolation for 2-D Up-Sampling: Crisp-Rule versus Fuzzy-Rule Based Approach.- Gaze-controlled Stereo Vision to Measure Position and Track a Moving Object: Machine Vision for Crane Control.

Fields of interest

Electronics and Microelectronics, Instrumentation; Communications Engineering, Networks; Analytical Chemistry

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02314-4

Hardcover

2014. VII, 263 p. 131 illus. (Smart Sensors, Measurement and Instrumentation, Vol. 8)
ISBN 978-3-319-02314-4

Due: November 30, 2013

Y. Cai, Nanyang Technological University, Singapore, Singapore; S.L. Goei, Windesheim University, Bloemendaal, Netherlands (Eds.)

Simulations, Serious Games and Their Applications

This book presents the state of the art technology in Serious Games which is driven extensive by applications and research in simulation. The topics in this book include: (1) Fashion simulation; (2) Chinese calligraphy ink diffusion simulation; (3) Rehabilitation (4) Long vehicle turning simulation; (5) Marine traffic conflict control; (6) CNC simulation; (7) Special needs education. The book also addresses the fundamental issues in Simulation and Serious Games such as rapid collision detection, game engines or game development platforms. The target audience for this book includes scientists, engineers and practitioners involved in the field of Serious Games and Simulation. The major[...]

Features

This book presents the state of the art technology in Serious Games which is driven extensive by applications and research in simulation. The topics in this book include: (1) Fashion simulation; (2) Chinese calligraphy ink diffusion simulation; (3) Rehabilitation (4) Long vehicle turning simulation; (5) Marine traffic conflict control; (6) CNC simulation; (7) Special needs education. The book also addresses [...]

Contents

Collision Detection using Axis Aligned Bounding Boxes.- Navier-Stokes Equation based Ink Diffusion Simulation in Chinese Calligraphy.- Human Body Adaptation and Cloth Prepositioning for Kinect based Virtual Try-on.- Integrating EEG modality in serious games for rehabilitation of mental patients.- Multi-link-ahead Conflicts Prediction In Dynamic Seaport Environments.- Long Vehicle Turning.- Reliable and Fast Conservative Advancement for Physically Realistic Rigid Body Simulation.- The Use of Virtual Worlds and Serious Gaming in Education.- Serious Games for e-Health Care Services.- GF[...]

Fields of interest

Computational Intelligence; User Interfaces and Human Computer Interaction; Mathematical Applications in Computer Science; Educational Technology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-981-4560-31-3

Hardcover

2014. IX, 273 p. 160 illus., 136 illus. in color. (Gaming Media and Social Effects)
ISBN 978-981-4560-31-3

Due: October 31, 2013

G. Schmidt, Christian-Albrechts-Universität zu Kiel, Kiel, Germany; H. Abut, San Diego State University, San Diego, USA; K. Takeda, Nagoya University, Nagoya, Japan; J.H.L. Hansen, The University of Texas at Dallas, Richardson, USA (Eds.)

Smart Mobile In-Vehicle Systems

Next Generation Advancements

This is an edited collection by world-class experts, from diverse fields, focusing on integrating smart in-vehicle systems with human factors to enhance safety in automobiles. The book presents developments on road safety, in-vehicle technologies and state-of-the-art systems. Includes coverage of DSP technologies in adaptive automobiles, algorithms and evaluation of in-car communication systems, driver-status monitoring and stress detection, in-vehicle dialogue systems and human-machine interfaces, challenges in video and audio processing for in-vehicle products, multi-sensor fusion for driver identification and vehicle to infrastructure wireless technologies.

Features

This is an edited collection by world-class experts, from diverse fields, focusing on integrating smart in-vehicle systems with human factors to enhance safety in automobiles. The book presents developments on road safety, in-vehicle technologies and state-of-the-art systems. Includes coverage of DSP technologies in adaptive automobiles, algorithms and evaluation of in-car communication systems, [...]

Contents

Part I: Sensor and Data Fusion.- Computational Aspects of Maximum Likelihood DOA Estimation of Two Targets with Applications to Automotive Radar.- Dense 3D Motion Field Estimation from a Moving Observer in Real-Time.- Intelligence in the Automobile of the Future.- Unmanned Ground Vehicle Otonobil: Design, Perception, and Decision Algorithms.- Part II: Speech and Audio Processing.- Car Hands-Free Testing and Optimization - An Overview.- A Wideband Automotive Hands-free System for Mobile HD Voice Services.- In-Car Communication.- Room in a Room: A Neglected Concept for Auralization.- [...]

Fields of interest

Signal, Image and Speech Processing; Control; Automotive Engineering; User Interfaces and Human Computer Interaction; Communications Engineering, Networks

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-9119-4

Hardcover

2014. XV, 325 p. 156 illus., 77 illus. in color. ISBN 978-1-4614-9119-4

Due: November 30, 2013

M. Torquati, University of Pisa, Pisa, Italy; K. Bertels, Delft University of Technology, Delft, Netherlands; S. Karlsson, DTU Informatik, Lyngby, Denmark; F. Pacull (Eds.)

Smart Multicore Embedded Systems

This book provides a single-source reference to the state-of-the-art of high-level programming models and compilation tool-chains for embedded system platforms. The authors address challenges faced by programmers developing software to implement parallel applications in embedded systems, where very often they are forced to rewrite sequential programs into parallel software, taking into account all the low level features and peculiarities of the underlying platforms. Readers will benefit from these authors' approach, which takes into account both the application requirements and the platform specificities of various embedded systems from different industries. Parallel programming[...]

Features

This book provides a single-source reference to the state-of-the-art of high-level programming models and compilation tool-chains for embedded system platforms. The authors address challenges faced by programmers developing software to implement parallel applications in embedded systems, where very often they are forced to rewrite sequential programs into parallel software, taking into account all the low [...]

Contents

Introduction.- Part I Parallel Programming Models and Methodologies.- Parallel Programming Models.- Compilation Tool Chains and Intermediate Representations.- Part II HW/SW Architectures Concepts.- The STHORM Platform.- The Architecture and the Technology Characterization of an FPGA-based Customizable Application-Specific Vector Co-Processor (ASVP).- Part III Run-time and Faults Management.- Fault Tolerance.- Introduction to Dynamic Code Generation -- an Experiment with Matrix Multiplication for STHORM Platform.- Part IV Case Studies.- Signal Processing: Radar.- Image Processing: Object[...]

Fields of interest

Circuits and Systems; Processor Architectures; Electronics and Microelectronics, Instrumentation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8799-9

Hardcover

2014. VIII, 218 p. 77 illus., 45 illus. in color. ISBN 978-1-4614-8799-9

Due: October 31, 2013

F.C. Moon, Cornell University, Ithaca, USA

Social Networks in the History of Innovation and Invention

This book integrates history of science and technology with modern social network theory. Using examples from the history of machines, as well as case studies from wireless, radio and chaos theory, the author challenges the genius model of invention. Network analysis concepts are presented to demonstrate the societal nature of invention in areas such as steam power, internal combustion engines, early aviation, air conditioning and more. Using modern measures of network theory, the author demonstrates that the social networks of invention from the 19th and early 20th centuries have similar characteristics to modern 21st C networks such as the World Wide Web. The book provides evidence[...]

Features

This book integrates history of science and technology with modern social network theory. Using examples from the history of machines, as well as case studies from wireless, radio and chaos theory, the author challenges the genius model of invention. Network analysis concepts are presented to demonstrate the societal nature of invention in areas such as steam power, internal combustion engines, early [...]

Contents

Preface and Acknowledgements.- Chapter 1 Introduction: James Watt's Social Network.- Chapter 2 Networks in the Machine Age: From Leonardo to Clocks to Reuleaux.- Chapter 3 Social Networks of the Internal Combustion Engine and Automobile.- Chapter 4 Social Networks in Early Aviation History.- Chapter 5 Wireless and Radio Electronics Social Networks.- Chapter 6 Social Networks in Nonlinear Dynamics, Chaos and Fractals.- Chapter 7.- Subject Index.- Author Index.

Fields of interest

Machinery and Machine Elements; History of Science; Complexity; Methodology of the Social Sciences

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7527-5

Hardcover

2014. XIII, 192 p. 88 illus. (History of Mechanism and Machine Science, Vol. 22)

ISBN 978-94-007-7527-5

Due: October 31, 2013

C. Skelton, Gotham Innovation Greenhouse, New York, USA

Soft City Culture and Technology

The Betaville Project

Soft City Culture and Technology: The Betaville Project discusses the complete cycle of conception, development, and deployment of the Betaville platform. Betaville is a massively participatory online environment for distributed 3D design and development of proposals for changes to the built environment— an experimental integration of art, design, and software development for the public realm. Through a detailed account of Betaville from a Big Crazy Idea to a working "deep social medium", the author examines the current conditions of performance and accessibility of hardware, software, networks, and skills that can be brought together into a new form of open public design and [...]

Features

Soft City Culture and Technology: The Betaville Project discusses the complete cycle of conception, development, and deployment of the Betaville platform. Betaville is a massively participatory online environment for distributed 3D design and development of proposals for changes to the built environment— an experimental integration of art, design, and software development for the public realm. Through [...]

Contents

Introduction.- Background: Waking Up In A New Soft City.- Strategy.- Development.- Deployments.- Software infrastructure.- Future Roadmaps.- Conclusion.

Fields of interest

Communications Engineering, Networks; Media Design; Software Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-7250-6

Hardcover

2014. XIII, 170 p. 49 illus., 34 illus. in color. ISBN 978-1-4614-7250-6

**usually dispatched within 3 to 5 business days
October 31, 2013**

C. Papadopoulos

Solid State Electronic Devices

An Introduction

A modern and concise treatment of the solid state electronic devices that are fundamental to electronic systems and information technology is provided in this book. The main devices that comprise semiconductor integrated circuits are covered in a clear manner accessible to the wide range of scientific and engineering disciplines that are impacted by this technology. Catering to a wider audience is becoming increasingly important as the field of electronic materials and devices becomes more interdisciplinary, with applications in biology, chemistry and electro-mechanical devices (to name a few) becoming more prevalent. Updated and state-of-the-art advancements are included along with [...]

Features

A modern and concise treatment of the solid state electronic devices that are fundamental to electronic systems and information technology is provided in this book. The main devices that comprise semiconductor integrated circuits are covered in a clear manner accessible to the wide range of scientific and engineering disciplines that are impacted by this technology. Catering to a wider audience is becoming [...]

Contents

Preface.- Chapter 1 – Introduction.- Chapter 2 – Junctions and Diodes.- Chapter 3 – Bipolar transistors.- Chapter 4 – Field Effect Transistors.- Chapter 5 - Emerging Devices for Electronics and Beyond.- Appendix I.- A.1 Quantum mechanics.- A.2 Semiconductor physics.- A.3 Outline of semiconductor planar processing.- Appendix II – Useful data.- Bibliography.- List of Symbols.- Index.

Fields of interest

Electronics and Microelectronics, Instrumentation; Semiconductors; Computer Engineering; Nanotechnology and Microengineering

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-1-4614-8835-4

Softcover

2014. XV, 185 p. 134 illus., 51 illus. in color. (Undergraduate Lecture Notes in Physics)
ISBN 978-1-4614-8835-4

Due: November 30, 2013

P. Arena, L. Patane (Eds.)

Spatial Temporal Patterns for Action-Oriented Perception in Roving Robots II

An Insect Brain Computational Model

This book presents the result of a joint effort from different European Institutions within the framework of the EU funded project called SPARK II, devoted to device an insect brain computational model, useful to be embedded into autonomous robotic agents. Part I reports the biological background on *Drosophila melanogaster* with particular attention to the main centers which are used as building blocks for the implementation of the insect brain computational model. Part II reports the mathematical approach to model the Central Pattern Generator used for the gait generation in a six-legged robot. Also the Reaction-diffusion principles in non-linear lattices are exploited to develop a [...]

Features

This book presents the result of a joint effort from different European Institutions within the framework of the EU funded project called SPARK II, devoted to device an insect brain computational model, useful to be embedded into autonomous robotic agents. Part I reports the biological background on *Drosophila melanogaster* with particular attention to the main centers which are used as [...]

Contents

Part I Models of the insect brain: from Neurobiology to Computational Intelligence.- Part II Complex dynamics for internal representation and Locomotion control.- Part III Software/Hardware cognitive architectures.- Part IV Scenarios and experiments.

Fields of interest

Robotics and Automation; Computational Intelligence; Computational Biology / Bioinformatics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02361-8

Hardcover

2014. XIV, 376 p. 256 illus., 205 illus. in color. (Cognitive Systems Monographs, Vol. 21)
ISBN 978-3-319-02361-8

Due: November 30, 2013

E.N. Strommen

Structural Dynamics

This book introduces to the theory of structural dynamics, with focus on civil engineering structures that may be described by line-like beam or beam-column type of systems, or by a system of rectangular plates. Throughout this book the mathematical presentation contains a classical analytical description as well as a description in a discrete finite element format, covering the mathematical development from basic assumptions to the final equations ready for practical dynamic response predictions. Solutions are presented in time domain as well as in frequency domain. Structural Dynamics starts off at a basic level and step by step brings the reader up to a level where the necessary[...]

Features

This book introduces to the theory of structural dynamics, with focus on civil engineering structures that may be described by line-like beam or beam-column type of systems, or by a system of rectangular plates. Throughout this book the mathematical presentation contains a classical analytical description as well as a description in a discrete finite element format, covering the mathematical development [...]

Contents

Basic Theory.- One And Two Degree OF Freedom Systems.- Eigan value Calculations Of Continuous Systems.- The Finite Element Method In Dynamics.- The Normal Mode Method.- Frequency And Time Domain Response Calculations Dynamic Response Earthquake Excitation.- Wind Induced Dynamic Response Calculations.- Damping Rectangular Plates.- Moving Load Of Beams.- Basic Theory Of Stochastic Processes.- Time Domain Simulations.- Element Properties.

Fields of interest

Vibration, Dynamical Systems, Control; Structural Mechanics; Civil Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01801-0

Hardcover

2014. XVIII, 510 p. 207 illus. (Springer Series in Solid and Structural Mechanics, Vol. 2)
ISBN 978-3-319-01801-0

usually dispatched within 3 to 5 business days
October 31, 2013

A. Costa, University of Aveiro, Aveiro, Portugal; J.M. Guedes, University of Porto, Porto, Portugal; H. Varum, University of Aveiro, Aveiro, Portugal (Eds.)

Structural Rehabilitation of Old Buildings

This present book describes the different construction systems and structural materials and elements within the main buildings typologies, and it analyses the particularities of each of them, including, at the end, general aspects concerning laboratory and in-situ testing, numerical modeling, vulnerability assessment and construction maintenance.

Features

The present book describes the different construction systems and structural materials and solutions within the main old buildings typologies, and it analyses the particularities of each of them, including mechanical properties, structural behaviour, typical damage patterns and collapse mechanisms. Common or pioneering intervention measures to repair and/or strengthen some of these structural elements are [...]

Contents

Introduction and Rehabilitation: Aims & Scopes.- Construction Systems.- Building Materials and Components.- Laboratorial and In-field Tests.- Modeling.- Vulnerability Assessment.- Construction Maintenance.

Fields of interest

Building Repair and Maintenance; Structural Materials; Structural Mechanics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39685-4

Hardcover

2014. VIII, 348 p. 224 illus., 147 illus. in color. (Building Pathology and Rehabilitation, Vol. 2)
ISBN 978-3-642-39685-4

usually dispatched within 3 to 5 business days

M. Davies, University of North Carolina, Charlotte, USA; T.L. Schmitz, University of North Carolina, Charlotte, USA

System Dynamics for Mechanical Engineers

This textbook is ideal for mechanical engineering students preparing to enter the workforce during a time of rapidly accelerating technology, where they will be challenged to join interdisciplinary teams. It explains system dynamics using analogies familiar to the mechanical engineer, while introducing new content in an intuitive fashion. The fundamentals provided in this book prepare the mechanical engineer to adapt to continuous technological advances with topics outside traditional mechanical engineering curricula by preparing them to apply basic principles and established approaches to new problems. This book also reinforces the connection between the subject matter and engineering[...]

Features

This textbook is ideal for mechanical engineering students preparing to enter the workforce during a time of rapidly accelerating technology, where they will be challenged to join interdisciplinary teams. It explains system dynamics using analogies familiar to the mechanical engineer, while introducing new content in an intuitive fashion. The fundamentals provided in this book prepare the mechanical [...]

Contents

Introductory Material and Motivation.- Laplace Transform Techniques.- Mechanical System Elements.- Single degree of freedom (DOF) translational mechanical systems.- Multi-DOF Models of Translational Mechanical Systems.- Rotational systems and transmission elements.- Block Diagrams.- Electrical systems.- Electro-mechanical systems.- Thermal-fluidic systems.- System dynamics in measurement.

Fields of interest

Vibration, Dynamical Systems, Control; Complexity; Mechanical Engineering

Target groups

Upper undergraduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-9292-4

Hardcover

2014. Approx. 700 p. 300 illus.
ISBN 978-1-4614-9292-4

Due: October 27, 2013

K.A. Seeler, Lafayette College, Easton, USA

System Dynamics

An Introduction for Mechanical Engineers

This unique textbook takes the student from the initial steps in modeling a dynamic system through development of the mathematical models needed for feedback control. The generously-illustrated, student-friendly text focuses on fundamental theoretical development rather than the application of commercial software. Practical details of machine design are included to motivate the non-mathematically inclined student.

Features

This unique textbook takes the student from the initial steps in modeling a dynamic system through development of the mathematical models needed for feedback control. The generously-illustrated, student-friendly text focuses on fundamental theoretical development rather than the application of commercial software. Practical details of machine design are included to motivate the non-mathematically inclined [...]

Contents

Introduction.- Differential Equations, Input Functions, Complex Exponentials, and Transfer Functions.- Introduction to the Linear Graph Method, Step Responses, and Superposition.- Mechanical Systems.- Fluid, Electrical, and Thermal Systems.- Power Transmission, Transformation and Conversion.- Vector-Matrix Algebra and the State-Space Representation of Dynamic Systems.- Finite Difference Methods and MATLAB.- Transfer Functions, Block Diagrams and the s-plane.- Frequency Response.- AC Circuits and Motors.

Fields of interest

Mechatronics; Vibration, Dynamical Systems, Control; Machinery and Machine Elements; Robotics and Automation; Engineering Design

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-1-4614-9151-4

Hardcover

2014. X, 935 p. 1300 illus., 50 illus. in color.
ISBN 978-1-4614-9151-4

Due: November 30, 2013

N. Sklavos, Technological Ed Institute of Patras, Hellas, Greece; M. Hübner, Ruhr-Universität Bochum, Bochum, Germany; D. Goehringer, Ruhr-Universität Bochum, Bochum, Germany; P. Kit-sos, KNOSSOSnet Research Group, Pyrgos, Greece (Eds.)

System-Level Design Methodologies for Telecommunication

This book provides a comprehensive overview of modern networks design, from specifications and modeling to implementations and test procedures, including the design and implementation of modern networks on chip, in both wireless and mobile applications. Topical coverage includes algorithms and methodologies, telecommunications, hardware (including networks on chip), security and privacy, wireless and mobile networks and a variety of modern applications, such as VoLTE and the internet of things.

Features

This book provides a comprehensive overview of modern networks design, from specifications and modeling to implementations and test procedures, including the design and implementation of modern networks on chip, in both wireless and mobile applications. Topical coverage includes algorithms and methodologies, telecommunications, hardware (including networks on chip), security and privacy, wireless and [...]

Contents

Indoor Radio Design – LTE Perspective.- VLC technology for indoor LTE planning.- Voice over LTE (VoLTE) – Service Implementation & Cell Planning Perspective.- 60 GHz Millimeter-Wave WLANs & WPANs: Introduction, System Design, and PHY Layer Challenges.- Modeling the Operation of CMOS Primitive Circuits and MOSFET Devices.- From Hardware Security Tokens to Trusted Computing and Trusted Systems.- Using Codebender and Arduino in Science and Education.- The Internet of Things: How WSNs Fit Into the Picture.- Shape Analysis In Radiotherapy Tumor Surgical Planning Using Segmentation Techniques.

Fields of interest

Circuits and Systems; Communications Engineering, Networks; Computer Systems Organization and Communication Networks

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-00662-8

Hardcover

2014. VIII, 176 p. 110 illus., 64 illus. in color.
ISBN 978-3-319-00662-8

usually dispatched within 3 to 5 business days

H. Kunieda, Tokyo Institute of Technology, Tokyo, Japan

System-Level VLSI Design

This textbook serves as an introduction to the subject of system-level VLSI design, focused on embedded systems design, verification and testing. A "Standard Cell Design" for large digital systems is described as a logic-level design methodology, which can be performed by automatic design software (CAD) tools, employing logic cells such as NAND, NOR, and FF cells. Basics of logic circuit design are covered, so that this book can be used without prior knowledge of VLSI circuit, device and process technology, but the emphasis is to provide the system-level design view of large-scale digital systems and to demonstrate basic concepts of System on Chip (SoC) design, including of both [...]

Features

This textbook serves as an introduction to the subject of system-level VLSI design, focused on embedded systems design, verification and testing. A "Standard Cell Design" for large digital systems is described as a logic-level design methodology, which can be performed by automatic design software (CAD) tools, employing logic cells such as NAND, NOR, and FF cells. Basics of logic circuit design are covered, [...]

Contents

What is an Integrated Circuit?.- Fundamental Design of Integrated Circuits.- Standard Cell Design.- Register Transfer Level (RTL) Design.- Logic Design and Verification.- Layout Design.- System Design Flow.- Algorithm Design.- Architecture Design.- Behavior Verification.

Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation; Processor Architectures

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-2319-5

Hardcover

2014. 250p. 125 illus..
ISBN 978-1-4614-2319-5

Due: November 28, 2013

M.A. Azadpour, Seagate Technology, LLC, Lafayette, USA

SystemVerilog for Design and Verification using UVM

From RTL to Synthesis

This book is an "A-Z" guide to using SystemVerilog for ASIC design, from conception to RTL coding, to synthesis and verification. Readers will benefit from a thorough introduction to the powerful constructs and features of SystemVerilog. In addition, the verification methodology of Universal Verification Methodology (UVM) is used to build testbenches that allow for verification of complicated designs and synthesis basics are discussed, using the Synopsys Design Compiler (DC). To complete this book's package as a practical guide, readers are introduced to the fundamentals of static timing analysis.

Features

This book is an "A-Z" guide to using SystemVerilog for ASIC design, from conception to RTL coding, to synthesis and verification. Readers will benefit from a thorough introduction to the powerful constructs and features of SystemVerilog. In addition, the verification methodology of Universal Verification Methodology (UVM) is used to build testbenches that allow for verification of complicated designs and [...]

Contents

The SystemVerilog language.- Designing with SystemVerilog.- Verification with SystemVerilog.- Building environment and the DUT.- Synthesis.- Timing analysis.

Fields of interest

Circuits and Systems; Processor Architectures

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-1-4614-1757-6

Hardcover

2014. 300p. 100 illus.
ISBN 978-1-4614-1757-6

Due: November 28, 2013

K. Maharatna, University of Southampton, Southampton, United Kingdom; S. Bonfiglio, FIMI S.r.l., Saronno, Italy (Eds.)

Systems Design for Remote Healthcare

This book provides a multidisciplinary overview of the design and implementation of systems for remote patient monitoring and healthcare. Readers are guided step-by-step through the components of such a system and shown how they could be integrated in a coherent framework for deployment in practice. The authors explain planning from subsystem design to complete integration and deployment, given particular application constraints. Readers will benefit from descriptions of the clinical requirements underpinning the entire application scenario, physiological parameter sensing techniques, information processing approaches and overall, application dependent system integration. Each[...]

Features

This book provides a multidisciplinary overview of the design and implementation of systems for remote patient monitoring and healthcare. Readers are guided step-by-step through the components of such a system and shown how they could be integrated in a coherent framework for deployment in practice. The authors explain planning from subsystem design to complete integration and deployment, given particular [...]

Contents

A Clinician's View of Next-Generation Remote Healthcare System.- System Overview of Next-Generation Remote Healthcare.- Vital Sign Sensing Technology.- Signal Processing Architecture Implementation Methodologies for Next-Generation Remote Healthcare Systems.- Machine Learning Techniques for Remote Healthcare.- Patient Health Record (PHR) System.- Wireless Sensor Networks—A Key Enabling Technology for Remote Healthcare.- System Integration Issues for Next-Generation Remote Healthcare System.- A Business Perspective.- Case Studies.

Fields of interest

Circuits and Systems; Biomedical Engineering; Health Informatics; Health Informatics

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-1-4614-8841-5

Hardcover

2014. XX, 320 p. 100 illus., 83 illus. in color.
ISBN 978-1-4614-8841-5

Due: November 30, 2013

E. Henriques, IDMEC, Lisbon, Portugal; P. Pecas, IDMEC, Lisbon, Portugal; A. Silva, IDMEC, Lisbon, Portugal (Eds.)

Technology and Manufacturing Process Selection

The Product Life Cycle Perspective

This book provides specific topics intending to contribute to an improved knowledge on Technology Evaluation and Selection in a Life Cycle Perspectives. Although each chapter will present possible approaches and solutions, there are no recipes for success. Each reader will find his/her balance in applying the different topics to his/her own specific situation. Case studies presented throughout will help in deciding what fits best to each situation, but most of all any ultimate success will come out of the interplay between the available solutions and the specific problem or opportunity the reader is faced with.

Features

This book provides specific topics intending to contribute to an improved knowledge on Technology Evaluation and Selection in a Life Cycle Perspectives. Although each chapter will present possible approaches and solutions, there are no recipes for success. Each reader will find his/her balance in applying the different topics to his/her own specific situation. Case studies presented throughout will help in [...]

Contents

Material flow cost accounting.- Life Cycle based Evaluation and Interpretation of Technology Chains in Manufacturing.- Selecting manufacturing process chains in the early stage of the product engineering process with focus on energy consumption.- Manufacturing with Minimal Energy Consumption.- Integrated framework for life cycle-oriented evaluation of product and process technologies.

Fields of interest

Industrial and Production Engineering; Engineering Economics, Organization, Logistics, Marketing; Transportation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4471-5543-0

Hardcover

2014. VIII, 348 p. 135 illus. (Springer Series in Advanced Manufacturing)
ISBN 978-1-4471-5543-0

Due: November 30, 2013

D.-S. Oh, World Technopolis Association, Daejeon, Korea(Rep.); F. Phillips, General Informatics LLC, San Diego, USA (Eds.)

Technopolis

Best Practices for Science & Technology Cities

Six years of UNESCO-World Technopolis Association workshops, held at various world cities and attended by government officials and scholars from nearly all the world's countries, have resulted in a uniquely complete collection of reports on science park and science city projects in most of those countries. These reports, of which a selected few form chapters in this book, allow readers to compare knowledge-based development strategies, practices, and successes across countries. The chapters illustrate varying levels of cooperation across government, industry, and academic sectors in the respective projects – and the reasons and philosophies underlying this variation – and resulting[...]

Features

Six years of UNESCO-World Technopolis Association workshops, held at various world cities and attended by government officials and scholars from nearly all the world's countries, have resulted in a uniquely complete collection of reports on science park and science city projects in most of those countries. These reports, of which a selected few form chapters in this book, allow readers to compare [...]

Contents

A New Strategic Approach to Science Cities: Towards the Achievement of Sustainable and Balanced Spatial Development.- Regional innovation and cooperation among industries, universities, R&D institutes and governments.- Regional Innovation Support Systems and Science Cities.- The Triple Helix: International Cases and Critical Summary.- Sustainable Development of Technopolis.- Support mechanism in Technopolis towards Green Growth.- Arrangement of Actors in the Triple Helix Innovation.- Business Incubation Strategy of High-tech Venture Firms in Science Park. Regional innovation and[...]

Fields of interest

Energy Technology; Facility Management; Engineering Economics, Organization, Logistics, Marketing; Energy Economics; Cities, Countries, Regions; Development Economics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4471-5507-2

Hardcover

2014. XII, 515 p. 141 illus., 70 illus. in color.
ISBN 978-1-4471-5507-2

Due: October 31, 2013

D. Sale

The Challenge of Reframing Engineering Education

The Challenge of Reframing Engineering Education is the first book to document the experience of implementing the CDIO Engineering Educational Framework in a large educational institution in the Asian context. It focuses on how to successfully implement and manage the key stages, activities and inevitable challenges that have to be negotiated in any large scale curriculum innovation. Its main purpose is to provide a practical resource for curriculum innovators and practitioners on what needs to be done, how and on what basis. It is written in a more narrative style than is typical of the genre, engaging the reader more intimately with the actual decision making processes and rationale[...]

Features

The Challenge of Reframing Engineering Education is the first book to document the experience of implementing the CDIO Engineering Educational Framework in a large educational institution in the Asian context. It focuses on how to successfully implement and manage the key stages, activities and inevitable challenges that have to be negotiated in any large scale curriculum innovation. Its main purpose is to [...]

Contents

Introduction.- Producing curriculum outcomes.- Effective and creative learning design.- Assessing learning.- Using information-communication technologies to support learning and teaching.- Evaluating the CDIO experience.- Managing the change process: Approach, strategies and professional development.

Fields of interest

Job Career in Science and Engineering; Science Education; Computers and Education; Educational Policy and Politics; Complexity; Communications Engineering, Networks

Target groups

Professional/practitioner

Type of publication

Monograph

More on www.springer.com/978-981-4560-28-3

Hardcover

2014. XIII, 137 p. 10 illus., 9 illus. in color.
ISBN 978-981-4560-28-3

Due: October 31, 2013

H.K. Patel, Institute of Technology, Nirma Universit, Ahmedabad, India

The Electronic Nose: Artificial Olfaction Technology

This book provides the basics of odor, odor analysis techniques, sensors used in odor analysis and overview of odor measurement techniques. For beginners as well researchers this book is a brief guide for odor measurement and analysis. The book includes a special chapter dedicated to practical implementation of e-nose sensor devices with software utility, which guides students to prepare projects and work in practical analysis. It also includes material from early to latest technology research available in the market of e-nose era. Students and researchers who want to learn the basics of biomedical engineering and sensor measurement technology will find this book useful.

Features

This book provides the basics of odor, odor analysis techniques, sensors used in odor analysis and overview of odor measurement techniques. For beginners as well researchers this book is a brief guide for odor measurement and analysis. The book includes a special chapter dedicated to practical implementation of e-nose sensor devices with software utility, which guides students to prepare projects and work [...]

Contents

Measurement Technology.- Sensor.- Biological Olfaction.- Odour.- Towards Sensor to Reproduce Human Sense.- Sensor Used in E-nose.- Sensor Circuits.- Application of Machine Olfaction.

Fields of interest

Biomedical Engineering; Electronics and Microelectronics, Instrumentation; Neurosciences

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-81-322-1547-9

Hardcover

2014. XX, 247 p. 134 illus. (Biological and Medical Physics, Biomedical Engineering)
ISBN 978-81-322-1547-9

usually dispatched within 3 to 5 business days

E. Stein, Gottfried Wilhelm Leibniz, Hannover, Germany (Ed.)

The History of Theoretical, Material and Computational Mechanics - Mathematics meets Mechanics and Engineering

This collection of 23 articles is the output of lectures in special sessions on "The History of Theoretical, Material and Computational Mechanics" within the yearly conferences of the GAMM in the years 2010 in Karlsruhe, Germany, 2011 in Graz, Austria, and in 2012 in Darmstadt, Germany; GAMM is the "Association for Applied Mathematics and Mechanics", founded in 1922 by Ludwig Prandtl and Richard von Mises. The contributions in this volume discuss different aspects of mechanics. They are related to solid and fluid mechanics in general and to specific problems in these areas including the development of numerical solution techniques. In the first part the origins and developments of[...]

Features

This collection of 23 articles is the output of lectures in special sessions on "The History of Theoretical, Material and Computational Mechanics" within the yearly conferences of the GAMM in the years 2010 in Karlsruhe, Germany, 2011 in Graz, Austria, and in 2012 in Darmstadt, Germany; GAMM is the "Association for Applied Mathematics and Mechanics", founded in 1922 by Ludwig Prandtl and Richard von Mises. [...]

Contents

Mechanical Conservation Principles, Variational Calculus and Engineering Applications from the Century.- Material Theories of Solid Continua and Solutions of Engineering Problems.- Theories, Engineering Solutions and Applications in Fluid Dynamics.- Numerical Methods in Solid Mechanics from Engineering Intuition and Variational Calculus.

Fields of interest

Continuum Mechanics and Mechanics of Materials; Appl. Mathematics / Computational Methods of Engineering; History of Mathematics; Applications of Mathematics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39904-6

Softcover

2014. XII, 460 p. (Lecture Notes in Applied Mathematics and Mechanics)

ISBN 978-3-642-39904-6

Due: October 15, 2013

C.M. Ionescu, Ghent University, Gent, Belgium

The Human Respiratory System

An Analysis of the Interplay between Anatomy, Structure, Breathing and Fractal Dynamics

The Human Respiratory System combines emerging ideas from biology and mathematics to show the reader how to produce models for the development of biomedical engineering applications associated with the lungs and airways. Mathematically mature but in its infancy as far as engineering uses are concerned, fractional calculus is the basis of the methods chosen for system analysis and modelling. This reflects two decades' worth of conceptual development which is now suitable for bringing to bear in biomedical engineering. The text reveals the latest trends in modelling and identification of human respiratory parameters with a view to developing diagnosis and monitoring technologies. Of[...]

Features

The Human Respiratory System combines emerging ideas from biology and mathematics to show the reader how to produce models for the development of biomedical engineering applications associated with the lungs and airways. Mathematically mature but in its infancy as far as engineering uses are concerned, fractional calculus is the basis of the methods chosen for system analysis and modelling. This [...]

Contents

Introduction.- The Human Respiratory System.- Respiratory Impedance.- Modelling the Respiratory Tract by Means of Electrical Analogy.- Mathematical Basis for Modelling.- Modelling the Respiratory Tract by Means of Mechanical Analogy.- Frequency Domain: Parametric Model Selection.- Time Domain: Fractal Dimension.- Nonlinear Effects in Measurement of Respiratory Impedance.- Conclusion.- Appendices: Mathematical Basis of Fractional Calculus; Overview of Forced Oscillation Technique Devices.

Fields of interest

Biomedical Engineering; Physiological, Cellular and Medical Topics; Human Physiology; Pneumology/Respiratory System; Signal, Image and Speech Processing

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4471-5387-0

Hardcover

2013. XXV, 217 p. 148 illus., 129 illus. in color. (Series in BioEngineering)

ISBN 978-1-4471-5387-0

usually dispatched within 3 to 5 business days

M. Macdonald, V. Baedescu (Eds.)

The International Handbook of Space Technology

This book is the most unique, definitive handbook of space technology to provide an up-to-date, comprehensive overview of space technology and an understanding of the end-to-end space mission. In addition to the very latest developments in every area of this very broad subject, the authors describe in lines of progressive thoughts all aspects related to space technology, enabling the reader to gain a holistic and interdisciplinary overview or, through the use of self-contained chapters, a more detailed understanding of a specific field. Following a brief historical perspective, the applications of space technology are reviewed prior to an overview of the fundamentals of space[...]

Features

This book is the most unique, definitive handbook of space technology to provide an up-to-date, comprehensive overview of space technology and an understanding of the end-to-end space mission. In addition to the very latest developments in every area of this very broad subject, the authors describe in lines of progressive thoughts all aspects related to space technology, enabling the reader to gain a [...]

Contents

Introduction.- Applications of Space Technology.- Fundamentals of Space Exploration.- Fundamentals of Space Exploration.- Launch Systems.- Structure, Mechanisms and Deployables.- Power.- Propulsion.- Altitude Determination, Guidance and Navigation Control.- Thermal and Radiation.- Telemetry, Tracking and Command.- Command and Data Handling.- Spacecraft Computer Systems.- Software.- Biological Life Support.- Descent and Landing Systems.- Mission Operations.- Payload Design and Sizing.- Spacecraft Manufacturing, Testing & Reliability.- Cost.- Legal and Regulatory Requirements.- Project[...]

Fields of interest

Aerospace Technology and Astronautics; Extraterrestrial Physics, Space Sciences; Law of the Sea, Air and Outer Space; Quality Control, Reliability, Safety and Risk

Target groups

Research

Type of publication

Handbook

More on www.springer.com/978-3-642-41100-7

Hardcover

Jointly published with Praxis Publishing, Chichester, UK 2014. Approx. 1470 p. 487 illus., 420 illus. in color.

(Astronautical Engineering)

ISBN 978-3-642-41100-7

Due: December 2013

V. Dabbaghian, Simon Fraser University, Burnaby, Canada; V.K. Mago, Troy University, Troy, USA (Eds.)

Theories and Simulations of Complex Social Systems

Research into social systems is challenging due to their complex nature. Traditional methods of analysis are often difficult to apply effectively as theories evolve over time. This can be due to a lack of appropriate data, or too much uncertainty. It can also be the result of problems which are not yet understood well enough in the general sense so that they can be classified, and an appropriate solution quickly identified. Simulation is one tool that deals well with these challenges, fits in well with the deductive process, and is useful for testing theory. This field is still relatively new, and much of the work is necessarily innovative, although it builds upon a rich and varied[...]

Features

Research into social systems is challenging due to their complex nature. Traditional methods of analysis are often difficult to apply effectively as theories evolve over time. This can be due to a lack of appropriate data, or too much uncertainty. It can also be the result of problems which are not yet understood well enough in the general sense so that they can be classified, and an appropriate solution [..]

Contents

Introducing Theories and Simulations of Complex Social Systems.- Creating Software for the Simulation of Complex Social Systems.- Modelling Epistemic Systems- Model the human behavior in space and time by mobile phone data.- Change Detection in Dynamic Political Networks: The Case of Sudan.- High-Level Simulation Model of a Criminal Justice System.- Celerity in the Courts: An Application of Fuzzy Logic to Model Case Complexity in the Criminal Justice System.- Understanding the Impact of Face Mask Usage through Epidemic Simulation of Large Social Networks.- e - Epidemic Models on the[...]

Fields of interest

Computational Intelligence; Artificial Intelligence (incl. Robotics); Nonlinear Dynamics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39148-4

Hardcover

2014. XI, 204 p. 72 illus. (Intelligent Systems Reference Library, Vol. 52)

ISBN 978-3-642-39148-4

Due: October 31, 2013

C.V. Madhusudana

Thermal Contact Conductance

The work covers both theoretical and practical aspects of thermal contact conductance. The theoretical discussion focuses on heat transfer through spots, joints, and surfaces, as well as the role of interstitial materials (both planned and inadvertent). The practical discussion includes formulae and data that can be used in designing heat-transfer equipment for a variety of joints, including special geometries and configurations. All of the material has been updated to reflect the latest advances in the field.

Features

This book covers both theoretical and practical aspects of thermal contact conductance. The theoretical discussion focuses on heat transfer through spots, joints, and surfaces, as well as the role of interstitial materials (both planned and inadvertent). The practical discussion includes formulae and data that can be used in designing heat-transfer equipment for a variety of joints, including special [..]

Contents

Introduction.- Thermal Constriction Resistance.- Solid Spot Thermal Conductance of a Joint.- Gap Conductance at the Interface.- Experimental Aspects.- Special Configurations and Processes.- Control of Thermal Contact Conductance Using Interstitial Materials and Coatings.- Major Applications.- Additional Topics.- Concluding Remarks.

Fields of interest

Engineering Thermodynamics, Heat and Mass Transfer

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-3-319-01275-9

Hardcover

2014. XVIII, 260 p. 133 illus., 17 illus. in color. (Mechanical Engineering Series)

ISBN 978-3-319-01275-9

usually dispatched within 3 to 5 business days

October 31, 2013

Y. Song, Institute of Plasma Physics, Hefei, China (P.R.); W. Wu, Institute of Plasma Physics, Hefei, China (P.R.); S. Du, Institute of Plasma Physics, Hefei, China (P.R.)

Tokamak Engineering Mechanics

Tokamak Engineering Mechanics offers concise and thorough coverage of engineering mechanics theory and application for tokamaks, and the material is reinforced by numerous examples. Chapter topics include general principles, static mechanics, dynamic mechanics, thermal fluid mechanics and multiphysics structural mechanics of tokamak structure analysis. The theoretical principle of the design and the methods of the analysis for various components and load conditions are presented, while the latest engineering technologies are also introduced. The book will provide readers involved in the study of mechanical/fusion engineering with a general understanding of tokamak engineering[...]

Features

Tokamak Engineering Mechanics offers concise and thorough coverage of engineering mechanics theory and application for tokamaks, and the material is reinforced by numerous examples. Chapter topics include general principles, static mechanics, dynamic mechanics, thermal fluid mechanics and multiphysics structural mechanics of tokamak structure analysis. The theoretical principle of the design and the [..]

Contents

Introduction.- Mechanical basics.- Electromagnetic, structural and thermal analyses of the vacuum vessel.- In-vessel components.- Superconducting Magnet.- Thermal Shield.- Cryostat.

Fields of interest

Nuclear Engineering; Quality Control, Reliability, Safety and Risk; Energy Systems; Nuclear Fusion; Energy Technology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39574-1

Hardcover

2014. X, 241 p. 175 illus. (Mechanical Engineering Series)

ISBN 978-3-642-39574-1

usually dispatched within 3 to 5 business days

October 31, 2013

S. Haddadin

Towards Safe Robots

Approaching Asimov's 1st Law

The vision of seamless human-robot interaction in our everyday life that allows for tight cooperation between human and robot has not become reality yet. However, the recent increase in technology maturity finally made it possible to realize systems of high integration, advanced sensorial capabilities and enhanced power to cross this barrier and merge living spaces of humans and robot workspaces to at least a certain extent. Together with the increasing industrial effort to realize first commercial service robotics products this makes it necessary to properly address one of the most fundamental questions of Human-Robot Interaction: How to ensure safety in human-robot coexistence? In[...]

Features

The vision of seamless human-robot interaction in our everyday life that allows for tight cooperation between human and robot has not become reality yet. However, the recent increase in technology maturity finally made it possible to realize systems of high integration, advanced sensorial capabilities and enhanced power to cross this barrier and merge living spaces of humans and robot workspaces to at least [...]

Contents

State of the art.- Soft-robotics control.- Biomechanics and forensics.- Crash-testing in robotics.- Sharp and acute contact.- Reactive pre-collision strategies.- Towards the robotic co-worker.- Competitive Robotics.- Intrinsic joint compliance.- Considerations for new robot standards.- Conclusion and outlook.- Soft-robotics control.- Biomechanics and forensics.- Crash-testing in robotics.- Sharp and acute contact.- Reactive pre-collision strategies.- Towards the robotic co-worker.- Competitive Robotics.- Intrinsic joint compliance.- Considerations for new robot standards.

Fields of interest

Robotics and Automation; Artificial Intelligence (incl. Robotics); Biomedical Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40307-1

Hardcover

2014. XXVI, 350 p. 206 illus., 171 illus. in color. (Springer Tracts in Advanced Robotics, Vol. 90)
ISBN 978-3-642-40307-1

usually dispatched within 3 to 5 business days
September 30, 2013

R.N. Jazar, RMIT University, Bundoora, Australia

Vehicle Dynamics

Theory and Application

This textbook is appropriate for senior undergraduate and first year graduate students in mechanical and automotive engineering. The contents in this book are presented at a theoretical-practical level. It explains vehicle dynamics concepts in detail, concentrating on their practical use. Related theorems and formal proofs are provided, as are real-life applications. Students, researchers and practicing engineers alike will appreciate the user-friendly presentation of a wealth of topics, most notably steering, handling, ride, and related components. This book also illustrates all key concepts with examples. Includes exercises for each chapter. Covers front, rear, and four wheel steering[...]

Features

This textbook is appropriate for senior undergraduate and first year graduate students in mechanical and automotive engineering. The contents in this book are presented at a theoretical-practical level. It explains vehicle dynamics concepts in detail, concentrating on their practical use. Related theorems and formal proofs are provided, as are real-life applications. Students, researchers and practicing [...]

Contents

Tire and Rim Fundamentals.- Part I Vehicle Motion.- Forward Vehicle Dynamics.- Tire Dynamics.- Driveline Dynamics.- Part II Vehicle Kinematics.- Applied Kinematics.- Applied Mechanisms.- Steering Dynamics.- Suspension Mechanisms.- Part III Vehicle Dynamics.- Applied Dynamics.- Vehicle Planar Dynamics.- Vehicle Roll Dynamics.- Part IV Vehicle Vibration.- Applied Vibrations.- Vehicle Vibrations.- Suspension Optimization.- Quarter Car Model.- Appendix A Frequency Response Curves.- Appendix B Trigonometric Formulas.- Appendix C Unit Conversions.

Fields of interest

Automotive Engineering; Vibration, Dynamical Systems, Control; Mechanical Engineering

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-1-4614-8543-8

Hardcover

2014. XX, 1064 p. 400 illus., 50 illus. in color.
ISBN 978-1-4614-8543-8

Due: November 30, 2013

P.J. From, Norwegian Univ. of Life Sci. Ås, Trondheim, Norway;
J.T. Gravdahl, Norwegian Univ. of Science & Technology, Trondheim, Norway; K.Y. Pettersen, Norwegian Univ. of Science & Technology, Trondheim, Norway

Vehicle-Manipulator Systems

Modeling for Simulation, Analysis, and Control

Furthering the aim of reducing human exposure to hazardous environments, this monograph presents a detailed study of the modeling and control of vehicle-manipulator systems. The text shows how complex interactions can be performed at remote locations using systems that combine the manipulability of robotic manipulators with the ability of mobile robots to locomote over large areas. The first part studies the kinematics and dynamics of rigid bodies and standard robotic manipulators and can be used as an introduction to robotics focussing on robust mathematical modeling. The monograph then moves on to study vehicle-manipulator systems in great detail with emphasis on combining two[...]

Features

Furthering the aim of reducing human exposure to hazardous environments, this monograph presents a detailed study of the modeling and control of vehicle-manipulator systems. The text shows how complex interactions can be performed at remote locations using systems that combine the manipulability of robotic manipulators with the ability of mobile robots to locomote over large areas. The first part [...]

Contents

Introduction.- Preliminary Mathematical Concepts.- Rigid Body Kinematics.- Kinematics of Manipulators on a Fixed Base.- Kinematics of Vehicle-manipulator Systems.- Rigid Body Dynamics.- Dynamics of Manipulators on a Fixed Base.- Dynamics of Vehicle-manipulator Systems.- Properties of the Dynamic Equations in Matrix Form.- Underwater Robotic Systems.- Spacecraft-manipulator Systems.- Field Robots.- Robotic Manipulators Mounted on a Forced Non-inertial Base

Fields of interest

Control; Robotics and Automation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4471-5462-4

Hardcover

2014. XXIV, 388 p. 52 illus., 33 illus. in color. (Advances in Industrial Control)
ISBN 978-1-4471-5462-4

Due: September 30, 2013

M. Ghantous, University of Louisiana at Lafayette, Lafayette, USA;
M. Al Najjar, University of Louisiana at Lafayette, Lafayette, USA;
M. Bayoumi, University of Louisiana at Lafayette, Lafayette, USA

Video Surveillance for Sensor Platforms

Algorithms and Architectures

This book introduces resource aware image decomposition, registration, fusion, object detection and tracking algorithms along with their applications in security, monitoring and integration in 3rd Generation Surveillance Systems. All algorithms are evaluated through experimental and simulation results and a parallel and pipelined efficient architecture for implementing the algorithms is described.

Features

This book introduces resource aware image decomposition, registration, fusion, object detection and tracking algorithms along with their applications in security, monitoring and integration in 3rd Generation Surveillance Systems. All algorithms are evaluated through experimental and simulation results and a parallel and pipelined efficient architecture for implementing the algorithms is [...]

Contents

Introduction.- Visual Sensor Nodes.- Image Registration.- Image Fusion.- Object Detection.- Object Tracking.- Hysteresis Thresholding.- Hardware Architecture Assist for Critical Components.- Conclusion.

Fields of interest

Circuits and Systems; Electronics and Microelectronics, Instrumentation

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-1856-6

Hardcover

2014. XV, 185 p. 89 illus., 50 illus. in color. (Lecture Notes in Electrical Engineering, Vol. 114)
ISBN 978-1-4614-1856-6

Due: October 31, 2013

R. Lima, Polytechnic Institute of Bragança, Bragança, Portugal;
Y. Imai, Tohoku University, Sendai, Japan; T. Ishikawa, Tohoku University, Sendai, Japan; M. Oliveira, University of Strathclyde, Glasgow, United Kingdom (Eds.)

Visualization and Simulation of Complex Flows in Biomedical Engineering

This book focuses on the most recent advances in the application of visualization and simulation methods to understand the flow behavior of complex fluids used in biomedical engineering and other related fields. It shows the physiological flow behavior in large arteries, microcirculation, respiratory systems and in biomedical microdevices.

Features

This book focuses on the most recent advances in the application of visualization and simulation methods to understand the flow behavior of complex fluids used in biomedical engineering and other related fields. It shows the physiological flow behavior in large arteries, microcirculation, respiratory systems and in biomedical microdevices.

Contents

Preface.- 1. A Survey of Quantitative Descriptors of Arterial Flows, by Diego Gallo, Giuseppe Isu, Diana Massai, Raffaele Ponzini, Alberto Audenino, Giovanna Rizzo, Umberto Morbiducci.- 2. Fluid-Structure Interaction Modeling of Patient-Specific Cerebral Aneurysms, by Kenji Takizawa and Tayfun E. Tezduyar.- 3. A full-Eulerian approach for the fluid-structure interaction problem, by Satoshi Ii, Kazuyuki Sugiyama, Shu Takagi, Yoichiro Matsumoto.- 4. Physiological significance of cell-free layer and experimental determination of its width in microcirculatory vessels, by Bumseok Namgung and[...]

Fields of interest

Biomedical Engineering; Engineering Fluid Dynamics; Computational Biology / Bioinformatics; Health Informatics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7768-2

Hardcover

2014. VII, 299 p. 111 illus. (Lecture Notes in Computational Vision and Biomechanics, Vol. 12)
ISBN 978-94-007-7768-2

Due: November 30, 2013

Materials Science

T. Schneller, RWTH Aachen University, Aachen, Germany; R. Waser, RWTH Aachen University, Aachen, Germany; M. Kosec, Jožef Stefan Institute, Ljubljana, Slovenia; D. Payne, University of Illinois at Urbana-Champaign, Urbana, USA (Eds.)

Chemical Solution Deposition of Functional Oxide Thin Films

This is the first text to cover all aspects of solution processed functional oxide thin-films. Chemical Solution Deposition (CSD) comprises all solution based thin-film deposition techniques, which involve chemical reactions of precursors during the formation of the oxide films, i. e. sol-gel type routes, metallo-organic decomposition routes, hybrid routes, etc. While the development of sol-gel type processes for optical coatings on glass by silicon dioxide and titanium dioxide dates from the mid-20th century, the first CSD derived electronic oxide thin films, such as lead zirconate titanate, were prepared in the 1980's. Since then CSD has emerged as a highly flexible and[...]

Features

This is the first text to cover all aspects of solution processed functional oxide thin-films. Chemical Solution Deposition (CSD) comprises all solution based thin-film deposition techniques, which involve chemical reactions of precursors during the formation of the oxide films, i. e. sol-gel type routes, metallo-organic decomposition routes, hybrid routes, etc. While the development of sol-gel type [...]

Contents

Introduction.- Solution Chemistry; Simple alkoxide based precursor systems; Carboxylate based precursor systems; Single-source precursors; Aqueous Precursor Systems; Solution Synthesis Strategies.- Analytical Methods; Introduction; Thermal Analysis; NMR Spectroscopy; EXAFS; Other Methods (XRM, SEM, TEM; scattering methods at nanocrystalline films); Spin-Coating; Dip Coating; Inkjet Printing and Other Direct Writing Methods (dip point and imprint techniques); Chemical Bath Deposition; Polymer Assisted Deposition.- Processing and Crystallization; Thermodynamics and Heating Processes; [...]

Fields of interest

Surfaces and Interfaces, Thin Films; Physical Chemistry; Industrial and Production Engineering; Tribology, Corrosion and Coatings

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-3-211-99310-1

Hardcover

2013. XII, 872 p. 384 illus., 128 illus. in color.
ISBN 978-3-211-99310-1

Due: October 31, 2013

H. Frey, H.R. Khan, Forschungsinstitut für Edelmetalle und, Schwäbisch Gmünd, Germany

Handbook of Thin Film Technology

“Handbook of Thin Film Technology” covers all aspects of coatings preparation, characterization and applications. Different deposition techniques based on vacuum and plasma processes are presented. Methods of surface and thin film analysis including coating thickness, structural, optical, electrical, mechanical and magnetic properties of films are detailed described. The several applications of thin coatings and a special chapter focusing on nanoparticle-based films can be found in this handbook. A complete reference for students and professionals interested in the science and technology of thin films.

Features

“Handbook of Thin Film Technology” covers all aspects of coatings preparation, characterization and applications. Different deposition techniques based on vacuum and plasma processes are presented. Methods of surface and thin film analysis including coating thickness, structural, optical, electrical, mechanical and magnetic properties of films are detailed described. The several applications of thin [..]

Contents

Applications and developments of thin film technology.- Importance of the vacuum technology for thin film coatings.- Evaporation in the vacuum.- Basic principle of plasma physics.- Gaseous phase and surface processes.- Coating by cathode sputtering.- Plasma treatment methods.- Ion beam-supported procedures.- Chemical Vapor Deposition (CVD).- Physical basics of modern methods of surface and thin film analysis.- Measurements of thin layers during the coating.- Measurements of thin layers after terminated coating process.- Nanoparticle Films.- Optical properties of thin films.

Fields of interest

Surfaces and Interfaces, Thin Films; Characterization and Evaluation of Materials; Nanotechnology; Tribology, Corrosion and Coatings; Physical Chemistry; Optical and Electronic Materials

Target groups

Research

Type of publication

Professional book

More on www.springer.com/978-3-642-05429-7

Hardcover

2013. 550 p. 20 illus. in color.
ISBN 978-3-642-05429-7

Due: July 31, 2013

N.A. Zimbovskaia, University of Puerto Rico at Humacao, Humacao, Puerto Rico

Transport Properties of Molecular Junctions

A comprehensive overview of the physical mechanisms that control electron transport and the characteristics of metal-molecule-metal (MMM) junctions. As far as possible, methods and formalisms presented elsewhere to analyze electron transport through molecules are avoided. This title introduces basic concepts—a description of the electron transport through molecular junctions—and briefly describes relevant experimental methods. Theoretical methods commonly used to analyze the electron transport through molecules are presented. Various effects that manifest in the electron transport through MMMs, as well as the basics of density-functional theory and its applications to electronic[...]

Features

A comprehensive overview of the physical mechanisms that control electron transport and the characteristics of metal-molecule-metal (MMM) junctions is presented. As far as possible, methods and formalisms presented elsewhere to analyze electron transport through molecules are avoided. This title introduces basic concepts—a description of the electron transport through molecular junctions—and briefly [..]

Contents

Preface.- General Description.- Transport Theory.- Ballistic Transport.- Inelastic Transport.- Electronic Structure Calculations in Molecules.- Nanoelectronic Applications of Molecular Junctions.- Conclusion.- Appendix.- Bibliography.- Index.

Fields of interest

Nanotechnology; Electronics and Microelectronics, Instrumentation; Applied and Technical Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8010-5

Hardcover

2013. XIII, 338 p. 104 illus., 95 illus. in color. (Springer Tracts in Modern Physics, Vol. 254)
ISBN 978-1-4614-8010-5

usually dispatched within 3 to 5 business days

Physics

X.C. Tong, Laird, Schaumburg, USA

Advanced Materials for Integrated Optical Waveguides

This book provides a comprehensive introduction to integrated optical waveguides for information technology and data communications. Integrated coverage ranges from advanced materials, fabrication, and characterization techniques to guidelines for design and simulation. A concluding chapter offers perspectives on likely future trends and challenges. The dramatic scaling down of feature sizes has driven exponential improvements in semiconductor productivity and performance in the past several decades. However, with the potential of gigascale integration, size reduction is approaching a physical limitation due to the negative impact on resistance and inductance of metal interconnects[...]

Features

This book provides a comprehensive introduction to integrated optical waveguides for information technology and data communications. Integrated coverage ranges from advanced materials, fabrication, and characterization techniques to guidelines for design and simulation. A concluding chapter offers perspectives on likely future trends and challenges. The dramatic scaling down of feature sizes has driven [..]

Contents

Preface.- Abbreviations.- 1 Fundamentals and design guides for optical waveguides.- 2 Characterization methodologies of optical waveguides.- 3 Optoelectronic devices integrated with optical waveguides.- 4 Optical fibers.- 5 Semiconductor waveguides.- 6 Silicon-on-insulator waveguides.- 7 Glass waveguides.- 8 Electro-optic waveguides.- 9 Polymer based optical waveguides.- 10 Hollow waveguides.- 11 Metamaterial optical waveguides.- 12 Perspectives and future trends.- Index.

Fields of interest

Electronic Circuits and Devices; Optical and Electronic Materials; Electronics and Microelectronics, Instrumentation; Applied Optics, Optoelectronics, Optical Devices; Semiconductors

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01549-1

Hardcover

2013. XXVII, 552 p. 124 illus. in color. (Springer Series in Advanced Microelectronics, Vol. 46)
ISBN 978-3-319-01549-1

Due: September 30, 2013

A. Lawrence, Institute for Astronomy, Edinburgh, United Kingdom

Astronomical Measurement

A Concise Guide

This book on astronomical measurement takes a fresh approach to teaching the subject. After discussing some general principles, it follows the chain of measurement through atmosphere, imaging, detection, spectroscopy, timing, and hypothesis testing. The various wavelength regimes are covered in each section, emphasising what is the same, and what is different. The author concentrates on the physics of detection and the principles of measurement, aiming to make this logically coherent. The book is based on a short self contained lecture course for advanced undergraduate students developed and taught by the author over several years.

Features

This book on astronomical measurement takes a fresh approach to teaching the subject. After discussing some general principles, it follows the chain of measurement through atmosphere, imaging, detection, spectroscopy, timing, and hypothesis testing. The various wavelength regimes are covered in each section, emphasising what is the same, and what is different. The author concentrates on the physics of [..]

Contents

Preface.- Acknowledgements.- Signal, Distortion, and Noise.- The atmosphere and how to avoid it.- Mapping the Sky.- Detection of Light.- Spectroscopy.- Overview of Statistics.- Basic orbital mechanics.- References.- Glossary.- Solutions.- Index.

Fields of interest

Astronomy, Observations and Techniques; Classical Electrodynamics, Wave Phenomena; Measurement Science, Instrumentation; Spectroscopy and Microscopy

Target groups

Upper undergraduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-3-642-39834-6

Hardcover

2014. XVIII, 188 p. 69 illus., 15 illus. in color. (Astronomy and Planetary Sciences)

ISBN 978-3-642-39834-6

Due: October 31, 2013

B.A. Stickler, Karl Franzens Universität, Graz, Austria; E. Schachinger, TU Graz, Graz, Austria

Basic Concepts in Computational Physics

With the development of ever more powerful computers a new branch of physics and engineering evolved over the last few decades: Computer Simulation or Computational Physics. It serves two main purposes:- Solution of complex mathematical problems such as, differential equations, minimization/optimization, or high-dimensional sums/integrals.- Direct simulation of physical processes, as for instance, molecular dynamics or Monte-Carlo simulation of physical/chemical/technical processes. Consequently, the book is divided into two main parts: Deterministic methods and stochastic methods. Based on concrete problems, the first part discusses numerical differentiation and integration, and the [...]

Features

With the development of ever more powerful computers a new branch of physics and engineering evolved over the last few decades: Computer Simulation or Computational Physics. It serves two main purposes:- Solution of complex mathematical problems such as, differential equations, minimization/optimization, or high-dimensional sums/integrals.- Direct simulation of physical processes, as for instance, [...]

Contents

Some Basic Remarks.- Part I Deterministic Methods: Numerical Differentiation.- Numerical Integration.- The KEPLER Problem.- Ordinary Differential Equations - Initial Value Problems.- The Double Pendulum.- Molecular Dynamics.- Numerics of Ordinary Differential Equations - Boundary Value Problems.- The One-Dimensional Stationary Heat Equation.- The One-Dimensional Stationary SCHRÖDINGER Equation.- Numerics of Partial Differential Equations.- Part II Stochastic Methods.- Pseudo Random Number Generators.- Random Sampling Methods.- A Brief Introduction to Monte-Carlo Methods.- The ISING[...]

Fields of interest

Numerical and Computational Physics; Appl. Mathematics / Computational Methods of Engineering; Computational Mathematics and Numerical Analysis; Theoretical and Computational Chemistry; Statistical Physics, Dynamical Systems and Complexity

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-3-319-02434-9

Hardcover

2014. XIV, 368 p. 95 illus.

ISBN 978-3-319-02434-9

Due: November 30, 2013

M. Chaichian, University of Helsinki, Helsinki, Finland; H.P. Rojas, ICMAF, La Habana, Cuba; A. Tureanu, University of Helsinki, Helsinki, Finland

Basic Concepts in Physics

From the Cosmos to Quarks

"Basic Concepts in Physics: From the Cosmos to Quarks" is the outcome of the authors' long and varied teaching experience in different countries and for different audiences, and gives an accessible and eminently readable introduction to all the main ideas of modern physics. The book's fresh approach, using a novel combination of historical and conceptual viewpoints, makes it ideal complementary reading to more standard textbooks. The first five chapters are devoted to classical physics, from planetary motion to special relativity, always keeping in mind its relevance to questions of contemporary interest. The next six chapters deal mainly with newer developments in physics, from [...]

Features

"Basic Concepts in Physics: From the Cosmos to Quarks" is the outcome of the authors' long and varied teaching experience in different countries and for different audiences, and gives an accessible and eminently readable introduction to all the main ideas of modern physics. The book's fresh approach, using a novel combination of historical and conceptual viewpoints, makes it ideal complementary reading to [...]

Contents

Gravitation and Newton Laws.- Entropy, Statistical Physics and Information.- Electromagnetism and Maxwell Equations.- Electromagnetic Waves.- The Special Theory of Relativity.- The Atom and Quantum Theory.- Quantum Electrodynamics.- Fermi-Dirac and Bose-Einstein Statistics.- The Four Fundamental Forces.- General Relativity and Cosmology.- Unification of the Forces of Nature.- Physics and Life.- Index.

Fields of interest

Theoretical, Mathematical and Computational Physics; Cosmology; Classical Continuum Physics; Biochemistry

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-3-642-19597-6

Hardcover

2014. XI, 290 p. (Undergraduate Lecture Notes in Physics)

ISBN 978-3-642-19597-6

Due: August 31, 2013

C. Chiuderi, University of Firenze, Firenze, Italy; M. Velli, University of Firenze, Firenze, Italy

Basics of Plasma Astrophysics

This book is an introduction to contemporary plasma physics that discusses the most relevant recent advances in the field and covers a careful choice of applications to various branches of astrophysics and space science. The purpose of the book is to allow the student to master the basic concepts of plasma physics and to bring him or her up to date in a number of relevant areas of current research. Topics covered include orbit theory, kinetic theory, fluid models, magnetohydrodynamics, MHD turbulence, instabilities, discontinuities, and magnetic reconnection. Some prior knowledge of classical physics is required, in particular fluid mechanics, statistical physics, and electrodynamics.[...]

Features

This book is an introduction to contemporary plasma physics that discusses the most relevant recent advances in the field and covers a careful choice of applications to various branches of astrophysics and space science. The purpose of the book is to allow the student to master the basic concepts of plasma physics and to bring him or her up to date in a number of relevant areas of current research. Topics [...]

Contents

From the Contents: Orbit theory.- Kinetic theory of plasmas.- Fluid models of plasmas.- Magnetohydrodynamics.- Instabilities.- Waves.- Discontinuities.- Magnetic reconnection.- MHD turbulence.

Fields of interest

Plasma Physics; Astrophysics and Astroparticles; Extraterrestrial Physics, Space Sciences; Statistical Physics, Dynamical Systems and Complexity; Fluid- and Aerodynamics

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-88-470-5279-6

Softcover

2014. Approx. 250 p. 30 illus. (Collana di Fisica e Astronomia)

ISBN 978-88-470-5279-6

Due: May 5, 2014

E. Okuno, Universidade de São Paulo, São Paulo, Brazil; L. Fratin, Fundação Armando Álvares Penteado, São Paulo, Brazil

Biomechanics of the Human Body

Biomechanics of the Human Body teaches basic physics concepts using examples and problems based on the human body. The reader will also learn how the laws of mechanics may help to understand the conditions of the static and dynamic equilibrium of one of the marvels of nature: the human body. The mathematical language used in physics has always been pointed out as responsible for students' difficulties. So, each concept given is followed by explanatory examples, with subsequent application and fixation exercises. It is a richly illustrated book that facilitates the comprehension of presented concepts. Biomechanics of the Human Body can be useful to students of physical and occupational[...]

Features

Biomechanics of the Human Body teaches basic physics concepts using examples and problems based on the human body. The reader will learn how the laws of mechanics may help to understand the conditions of the static and dynamic equilibrium of one of the marvels of nature: the human body. The mathematical language used in physics has always been pointed out as responsible for students' [...]

Contents

Preface.- Forces.- Torques.- Center of Gravity.- Rotations.- Simple Machines.- Muscle Force.- Bones.- Experimental Activities.- Appendix.- References.- Index.- List of Abbreviations.

Fields of interest

Biophysics and Biological Physics; Biomedical Engineering; Human Physiology

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-1-4614-8575-9

Softcover

2014. XII, 164 p. 128 illus. (Undergraduate Lecture Notes in Physics)

ISBN 978-1-4614-8575-9

Due: October 31, 2013

C. Beck, Institut Pluridisciplinaire Hubert Curie, Strasbourg, France (Ed.)

Clusters in Nuclei, Volume 3

Following the pioneering discovery of alpha clustering and of molecular resonances, the field of nuclear clustering is today one of those domains of heavy-ion nuclear physics that faces the greatest challenges, yet also contains the greatest opportunities. After many summer schools and workshops, in particular over the last decade, the community of nuclear molecular physicists has decided to collaborate in producing a comprehensive collection of lectures and tutorial reviews covering the field. This third volume follows the successful Lect. Notes Phys. 818 (Vol. 1) and 848 (Vol. 2), and comprises six extensive lectures covering the following topics: - Gamma Rays and Molecular[...]

Features

Following the pioneering discovery of alpha clustering and of molecular resonances, the field of nuclear clustering is today one of those domains of heavy-ion nuclear physics that faces the greatest challenges, yet also contains the greatest opportunities. After many summer schools and workshops, in particular over the last decade, the community of nuclear molecular physicists has decided to collaborate in [...]

Contents

Faddeev Equation Approach for Three Cluster Nuclear Reactions.- Electromagnetic Transitions as a Probe of Nuclear Clustering.- Tomography of the Cluster Structure of Light Nuclei via Relativistic Dissociation.- From Light to Hyper-heavy Molecules in Dynamical Mean-field Approach.- Covalent Binding on the Femtometer Scale: Nuclear Molecules.- Clusterization in Ternary Fission.

Fields of interest

Nuclear Physics, Heavy Ions, Hadrons

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01076-2

Softcover

2014. XIV, 246 p. 167 illus., 92 illus. in color. (Lecture Notes in Physics, Vol. 875)

ISBN 978-3-319-01076-2

usually dispatched within 3 to 5 business days

S.T. Ali, Concordia University, Montreal, Canada; J.-P. Antoine, Université Catholique de Louvain, Leuven, Belgium; J. Gazeau, Université Paris Diderot, Paris, France

Coherent States, Wavelets, and Their Generalizations

This second edition is fully updated, covering in particular new types of coherent states (the so-called Gazeau-Klauder coherent states, nonlinear coherent states, squeezed states, as used now routinely in quantum optics) and various generalizations of wavelets (wavelets on manifolds, curvelets, shearlets, etc.). In addition, it contains a new chapter on coherent state quantization and the related probabilistic aspects. As a survey of the theory of coherent states, wavelets, and some of their generalizations, it emphasizes mathematical principles, subsuming the theories of both wavelets and coherent states into a single analytic structure. The approach allows the user to take a[...]

Features

This second edition is fully updated, covering in particular new types of coherent states (the so-called Gazeau-Klauder coherent states, nonlinear coherent states, squeezed states, as used now routinely in quantum optics) and various generalizations of wavelets (wavelets on manifolds, curvelets, shearlets, etc.). In addition, it contains a new chapter on coherent state quantization and the related [...]

Contents

Canonical Coherent States.- Positive Operator-Valued Measures and Frames.- Some Group Theory.- Hilbert Spaces.- Square Integrable and Holomorphic Kernels.- Covariant Coherent States.- Coherent States from Square Integrable Representations.- Some Examples and Generalizations.- CS of General Semidirect Product Groups.- CS of Product Groups.- CS Quantizations and Probabilistic Aspects.- Direct Wavelet Transforms.- Multidimensional Wavelets.- Wavelets Related to Other G Groups.- The Discretization Problem - Frames Sampling and All That.

Fields of interest

Quantum Physics; Group Theory and Generalizations; Quantum Information Technology, Spintronics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8534-6

Hardcover

2014. XVIII, 575 p. 31 illus. (Theoretical and Mathematical Physics)

ISBN 978-1-4614-8534-6

Due: **October 31, 2013**

G. Rhee, University of Nevada, Las Vegas, USA

Cosmic Dawn

The Search for the First Stars and Galaxies

This book takes the reader on an exploration of the structure and evolution of our universe. The basis for our knowledge is the Big Bang theory of the expanding universe. This book then tells the story of our search for the first stars and galaxies using current and planned telescopes. These telescopes are marvels of technology far removed from Galileo's first telescope but continuing astronomy in his ground breaking spirit. We show the reader how these first stars and galaxies shaped the universe we see today. This story is one of the great scientific adventures of all time.

Features

The visible universe consists of stars and galaxies. One of the challenges of astronomy is to understand how galaxies and stars first came into existence over thirteen billion years ago. This book tells the story of our quest to solve this problem. Four hundred years after Galileo used his telescope to discover the moons of Jupiter, we are using new telescopes and instruments to search for the first [...]

Contents

An evening in May.- A brief history of cosmology.- The Big Bang.- The Visible Universe.- Dark matter.- Cosmic backgrounds.- Clues from Nearby Galaxies (astronomical fossils).- Structure formation.- A map of the universe.- The First Stars and Galaxies.- The great time machines; A New Generation of Telescopes.- Exploring the Universe from Space with the next Hubble telescope.

Fields of interest

Astronomy, Observations and Techniques; Popular Science in Astronomy; Cultural Heritage

Target groups

Popular/general

Type of publication

Monograph

More on www.springer.com/978-1-4614-7812-6

Softcover

2013. XI, 279 p. 96 illus., 79 illus. in color. (Astronomers' Universe)

ISBN 978-1-4614-7812-6

usually dispatched within 3 to 5 business days

M. Ohtsu, Tokyo University, Tokyo, Japan

Dressed Photons

Concepts of Light-Matter Fusion Technology

Authored by the developer of dressed photon science and technology as well as nanophotonics, this book outlines concepts of the subject using a novel theoretical framework that differs from conventional wave optics. It provides a quantum theoretical description of optical near fields and related problems that puts matter excitation such as electronic and vibrational ones on an equal footing with photons. By this description, optical near fields are interpreted as quasi-particles and named dressed photons which carry the material excitation energy in a nanometric space. The author then explores novel nanophotonic devices, fabrications, and energy conversion based on the theoretical[...]

Features

Authored by the developer of dressed photon science and technology as well as nanophotonics, this book outlines concepts of the subject using a novel theoretical framework that differs from conventional wave optics. It provides a quantum theoretical description of optical near fields and related problems that puts matter excitation such as electronic and vibrational ones on an equal footing with photons. By [...]

Contents

Introduction and Background.- Concepts of Dressed Photons.- Optical Near-Fields and Effective Interactions as a Base of Nanophotonics.- Principles of Operations of Devices Using Dressed Photons.- Principles of Nanofabrication Using Dressed Photons.- Nanophotonic Devices.- Nanophotonic Fabrication.- Nanophotonic Energy Conversion.- Nanophotonic Systems and their Evolution to Related Sciences.

Fields of interest

Quantum Optics, Quantum Electronics, Nonlinear Optics; Nanotechnology; Applied Optics, Optoelectronics, Optical Devices; Nanotechnology and Microengineering; Microwaves, RF and Optical Engineering; Nanoscale Science and Technology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39568-0

Hardcover

2014. X, 322 p. 156 illus., 26 illus. in color. (Nano-Optics and Nanophotonics)

ISBN 978-3-642-39568-0

Due: **October 31, 2013**

V.M. Akulin, CNRS, Orsay Cedex, France

Dynamics of Complex Quantum Systems

This book gathers together a range of similar problems that can be encountered in different fields of modern quantum physics and that have common features with regard to multilevel quantum systems. The main motivation was to examine from a uniform standpoint various models and approaches that have been developed in atomic, molecular, condensed matter, chemical, laser and nuclear physics in various contexts. The book should help senior-level undergraduate, graduate students and researchers putting particular problems in these fields into a broader scientific context and thereby taking advantage of well-established techniques used in adjacent fields. This second edition has been expanded [...]

Features

This book gathers together a range of similar problems that can be encountered in different fields of modern quantum physics and that have common features with regard to multilevel quantum systems. The main motivation was to examine from a uniform standpoint various models and approaches that have been developed in atomic, molecular, condensed matter, chemical, laser and nuclear physics in various contexts. [...]

Contents

Complex Systems and Their Statistical Description.- Examples of Complex Systems.- Molecules and Atoms in Laser Fields.- Collisions and Reactions of Molecules.- Rydberg Molecules.- Atomic and Molecular Clusters.- Some Other Examples.- Quantum Circuits and Networks.- Two-Level and Level-Band Systems.- Two-Level System.- Level-band System.- Long-Time Behavior.- Population of Inhomogeneous Bands.- Two-Band System.- General Consideration.- Non-Degenerate Bands.- Two Degenerate Levels.- A Band Coupled to a Degenerate Level.- The Role of Correlations.- Soluble Time-Dependent [...]

Fields of interest

Statistical Physics, Dynamical Systems and Complexity; Quantum Physics; Mathematical Physics; Quantum Optics, Quantum Electronics, Nonlinear Optics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7204-5

Hardcover

2013. XII, 748 p. 175 illus., 146 illus. in color. (Theoretical and Mathematical Physics)
ISBN 978-94-007-7204-5

Due: October 25, 2013

T. Matsushita, Kyushu Institute of Technology, Iizuka, Japan

Electricity and Magnetism

New Formulation by Introduction of Superconductivity

The author introduces the concept that superconductivity can establish a perfect formalism of electricity and magnetism. The correspondence of electric materials that exhibit perfect electrostatic shielding ($E=0$) in the static condition and superconductors that show perfect diamagnetism ($B=0$) is given to help readers understand the relationship between electricity and magnetism. Another helpful aspect with the introduction of the superconductivity feature perfect diamagnetism is that the correspondence in the development of the expression of magnetic energy and electric energy is clearly shown. Additionally, the basic mathematical operation and proofs are shown in an appendix, and [...]

Features

The author introduces the concept that superconductivity can establish a perfect formalism of electricity and magnetism. The correspondence of conductors that exhibit perfect electrostatic shielding ($E=0$) in the static condition and superconductors that show perfect diamagnetism ($B=0$) is given to help readers understand the relationship between electricity and magnetism. Another [...]

Contents

Part I Static Electric Phenomena.- Electrostatic Field.- Conductors.- Conductor System in Vacuum.- Dielectric Materials.- Steady Current.- Part II Static Magnetic Phenomena.- Current and Magnetic Flux Density.- Superconductors.- Current Systems.- Magnetic Materials.- Part III Time-Dependent Electromagnetic Phenomena.- Electromagnetic Induction.- Displacement Current and Maxwell's Equations.- Electromagnetic Wave.

Fields of interest

Classical Electrodynamics, Wave Phenomena; Strongly Correlated Systems, Superconductivity; Mathematical Methods in Physics; Electrical Engineering

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-4-431-54525-5

Softcover

2014. XII, 382 p. 286 illus. (Undergraduate Lecture Notes in Physics)
ISBN 978-4-431-54525-5

Due: October 31, 2013

D.A. Vakoch (Ed.)

Extraterrestrial Altruism

Evolution and Ethics in the Cosmos

Extraterrestrial Altruism examines a basic assumption of the Search for Extraterrestrial Intelligence (SETI): that extraterrestrials will be transmitting messages to us for our benefit. This question of whether extraterrestrials will be altruistic has become increasingly important in recent years as SETI scientists have begun contemplating transmissions from Earth to make contact. Technological civilizations that transmit signals for the benefit of others, but with no immediate gain for themselves, certainly seem to be altruistic. But does this make biological sense? Should we expect altruism to evolve throughout the cosmos, or is this only wishful thinking? Is it dangerous to send [...]

Features

Extraterrestrial Altruism examines a basic assumption of the Search for Extraterrestrial Intelligence (SETI): that extraterrestrials will be transmitting messages to us for our benefit. This question of whether extraterrestrials will be altruistic has become increasingly important in recent years as SETI scientists have begun contemplating transmissions from Earth to make contact. Should we [...]

Contents

Cosmic Evolution, Reciprocity, and Interstellar Tit for Tat.- Extraterrestrial Intelligence: Friends, Foes, or Just Curious?.- Eliciting Altruism While Avoiding Xenophobia: A Thought Experiment.- Predator - Prey Models and Contact Considerations.- Harmful ETI Hypothesis Denied: Visiting ETIs Likely Altruists.- Altruism Toward Non-Humans: Lessons for Interstellar Communication.- Caring Capacity and Cosmocultural Evolution: Potential Mechanisms for Advanced Altruism.- The Precautionary Principle: Egoism, Altruism, and the Active SETI Debate.- The Accidental Altruist: Inferring Altruism [...]

Fields of interest

Astrobiology; Ethics; Planetology; Cross Cultural Psychology; Communication Studies

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-37749-5

Hardcover

2014. XV, 329 p. 2 illus., 1 illus. in color. (The Frontiers Collection)
ISBN 978-3-642-37749-5

usually dispatched within 3 to 5 business days

R.K. Zeytounian

Five Decades of Tackling Models for Stiff Fluid Dynamics Problems

A Scientific Autobiography

Rationality - as opposed to 'ad-hoc' - and asymptotics - to emphasize the fact that perturbative methods are at the core of the theory - are the two main concepts associated with the Rational Asymptotic Modeling (RAM) approach in fluid dynamics when the goal is to specifically provide useful models accessible to numerical simulation via high-speed computing. This approach has contributed to a fresh understanding of Newtonian fluid flow problems and has opened up new avenues for tackling real fluid flow phenomena, which are known to lead to very difficult mathematical and numerical problems irrespective of turbulence. With the present scientific autobiography the author guides the [...]

Features

Rationality - as opposed to 'ad-hoc' - and asymptotics - to emphasize the fact that perturbative methods are at the core of the theory - are the two main concepts associated with the Rational Asymptotic Modeling (RAM) approach in fluid dynamics when the goal is to specifically provide useful models accessible to numerical simulation via high-speed computing. This approach has contributed to a fresh [...]

Contents

Introduction.- Ten Years in Armenia.- The Moscow Period With I.A. Kibel.- My French Scientific Career up to 2012.- The Interrelationship Between NSF Equations and our RAM Approach.- Retrospective Summary.- Bibliography.

Fields of interest

Fluid- and Aerodynamics; Engineering Fluid Dynamics; Geophysics / Geodesy; History and Philosophical Foundations of Physics; Numerical and Computational Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39540-6

Hardcover

2014. X, 145 p. 22 illus., 1 illus. in color.
ISBN 978-3-642-39540-6

Due: November 30, 2013

P.P. Mondal, Indian Institute of Science, Bangalore, India; A. Diaspro, Italian Institute of Technology - IIT, Genoa, Italy

Fundamentals of Fluorescence Microscopy

Exploring Life with Light

This book starts at an introductory level and leads reader to the most advanced topics in fluorescence imaging and super-resolution techniques that have enabled new developments such as nanobioimaging, multiphoton microscopy, nanometrology and nanosensors. The interdisciplinary subject of fluorescence microscopy and imaging requires complete knowledge of imaging optics and molecular physics. So, this book approaches the subject by introducing optical imaging concepts before going in more depth about advanced imaging systems and their applications. Additionally, molecular orbital theory is the important basis to present molecular physics and gain a complete understanding of [...]

Features

This book starts at an introductory level and leads reader to the most advanced developments in fluorescence imaging and super-resolution techniques that have enabled the emergence of new disciplines such as nanobioimaging, multiphoton microscopy, photodynamic therapy, nanometrology and nanosensors. The interdisciplinary subject of fluorescence microscopy and imaging requires complete knowledge of [...]

Contents

Preface.- Acknowledgements.- Dedication.- 1 Ray Optics, Wave Optics and Imaging System Designing.- 2 Basics of Electromagnetic Theory for Fluorescence Microscopy.- 3 Electric Field Effects in Optical Microscopy Systems.- 4 Quantum Description of Radiation Field and Optical Microscopy.- 5 Molecular Physics of Fluorescence Markers.- 6 Basics of Fluorescence and Photophysics.- 7 General Fluorescence Imaging Techniques.- 8 Multiphoton Fluorescence Microscopy.- 9 Super Resolution Fluorescence Microscopy.- 10 Image Reconstruction Methodologies for Fluorescence Microscopy.- 11 Future [...]

Fields of interest

Spectroscopy and Microscopy; Biological Microscopy; Biophysics and Biological Physics; Applied Optics, Optoelectronics, Optical Devices; Spectroscopy / Spectrometry

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-94-007-7544-2

Hardcover

2014. XII, 240 p. 140 illus., 59 illus. in color.
ISBN 978-94-007-7544-2

Due: October 31, 2013

G.E. Romero, Instituto Argentino de Radioastronomía, Villa Elisa, Argentina; G.S. Vila

Introduction to Black Hole Astrophysics

This book is based on the lecture notes of a one-semester course on black hole astrophysics given by the author and is aimed at advanced undergraduate and graduate students with an interest in astrophysics. The material included goes beyond that found in classic textbooks and presents details on astrophysical manifestations of black holes. In particular, jet physics and detailed accounts of objects like microquasars, active galactic nuclei, gamma-ray bursts, and ultra-luminous X-ray sources are covered, as well as advanced topics like black holes in alternative theories of gravity. The author avoids unnecessary technicalities and to some degree the book is self-contained. The reader [...]

Features

This book is based on the lecture notes of a one-semester course on black hole astrophysics given by the author and is aimed at advanced undergraduate and graduate students with an interest in astrophysics. The material included goes beyond that found in classic textbooks and presents details on astrophysical manifestations of black holes. In particular, jet physics and detailed accounts of objects [...]

Contents

Space-time and Gravitation.- Black Holes.- Black Hole Physics.- Accretion onto Black Holes.- Jets.- Evidence for Black Holes.- Wormholes and Exotic Objects.- Black Holes and Cosmology.- Topology and Manifolds.- Selected and Annotated Bibliography.

Fields of interest

Astrophysics and Astroparticles; Classical and Quantum Gravitation, Relativity Theory

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39595-6

Softcover

2014. XVIII, 318 p. 96 illus., 47 illus. in color. (Lecture Notes in Physics, Vol. 876)
ISBN 978-3-642-39595-6

usually dispatched within 3 to 5 business days

N. Laanait, Argonne National Laboratory, Argonne, USA

Ion Correlations at Electrified Soft Matter Interfaces

Ion Correlations at Electrified Soft Matter Interfaces presents an investigation that combines experiments, theory, and computer simulations to demonstrate that the interdependency between ion correlations and other ion interactions in solution can explain the distribution of ions near an electrified liquid/liquid interface. The properties of this interface are exploited to vary the coupling strength of ion-ion correlations from weak to strong while monitoring their influence on ion distributions at the nanometer scale with X-ray reflectivity and on the macroscopic scale with interfacial tension measurements. This thesis demonstrates that a parameter-free density functional theory that [...]

Features

Ion Correlations at Electrified Soft Matter Interfaces presents an investigation that combines experiments, theory, and computer simulations to demonstrate that the interdependency between ion correlations and other ion interactions in solution can explain the distribution of ions near an electrified liquid/liquid interface. The properties of this interface are exploited to vary the coupling strength [...]

Contents

The Poisson-Boltzmann Equation.- Electrochemical Methods.- X-Ray Reflectivity Studies of Ion Condensation at the Electrified Liquid/Liquid Interface.- Sterically Modified Poisson-Boltzmann Equation.- Molecular Dynamics Simulation of Solvent Correlations.- The Role of Electrostatic Ion Correlations in Ion Condensation.

Fields of interest

Soft and Granular Matter, Complex Fluids and Microfluidics; Electrochemistry; Surface and Interface Science, Thin Films; Surfaces and Interfaces, Thin Films; Numerical and Computational Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-00899-8

Hardcover

2013. XV, 112 p. 56 illus., 51 illus. in color. (Springer Theses)

ISBN 978-3-319-00899-8

usually dispatched within 3 to 5 business days

M. Frize, University of Ottawa, Ottawa, Canada

Laura Bassi and Science in 18th Century Europe

The Extraordinary Life and Role of Italy's Pioneering Female Professor

This book presents the extraordinary story of a Bolognese woman of the settecento. Laura Maria Caterina Bassi (1711-1778) defended 49 Theses at the University of Bologna on April 17, 1732 and was awarded a doctoral degree on May 12 of the same year. Three weeks before her defense, she was made a member of the Academy of Sciences in Bologna. On June 27 she defended 12 additional Theses. Several of the 61 Theses were on physics and other science topics. Laura was drawn by the philosophy of Newton at a time when most scientists in Europe were still focused on Descartes and Galen. This last set of Theses was to encourage the University of Bologna to provide a lectureship to Laura, which [...]

Features

This book presents the extraordinary story of a Bolognese woman of the settecento. Laura Maria Caterina Bassi (1711-1778) defended 49 Theses at the University of Bologna on April 17, 1732 and was awarded a doctoral degree on May 12 of the same year. Three weeks before her defense, she was made a member of the Academy of Sciences in Bologna. On June 27 she defended 12 additional Theses. Several of the 61 [...]

Contents

An Extraordinary Event in 1732.- "Querelle des femmes" and Debates on the "Woman Question".- Women in Science and Medicine in Europe Prior to the Eighteenth Century.- Laura Bassi: Her Education and Her Marriage.- The Slow Start of Laura Bassi's Scientific Career and the Bolognese Community's Response to her Work.- A Transition from the "Old" to the New Science.- Scientific Works by Laura Bassi and Giuseppe Veratti.- Laura Bassi and her Networks (1732-1745).- Correspondence with Men in Science and Medicine (1746-1778).- Famous Women in Science in Laura Bassi's Epoch.- After Laura Bassi: [...]

Fields of interest

History and Philosophical Foundations of Physics; History of Science; Popular Science in Mathematics / Natural Science / Technology

Target groups

Popular/general

Type of publication

Monograph

More on www.springer.com/978-3-642-38684-8

Softcover

2013. XIX, 196 p. 17 illus., 7 illus. in color.

ISBN 978-3-642-38684-8

usually dispatched within 3 to 5 business days

P. Kevrekidis, University of Massachusetts, Amherst, USA; R. Carretero-González, San Diego State University, San Diego, USA; J. Cuevas-Maraver, Universidad de Sevilla, Sevilla, Spain; D. Frantzeskakis, University of Athens, Athens, Greece; N. Karachalios, University of the Aegean, Samos, Greece; F. Palmero-Acebedo, Universidad de Sevilla, Sevilla, Spain (Eds.)

Localized Excitations in Nonlinear Complex Systems

Current State of the Art and Future Perspectives

The study of nonlinear localized excitations is a long-standing challenge for research in basic and applied science, as well as engineering, due to their importance in understanding and predicting phenomena arising in nonlinear and complex systems, but also due to their potential for the development and design of novel applications. This volume is a compilation of chapters representing the current state-of-the-art on the field of localized excitations and their role in the dynamics of complex physical systems.

Features

The study of nonlinear localized excitations is a long-standing challenge for research in basic and applied science, as well as engineering, due to their importance in understanding and predicting phenomena arising in nonlinear and complex systems, but also due to their potential for the development and design of novel applications. This volume is a compilation of chapters representing the current [...]

Contents

Nonlinear Schrödinger Models: Continuum and Discrete Solitons and their Ghosts in PT-Symmetric Systems with Defocusing Nonlinearities.- Coding of Nonlinear States for NLS-Type Equations with Periodic Potential.- Nonreciprocal Wave Propagation Through Open, Discrete Nonlinear Schrödinger dimers.- Breather Solutions of the discrete p-Schrödinger.

Fields of interest

Statistical Physics, Dynamical Systems and Complexity; Solid State Physics; Complexity; Complex Systems; Mathematical Methods in Physics; Appl. Mathematics / Computational Methods of Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02056-3

Hardcover

2014. XX, 404 p. 175 illus., 120 illus. in color. (Nonlinear Systems and Complexity, Vol. 7)

ISBN 978-3-319-02056-3

Due: November 30, 2013

S. Abdullaev, Forschungszentrum Jülich, Jülich, Germany

Magnetic Stochasticity in Magnetically Confined Fusion Plasmas

Chaos of Field Lines and Charged Particle Dynamics

This is the first book to systematically consider the modern aspects of chaotic dynamics of magnetic field lines and charged particles in magnetically confined fusion plasmas. The analytical models describing the generic features of equilibrium magnetic fields and magnetic perturbations in modern fusion devices are presented. It describes mathematical and physical aspects of onset of chaos, generic properties of the structure of stochastic magnetic fields, transport of charged particles in tokamaks induced by magnetic perturbations, new aspects of particle turbulent transport, etc. The presentation is based on the classical and new unique mathematical tools of Hamiltonian dynamics, [...]

Features

This is the first book to systematically consider the modern aspects of chaotic dynamics of magnetic field lines and charged particles in magnetically confined fusion plasmas. The analytical models describing the generic features of equilibrium magnetic fields and magnetic perturbations in modern fusion devices are presented. It describes mathematical and physical aspects of onset of chaos, generic [...]

Contents

Hamiltonian Representation of Magnetic Field.- Magnetic Field Structure of Equilibrium Plasmas.- Magnetic Field Perturbations.- Hamiltonian Equations for the Guiding Center Motion of Particles.- Drift Orbits in Equilibrium Plasmas.- Methods to Study the Hamiltonian Systems.- Onset of Dynamical Chaos: Mathematical Aspects.- Onset of Dynamical Chaos: Physical Aspects.- Magnetic Field Structure Induced by Resonant Magnetic Perturbations in Tokamaks.- Transport of Field Lines and Particles in a Stochastic Magnetic Field.- Transport of Particles in a Turbulent Field.

Fields of interest

Atoms and Molecules in Strong Fields, Laser Matter Interaction; Plasma Physics; Numerical and Computational Physics; Applied and Technical Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01889-8

Hardcover

2014. XX, 428 p. 175 illus., 27 illus. in color. (Springer Series on Atomic, Optical, and Plasma Physics, Vol. 78) ISBN 978-3-319-01889-8

Due: October 31, 2013

A. Chin, Nokia Research Center, Beijing, China (P.R.); D. Zhang, Institut Telecom SudParis, Evry Cedex, France (Eds.)

Mobile Social Networking

An Innovative Approach

The use of contextually aware, pervasive, distributed computing, and sensor networks to bridge the gap between the physical and online worlds is the basis of mobile social networking. This book shows how applications can be built to provide mobile social networking, the research issues that need to be solved to enable this vision, and how mobile social networking can be used to provide computational intelligence that will improve daily life. With contributions from the fields of sociology, computer science, human-computer interaction and design, this book demonstrates how mobile social networks can be inferred from users' physical interactions both with the environment and with others, [...]

Features

The use of contextually aware, pervasive, distributed computing, and sensor networks to bridge the gap between the physical and online worlds is the basis of mobile social networking. This book shows how applications can be built to provide mobile social networking, the research issues that need to be solved to enable this vision, and how mobile social networking can be used to provide computational [...]

Contents

1. Introduction.- 2. Socially Aware Computing: Concepts, Technologies, and Practices.- 3. Ephemeral Social Networks.- 4. Social Behavior in Mobile Social Networks: Characterizing Links, Roles and Communities.- 5. Mobile Social Service Design for Special Context.- 6. Exploiting Personal and Community Context in Mobile Social Networks.- 7. Enhancing Mobile Social Networks with Ambient Intelligence.- 8. Data Analysis on Location-Based Social Networks.- 9. Towards Trustworthy Mobile Social Networking.- 10. Conclusions.

Fields of interest

Complex Networks; Computer Communication Networks; Communications Engineering, Networks; Communication Studies; Complexity; User Interfaces and Human Computer Interaction

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8578-0

Hardcover

2014. XII, 258 p. 61 illus., 58 illus. in color. (Computational Social Sciences) ISBN 978-1-4614-8578-0

Due: November 30, 2013

M.Y. Kagan, P.L. Kapitza Institute, Moscow, Russian Federation

Modern trends in Superconductivity and Superfluidity

This book concisely presents the latest trends in the physics of superconductivity and superfluidity and magnetism in novel systems, as well as the problem of BCS-BEC crossover in ultracold quantum gases and high-Tc superconductors. It further illuminates the intensive exchange of ideas between these closely related fields of condensed matter physics over the last 30 years of their dynamic development. The content is based on the author's original findings obtained at the Kapitza Institute, as well as advanced lecture courses he held at the Moscow Engineering Physical Institute, Amsterdam University, Loughborough University and LPTMS Orsay between 1994 and 2011. In addition to the [...]

Features

This book concisely presents the latest trends in the physics of superconductivity and superfluidity and magnetism in novel systems, as well as the problem of BCS-BEC crossover in ultracold quantum gases and high-Tc superconductors. It further illuminates the intensive exchange of ideas between these closely related fields of condensed matter physics over the last 30 years of their dynamic development. The [...]

Contents

Introduction.- Part I.- Hydrodynamics of rotating superfluids with quantized vortices.- The foundation of Landau theory for superfluid hydrodynamics.- Hydrodynamics of rotating superfluids.- Hydrodynamics of fast rotations.- Opposite case of a single bended vortex line for extremely slow rotations ($\Omega \sim \Omega_{C1}$).- Experimental situation and discussion. How to achieve the limit of the fast rotations at not very high frequencies in He II - 3He mixtures and in superfluid 3He-B.- Reference list to Chapter 1.- 2. Quantum crystals. The search of supersolidity.- Quantum crystals. Phase diagram. The [...]

Fields of interest

Condensed Matter Physics; Quantum Gases and Condensates; Theoretical, Mathematical and Computational Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-6960-1

Softcover

2014. XXIV, 541 p. 216 illus. (Lecture Notes in Physics, Vol. 874) ISBN 978-94-007-6960-1

Due: November 29, 2013

J. Bartolomé, F. Luis, J.F. Fernández (Eds.)

Molecular Magnets

Physics and Applications

This book provides an overview of the physical phenomena discovered in magnetic molecular materials over the last 20 years. It is written by leading scientists having made the most important contributions to this active area of research. The main topics of this book are the principles of quantum tunneling and quantum coherence of single-molecule magnets (SMMs), phenomena which go beyond the physics of individual molecules, such as the collective behavior of arrays of SMMs, the physics of one-dimensional single-chain magnets and magnetism of SMMs grafted on substrates. The potential applications of these physical phenomena to classical and quantum information, communication[...]

Features

This book provides an overview of the physical phenomena discovered in magnetic molecular materials over the last 20 years. It is written by leading scientists having made the most important contributions to this active area of research. The main topics of this book are the principles of quantum tunneling and quantum coherence of single-molecule magnets (SMMs), phenomena which go beyond the physics of [...]

Contents

From the Contents: Tunneling of single molecule magnets.- Theory of spin tunneling in magnetic molecules.- Quantum tunneling in single molecule magnets: from the early studies to quantum coherence.- From quantum relaxation to resonant spin tunneling.- Magnetic quantum tunneling through the ground state.

Fields of interest

Magnetism, Magnetic Materials; Nanoscale Science and Technology; Metallic Materials; Nanotechnology and Microengineering; Applied and Technical Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40608-9

Hardcover

2014. XII, 410 p. 175 illus., 101 illus. in color. (NanoScience and Technology)
ISBN 978-3-642-40608-9

Due: November 30, 2013

V.G. Dubrovskii, St. Petersburg Academic University, St. Petersburg, Russian Federation

Nucleation Theory and Growth of Nanostructures

Semiconductor nanostructures such as nanowires are promising building blocks of future nanoelectronic, nanophotonic and nanosensing devices. Their physical properties are primarily determined by the epitaxy process which is rather different from the conventional thin film growth. This book shows how the advanced nucleation theory can be used in modeling of growth properties, morphology and crystal phase of such nanostructures. The book represents a systematic account of modern nucleation theory in open systems, nanostructure nucleation and growth mechanisms, and possibilities for tuning the nanostructure properties to the desired values.

Features

Semiconductor nanostructures such as nanowires are promising building blocks of future nanoelectronic, nanophotonic and nanosensing devices. Their physical properties are primarily determined by the epitaxy process which is rather different from the conventional thin film growth. This book shows how the advanced nucleation theory can be used in modeling of growth properties, morphology and crystal phase of [...]

Contents

Foreword by Zh. I. Alferov.- Introduction.- Fundamentals of nucleation theory.- Kinetics of phase transition.- Quantum dots and nanoneedles.- Growth of semiconductor nanowires.- Crystal structure of III-V nanowires.

Fields of interest

Nanoscale Science and Technology; Semiconductors; Optical and Electronic Materials; Crystallography; Surface and Interface Science, Thin Films; Nanotechnology and Microengineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39659-5

Hardcover

2013. XIII, 603 p. 358 illus., 126 illus. in color. (NanoScience and Technology)
ISBN 978-3-642-39659-5

Due: October 31, 2013

M. Huber, Paul Scherrer Institut, Villigen PSI, Switzerland; A. Pauluhn, J.L. Culhane, University College London, Dorking, Surrey, United Kingdom; J.G. Timothy, K. Wilhelm, MPI für Sonnen-systemforschung, Katlenburg-Lindau, Germany; A. Zehnder (Eds.)

Observing Photons in Space

A Guide to Experimental Space Astronomy

An ideal resource for lecturers, this book provides a comprehensive review of experimental space astronomy. The number of astronomers whose knowledge and interest is concentrated on interpreting observations has grown substantially in the past decades; yet, the number of scientists who are familiar with and capable of dealing with instrumentation has dwindled. All of the authors of this work are leading and experienced experts and practitioners who have designed, built, tested, calibrated, launched and operated advanced observing equipment for space astronomy. This book also contains concise information on the history of the field, supported by appropriate references. Moreover,[...]

Features

An ideal resource for lecturers, this book provides a comprehensive review of experimental space astronomy. The number of astronomers whose knowledge and interest is concentrated on interpreting observations has grown substantially in the past decades; yet, the number of scientists who are familiar with and capable of dealing with instrumentation has dwindled. All of the authors of this work are leading and [...]

Contents

From the Contents: Part I: Observing Photons in Space.- Part II: Energy and Wavelength Regions.- Part III: Techniques and Systems.- Part IV: Detectors.- Chapter 20: Detector Types Used in Space.- Part V: Polarimetry.- Part VI: General Techniques.- Part VII: Space Environment.

Fields of interest

Spectroscopy and Microscopy; Atomic, Molecular, Optical and Plasma Physics; Astronomy, Astrophysics and Cosmology; Remote Sensing / Photogrammetry

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-7803-4

Hardcover

2014. XVII, 741 p. 313 illus., 147 illus. in color. (ISSI Scientific Report Series, Vol. 9)
ISBN 978-1-4614-7803-4

Due: October 31, 2013

W.F. Huebner, W.D. Barfield

Opacity

The interaction of radiation with matter is a fundamental process in the universe; in particular, the absorption and scattering of radiation by matter (the opacity) govern the formation, evolution, and structure of stars and planets. But opacity is also important in many terrestrial applications in which radiation is the dominant means of energy transfer, such as controlled nuclear-fusion, laser ablation, atmospheric entry and reentry, and the "greenhouse" effect. This book covers all aspects of opacity and equations of state for plasmas, gases, vapors, and dust and emphasizes the continuous transformation of phases and molecular compositions with changing density and temperature[...]

Features

The interaction of radiation with matter is a fundamental process in the universe; in particular, the absorption and scattering of radiation by matter (the opacity) govern the formation, evolution, and structure of stars and planets. But opacity is also important in many terrestrial applications in which radiation is the dominant means of energy transfer, such as controlled nuclear-fusion, laser ablation, [...]

Contents

Definitions.- Atomic and Molecular Structure.- Equation of State.- Radiative Cross Sections.- Continuum transitions.- Bound-Bound Transitions.- Electron Conduction.- Equations of State and Opacities for Mixtures.- Limits, Approximations, Scaling, and Interpolation.- Uncertainties in Models, Methods, and Calculations.

Fields of interest

Astronomy, Observations and Techniques

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8796-8

Hardcover

2014. XIII, 514 p. 98 illus., 1 illus. in color. (Astrophysics and Space Science Library, Vol. 402)
ISBN 978-1-4614-8796-8

Due: November 30, 2013

N. Barbero, Università di Torino, Torino, Italy; M. Delfino, Università di Torino, Torino, Italy; C. Palmisano, Università di Torino, Torino, Italy; G. Zosi, Università di Torino, Torino, Italy

Pathways Through Applied and Computational Physics

This book is intended for undergraduates and young researchers who wish to understand the role that different branches of physics and mathematics play in the execution of actual experiments. The unique feature of the book is that all the subjects addressed are strictly interconnected within the context of the execution of a single experiment with very high accuracy, namely the redetermination of the Avogadro constant NA, one of the fundamental physical constants. The authors illustrate how the basic laws of physics are applied to describe the behavior of the quantities involved in the measurement of NA and explain the mathematical reasoning and computational tools that have been[...]

Features

This book is intended for undergraduates and young researchers who wish to understand the role that different branches of physics and mathematics play in the execution of actual experiments. The unique feature of the book is that all the subjects addressed are strictly interconnected within the context of the execution of a single experiment with very high accuracy, namely the redetermination of the Avogadro [...]

Contents

Introduction.- Fundamentals of X-ray diffraction and X-ray interferometry.- Linear elasticity and anisotropy.- Propagation of thermal energy.- Antivibration mounting system.- Appendix.- Bibliography.

Fields of interest

Numerical and Computational Physics; Applied and Technical Physics; Theoretical, Mathematical and Computational Physics; Mathematical Software

Target groups

Upper undergraduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-88-470-5219-2

Softcover

2014. XXXV, 329 p. 118 illus. (Undergraduate Lecture Notes in Physics)
ISBN 978-88-470-5219-2

Due: October 31, 2013

H. Kleinpoppen, B. Lohmann, Universität Münster, Münster, Germany; A. Grum-Grzhimailo, Moscow State University, Moskva, Russian Federation

Perfect/Complete Scattering Experiments

Probing Quantum Mechanics on Atomic and Molecular Collisions and Coincidences

The main goal of this book is to elucidate what kind of experiment must be performed in order to determine the full set of independent parameters which can be extracted and calculated from theory, where electrons, photons, atoms, ions, molecules, or molecular ions may serve as the interacting constituents of matter. The feasibility of such perfect' and-or 'complete' experiments, providing the complete quantum mechanical knowledge of the process, is associated with the enormous potential of modern research techniques, both, in experiment and theory. It is even difficult to overestimate the role of theory in setting of the complete experiment, starting with the fact that an experiment[...]

Features

The main goal of this book is to elucidate what kind of experiment must be performed in order to determine the full set of independent parameters which can be extracted and calculated from theory, where electrons, photons, atoms, ions, molecules, or molecular ions may serve as the interacting constituents of matter. The feasibility of such perfect' and-or 'complete' experiments, providing the complete [...]

Contents

Analysis of Atomic Collisions.- Angle and Spin Resolved Analysis of Resonantly Excited Auger Decay.- Complete Experiments for Half-Collision, Auger Decay.- Analysis of Molecular Collisions.- Conclusions.

Fields of interest

Atomic, Molecular, Optical and Plasma Physics; Theoretical, Mathematical and Computational Physics; Measurement Science, Instrumentation; Engineering (general)

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40513-6

Hardcover

2014. XI, 380 p. 177 illus., 6 illus. in color. (Springer Series on Atomic, Optical, and Plasma Physics, Vol. 75)
ISBN 978-3-642-40513-6

Due: October 31, 2013

M. Perenzoni, Fondazione Bruno Kessler, Povo, Italy; D.J. Paul, University of Glasgow, Glasgow, United Kingdom (Eds.)

Physics and Applications of Terahertz Radiation

This book covers the latest advances in the techniques employed to manage the THz radiation and its potential uses. It has been subdivided in three sections: THz Detectors, THz Sources, Systems and Applications. These three sections will allow the reader to be introduced in a logical way to the physics problems of sensing and generation of the terahertz radiation, the implementation of these devices into systems including other components and finally the exploitation of the equipment for real applications in some different field. All of the sections and chapters can be individually addressed in order to deepen the understanding of a single topic without the need to read the whole[...]

Features

This book covers the latest advances in the techniques employed to manage the THz radiation and its potential uses. It has been subdivided in three sections: THz Detectors, THz Sources, Systems and Applications. These three sections will allow the reader to be introduced in a logical way to the physics problems of sensing and generation of the terahertz radiation, the implementation of these devices into [...]

Contents

THz Detectors.- 1 Quantum Well Photodetectors; Fabrizio Castellano.- 2 Bolometric Detectors; François Simoens.- 3 Terahertz Plasma Field-Effect Transistors; Wojciech Knap, Dominique Coquillat, Nina Dyakonova, Dmitry But, Taiichi Otsuji and Frederic Teppe.- THz Sources.- 4 Quantum Cascade Lasers; Douglas Paul.- 5 Relativistic Electrons Based Sources; Andrea Doria.- 6 Non-linear Optical Generation; Graeme Malcolm, David A. Walsh, Marc Chateaufneuf.- Systems and Applications.- 7 THz Control with Metamaterials; David R. S. Cumming, Timothy D. Drysdale, James P. Grant.- 8 Time Domain[...]

Fields of interest

Applied and Technical Physics; Microwaves, RF and Optical Engineering; Applied Optics, Optoelectronics, Optical Devices; Optical and Electronic Materials; Atomic/Molecular Structure and Spectra

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-3836-2

Hardcover

2014. VIII, 255 p. 172 illus., 45 illus. in color. (Springer Series in Optical Sciences, Vol. 173)
ISBN 978-94-007-3836-2

Due: October 31, 2013

J. Wu, University of Electronic Science and, Chengdu, China (P.R.); Z.M. Wang, University of Electronic Science and, Chengdu, China (P.R.) (Eds.)

Quantum Dot Solar Cells

The third generation of solar cells includes those based on semiconductor quantum dots. This sophisticated technology applies nanotechnology and quantum mechanics theory to enhance the performance of ordinary solar cells. Although a practical application of quantum dot solar cells has yet to be achieved, a large number of theoretical calculations and experimental studies have confirmed the potential for meeting the requirement for ultra-high conversion efficiency. In this book, high-profile scientists have contributed tutorial chapters that outline the methods used in and the results of various quantum dot solar cell designs, including quantum dot intermediate band solar cells, hot[...]

Features

The third generation of solar cells includes those based on semiconductor quantum dots. This sophisticated technology applies nanotechnology and quantum mechanics theory to enhance the performance of ordinary solar cells. Although a practical application of quantum dot solar cells has yet to be achieved, a large number of theoretical calculations and experimental studies have confirmed the potential for [...]

Contents

Preface.- Chapter 1: Recent Progress in Colloidal Quantum Dot Sensitized Solar Cells.- Chapter 2: Hierarchically Nanostructured Photoelectrodes for Quantum-Dot-Sensitized Solar Cells.- Chapter 3: Hybrid Optoelectronic Devices with Colloidal Quantum Dots.- Chapter 4: Control of photoinduced charge transfer in semiconducting quantum dot-based hybrids.- Chapter 5: Theory of Quantum Dot Arrays for Solar Cell Devices.- Chapter 6: Material Selection for the Quantum Dot Intermediate Band Solar Cell.- Chapter 7: AlGaInAs quantum dots for intermediate band formation in solar cell devices.- [...]

Fields of interest

Quantum Optics, Quantum Electronics, Nonlinear Optics; Engineering Thermodynamics, Heat and Mass Transfer; Energy Technology; Energy Storage; Optical and Electronic Materials; Nanoscale Science and Technology

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8147-8

Hardcover

2014. XIV, 387 p. 220 illus., 173 illus. in color. (Lecture Notes in Nanoscale Science and Technology, Vol. 15)
ISBN 978-1-4614-8147-8

Due: October 31, 2013

G. Jaeger, Boston University, Boston, USA

Quantum Objects

Non-Local Correlation, Causality and Objective Indefiniteness in the Quantum World

This monograph identifies the essential characteristics of the objects described by current quantum theory and considers their relationship to space-time. In the process, it explicates the senses in which quantum objects may be consistently considered to have parts of which they may be composed or into which they may be decomposed. The book also demonstrates the degree to which reduction is possible in quantum mechanics, showing it to be related to the objective indefiniteness of quantum properties and the strong non-local correlations that can occur between the physical quantities of quantum subsystems. Careful attention is paid to the relationships among such property correlations,[...]

Features

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Contents

Non-locality, Communication, and Entanglement.- Einstein locality.- Bell locality.- Communication.- Non-locality.- Entanglement.- Causation, Imprecision, and Indefiniteness.- Probability.- Causation.- Indeterminacy.- Imprecision.- Indefiniteness.- Individuals, Parts, and Wholes.- Potentiality.- Discernibility.- Individuation.- Persistence.- Parts and wholes.

Fields of interest

Quantum Physics; History and Philosophical Foundations of Physics; Philosophy of Science; Quantum Information Technology, Spintronics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-37628-3

Hardcover

2014. XI, 203 p. 23 illus. (Fundamental Theories of Physics, Vol. 175)
ISBN 978-3-642-37628-3

usually dispatched within 3 to 5 business days

G.M. Nikolopoulos, Foundation for Research and, Heraklion, Greece; I. Jex, Czech Technical University, Prague, Czech Republic (Eds.)

Quantum State Transfer and Network Engineering

Faithful communication is a necessary precondition for large-scale quantum information processing and networking, irrespective of the physical platform. Thus, the problems of quantum-state transfer and quantum-network engineering have attracted enormous interest over the last years, and constitute one of the most active areas of research in quantum information processing. The present volume introduces the reader to fundamental concepts and various aspects of this exciting research area, including links to other related areas and problems. The implementation of state-transfer schemes and the engineering of quantum networks are discussed in the framework of various quantum optical and [...]

Features

Faithful communication is a necessary precondition for large-scale quantum information processing and networking, irrespective of the physical platform. Thus, the problems of quantum-state transfer and quantum-network engineering have attracted enormous interest over the last years, and constitute one of the most active areas of research in quantum information processing. The present volume introduces the [...]

Contents

Spin Chains as Data Buses, Logic Buses and Entanglers.- Communication in Engineered Quantum Networks.- Dual- and Multi-rail Encoding.- Quantum State Transfer with Limited Resources.- Robustness of Spin-chain State-transfer Schemes.- Implementation of State Transfer Hamiltonians in Spin Chains with Magnetic Resonance Techniques.- State Transfer Hamiltonians in Photonic Lattices.

Fields of interest

Quantum Information Technology, Spintronics; Communications Engineering, Networks; Quantum Physics; Special Purpose and Application-Based Systems; Quantum Computing

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39936-7

Hardcover

2014. X, 250 p. 80 illus., 68 illus. in color. (Quantum Science and Technology)
ISBN 978-3-642-39936-7

Due: October 31, 2013

K. Fischer, Tokyua College of Technology, Shunan-Shi, Japan

Relativity for Everyone

How Space-Time Bends

This book explains the theory of special and general relativity in detail, without digressions such as information on Einstein's life or the historical background. However, complicated calculations are replaced with figures and thought experiments, the text being formulated in such a way that the reader will be able to understand the gist intuitively. The first part of the book focuses on the essentials of special relativity. Explanations are provided of the famous equivalence between mass and energy and of why Einstein was able to use the theory of electrodynamics as a template for his "electrodynamics of moving bodies", simply because besides the speed of light, the electric charge[...]

Features

This book explains the theory of special and general relativity in detail, without digressions such as information on Einstein's life or the historical background. However, complicated calculations are replaced with figures and thought experiments, the text being formulated in such a way that the reader will be able to understand the gist intuitively. The first part of the book focuses on the essentials of [...]

Contents

Light, matter, and energy.- Light, time, mass, and length.- Light, electricity, and magnetism.- Acceleration and inertia.- Inertia and gravity.- Equivalence principle in action.- How mass creates gravity.- Solving the Einstein equation of gravity.- General Relativity in action.- Epilogue.- Appendices.

Fields of interest

Classical and Quantum Gravitation, Relativity Theory; Popular Science in Astronomy; Cosmology

Target groups

Popular/general

Type of publication

Monograph

More on www.springer.com/978-3-319-00586-7

Softcover

2013. XIII, 129 p. 114 illus., 2 illus. in color.
ISBN 978-3-319-00586-7

usually dispatched within 3 to 5 business days

J. Franco, B. Kaczer, G. Groeseneken

Reliability of High Mobility SiGe Channel MOSFETs for Future CMOS Applications

Due to the ever increasing electric fields in scaled CMOS devices, reliability is becoming a showstopper for further scaled technology nodes. Although several groups have already demonstrated functional Si channel devices with aggressively scaled Equivalent Oxide Thickness (EOT) down to 5 Å, a 10 year reliable device operation cannot be guaranteed anymore due to severe Negative Bias Temperature Instability. This book focuses on the reliability of the novel (Si)Ge channel quantum well pMOSFET technology. This technology is being considered for possible implementation in next CMOS technology nodes, thanks to its benefit in terms of carrier mobility and device threshold voltage tuning. We[...]

Features

Due to the ever increasing electric fields in scaled CMOS devices, reliability is becoming a showstopper for further scaled technology nodes. Although several groups have already demonstrated functional Si channel devices with aggressively scaled Equivalent Oxide Thickness (EOT) down to 5 Å, a 10 year reliable device operation cannot be guaranteed anymore due to severe Negative Bias Temperature Instability. [...]

Contents

1 Introduction.- 2 Degradation mechanisms.- 3 Techniques and devices.- 4 Negative Bias Temperature Instability in (Si)Ge pMOSFETs.- 5 Negative Bias Temperature Instability in nanoscale devices.- 6 Channel Hot Carriers and other reliability mechanisms.- 7 Conclusions and perspectives.

Fields of interest

Semiconductors; Circuits and Systems; Optical and Electronic Materials; Electronic Circuits and Devices

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-94-007-7662-3

Hardcover

2014. XIX, 184 p. 219 illus. (Springer Series in Advanced Microelectronics, Vol. 47)
ISBN 978-94-007-7662-3

Due: October 31, 2013

E.F. Milone, W.J.F. Wilson

Solar System Astrophysics

Background Science and the Inner Solar System

The second edition of Solar System Astrophysics: Background Science and the Inner Solar System provides new insights into the burgeoning field of planetary astronomy. As in the first edition, this volume begins with a rigorous treatment of coordinate frames, basic positional astronomy, and the celestial mechanics of two and restricted three body system problems. Perturbations are treated in the same way, with clear step-by-step derivations. Then the Earth's gravitational potential field and the Earth-Moon system are discussed, and the exposition turns to radiation properties with a chapter on the Sun. The exposition of the physical properties of the Moon and the terrestrial planets[...]

Features

The second edition of Solar System Astrophysics: Background Science and the Inner Solar System provides new insights into the burgeoning field of planetary astronomy. As in the first edition, this volume begins with a rigorous treatment of coordinate frames, basic positional astronomy, and the celestial mechanics of two and restricted three body system problems. Perturbations are treated in the same [...]

Contents

Perceptions of the Solar System in History.- Basic Tools and Techniques.- Celestial Mechanics.- The Core of the Solar System: The Sun.- General Properties of Terrestrial Planets.- Planetary Heat Flow and Temperatures.- Rocks and Minerals.- The Moon's Surface, Structure, and Evolution.- Surface Science of our Terrestrial Planets.

Fields of interest

Astronomy, Astrophysics and Cosmology; Planetology; Astrophysics and Astroparticles

Target groups

Upper undergraduate

Type of publication

Monograph

More on www.springer.com/978-1-4614-8847-7

Hardcover

2014. XV, 335 p. 177 illus., 28 illus. in color. (Astronomy and Astrophysics Library)
ISBN 978-1-4614-8847-7

Due: November 15, 2013

E.F. Milone, W.J.F. Wilson

Solar System Astrophysics

Planetary Atmospheres and the Outer Solar System

The second edition of Solar System Astrophysics: Planetary Atmospheres and the Outer Solar System provides a timely update of our knowledge of planetary atmospheres and of the bodies of the outer solar system and their analogs in other planetary systems. This volume begins with an expanded treatment of the physics, chemistry, and meteorology of the atmospheres of the Earth, Venus, and Mars, moving on to their magnetospheres and then to a full discussion of the gas and ice giants and their properties. From here, attention switches to the small bodies of the solar system, beginning with the natural satellites. The comets, meteors, meteorites, and asteroids are discussed in order, and[...]

Features

The second edition of Solar System Astrophysics: Planetary Atmospheres and the Outer Solar System provides a timely update of our knowledge of planetary atmospheres and the bodies of the outer solar system and their analogs in other planetary systems. This volume begins with an expanded treatment of the physics, chemistry, and meteorology of the atmospheres of the Earth, Venus, and Mars, moving on to [...]

Contents

Planetary Atmospheres.- Planetary Ionospheres and Magnetospheres.- The Giant Planets.- Satellite and Ring Systems.- Comets and Meteors.- Meteorites, Asteroids, and the Age and Origin of Planetary Systems.- Extra-solar Planetary Systems.

Fields of interest

Astronomy, Astrophysics and Cosmology; Planetology; Astrophysics and Astroparticles

Target groups

Upper undergraduate

Type of publication

Monograph

More on www.springer.com/978-1-4614-9089-0

Hardcover

2014. XV, 510 p. 188 illus., 27 illus. in color. (Astronomy and Astrophysics Library)
ISBN 978-1-4614-9089-0

Due: November 15, 2013

V. Kuznetsov, IZMIRAN, Troitsk, Russian Federation (Ed.)

The Coronas-F Space Mission

Key Results for Solar Terrestrial Physics

This volume is the updated and extended translation of the Russian original. It presents the results of observations of solar activity and its effects in the Earth space environment carried out from July 2001 to December 2005 on board the CORONAS-F space mission. The general characteristics of the CORONAS-F scientific payload are provided with a description of the principal experiments. The main results focus on the global oscillations of the Sun (p-modes), solar corona, solar flares, solar cosmic rays, Earth's radiation belts, and upper atmosphere. The book will be welcomed by students, post-graduates, and scientists working in the field of solar and solar-terrestrial physics.This[...]

Features

This volume is the updated and extended translation of the Russian original. It presents the results of observations of solar activity and its effects in the Earth space environment carried out from July 2001 to December 2005 on board the CORONAS-F space mission. The general characteristics of the CORONAS-F scientific payload are provided with a description of the principal experiments. The main results [...]

Contents

CORONAS-F Project: The study of solar activity and its effects on the Earth.- Brightness fluctuations and global oscillations of the Sun (DIFOS experiment).- Study of Active Phenomena in the Solar Corona in the 8–350 Å Region by Imaging Spectroscopy Methods (SPIRIT Experiment).- Experiment with the SPR-N instrument onboard the CORONAS-F satellite: polarization, temporal and spectral characteristics of the hard X-ray of the solar flares.- Observations of Doppler shifts of X-ray lines in solar flares spectra based on DIOGENESS spectrometer data.- Investigations of physical processes in[...]

Fields of interest

Extraterrestrial Physics, Space Sciences; Astrophysics and Astroparticles; Geophysics and Environmental Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-39267-2

Hardcover

2014. X, 535 p. 318 illus., 48 illus. in color. (Astrophysics and Space Science Library, Vol. 400)
ISBN 978-3-642-39267-2

Due: October 31, 2013

B.C. Reed, Alma College, Alma, USA

The History and Science of the Manhattan Project

The development of atomic bombs under the auspices of the U. S. Army's Manhattan Project during World War II is considered to be the outstanding news story of the twentieth century. In this book, a physicist and expert on the history of the Project presents a comprehensive overview of this momentous achievement. The first three chapters cover the history of nuclear physics from the discovery of radioactivity to the discovery of fission, and would be ideal for instructors of a sophomore-level "Modern Physics" course. Student-level exercises at the ends of the chapters are accompanied by answers. Chapter 7 covers the physics of first-generation fission weapons at a similar level, again[...]

Features

The development of atomic bombs under the auspices of the U. S. Army's Manhattan Project during World War II is considered to be the outstanding news story of the twentieth century. In this book, a physicist and expert on the history of the Project presents a comprehensive overview of this momentous achievement. The first three chapters cover the history of nuclear physics from the discovery of [...]

Contents

Introduction and Overview.- A Short History of Nuclear Physics to the Mid-1930s.- The Discovery and Interpretation of Nuclear Fission.- Organizing the Manhattan Project, 1939-1943.- Oak Ridge, CP-1, and the Clinton Engineer Works.- The Hanford Engineer Works.- Los Alamos, Trinity, and Tinian.- Hiroshima and Nagasaki.- The Legacy of Manhattan.- Glossary.

Fields of interest

Nuclear Physics, Heavy Ions, Hadrons; History and Philosophical Foundations of Physics; Nuclear Chemistry

Target groups

Lower undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-3-642-40296-8

Hardcover

2014. XVI, 451 p. 173 illus. (Undergraduate Lecture Notes in Physics)
ISBN 978-3-642-40296-8

Due: October 31, 2013

L.A. DeWerd, University of Wisconsin–Madison, Madison, USA; M. Kissick, University of Wisconsin–Madison, Madison, USA (Eds.)

The Phantoms of Medical and Health Physics

Devices for Research and Development

The purpose and subject of this book is to provide a comprehensive overview of all types of phantoms used in medical imaging, therapy, nuclear medicine and health physics. For ionizing radiation, dosimetry with respect to issues of material composition, shape, and motion/position effects are all highlighted. For medical imaging, each type of technology will need specific materials and designs, and the physics and indications will be explored for each type. Health physics phantoms are concerned with some of the same issues such as material heterogeneity, but also unique issues such as organ-specific radiation dose from sources distributed in other organs. Readers will be able to use[...]

Features

A comprehensive overview of all types of phantoms used in medical imaging, therapy, nuclear medicine and health physics is provided in this title. For ionizing radiation, dosimetry with respect to issues of material composition, shape, and motion/position effects are all highlighted. For medical imaging, each type of technology will need specific materials and designs, and the physics and indications will be [...]

Contents

1. Introduction to Phantoms of Medical and Health Physics.- Section I: Phantoms of Radiation Therapy.- 2. Radiation Therapy Dosimetry Phantoms.- 3. Anthropomorphic Phantoms for Radiation Oncology Medical Physics.- 4. Motion Phantoms for Therapy.- 5. Phantoms in Brachytherapy.- Section II. Imaging Phantoms.- 6. Imaging Phantoms: Conventional X-ray Imaging Applications.- 7. Computer Tomography (CT) Phantom Applications.- 8. Mammography Phantoms.- 9. Phantoms for Ultrasound Experimentation and Quality Control.- 10. Phantoms for Magnetic Resonance Imaging.- 11. Nuclear Medicine phantoms.- [...]

Fields of interest

Medical and Radiation Physics; Imaging / Radiology; Biomedical Engineering; Nuclear Medicine; Ultrasound; Biophysics and Biological Physics

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-8303-8

Hardcover

2013. IX, 356 p. 114 illus. (Biological and Medical Physics, Biomedical Engineering)
ISBN 978-1-4614-8303-8

Due: September 30, 2013

C.D.P. Lagos, Durham University, Durham, United Kingdom

The Physics of Galaxy Formation

This thesis addresses two of the central processes which underpin the formation of galaxies: the formation of stars and the injection of energy into the interstellar medium from supernovae, called feedback. In her work Claudia Lagos has completely overhauled the treatment of these processes in simulations of galaxy formation. Her thesis makes two major breakthroughs, and represents the first major steps forward in these areas in more than a decade. Her work has enabled, for the first time, predictions to be made which can be compared against new observations which probe the neutral gas content of galaxies, opening up a completely novel way to constrain the models. The treatment of [...]

Features

This thesis addresses two of the central processes which underpin the formation of galaxies: the formation of stars and the injection of energy into the interstellar medium from supernovae, called feedback. In her work Claudia Lagos has completely overhauled the treatment of these processes in simulations of galaxy formation. Her thesis makes two major breakthroughs, and represents the first major steps [...]

Contents

Introduction.- The galaxy formation model.- On the impact of empirical and theoretical star formation laws on galaxy formation.- Cosmic evolution of the atomic and molecular gas content of galaxies and scaling relations.- Predictions for the CO emission of galaxies from a coupled simulation of galaxy formation and photon dominated regions.- A dynamical model of supernova feedback: gas outflows from the interstellar medium.- Conclusions.- Non-exponential star formation laws and their application to a numerical model.- The CO line and IR luminosity.- Radial profiles of the stellar and [...]

Fields of interest

Cosmology; Astrophysics and Astroparticles

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01525-5

Hardcover

2014. XIII, 247 p. 86 illus. in color. (Springer Theses)
ISBN 978-3-319-01525-5

Due: October 31, 2013

R. Caminiti, Università di Roma la Sapienza, Rome, Italy; L. Gontrani, CNR-ISM, Rome, Italy (Eds.)

The Structure of Ionic Liquids

This volume describes the most recent findings on the structure of ILs interpreted through cutting-edge experimental and theoretical methods. Research in the field of ionic liquids (ILs) keeps a fast and steady pace. Since these new-generation molten salts first appeared in the chemistry and physics landscape, a large number of new compounds has been synthesized. Most of them display unexpected behaviour and possess stunning properties. The coverage in this book ranges from the mesoscopic structure of ILs to their interaction with proteins. The reader will learn how diffraction techniques (small and large angle X-Ray and neutron scattering, powder methods), X-Ray absorption[...]

Features

This volume describes the most recent findings on the structure of ILs interpreted through cutting-edge experimental and theoretical methods. Research in the field of ionic liquids (ILs) keeps a fast and steady pace. Since these new-generation molten salts first appeared in the chemistry and physics landscape, a large number of new compounds has been synthesized. Most of them display unexpected behaviour [...]

Contents

1 X-Ray Diffraction Studies of Ionic Liquids: from Spectra to Structure and Back.- 2 Structural Organization in Neat Ionic Liquids and in their Mixtures.- 3 Raman Spectroscopy in Ionic Liquids under Variable Thermodynamic and Environmental Conditions.- 4 CompChem and NMR Probing Ionic Liquids.- 5 Theoretical Description of Ionic Liquids.- 6 Structural Characterization of Ionic Liquids by X-Ray Absorption Spectroscopy.- 7 Physical-Chemical Properties of Ionic Liquid-containing Mixtures.

Fields of interest

Soft and Granular Matter, Complex Fluids and Microfluidics; Characterization and Evaluation of Materials; Physical Chemistry; Industrial Chemistry / Chemical Engineering

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-01697-9

Hardcover

2014. V, 224 p. 92 illus., 30 illus. in color. (Soft and Biological Matter)

ISBN 978-3-319-01697-9

Due: November 30, 2013

Th.L. Wilson, K. Rohlf, S. Hüttemeister, Zeiss Planetarium Bochum, Bochum, Germany

Tools of Radio Astronomy

This 6th edition of "Tools of Radio Astronomy", the most used introductory text in radio astronomy, has been revised to reflect the current state of this important branch of astronomy. This includes the use of satellites, low radio frequencies, the millimeter/sub-mm universe, the Cosmic Microwave Background and the increased importance of mm/sub-mm dust emission. Several derivations and presentations of technical aspects of radio astronomy and receivers, such as receiver noise, the Hertz dipole and beam forming have been updated, expanded, re-worked or complemented by alternative derivations. These reflect advances in technology. The wider bandwidths of the Jansky-VLA and long wave[...]

Features

This 6th edition of "Tools of Radio Astronomy", the most used introductory text in radio astronomy, has been revised to reflect the current state of this important branch of astronomy. This includes the use of satellites, low radio frequencies, the millimeter/sub-mm universe, the Cosmic Microwave Background and the increased importance of mm/sub-mm dust emission. Several derivations and presentations [...]

Contents

Radio Astronomical Fundamentals.- ElectromagneticWave Propagation Fundamentals.- Wave Polarization.- Signal Processing and Receivers: Theory.- Practical Receiver Systems.- Fundamentals of Antenna Theory.- Practical Aspects of Filled Aperture Antennas.- Single Dish Observational Methods.- Interferometers and Aperture Synthesis.- Emission Mechanisms of Continuous Radiation.- Some Examples of Thermal and Nonthermal Radio Sources.- Spectral Line Fundamentals.- Line Radiation from Atoms.- Radio Recombination Lines.- Overview of Molecular Basics.- Molecules in Interstellar Space.- Some Useful[...]

Fields of interest

Astronomy, Observations and Techniques; Microwaves, RF and Optical Engineering; Astrophysics and Astroparticles; Signal, Image and Speech Processing

Target groups

Graduate

Type of publication

Graduate/advanced undergraduate textbook

More on www.springer.com/978-3-642-39949-7

Hardcover

2014. XV, 619 p. 154 illus., 2 illus. in color. (Astronomy and Astrophysics Library)

ISBN 978-3-642-39949-7

Due: October 31, 2013

G.P. Zank

Transport Processes in Space Physics and Astrophysics

"Transport Processes in Space Physics and Astrophysics" is aimed at graduate level students to provide the necessary mathematical and physics background to understand the transport of gases, charged particle gases, energetic charged particles, turbulence, and radiation in an astrophysical and space physics context. Subjects emphasized in the work include collisional and collisionless processes in gases (neutral or plasma), analogous processes in turbulence fields and radiation fields, and allows for a simplified treatment of the statistical description of the system. A systematic study that addresses the common tools at a graduate level allows students to progress to a point where[...]

Features

Transport Processes in Space Physics and Astrophysics is aimed at graduate level students to provide the necessary mathematical and physics background to understand the transport of gases, charged particle gases, energetic charged particles, turbulence, and radiation in an astrophysical and space physics context. Subjects emphasized in the work include collisional and collisionless processes in gases [...]

Contents

Statistical Background.- The Boltzmann transport equation.- Charged particle transport in a collisional magnetized plasma.- Charged particle transport in a collisionless magnetized plasma.- The transport of low frequency turbulence.- Radiative transport.

Fields of interest

Astrophysics and Astroparticles; Plasma Physics; Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences

Target groups

Graduate

Type of publication

Monograph

More on www.springer.com/978-1-4614-8479-0

Softcover

2013. IX, 286 p. 21 illus., 1 illus. in color. (Lecture Notes in Physics, Vol. 877)

ISBN 978-1-4614-8479-0

Due: September 30, 2013

Psychology

I. Dincer, C.O. Colpan, Dokuz Eylul University, Buca, Turkey; F. Kadioglu, Istanbul Technical University, Maslak, Turkey (Eds.)

Causes, Impacts and Solutions to Global Warming

Global Warming: Causes, Impacts and Solutions covers all aspects of global warming including its causes, impacts, and engineering solutions. Energy and environment policies and strategies are scientifically discussed to expose the best ways to reduce global warming effects and protect the environment and energy sources affected by human activities. The importance of green energy consumption on the reduction of global warming, energy saving and energy security are also discussed. This book also focuses on energy management and conservation strategies for better utilization of energy sources and technologies in buildings and industry as well as ways of improving energy efficiency at the [...]

Features

This book covers all aspects of global warming including its causes, impacts, and engineering solutions. This book also focuses on energy management and conservation strategies for better utilization of energy sources and technologies in various sectors, ranging from industrial to residential as well as transportation. It provides ways of improving energy efficiency at the end use. In order to reduce [...]

Contents

Part. 1. Causes and Impacts.- Vegetation at Northern High Latitudes under Global Warming.- Exceptionally hot summers months in Central and Eastern Europe during the years 1951-2010.- Spatial Correlations and Distributions of Heating and Cooling Degree-day Normals in Turkey.- Use of Empirical Regression and Artificial Neural Network Models for Prediction of Global Solar Radiation in Dubai, UAE.- Turkish Water Foundation Climate Change Downscaling Model Principles.- Climate Change Expectations in the Next Half Century of Turkey.- Environmental pollution by organic contaminants as the [...]

Fields of interest

Renewable and Green Energy; Climate Change Management and Policy; Renewable and Green Energy; Sustainable Development

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4614-7587-3

Hardcover

2013. XII, 976 p. 473 illus., 264 illus. in color. ISBN 978-1-4614-7587-3

Due: October 31, 2013

R. Vepa, University of London, London, United Kingdom

Dynamic Modeling, Simulation and Control of Energy Generation

This book addresses the core issues involved in the dynamic modeling, simulation and control of a selection of energy systems such as gas turbines, wind turbines, fuel cells and batteries. The principles of modeling and control could be applied to other non-convention methods of energy generation such as solar energy and wave energy. A central feature of Dynamic Modeling, Simulation and Control of Energy Generation is that it brings together diverse topics in thermodynamics, fluid mechanics, heat transfer, electro-chemistry, electrical networks and electrical machines and focuses on their applications in the field of energy generation, its control and regulation. This book will help [...]

Features

This book addresses the core issues involved in the dynamic modeling, simulation and control of a selection of energy systems such as gas turbines, wind turbines, fuel cells and batteries. The principles of modeling and control could be applied to other non-convention methods of energy generation such as solar energy and wave energy. A central feature of Dynamic Modeling, Simulation and Control of [...]

Contents

Introduction to Energy Generation Principles.- Principles of Energy Conversion.- Modeling of Synchronous and Induction Machines.- Wind Power Generation and Control.- Dynamic Modeling of Gas Turbines and Compressors.- Modeling and Simulation of Fuel Cells.- Batteries: Modeling and State of Charge Estimation.- Non-Conventional Energy Generation: Solar, Wave and Tidal Energy Generation.

Fields of interest

Energy Efficiency (incl. Buildings); Renewable and Green Energy; Control; Environmental Engineering / Biotechnology

Target groups

Professional/practitioner

Type of publication

Monograph

More on www.springer.com/978-1-4471-5399-3

Hardcover

2013. XVI, 373 p. 111 illus., 11 illus. in color. (Lecture Notes in Energy, Vol. 20) ISBN 978-1-4471-5399-3

usually dispatched within 3 to 5 business days

Z. Hu, State Grid Energy Research Institute, Beijing, China (P.R.); Z. Hu, University of Delaware, Newark, USA

Electricity Economics: Production Functions with Electricity

Electricity Economics: Production Functions with Electricity studies the production output from analyzing patterns of electricity consumption. Since electricity data can be used to measure scenarios of economic performance due to its accuracy and reliability, it could therefore also be used to help scholars explore new research frontiers that directly and indirectly benefits human society. Our research initially explores a similar pattern to substitute the Cobb-Douglas function with the production function with electricity to track and forecast economic activities. The book systematically introduces the theoretical frameworks and mathematical models of economics from the perspective [...]

Features

Electricity Economics: Production Functions with Electricity studies the production output from analyzing patterns of electricity consumption. Since electricity data can be used to measure scenarios of economic performance due to its accuracy and reliability, it could therefore also be used to help scholars explore new research frontiers that directly and indirectly benefits human society. Our [...]

Contents

Introduction.- Production Functions with Electricity: The Enterprise Level.- Production Functions with Electricity: The Sectoral Level.- The Supply and Demand Models Based on Electricity Consumption.- Production Functions with Electricity: The Industrial Level.- E-GDP Functions for a National Economy.- The Characteristics of Gene in an Economy.- Energy Intensity and Electrification.- Features of Electricity Consumption During the Economic Development Stages.- Up-industrialization.- E-GDP Functions for the World and Particular Countries.- Macroeconomic and Policy Models.- Updates of the [...]

Fields of interest

Energy Policy, Economics and Management; Energy Economics; Industrial Organization

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-642-40756-7

Hardcover

2013. XII, 454 p. 353 illus., 260 illus. in color. ISBN 978-3-642-40756-7

Due: October 31, 2013

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

Geothermal Engineering

Fundamentals and Applications

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

Features

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Contents

Introduction.- Sources of Geothermal Heat.- Thermodynamics Background and the Properties of Water.- The Equations Governing Heat and Single-Phase Fluid Flow and their Simplification for Particular Applications.- Geothermal Drilling and Well Design.- Well Measurements from Completion Tests to the First Discharge.- Phase Change Phenomena and Two-Phase Flow.- The Discharging Well.- The Transient Response of Formations to Flow in a Well - Transient Pressure Well Testing.- The Economics of a Geothermal Electricity Generation Project.- The Power Station.- The Steamfield.- The Resource[...]

Fields of interest

Renewable and Green Energy; Geoengineering, Foundations, Hydraulics; Geotechnical Engineering & Applied Earth Sciences; Energy Systems; Energy Harvesting; Environmental Science and Engineering

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-1-4614-8568-1

Hardcover

2013. XVIII, 336 p. 130 illus., 28 illus. in color. ISBN 978-1-4614-8568-1

Due: September 30, 2013

B. Dimitrijević (Ed.)

Innovations for Sustainable Building Design and Refurbishment in Scotland

The Outputs of CIC Start Online Project

This book presents innovations for sustainable building design and refurbishment developed and tested through feasibility studies undertaken by researchers at Scottish universities in collaboration with small to medium size enterprises in Scotland during the 'CIC Start Online' project that ran from September 2009 to February 2013. The project was led by Glasgow Caledonian University in collaboration with Edinburgh Napier University, Glasgow School of Art, Heriot-Watt University, the Robert Gordon University, University of Edinburgh and the University of Strathclyde Glasgow. The book includes chapters on Context and Policies, Planning, Building Design, Technologies, Construction, [...]

Features

This book presents innovations for sustainable building design and refurbishment developed and tested through feasibility studies undertaken by researchers at Scottish universities in collaboration with small to medium size enterprises in Scotland during the 'CIC Start Online' project that ran from September 2009 to February 2013. The project was led by Glasgow Caledonian University in collaboration with [...]

Contents

About CIC Start Online.- Context and Policies.- Planning.- Building design.- Technologies.- Construction.- Refurbishment.- Performance.- Conclusions.

Fields of interest

Energy Efficiency (incl. Buildings); Building Construction, HVAC, Refrigeration; Building Repair and Maintenance

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02477-6

Hardcover

2013. VII, 193 p. 35 illus. (Green Energy and Technology) ISBN 978-3-319-02477-6

Due: October 31, 2013

M. Junginger, Utrecht University, Utrecht, Netherlands; C.S. Goh, Utrecht University, Utrecht, Netherlands; A. Faaij, Utrecht University, Utrecht, Netherlands (Eds.)

International Bioenergy Trade

History, status & outlook on securing sustainable bioenergy supply, demand and markets

The trade of global bioenergy commodities, such as ethanol, biodiesel and wood pellets has been growing exponentially in the past decade, and have by 2013 reached true "commodity" volumes, i.e. tens of millions of tonnes traded each year, and billions (both in US\$/€) of annual turnover. IEA Bioenergy Task 40 was founded in 2004 and is now in its 4th triennium. For the past 9 years, task 40 has monitored the developments in international bioenergy trade, including the organization of about 20 workshops on trade-related topics, and the publication of over 100 studies, country reports, newsletters, etc. The amount of material produced over the years and insights gained in how biomass[...]

Features

The trade of global bioenergy commodities, such as ethanol, biodiesel and wood pellets has been growing exponentially in the past decade, and have by 2013 reached true "commodity" volumes, i.e. tens of millions of tonnes traded each year, and billions (both in US\$/€) of annual turnover. IEA Bioenergy Task 40 was founded in 2004 and is now in its 4th triennium. For the past 9 years, task [...]

Contents

Chapter 1 A general introduction to international bioenergy trade; André Faaij, Martin Junginger, Chun Sheng Goh.- Chapter 2 Developments in international liquid biofuel trade; Patrick Lamers, et al.- Chapter 3 Global woody biomass trade for energy; Patrick Lamers, et al.- Chapter 4 Development of bioenergy trade in four different settings - the role of potential and policies; Daniela Thrän, et al.- Chapter 5 Optimization of Biomass Transport and Logistics; Erin Searcy, et al.- Chapter 6 The role of sustainability requirements in international bioenergy markets; Luc Pelkmans, et al.- [...]

Fields of interest

Energy Policy, Economics and Management; Renewable and Green Energy; Environmental Economics; Energy Economics; Sustainable Development

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-94-007-6981-6

Hardcover

2013. VI, 222 p. 56 illus., 37 illus. in color. (Lecture Notes in Energy, Vol. 17) ISBN 978-94-007-6981-6

Due: September 30, 2013

L.M. Abadie, J.M. Chamorro

Investment in Energy Assets Under Uncertainty

Numerical methods in theory and practice

This book aims to provide a rigorous yet pragmatic approach to the valuation and management of investments in the energy sector. Time and uncertainty pervade most if not all issues relevant to energy assets. They run from the early stage of prototype and demonstration to the ultimate abandonment and decommissioning. Risk in particular appears in several areas; thus, one can distinguish technical risk from financial risk. Furthermore, the extent to which one can react to them is different (just think of price risk and regulation risk). Markets in general, and financial markets in particular, regularly put a price on a number of assets which differ in their return/risk characteristics.[...]

Features

This book aims to provide a rigorous yet pragmatic approach to the valuation and management of investments in the energy sector. Time and uncertainty pervade most if not all issues relevant to energy assets. They run from the early stage of prototype and demonstration to the ultimate abandonment and decommissioning. Risk in particular appears in several areas; thus, one can distinguish technical risk from [...]

Fields of interest

Energy Policy, Economics and Management; Energy Economics; Finance / Banking

Target groups

Professional/practitioner

Type of publication

Professional book

More on www.springer.com/978-1-4471-5591-1

Hardcover

2013. XII, 188 p. 34 illus. (Lecture Notes in Energy, Vol. 21)

ISBN 978-1-4471-5591-1

Due: October 31, 2013

Z. Fang, Chinese Academy of Sciences, Kunming, China (P.R.); R.L. Smith, Jr., X. Qi, Nankai University, Tianjin, China (P.R.) (Eds.)

Production of Biofuels and Chemicals with Ionic Liquids

The application of ionic liquids to biomass for producing biofuels and chemicals will be one of the hot research areas during the next decade due to the fascinating properties of these versatile group of solvents that allow them to dissolve lignocellulosic materials. The present text provides up-to-date fundamentals, state-of-the-art reviews, current assessments and prospects in this area, including aspects of pretreatment, fermentation, biomass dissolution, cellulose transformation, reaction kinetics and physical properties, as well as the subsequent production of biofuels and platform chemicals such as sugars, aldehydes and acids. Auxiliary methods such as catalysis, microwave and [...]

Features

The application of ionic liquids to biomass for producing biofuels and chemicals will be one of the hot research areas during the next decade due to the fascinating properties of these versatile group of solvents that allow them to dissolve lignocellulosic materials. The present text provides up-to-date fundamentals, state-of-the-art reviews, current assessments and prospects in this area, including aspects [...]

Contents

PART 1: Synthesis and fundamentals of ionic liquids for biomass conversion.- PART 2: Dissolution and derivation of cellulose and Fractionation of lignocellulosic materials with ionic liquids.- PART 3: Production of biofuels and chemicals in ionic liquids.- PART 4: Compatibility of ionic liquids with enzyme in biomass treatment.- PART 5: Ionic liquids for absorption and biodegradation of organic pollutant in multiphase systems.

Fields of interest

Renewable and Green Energy; Wood Science & Technology; Industrial Chemistry / Chemical Engineering; Biotechnology

Target groups

Research

Type of publication

Contributed volume

More on www.springer.com/978-94-007-7710-1

Hardcover

2013. X, 492 p. 140 illus., 32 illus. in color. (Biofuels and Biorefineries, Vol. 1)

ISBN 978-94-007-7710-1

Due: October 31, 2013

E. Colombo, S. Bologna, UN Industrial Development Organization, Vienna, Austria; D. Maserà, UN Industrial Development Organization, Vienna, Austria (Eds.)

Renewable Energy for Unleashing Sustainable Development

Blending Technology, Finance and Policy in Low and Middle Income Economies

The book aims at analyzing technologies and business models within a new approach to sustainable global resource management. It will produce a set of recommendations for further activities and networking on access to energy services and renewable energies. The first part will review the issue of access to energy, as precondition for socio-economic progress. A global description of the current situation will be depicted, with an analysis on access to electricity, share of modern fuels and future trends. The three main interlinked topics related to energy in sustainable growth will be investigated: appropriate technologies for modern energy services, business models for the development[...]

Features

The book aims at analyzing technologies and business models within a new approach to sustainable global resource management. It will produce a set of recommendations for further activities and networking on access to energy services and renewable energies. The first part will review the issue of access to energy, as precondition for socio-economic progress. A global description of the current situation will be [...]

Contents

Renewable energies to promote local development (by E. Colombo, D. Maserà, S. Bologna).- Global dimension of universal access to energy (by E. Colombo, L. Mattarolo, S. Mandelli).- Rule of law and right within access to energy: a philosophical perspective (by T. Scandroglio).- Modern energies services for cooking: from Improved Cook-Stoves to domestic and community-based systems (by F. Mapelli, J. Mungwe).- Distributed generation for access to electricity: from Home Based Systems to Mini Grid (by S. Mandelli, R. Mereu).- Grid connected systems for access to electricity: from micro-grid[...]

Fields of interest

Renewable and Green Energy; Energy Policy, Economics and Management; Sustainable Development

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-00283-5

Hardcover

2013. XIII, 275 p. 79 illus.

ISBN 978-3-319-00283-5

Due: November 30, 2013

S. Caeiro, W. Leal Filho, Hamburg University of Applied Sciences, Hamburg, Germany; C. Jabbour, U. Azeiteiro (Eds.)

Sustainability Assessment Tools in Higher Education Institutions

Mapping Trends and Good Practice Around the World

This book contributes to debates on current sustainability practices, with a focus on assessment tools as applied in higher education institutions. These institutions are challenged to carry out management, research, and teaching, and to create settings that allow developing new competencies to address the complex global environmental, social, cultural, and economic pressures with which current and future generations are confronted. The first chapters discuss issues of sustainability in higher education, namely the role of universities in promoting sustainability and the emergent fields of sustainability science and education for sustainable development and how to integrate and [...]

Features

This book contributes to debates on current sustainability practices, with a focus on assessment tools as applied in higher education institutions. These institutions are challenged to carry out management, research, and teaching, and to create settings that allow developing new competencies to address the complex global environmental, social, cultural, and economic pressures with which current and future [...]

Contents

1. Sustainability Science and Education for Sustainable Development in Universities: A Way for Transition.- 2. Being scared is not enough! Motivators for Education for Sustainable Development.- 3. Time and sustainability metrics in higher education.- 4. Integrating sustainability into the university: past, present and future.- 5. Sustainability assessment methodologies.- 6. A strategy and a toolkit to realize System Integration of Sustainable Development (SISD).- 7. Assessing Sustainability and Social Responsibility in Higher Education. Assessment Frameworks explained.- 8. Alternative[...]

Fields of interest

Energy Efficiency (incl. Buildings); Sustainable Development; Higher Education; Renewable and Green Energy

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-3-319-02374-8

Hardcover

2013. X, 402 p. 58 illus., 4 illus. in color.
ISBN 978-3-319-02374-8

Due: November 30, 2013

O. Andersen, Western Norway Research Institute, Sogndal, Norway

Unintended Consequences of Renewable Energy

Problems to be Solved

Energy technologies in the future will need to be based on renewable sources of energy and will, ultimately, need to be sustainable. This book provides insight into unintended, negative impacts and how they can be avoided. In order to steer away from the pitfalls and unintended effects, it is essential that the necessary knowledge is available to the developers and decision makers engaged in renewable energy. The value of this book lies in its presentation of the unintended health and environmental impacts from renewable energies. The book presents results from cross-disciplinary research on the implementation of alternative fuels in the transport sector, namely hydrogen.[...]

Features

Energy technologies in the future will need to be based on renewable sources of energy and will, ultimately, need to be sustainable. This book provides insight into unintended, negative impacts and how they can be avoided. In order to steer away from the pitfalls and unintended effects, it is essential that the necessary knowledge is available to the developers and decision makers engaged in renewable [...]

Contents

Introduction: What are Unintended Consequences of Renewable Energy and How Can They be Predicted?.- Rebound Effects.- Consequential Life Cycle Environmental Impact Assessment.- Implementation of Hydrogen Gas as a Transport Fuel.- Biodiesel and Its Blending into Fossil Diesel.- Towards the use of Electric Cars.- Solar Cell Production.- Final Discussion and Conclusions.

Fields of interest

Renewable and Green Energy; Renewable and Green Energy; Sustainable Development

Target groups

Research

Type of publication

Monograph

More on www.springer.com/978-1-4471-5531-7

Hardcover

2013. XIII, 94 p. 16 illus. (Green Energy and Technology)
ISBN 978-1-4471-5531-7

Due: October 31, 2013

Societal Aspects of Physics

D. Hafemeister, California Polytechnic State University, San Luis Obispo, USA

Physics of Societal Issues

Calculations on National Security, Environment, and Energy

This book provides the reader with essential tools needed to analyze complex societal issues and demonstrates the transition from physics to modern-day laws and treaties. Problems to challenge the reader and extend discussion are presented on three timely issues: National Security: Weapons, Offense, Defense, Verification, Nuclear Proliferation, Terrorism; Environment: Air/Water, Nuclear, Climate Change, EM Fields/Epidemiology; Energy: Current Energy Situation, Buildings, Solar Buildings, Renewable Energy, Enhanced End-Use Efficiency, Transportation, Economics. This second edition features new equation-oriented material and extensive data sets drawing upon current information from experts in [...]

Features

This book provides the reader with essential tools needed to analyze complex societal issues and demonstrates the transition from physics to modern-day laws and treaties. Problems to challenge the reader and extend discussion are presented on three timely issues: National Security: Weapons, Offense, Defense, Verification, Nuclear Proliferation, Terrorism; Environment: [...]

Contents

Nuclear Weapons.- The Offense: Missiles and War Games.- The Defense: ABM/SDI/BMD/NMD.- Verification and Arms Control Treaties.- Nuclear Proliferation and Terrorism.- Air and Water Pollution.- Nuclear Pollution.- Climate Change.- Electromagnetic Fields and Epidemiology.- The Energy Situation and Fossil Fuels.- Energy in Buildings.- Solar Buildings.- Renewable Energy.- Enhanced End-Use Efficiency.- Transportation.- Energy Economics.- Appendix A: Nuclear Arms Chronology.- Appendix B: Energy/ Environment Chronology.- Appendix C: Nuclear-Age History.- Appendix D: Units.- Appendix E: [...]

Fields of interest

Societal Aspects of Physics; Energy Policy, Economics and Management; Renewable and Green Energy; Security Science and Technology; Nuclear Engineering; Environmental Law / Policy / Ecojustice

Target groups

Upper undergraduate

Type of publication

Undergraduate textbook

More on www.springer.com/978-1-4614-9271-9

Hardcover

2014. X, 566 p. 109 illus., 36 illus. in color.
ISBN 978-1-4614-9271-9

Due: December 31, 2013

