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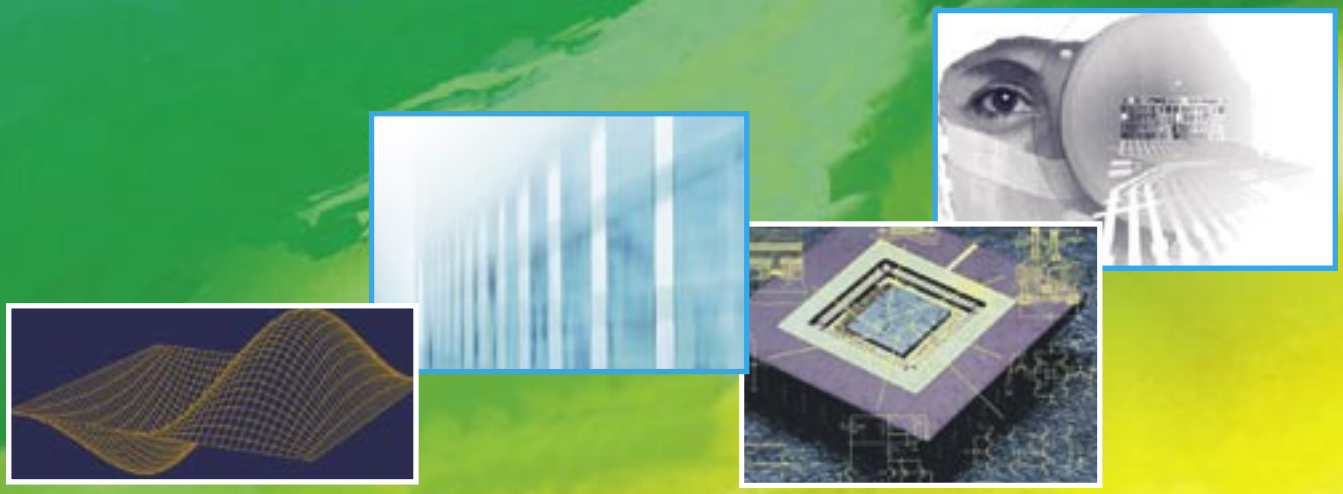


CIRCUITS AND SYSTEMS

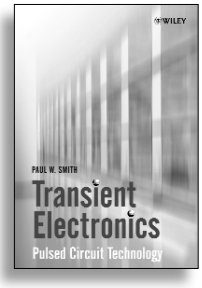
Books & Journals • 2005

WILEY

Transient Electronics

Pulsed Circuit Technology

PAUL W. SMITH, Fellow of Pembroke College, Oxford, UK



The design of circuits capable of generating short electrical pulses at very high power levels has been the subject of considerable research over the last 50 years. Much of this work is dispersed throughout conference proceedings and journals. There are very few books dedicated to the subject. *Transient Electronics* redresses the balance with a comprehensive survey of the most significant work in the field. It will serve as a self-contained guide to the application of pulsed circuit techniques in pulsed power technology.

Features include:

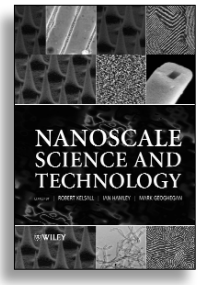
- A comprehensive guide to the use of the Laplace transform method for the analysis of the transient response of electronic circuits and transmission lines.
- A survey of pulse forming line and pulse forming network techniques including detailed analysis of their performance.
- A review of the many different types of pulsed transformer including transmission line transformers.
- Coverage of a wide range of specialised pulse generating circuits used in pulsed power generation.
- A chapter on the relatively new field of non-linear pulsed circuit technology.

Intended Audience: Students and researchers in the field of pulsed power, including physicists, engineers and those with an interest in waste and materials processing.

0-471-97773-X • Jun 2002 • Cloth • 288pp

Nanoscale Science and Technology

ROBERT KELSALL, Univ. of Leeds, UK, IAN W. HAMLEY, Univ. of Leeds, UK, MARK GEOGHEGAN, Univ. of Sheffield, UK



Nanoscale Science and Technology covers the whole spectrum of nanotechnology, from electronic and magnetic nanostructures to molecular self-assembly and bio-nanotechnology. Written by a team of experts, this book offers specialist analyses of each particular topic, all seamlessly integrated into a fully cross-referenced volume.

Maintaining an interdisciplinary approach that addresses aspects of physics, chemistry, biology, materials science and electronic engineering, this book:

- presents a coherent approach to nanoscale sciences, consistent in technical level, extent of coverage, and educational style;
- illustrates important features of each individual area of investigation, using representative examples of research results; and
- discusses the key breakthroughs and future development of nanoscale science and technology.

Intended Audience: Industrialists working in nanoscale research and development and practicing engineers working within the defense industry. Researchers with a background in electronic engineering, physics, chemistry, biology, and materials science.

0-470-85086-8 • Jan 05 • Cloth • 472pp

Stuff You Don't Learn in Engineering School

Skills for Success in the Real World

CARL SELINGER, Consultant, Bloomfield, NJ

An engineer's road map to professional and personal success

Congratulations! You're an engineer, and now you're ready to take the corporate world by storm. But in order to succeed in your career, you'll need more than just great technical skills. You'll need to be able to promote your ideas, share them with others, and work with a wide variety of people. Stuff You Don't Learn in Engineering School: Skills for Success in the Real World is designed to give engineers entering the corporate world the "soft" skills they'll need to succeed—in business, and in life. Based on the author's popular leadership seminars, this easy-to-digest guide to success will help even the most inhibited engineer to comfortably deal with the difficult people, processes, and meetings of today's competitive business world.

Step by step, you'll learn important skills like

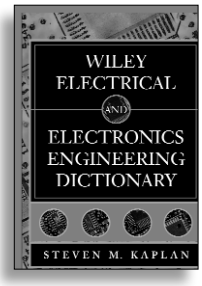
- Setting priorities
- Working in a team
- Being more effective at meetings
- Speaking in front of a group
- Negotiating personal or business issues
- Dealing with stress
- And just having more fun in the process!

Intended Audience: Entry-level engineers, engineers further along in their career paths, emerging project managers, graduate and undergraduate students and professors, engineering managers, and other professionals who work with engineers.

0-471-65576-7 • Oct 04 • Paper • 178pp

Wiley Electrical and Electronics Engineering Dictionary

STEVEN M. KAPLAN, Lexicographer



The most comprehensive electrical engineering dictionary on the market–with over 35,000 entries

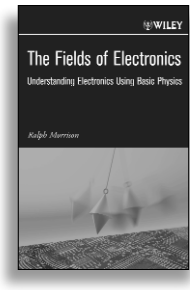
Sponsored by the Institite of Electrical and Electronics Engineers, the world's largest professional organization and the creator of electrical engineering standards

The Wiley Electrical and Electronics Engineering Dictionary provides researchers, working engineers, students, and those in related disciplines with the definitions of all the terms and acronyms used in today's electrical and electronics literature. This comprehensive resource saves time by presenting the desired information in the place it is first looked up–and in a straightforward manner that allows this content to be more readily assimilated.

Intended Audience: All engineers, libraries, and individuals working with engineered products

0-471-40224-9 • Jan 04 • Paper • 885pp

The Fields of Electronics



Understanding Electronics Using Basic Physics

RALPH MORRISON, consultant

A practical new approach that brings together circuit theory and field theory for the practicing engineer

To put it frankly, the traditional education of most engineers and scientists leaves them often unprepared to handle many of the practical problems they encounter. The Fields of Electronics: Understanding Electronics Using Basic Physics offers a highly original correction to this state of affairs.

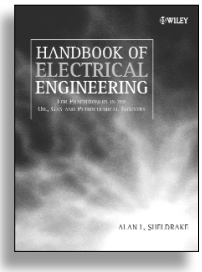
Most engineers learn circuit theory and field theory separately. Electromagnetic field theory is an important part of basic physics, but because it is a very mathematical subject, the connection to everyday problems is not emphasized. Circuit theory, on the other hand, is by its nature very practical. However, circuit theory cannot describe the nature of a facility, the interconnection of many pieces of hardware, or the power grid that interfaces each piece of hardware.

Written with very little mathematics, and requiring only some background in electronics, this book provides an eminently useful new way to understand the subject of electronics that will simplify the work of every novice, experienced engineer, and scientist.

Intended Audience: Students and teachers of electronics and electromagnetics, engineers and technicians.

0-471-22290-9 • Mar 02 • Cloth • 192pp

Handbook of Electrical Engineering



For Practitioners in the Oil, Gas and Petrochemical Industry

ALAN L. SHELDRAKE, Consulting Electrical Engineer, Bangalore, India

At last a comprehensive handbook detailing the application of electrical engineering to the oil, gas and petrochemical industries! The book discusses the necessary theories behind the design of facilities and offers practical guidance on selecting the electrical power systems and equipment used on offshore production platforms, drilling rigs, pipelines and chemical plants.

Compiled from 35 years of experience in the oil and power generating industries, Alan Sheldrake provides a careful balance between mathematical theory and comprehensive practical application knowledge. This handbook will prove an invaluable reference to practising power electrical and instrumentation engineers involved in the design, installation and maintenance of power generation and distribution systems

Intended Audience: Power, instrumentation and electrical engineers involved in the design and installation of industrial power generation and distribution systems.

0-471-49631-6 • Apr 03 • Cloth • 650pp

Make Your Mark in Science

Creativity, Presenting, Publishing, and Patents, A Guide for Young Scientists

CLAUS ASCHERON, Springer-Verlag, ANGELA KICKUTH, Springer-Verlag

This excellent guides tells graduate students, doctoral students and beginning professional scientists and engineers everything they need to know to help them communicate their scientific achievements in oral presentations and written publications. Addressing the topic of creativity, this book will answer the neglected questions that are seldom covered in academic courses.

Intended Audience: Graduate students and professionals; scientists and engineers.

0-471-65733-6 • Dec 04 • Paper • 256 pp

Semiconductors

Technical Information, Technologies and Characteristic Data

INFINEON TECHNOLOGIES

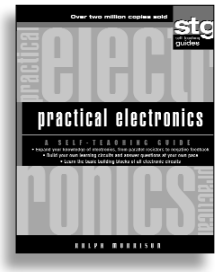
"Semiconductors" provides a comprehensive overview of today's standard technologies. The development work involved in such products is also described, along with the variety of them available and their range of possible uses. Future prospects and likely trends are also portrayed.

The Topics covered extend from the basics of conventional semiconductor technology through standard, power and opto semiconductors to highly complex memories and microcontrollers. Also featured are the special devices and modules for chip cards, automotive electronics, consumer electronics and telecommunication. Some chapters are devoted to the production of semiconductor components and their use in electronic systems, as well as to quality management.

Intended Audience: Lecturers in electrical engineering and information technology; electrical engineers.

3-89578-071-5 • Mar 04 • Paper • 587pp

Practical Electronics



A Self-Teaching Guide

RALPH MORRISON

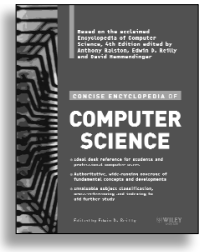
What is a semiconductor? How do you lay out circuits to avoid noise and interference? What do inductors and transformers have in common? How does a coaxial cable carry power to an antenna? With Practical Electronics: A Self-Teaching Guide, you'll discover the answers to these questions and many more about the basics of electricity and electronic components.

Thoroughly researched for our digital age, this easy-to-use guide makes familiar the workings of transistors, capacitors, diodes, resistors, integrated circuits, and more. Electronics expert Ralph Morrison starts you off with two of the simplest electronic components, showing you how to combine them into circuits and then add more components to create more complex circuits. He includes detailed "learning circuits," which are electronic circuits you can build yourself, even if you have had no prior electronics experience. The clearly structured format of Practical Electronics makes it fully accessible, providing an easily understood, comprehensive overview for everyone from the student to the engineer to the hobbyist.

Intended Audience: Students, hobbyists, and teachers.

0-471-26406-7 • Oct 03 • Paper • 288pp

Concise Encyclopedia of Computer Science



EDWIN D. REILLY, State University of New York, USA

The *Concise Encyclopedia of Computer Science* is the perfect desk reference to guide you beyond the hype and jargon that entangle computer technology and its ubiquitous applications.

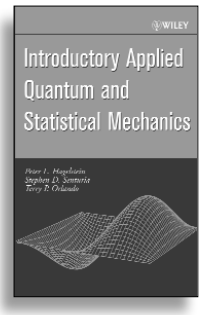
This abridged version of its classic predecessor addresses the broad spectrum of computer science and engineering, omitting in this concise edition the more theoretical or mathematical topics.

- An ideal desk reference for students, teachers, and professional computer users in science and industry.
- Authoritative coverage of the fundamental concepts of computer science and engineering by acknowledged experts and innovators in the field.
- Wide-ranging perspective on key historical breakthroughs and developments that have set the course of the computing industry.
- Based on the acclaimed, best-selling *Encyclopedia of Computer Science, 4th Edition* edited by Tony Ralston, David Hemmendinger, and Ed Reilly (ISBN 0 470864125).

Intended Audience: Students of computer science ranging from high school to undergraduate level, students in computer-related/dependent disciplines in science and technology, teachers and lecturers of computer science and related disciplines, computer users in business and industry requiring an accessible desk reference.

0-470-09095-2 • Jul 04 • Paper • 902pp

Introductory Applied Quantum and Statistical Mechanics



PETER L. HAGELSTEIN, Massachusetts Institute of Technology, STEPHEN D. SENTURIA, Massachusetts Institute of Technology, TERRY P. ORLANDO, Massachusetts Institute of Technology

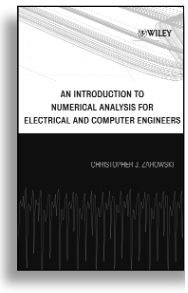
Quantum mechanics is vitally important in the study and design of semiconductor devices. The latest electronic and photonic devices have quantum mechanics at their core, and the emergence of quantum computing further increases the engineering importance of the subject. In contrast to the usual theoretical or experimental treatments of quantum physics, Introductory Applied Quantum and Statistical Mechanics approaches the subject from the point of view of an electrical engineer or materials scientist.

Equally useful as a reference for the practitioner and as a text, Introductory Applied Quantum and Statistical Mechanics introduces the reader to the fundamental concepts of quantum physics and their applications to electrical engineering, applied physics, and materials science. Developed from an introductory graduate course in the EECS Department at MIT, this book is structured with an eye towards how the laws enable one to design and build new and better devices.

Intended Audience: Electrical engineers, physicists, materials scientists, and students in the field.

0-471-20276-2 • Mar 04 • Cloth • 785pp

An Introduction to Numerical Analysis for Electrical and Computer Engineers



CHRISTOPHER J. ZAROWSKI, Univ. of Alberta, Canada

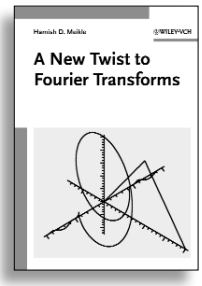
This book gives electrical and computer engineering students their first exposure to numerical analysis and serves as a refresher for professionals as well. Emphasizing the earlier stages of numerical analysis for engineers with real-life solutions for computing and engineering applications, the book:

- Forms a logical bridge between first courses in matrix/linear algebra and the more sophisticated methods of signal processing and control system courses
- Includes MATLAB®-oriented examples, with a quick introduction to MATLAB for those who need it
- Provides detailed proofs and derivations for many key results

Intended Audience: A refresher for professionals; electrical and computer engineering students with first exposure to numerical analysis.

0-471-46737-5 • Mar 04 • Cloth • 608pp

A New Twist to Fourier Transforms



HAMISH D. MEIKLE
(SAMPLE CHAPTER ONLINE)

Making use of the inherent helix in the Fourier transform expression, this book illustrates both Fourier transforms and their properties in the round. The author draws on elementary complex algebra to manipulate the transforms, presenting the ideas in such a way as to avoid pages of complicated mathematics. Similarly, abbreviations are not used throughout and the language is kept deliberately clear so that the result is a text that is accessible to a much wider readership.

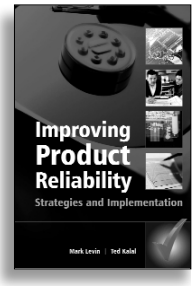
The treatment is extended with the use of sampled data to finite and discrete transforms, the fast Fourier transforms, or FFT, being a special case of a discrete transform. The application of Fourier transforms in statistics is illustrated for the first time using the examples operational research and later radar detection. In addition, a whole chapter on tapering or weighting functions is added for reference. The whole is rounded off by a glossary and examples of diagrams in three dimensions made possible by today's mathematics programs.

Intended Audience: Engineers, physicists, statistics specialists, radiologists.

3-527-40441-4 • Feb 04 • Paper • 238pp

Enrich your library by recommending our title to your Librarian!

Improving Product Reliability



Strategies and Implementation

MARK A. LEVIN, TED T. KALAL

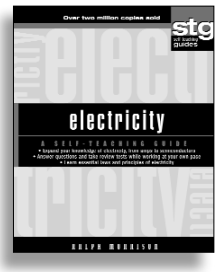
If product reliability is falling short of customer expectations and warranty costs are out of control then changes are needed to the reliability process. Practical and easy to understand, Improving Product Reliability offers invaluable advice to designers, engineers, managers and CEOs who wish to develop better products but are unsure of what to do and how to go about it. This book presents a time-tested reliability process which has been refined over the years and can be readily transferable to any organization.

This book can be understood and applied by designers, engineers, business managers, consultants and product development teams who must develop reliable products. Anyone involved in this work will appreciate the time-saving, cost-effective, and result oriented techniques described.

Intended Audience: Engineers, managers and consultants lacking a background in reliability theory and statistics. Business and engineering managers working in technology product design. Engineering libararies (universities, professional institutions, industry, test centres). In-house product design/engineering management training courses.

0-470-85449-9 • Mar 03 • Cloth • 342pp

Electricity



A Self-Teaching Guide

RALPH MORRISON

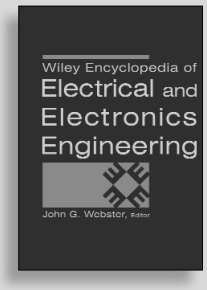
What makes a light bulb work? What overloads a fuse? How does a magnetic field differ from an electrical field? With Electricity: A Self-Teaching Guide, you'll discover the answers to these questions and many more about this powerful, versatile force that everyone uses, yet most of us don't understand.

Ralph Morrison demystifies electricity, taking you through the basics step by step. Significantly updated to cover the latest in electrical technology, this easy-to-use guide makes familiar the workings of voltage, current, resistance, power, and other circuit values. You'll discover where electricity comes from, how electric fields cause current to flow, how we harness its tremendous power, and how best to avoid the various pitfalls in many practical applications when the time comes for you to put your knowledge to work. The clearly structured format of Electricity makes it fully accessible, providing an easily understood, comprehensive overview for everyone from the student to the engineer to the hobbyist.

Intended Audience: Students; hobbyists.

0-471-26405-9 • Jul 03 • Paper• 288pp

Wiley Encyclopedia of Electrical and Electronics Engineering



JOHN G. WEBSTER, Univ. of Wisconsin-Madison

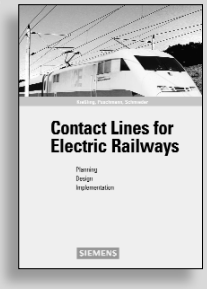
This 24 volume set offers comprehensive coverage of the electrical and electronics engineering field. Covers wide range of information from power systems and communications to advanced applications in neural networks and robotics.

- Initial purchase includes one-year subscription to web version.
- Each article written by expert in the field or discipline.
- Written for both novice and expert — articles are structured to start with basic material and then move on to more complex theory and applications.
- All articles cross-referenced to related literature of further research.
- Covers history of electrical and electronics engineering, patents, computer engineering and much more.

Intended Audience: Electrical and Electronics Engineers.

0-471-13946-7 • Oct 04 • Cloth• 17616pp

Contact Lines for Electrical Railways



Planning – Design – Implementation

FRIEDRICH KIEßLING, RAINER PUSCHMANN, AXEL SCHMIEDER

From both ecological and economical perspectives, electric traction is the most favorable type of power supply for railways. Its reliability depends to a large degree on the contact lines, which have to operate safely under all relevant climatic conditions, needing as little maintenance as possible. Particularly extreme demands are made if overhead contact lines are expected to ensure safe power transmission to electric traction vehicles travelling at speeds over 300 km/h.

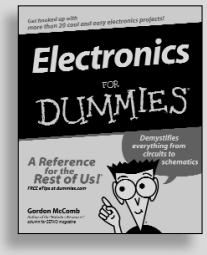
The authors have used their world-wide experience to provide a clear and comprehensive description of the configuration, mechanical and electrical design, installation and operation of contact lines for electric railways on local and long-distance transportation systems.

The book provides students and those embarking on a career in this field with a detailed description of the subject, including the electromechanical and structural requirements. Railway company professionals and manufacturers of contact line systems will find practical guidance in the planning and implementation of systems, as well as appropriate specifications and the technical data they will need, including standards and regulations. Since large sections of the book are dedicated to the system aspects, consultant engineers can also use it as a basis for designing systems and interfaces to other subsystems of electric railway engineering.

Intended Audience: Engineers; public authorities; transport industry.

3-89578-152-5 • Jan 02 • Cloth• 822pp

Electronics For Dummies®



GORDON McCOMB

- Makes the scary topic of electronics fun, demystifying everything from circuits to schematics
- The perfect introduction for electronics do-it-yourselfers and hobbyists-and the perfect supplement for anyone studying electronics in school
- Explains the principles behind home theater system wiring, guitar fuzz amps, and other real-world electronics
- Focuses less on theory, more on doing-gets the fundamentals down, then moves right to practical applications
- Covers multimeters, oscilloscopes, resistors, capacitors, transistors, breadboards, circuit boards, microcontrollers, and more

Intended Audience: Electrical and Electronics Engineers

0-7645-7660-7 • Jan 05 • Paper • 408pp

Electric Bicycles

A Guide to Design and Use

WILLIAM C. MORCHIN, HENRY OMAN

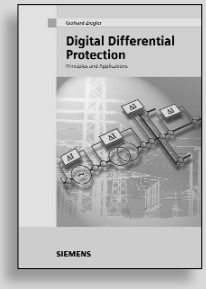
Among others, *Build a Battery-Powered Electric Bicycle* serves the amateur craftsman who chooses to build their own. From how to choose the components, to how to put them together for a finished home built bicycle conversion, the authors give commentary and specific data for future modifications to improve performance.

It is also useful to the purchaser of a factory built electric bicycle to understand the capabilities of his purchase and to judge to worthiness of his brand-new bike. The description, performance, and cost of over 45 commercial electric-powered bicycles is included. The authors include test results of sample configurations they have built, with component-cost ranges from under $100 to over $600. These features are also attractive to the amateur craftsman and mechanical engineers.

Intended Audience: Mechanical Engineers, Electrical Engineers, the average craftsman, factory bike purchasers

0-471-67419-2 • Jul 05 • Paper• 200pp

Digital Differential Protection



Principles and Applications

GERHARD ZIEGLER

Differential protection is a fast, selective method of protection against short-circuits which is applied in many variants for electrical machines, transformers, busbars, and electric lines. Initially this book covers the fundamentals of analog and digital differential protection. The emphasis is then placed on the different variants of differential protection and its practical application, which is illustrated by concrete examples.

A textbook and standard work in one, this book covers all topics, which have to be paid attention to for planning, designing, configuring and applying differential protection systems. The book is aimed at students and engineers who wish to familiarise themselves with the subject of differential power protection, as well as the experienced user, entering the area of digital differential protection. Furthermore it serves as a reference guide for solving application problems.

Intended Audience: Energy supplying companies, engineers in power technology, power engineers, students in electrical engineering, lecturers in electrical engineering, and industrial planners

3-89578-234-3 • Apr 05 • Cloth• 260pp

About Electronic and Electrical Engineering On-line Book Collection

The Electronic and Electrical Engineering Collection provides a fully browseable, searchable collection of OnlineBook titles that focus on the fields of Electronic and Electrical Engineering.

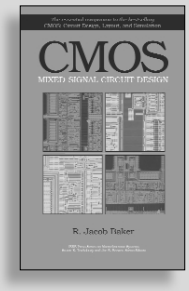
Wiley InterScience OnlineBooks are searchable and feature freely accessible table of contents, chapter summaries and front matter, copyright information, preface, introduction and complete keyword index. Full-text access is available by license or via Pay-Per-View.

"Some titles inside the collection are:

- Introduction to Biophotonics
- RFID Handbook (Second Edition)
- Telecommunication Circuit Design (Second Edition)
- Sensors in Medicine and Health Care
- Cleanroom Technology
- Data Engineering
- Principles of Random Signal Analysis and Low Noise Design "

www.interscience.wiley.com/cgi-bin/collectionhome/EEL02/HOME

CMOS



R. JACOB BAKER, Boise State Univ., Micron Technology, Inc., Boise, Idaho

The power of mixed-signal circuit designs, and perhaps the reason they are replacing analog-only designs in the implementation of analog interfaces, comes from the marriage of analog circuits with digital signal processing. This book builds on the fundamental material in the author's previous book, CMOS: Circuit Design, Layout, and Simulation, to provide a solid textbook and reference for mixed-signal circuit design. The coverage is both practical and in-depth, integrating experimental, theoretical, and simulation examples to drive home the why and the how of doing mixed-signal circuit design. Some of the highlights of this book include:

- A practical/theoretical approach to mixed-signal circuit design with an emphasis on oversampling techniques
- An accessible and useful alternative to hard-to-digest technical papers without losing technical depth
- Coverage of delta-sigma data converters, custom analog and digital filter design, design with submicron CMOS processes, and practical at-the-bench deadbug prototyping techniques
- Hundreds of worked examples and questions covering all areas of mixed-signal circuit design

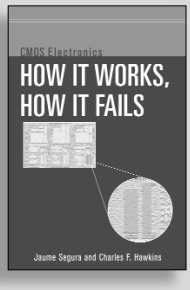
A helpful companion Web site, http://cmosedu.com, provides worked solutions to textbook problems, SPICE simulation netlist examples, and discussions concerning mixed-signal circuit design.

Intended Audience: Design, product, and testing engineers; advanced level circuit engineering students.

0-471-22754-4 • Jun 02 • Cloth • 520pp

CMOS Electronics

How It Works, How It Fails



JAUME SEGURA, Balearic Islands University, Palma de Mallorca, Spain, CHARLES F. HAWKINS, Univ. of New Mexico

Get a better understanding of how CMOS circuits work and, more importantly, how they fail!

CMOS manufacturing environments are rife with symptoms that can indicate serious test, design, or reliability problems. CMOS Electronics: How It Works, How It Fails provides both practitioners and students in the industry with the electronic knowledge that relates not just to the design of a product, but other important aspects of manufacturing such as testing, reliability, failure analysis, yield-quality issues, and common problems that may occur during production.

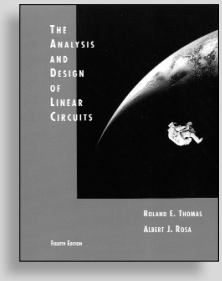
A valuable addition to the CMOS literature, CMOS Electronics addresses such common questions as:

- Is the symptom an outcome of random defects, or is it symptomatic with a common failure signature?
- Why doesn't my test program detect certain defects?
- Are my test escapes a reliability problem?
- Is the defect a bridging problem, an open circuit problem, or a subtle speed-related problem?

Intended Audience: Test Engineers, Failure Analysts, Designers, Reliability Engineers, and Yield Improvement Engineers; senior level undergraduate electrical engineering courses.

0-471-47669-2 • Mar 04 • Cloth • 348pp

The Analysis and Design of Linear Circuits



ROLAND E. THOMAS, Emeritus, United States Air Force Academy, ALBERT J. ROSA, Univ. of Denver

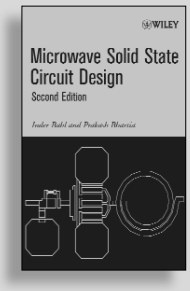
Now revised with a stronger emphasis on applications and more problems, this new Fourth Edition gives readers the opportunity to analyze, design, and evaluate linear circuits right from the start. The book's abundance of design examples, problems, and applications, promote creative skills and show how to choose the best design from several competing solutions.

- Emphasis on circuit design. Integrated treatment of analysis and design enhances students understanding of circuit fundamentals. The text gets students involved in design early, so they can recognize how their newly acquired knowledge can be applied to practical situations.
- Early introduction to the Op-Amp. The authors introduce students to the ideal Op-Amp early and often, allowing you to teach practical designs that students can actually build and use.

Intended Audience: Electrical engineers, students, circuit designers, and readers interested in electrical engineering.

0-471-27213-2 • May 03 • Cloth • 848pp

Microwave Solid State Circuit Design



INDER BAHL, M/A-COM, Roanoke, Virginia, PRAKASH BHARTIA, Defense Research Establishment, National Defense Headquarters, Ottawa, Ontario, Canada

Monolithic microwave integrated circuits (MMICs) based on gallium arsenide (GaAs) technology are increasingly important in applications where component size and performance are prime factors. These include electronic systems for satellite communications, phased-array radar systems, electronic warfare, and other military applications, as well as consumer electronics. The new Second Edition of Microwave Solid State Circuit Design presents a comprehensive discussion of the most current trends in RF and microwave circuits technologies.

This contributed volume brings together a team of experts to provide state-of-the-art coverage of network theory basics, the design of passive circuits, solid state devices, and microwave solid state circuits. Richly supported by extensive references and problems, the book examines transmission lines and lumped elements, resonators, impedance matching networks, hybrids and couplers, filters, active and passive solid state devices, oscillators, amplifiers, detectors and mixers, microwave control circuits, frequency multipliers and dividers, MEMS, and circuit fabrication technologies. Appendixes cover S-parameters and ABCD parameters, transfer functions, including Butterworth and Chebyshev, units and symbols, as well as physical constants. Features include:

- Comprehensive coverage of passive and active RF and microwave circuit design
- Treatment of practical aspects of microwave circuits including fabrication technologies
- An overview of MEMS technology
- Treatment of heterostructure and wide-band gap devices
- Inclusion of compact and low-cost circuit design methodologies

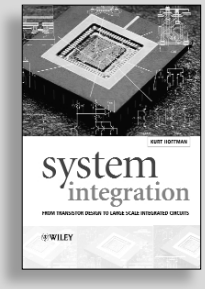
Intended Audience: Researchers and Engineers in RF and Microwave Engineering.

0-471-20755-1 • Apr 03 • Cloth • 906pp

System Integration

From Transistor Design to Large Scale Integrated Circuits

KURT HOFFMANN, Univ. of the Bundeswehr Munich, Germany



The development of large-scale integrated systems-on-a-chip has had a dramatic effect on circuit design methodology. Escalating requirements for low-power, high-chip density circuits and systems have resulted in increasingly complex Bipolar, CMOS and BICMOS technologies. In order to design cost-effective and reliable systems a thorough understanding of the relationship between the individual components and their impact on the performance of the integrated system is required. Bridging the gap between semiconductor device physics and practical circuit design, this book:

- Introduces the basic behaviour of semiconductor components for integrated circuit devices and their influence on digital, analog and memory circuits.
- Covers the design of both digital and analog circuits in CMOS and BiCMOS technologies.
- Features a wide range of topics including: field effect transistor design, power devices, MOS transistor modelling and the fundamentals of digital CMOS circuit design through to MOS memory architecture and design.
- Provides readers with the methodology by which useful equations for the estimation of transistor geometries and circuit behaviour can be deduced.

Intended Audience: Designers, practicing engineers in the semiconductor device field and electronics systems industry.

0-470-85407-3 • Mar 04 • Cloth • 510pp

Multiple Supply and Threshold Voltage CMOS Circuit

VOLKAN KURSUN, University of Rochester, Rochester, NY, USA, EBY FRIEDMAN, University of Rochester, Rochester, NY, USA

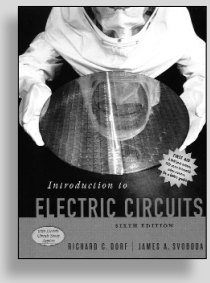
This book presents an in-depth treatment of various power reduction and speed enhancement techniques based on multiple supply and threshold voltages. A detailed discussion of the sources of power consumption in CMOS circuits will be provided whilst focusing primarily on identifying the mechanisms by which sub-threshold and gate oxide leakage currents are generated. The authors present a comprehensive review of state-of-the-art dynamic, static supply and threshold voltage scaling techniques and discuss the pros and cons of supply and threshold voltage scaling techniques.

There are currently no others books on the market covering leakage design techniques and methodologies CMOS circuits

0-470-01023-1 • Apr 05 • Cloth • 320pp

Introduction to Electric Circuits

RICHARD C. DORF, Univ. of California, DAVIS, JAMES A. SVOBODA, Clarkson Univ.



Praised for its highly accessible, real-world approach, the Sixth Edition demonstrates how the analysis and design of electric circuits are inseparably intertwined with the ability of the engineer to design complex electronic, communication, computer, and control systems as well as consumer products. The book offers numerous design problems and MATLAB examples, and focuses on the circuits that we encounter everyday.

New integration of interactive examples and problem solving, which helps readers understand circuit analysis concepts in an interactive way

New problems in every chapter and new examples

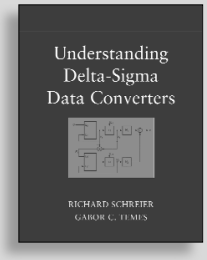
A CD-ROM offers exercises, interactive illustrations, and a circuit design lab that allows users to experiment with different circuits

Intended Audience: Electrical engineers, circuit designers, and readers interested in electrical engineering.

0-471-44795-1 • Jun 03 • Cloth • 832pp

Understanding Delta-Sigma Data Converters

RICHARD SCHREIER, Oregon State Univ., GABOR C. TEMES, Univ. of California, Los Angeles



Understanding Delta-Sigma Data Converters brings readers a clear understanding of the principles of delta-sigma (∂) converter operation—analog to digital and digital to analog. It introduces the best computer-aided analysis and design techniques available. With an understanding of the great versatility of the ∂ converter, readers can apply their new knowledge to a wide variety of applications, including digital telephony, digital audio, wireless and wired communications, medical electronics, and industrial and scientific instrumentation. The authors make the material accessible to all design engineers by focusing on developing an understanding of the physical operation rather than getting mired in complex mathematical treatments and derivations.

Written for entry-level readers, the publication has a natural flow that begins with basic concepts, enabling the readers to develop a solid foundation for the book's more complex material. The text, therefore, starts with a general introduction to the ∂ converter, including a brief historical overview to place it in context. Next, the publication introduces the first-order ∂ modulator, covering oversampling, noise-shaping, decimation filtering and other key concepts. Then, using the first-order modulator as a foundation, second and higher-order modulators are presented and analyzed. Finally, the authors delve into implementation considerations and present several design examples using the Delta-Sigma Toolbox.

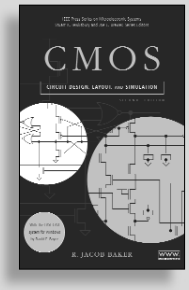
Intended Audience: Electronic Engineers; Undergraduate classes and engineering short courses.

0-471-46585-2 • Oct 04 • Cloth • 446pp

CMOS

Circuit Design, Layout, and Simulation

R. JACOB BAKER, Boise State Univ., Micron Technology, Inc., Boise, Idaho



Praise for CMOS: Circuit Design, Layout, and Simulation, Second Edition from the Technical Reviewers

"A refreshing industrial flavor. Design concepts are presented as they are needed for 'just-in-time' learning. Simulating and designing circuits using SPICE is emphasized with literally hundreds of examples. Very few textbooks contain as much detail as this one. Highly recommended!"
— PAUL M. FURTH, NEW MEXICO STATE UNIVERSITY

"This book builds a solid knowledge of CMOS circuit design from the ground up. With coverage of process integration, layout, analog and digital models, noise mechanisms, memory circuits, references, amplifiers, PLLs/DLLs, dynamic circuits, and data converters, the text is an excellent reference for both experienced and novice designers alike."
— TYLER J. GOMM, MICRON TECHNOLOGY, INC.

The most comprehensive presentation of CMOS integrated circuit design, guiding readers through the entire process from physical definition through design and simulation of a finished chip.

- Complete with integrated-circuit layout software for Windows.
- Updated to reflect CMOS technology's movement into nanometer sizes.
- Discussions on phase-and delay-locked loops, mixed-signal circuits, data converters, and circuit noise.
- More than 1,000 figures, 200 examples, and over 500 end-of-chapter problems.
- In-depth coverage of both analog and digital circuit-level design techniques.
- Real-world process parameters and design rules.
- Associated Website (cmosedu.com) providing examples, solutions, and SPICE simulation netlists.

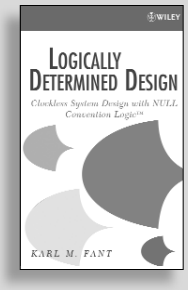
Intended Audience: Advanced textbook or reference for professional engineers, engineering managers, layout designers, layout draftsmen, computer engineers, and computer scientists, as well as students in these areas.

0-471-70055-X • Oct 04 • Cloth • 1080pp

Logically Determined Design

Clockless System Design with NULL Convention Logic

KARL M. FANT, President, Theseus Research, Inc.



This seminal book presents a new logically determined design methodology for designing clockless circuit systems. The book presents the foundations, architectures and methodologies to implement such systems. Based on logical relationships, it concentrates on digital circuit system complexity and productivity to allow for more reliable, faster and cheaper products.

- Transcends shortcomings of Boolean logic.
- Presents theoritical foundations, architecture and analysis of clockless (asynchronous) circuit design.
- Contains examples and exercises making it ideal for those studying the area.

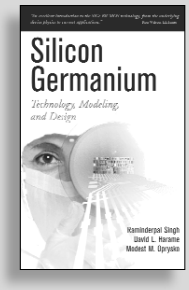
Intended Audience: Professional researchers, practioners, engineers in the field of computer system design and electrical engineering; Graduate and MBAs students in electrical engineering and computer science.

0-471-68478-3 • Jan 05 • Cloth • 320pp

Silicon Germanium

Technology, Modeling, and Design

RAMINDERPAL SINGH, IBM , MODEST M. OPRYSKO, IBM , DAVID HARAME, IBM



"An excellent introduction to the SiGe BiCMOS technology, from the underlying device physics to current applications."
— RON WILSON, EETIMES

"This book chronicles the development of SiGe in detail, provides an in-depth look at the modeling and design automation requirements for making advanced applications using SiGe possible, and illustrates such applications as implemented using IBM's process technologies and design methods."
— JOHN KELLY

Filled with in-depth insights and expert advice, Silicon Germanium covers all the key aspects of this technology and its applications. Beginning with a brief introduction to and historical perspective of IBM's SiGe technology, this comprehensive guide quickly moves on to:

- Detail many of IBM's SiGe technology development programs
- Explore IBM's approach to device modeling and characterization–including predictive TCAD modeling
- Discuss IBM's design automation and signal integrity knowledge and implementation methodologies
- Illustrate design applications in a variety of IBM's SiGe technologies
- Highlight details of highly integrated SiGe BiCMOS system-on-chip (SOC) design

Intended Audience: Circuit design and CAD/EDA industries; companies involved in telecommunication IC design.

0-471-44653-X • Oct 03 • Cloth • 368pp

Synthesis of Arithmetic Circuits

ASIC, FPGA and Firmware Design

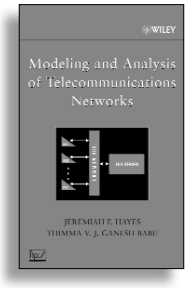
GERY JEAN ANTOINE BIOUL, JEAN-PIERRE DESCHAMPS, GUSTAVO D. SUTTER

This book presents methods and examples for synthesis of arithmetic circuits, including the description of arithmetic units of computers and their implementation in digital circuits. Includes mathematical aspects and algorithms (mathematical background, number representation, addition, subtraction, multiplication and division, and operations); synthesis of arithmetic circuits (hardware platforms, general principles, adders, subtractors, multipliers, dividers, and operators; and arithmetic operations (applications including arithmetic operations, convolution algorithms, and cryptography).

Intended Audience: Embedded System designers, engineers, and researchers in the field of hardware-software computer system design and development; Computer science graduate students.

0-471-68783-9 • Aug 05 • Cloth • 500pp

Modeling and Analysis of Telecommunications Networks



JEREMIAH F. HAYES, Concordia Univ., Canada, THIMMA V. J. GANESH BABU, EMS Technologies, Canada

A timely and relevant analysis of today's complex callmodels

In today's world of ever-expanding telecommunications options, here is anadvanced-level text that covers the mathematical methods used in the analysisof modern telecom networks, with emphasis on a variety of call models such asquality of service (QoS) in packet-switched Internet Protocol (IP) networks, Asynchronous Transfer Mode (ATM), and Time Division Multiplexing (TDM). The authors move from basic principles to complex concepts and outline the fundamental steps toward modeling and analyzing each system. Illustrative numerical examples are carried out using three computational tools, Excel, Matlab®, and Maple.

Refined and class tested for more than five years, Modeling and Analysis of Telecommunications Networks will benefit telecom researchers, students, and professionals alike, with thorough coverage that includes:

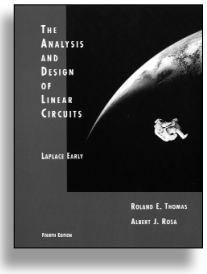
- Plentiful numerical examples that illustrate the material covered and utilize the tools described
- Complex concepts supported by extensive computations and detailed derivations
- Analytical work complemented by a chapter presenting mathematical foundations of simulation
- A complementary Web site with computational software that will be regularly updated with new examples and exercises

Intended Audience: Professionals, researchers, graduate students of telecommunications.

0-471-34845-7 • Feb 04 • Cloth • 416pp

The Analysis and Design of Linear Circuits

Laplace Early



ROLAND E. THOMAS, EMERITUS, UNITED STATES AIR FORCE ACADEMY, ALBERT J. ROSA, UNIV. OF DENVER

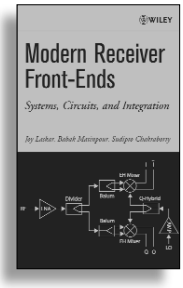
Now revised with a stronger emphasis on applications and more problems, this new Fourth Edition gives readers the opportunity to analyze, design, and evaluate linear circuits right from the start. The book's abundance of design examples, problems, and applications, promote creative skills and show how to choose the best design from several competing solutions.

Laplace first. The text's early introduction to Laplace transforms saves time spent on transitional circuit analysis techniques that will be superseded later on. Laplace transforms are used to explain all of the important dynamic circuit concepts, such as zero state and zero-input responses, impulse and step responses, convolution, frequency response, and Bode plots, and analog filter design. This approach provides students with a solid foundation for follow-up courses.

0-471-43299-7 • May 03 • Cloth • 848pp

Modern Receiver Front-Ends

Systems, Circuits, and Integration



JOY LASKAR, Georgia Institute of Technology, BABAK MATINPOUR, VT Silicon Inc., SUDIPTO CHAKRABORTY, Georgia Institute of Technology

Radio-frequency integrated circuit (RFIC) design is one of the most importantfields in modern technology, as advances in chip architecture are essential todelivering the full promise of broadband wireless communications. Modern Receiver Front-Ends outlines today's most cutting-edge approaches to advanced receiver design, covering topics ranging from system design to circuits and integration of a fullsolution. Bridging the gap between analytical understanding of receiver IC design and the limitations associated with practical implementation, the textoffers a breadth of coverage second to none.

An ideal resource for entry-level designers and students ofcircuit design, the book addresses:

- The actual implementation of wireless systems
- A range of practical issues associated with receiver design, including semiconductor technology selection, cost versus performance, yield, prototype development, testing, and analysis
- The architectures employed in modern broadband wireless systems
- The fundamental challenges in receiver design, from IC implementation to packaging
- A wealth of tricks-of-the-trade and practical considerations

Intended Audience: Practicing radio-frequency integrated circuit (RFIC) Designers; graduate students of electrical and computer engineering.

0-471-22591-6 • Jan 04 • Cloth • 221pp

The Analysis and Design of Linear Circuits

ROLAND E. THOMAS, Emeritus, United States Air Force Academy, ALBERT J. ROSA, Univ. of Denver

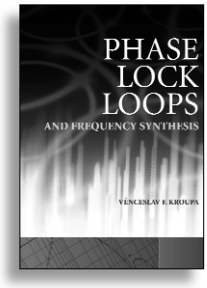
Now revised with a stronger emphasis on applications and more problems, this new Fourth Edition gives readers the opportunity to analyze, design, and evaluate linear circuits right from the start. The book's abundance of design examples, problems, and applications, promote creative skills and show how to choose the best design from several competing solutions.

- Emphasis on circuit design. Integrated treatment of analysis and design enhances students understanding of circuit fundamentals. The text gets students involved in design early, so they can recognize how their newly acquired knowledge can be applied to practical situations.
- Early introduction to the Op-Amp. The authors introduce students to the ideal Op-Amp early and often, allowing you to teach practical designs that students can actually build and use.

Intended Audience: Electrical engineers, students, circuit designers, and readers interested in electrical engineering.

0-471-46968-8 • Aug 03 • Paper • 149pp

Phase Lock Loops and Frequency Synthesis



VÊCARON;NCESLAV F. KROUPA, The Institute of Radion Engineering and Electronics, Academy of Sciences of the Czech Republic, Prague

Phase lock loops (PLL) with frequency synthesisers are key components of modern communication systems. Their growing use in controlling numerous wireless applications continues to drive the need for coherent information on their design and simulation. Balancing a detailed background in theory with practical applications of state-of-the-art device design, this book provides expert advice and in-depth discussions on switching phenomena, higher order loops and noise properties of oscillators, dividers and phase detectors.

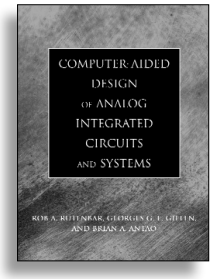
Phase Lock Loops and Frequency Synthesis:

- describes the basic properties of PLLs, emphasizing natural frequency and damping factors.
- investigates the theory control system stability.
- examines spurious signals in PLL frequency synthesizers, particularly signa-delta types.
- discusses individual blocks encountered in PLL systems.
- presents practical higher order PLLs and solutions based on the normalized 2nd order forms.

Intended Audience: Professional analog and digital circuit designers; telecommunications engineers designing new systems and components; optical comms engineers; graduate electrical engineering students and researchers.

0-470-84866-9 • Apr 03 • Cloth • 334pp

Computer-Aided Design of Analog Integrated Circuits and Systems



ROB A. RUTENBAR, Carnegie Mellon Univ., GEORGES G. E. GIELEN, Kathilieke Univ., LEUVEN, BRIAN A. ANTAO, Silicon Metrics Corporation, Austin, Texas

Ten years ago, analog seemed to be a dead-end technology. Today, System-on-Chip (SoC) designs are increasingly mixed-signal designs. With the advent of application-specific integrated circuits (ASIC) technologies that can integrate both analog and digital functions on a single chip, analog has become more crucial than ever to the design process. Today, designers are moving beyond hand-crafted, one-transistor-at-a-time methods. They are using new circuit and physical synthesis tools to design practical analog circuits; new modeling and analysis tools to allow rapid exploration of system level alternatives; and new simulation tools to provide accurate answers for analog circuit behaviors and interactions that were considered impossible to handle only a few years ago.

To give circuit designers and CAD professionals a better understanding of the history and the current state of the art in the field, this volume collects in one place the essential set of analog CAD papers that form the foundation of today's new analog design automation tools. Areas covered are:

- Analog synthesis
- Symbolic analysis
- Analog layout
- Analog modeling and analysis
- Specialized analog simulation
- Circuit centering and yield optimization
- Circuit testing

Intended Audience: Semiconductor circuit designers and manufacturers, electronic computer-aided design tool developers, circuit design and CAD research labs and organizations, electrical and computer engineering departments.

0-471-22782-X • Apr 02 • Cloth • 754pp

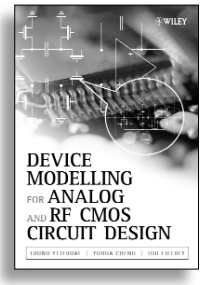
ESD Circuits & Systems

STEVEN HOWARD VOLDMAN, IBM, USA

As today's high circuit density technologies shrink to sub-micron levels there is an increasing requirement for information on the design of ESD circuits. This volume is designed as the second in a series of three books addressing Electrostatic Discharge (ESD) physics, devices, circuits and design across the full range of integrated circuit technologies. ESD Circuits and Design focuses on the layout and design of circuitry for protection against, and prevention of, ESD. New developments in advanced ESD protection designs for very-deep-sub-micron ICs are presented and the author covers ESD CAD design systems, chip architecture and design synthesis. This book can be viewed both as a stand-alone circuits and design guide and as a natural follow-on to the Physics and Devices book. Voldman regularly presents ESD tutorials and would use the book as a course supplement or recommended course reading.

0-470-84754-9 • Apr 05 • Cloth • 320pp

Device Modeling for Analog and RF CMOS Circuit Design



TROND YTTERDAL, Norwegian University of Science and Technology , YUHUA CHENG, Skyworks Solutions Inc., USA, TOR A. FJELDLY, Norwegian University of Science and Technology

In order to keep up with global demand, microelectronics engineers are continually challenged to produce increasingly complex, high performance integrated circuits. The steady downscaling of MOSFET/CMOS technology has highlighted the need for a thorough understanding of the properties, potentials and limitations of the latest device models and technology. Presenting state-of-the-art MOSFET models, this book will prove a valuable reference and text for engineers striving to achieve first-time-right, reduced time-to-market silicon products.

Featuring:

- A complete survey of the CMOS device models used in modern analog and RF integrated circuit design.
- A thorough treatment of the device modeling challenges faced by designers today.
- An examination of the most commonly used MOSFET models, including BSIM4 and EKV.
- A discussion of the modeling of process variations and device mismatch effects, along with device model quality assurance.
- Two accompanying software packages, AIM-Spice and MOSCalc, available via the Internet.

Intended Audience: Designers and Practicing Engineers in the Semiconductor Device Field and Electronic Systems Industry.

0-471-49869-6 • Mar 03 • Cloth • 306pp

Module-Level Hardware Design with VHDL

PONG CHU

This book teaches readers how to systematically design efficient, portable "moderately complex" digital circuits using the VHDL hardware description language and synthesis software. The focus is on the module-level design, which is composed of functional units, routing circuit and storage. The book illustrates the relationship between the VHDL contructs and the underlying hardware components, and shows how to develop codes that faithfully reflect the module-level design and can be synthesized into efficient gate-level implementation.

0-471-72092-5 • Nov 05 • Cloth • 550pp

Basic ESD and I/O Design

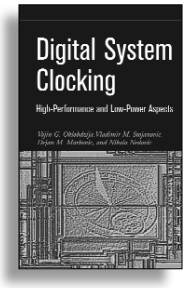
SANJAY DABRAL, TIMOTHY J. MALONEY

The book is a comprehensive guide to ESD (electrostatic discharge) protection and input/output design. Addressing the growing demand in industry for high-speed I/O designs, it bridges the gap between ESD research and current VLSI design practices, and serves as a reference for practicing engineers. The book presents an integrated treatment of ESD, I/O, and process parameter interactions that both I/O designers and process designers can use. It examines key factors in I/O and ESD design and testing, and focuses on design principles that can be applied widely as the field continues to evolve.

Intended Audience: Engineers, researchers, and graduate students involved with the design of circuits, systems, VLSI design, or computer architecture; digital system design engineers at any high-tech company that develops hardware.

0-471-48853-4 • Dec 05 • Cloth • 350pp

Digital System Clocking



High-Performance and Low-Power Aspects

VOJIN G. OKLOBDZIJA, Univ. of California, Davis, VLADIMIR M. STOJANOVIC, Stanford Univ., DEJAN M. MARKOVIC, Univ. of California, Berkeley, NIKOLA M. NEDOVIC, Univ. Of California, Davis

Digital System Clocking is assuming ever greater importance as clock speeds increase, doubling every three years. This—the first book to focus entirely on clocked storage elements, "Flip-Flops" or "Latches"—provides an in-depth introduction to the subject for both professional computer design engineers and graduate-level computer engineering students. In Digital System Clocking: High-Performance and Low-Power Aspects, you will find information on:

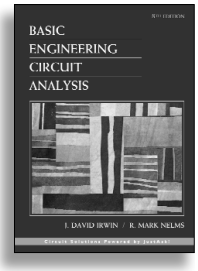
- Clocking in synchronous systems including on-chip clock generation, timing parameters, and clock signal distribution
- Latch-based and Flip-Flop derivation
- Clock-to-output delay tcq
- Pipelining and timing analysis
- Absorbing clock uncertaintites and dynamic time borrowing
- Low-swing circuit techniques, clock gating, and dual-edge triggering

With numerous microprocessor examples including clocking for Intel®, Sun Microsystems's UltraSPARC®-III, and IBM processors, Digital System Clocking: High-Performance and Low-Power Aspects provides much-needed answers about a technology that stands as a centerpiece of digital system design.

Intended Audience: Computer design engineers and graduate-level computer engineering students.

0-471-27447-X • Jan 03 • Cloth • 264pp

Basic Engineering Circuit Analysis, 8th Edition



J. DAVID IRWIN

Irwin's *Basic Engineering Circuit Analysis* has built a solid reputation for its highly accessible presentation, clear explanations, and extensive array of helpful learning aids. Now in a new eighth edition, this highly accessible book has been fine-tuned and revised, making it more effective and even easier to use. It covers such topics as resistive circuits, nodal and loop analysis techniques, capacitance and inductance, AC steady-state analysis, polyphase circuits, the Laplace transform, two-port networks, and much more.

0-471-48728-7 • Nov 04 • Cloth • 816pp

High-Performance Digital System Design

Techniques, Circuits, and Logic

VOJIN G. OKLOBDZIJA, Univ. of California, Davis, KAZUO YANO

Techniques, Circuits, and Logic VOJIN G. OKLOBDZIJA, University of California, USA and KAZUO YANO

- Describes the key rules of thumb and physical insights involved in state-of-the-art VLSI design
- Examines a number of well-known design implementations from industry
- Concentrates on CMOS design but also covers ECL and BiCMOS bipolar technology
- Emphasizes low-power design and design for testability
- Includes a range of worked examples and homework exercises

0-471-15046-0 • Aug 05 • Cloth • 500pp

Design Through VERILOG HDL

T. R. PADMANABHAN, Principal, Amrita Institute of Technology and Science, Coimbatore, India, B. BALA TRIPURA SUNDARI, Senior Lecturer, Amrita Institute of Technology and Science, Coimbatore, India

Large and complicated digital circuits can be incorporated into hardware by using Verilog, a hardware description language (HDL). A designer aspiring to master this versatile language must first become familiar with its constructs, practice their use in real applications, and apply them in combinations in order to be successful. Design Through Verilog HDL affords novices the opportunity to perform all of these tasks, while also offering seasoned professionals a comprehensive resource on this dynamic tool.

Describing a design using Verilog is only half the story: writing test-benches, testing a design for all its desired functions, and how identifying and removing the faults remain significant challenges. Design Through Verilog HDL addresses each of these issues concisely and effectively. The authors discuss constructs through illustrative examples that are tested with popular simulation packages, ensuring the subject matter remains practically relevant. Other important topics covered include:

Each chapter concludes with exercises that both ensure readers have mastered the present material and stimulate readers to explore avenues of their own choosing. Written and assembled in a paced, logical manner, Design Through Verilog HDL provides professionals, graduate students, and advanced undergraduates with a one-of-a-kind resource.

Intended Audience: Electronic design specialists; VLSI and EDA professionals; IEEE Societies; and graduate and undergraduate students.

0-471-44148-1 • Oct 03 • Cloth • 472pp

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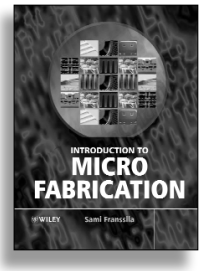
Introduction to Microfabrication



SAMI FRANSSILA, Helsinki University of Technology, Finland

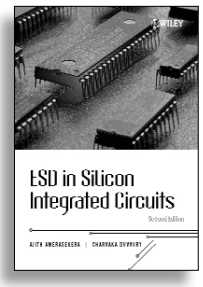
Microfabrication is the key technology behind integrated circuits, microsensors, photonic crystals, ink jet printers, solar cells and flat panel displays. Microsystems can be complex, but the basic microstructures and processes of microfabrication are fairly simple. *Introduction to Microfabrication* shows how the common microfabrication concepts can be applied over and over again to create devices with a wide variety of structures and functions.

Introduction to Microfabrication includes 250 homework problems for students to familiarise themselves with micro-scale materials, dimensions, measurements, costs and scaling trends. Both research and manufacturing topics are covered, with an emphasis on silicon, which is the workhorse of microfabrication.

Intended Audience: Electrical Engineers, Materials Scientists.

0-470-85105-8 • Apr 04 • Cloth • 422pp

ESD in Silicon Integrated Circuits



E. AJITH AMERASEKERA, Texas Instruments, CHARVAKA DUVVURY, Texas Instruments

As high density circuits move deeper into submicron dimensions Electrostatic Discharge (ESD) effects become an increasing concern. This new edition of a classic reference presents a practical and systematic approach to ESD device physics, modelling and design techniques. The authors draw upon their wealth of industrial experience to provide a complete overview of ESD and its implications in the development of advanced integrated circuits.

Fully revised to incorporate the latest industry achievements and featuring:

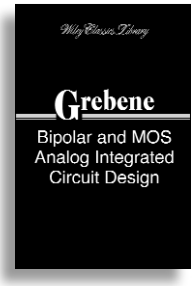
- Design methods for a variety of technologies from 1 micron to the current sub-micron regimes, along with complete design approaches for MOS, BiCMOS and Power MOSFETs.
- New sections on ESD design rules, process technology effects, layout approaches, package effects and circuit simulations.
- Guidance on the implementation of circuit protection measures for a range of I/O configurations.
- Detailed coverage of ESD simulation stress models.

Intended Audience: IC design and process design engineers, product and reliability engineers, device modeling engineers, physicists, and researchers.

0-471-49871-8 • Apr 02 • Cloth • 422pp

Enrich your library by recommending our title to your Librarian!

Bipolar and MOS Analog Integrated Circuit Design



ALAN B. GREBENE

The Wiley Classics Library consists of selected books that have become recognized classics in their respective fields. With these new unabridged and inexpensive editions, Wiley hopes to extend the life of these important works by making them available to future generations of mathematicians and scientists.

Covers the entire field of analog integrated circuits by dividing them into functional categories and then examining each of these circuit classes separately

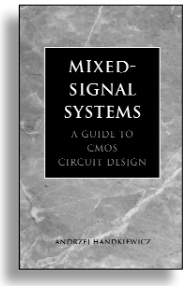
- Lengthy and detailed mathematical derivations are avoided wherever possible. Emphasis is squarely on the end result, the basic design philosophy leading up to it, and the underlying assumptions and trade-offs.
- Numerous examples illustrate the most effective modern practices and workable short-cuts.
- Familiarizes the reader with the physical structures, advantages, and limitations of monolithic components.
- Covers the basic "building blocks" or sub-circuits of analog IC design.

Intended Audience: Engineers in circuit design.

0-471-43078-1 • Nov 02 • Paper • 894pp

Mixed-Signal Systems

A Guide to CMOS Circuit Design



ANDRZEJ HANDKIEWICZ, Poznan Univ.

Mixed-signal processing–the integration of digital and analog circuitry within computer systems–enables systems to take signals from the analog world and process them within a digital system. In fact, recent advances in VLSI technology performance now allow for the integration of digital and analog circuits on a single chip, a process that requires the use of analog pre- and post-processing systems such as converters, filters, sensors, drivers, buffers, and actuators. However, the lack of universal CAD tools for the synthesis, simulation, and layout of the analog part of the chip represents a design bottleneck of today's VLSI circuits.

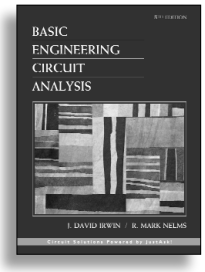
Mixed-Signal Systems: A Guide to CMOS Circuit Design presents a comprehensive general overview of the latest CMOS technology and covers the various computer systems that may be used for designing integrated circuits. Taking an original approach to one- and two-dimensional filter design, the author explores the many digital-oriented design systems, or silicon compilers, currently being used, and presents the basic methods, procedures, and tools used by each. In a thorough and systematic manner, the text:

- Presents common features of digital-oriented design systems
- Describes methods and tools that are not yet being applied in any compiler
- Illustrates image processing systems that can be implemented on a single chip
- Demonstrates the path from synthesis methods to the actual silicon assembly

Intended Audience: Integrated circuit designers, developers of computer programs for design of integrated circuits, advanced students in systems design.

0-471-22853-2 • Jul 02 • Cloth • 228pp

Basic Engineering Circuit Analysis



J. DAVID IRWIN, Auburn Univ.

Irwin's Basic Engineering Circuit Analysis has built a solid reputation for its highly accessible presentation, clear explanations, and extensive array of helpful learning aids. Now in a new eighth edition, this highly accessible book has been fine-tuned and revised, making it more effective and even easier to use. It covers such topics as resistive circuits, nodal and loop analysis techniques, capacitance and inductance, AC steady-state analysis, polyphase circuits, the Laplace transform, two-port networks, and much more.

For over twenty years, Irwin has provided readers with a straightforward examination of the basics of circuit analysis.

- Uses real-world examples to demonstrate the usefulness of the material.
- Integrates MATLAB throughout the book and includes special icons to identify sections where CAD tools are used and discussed.
- Offers expanded and redesigned Problem-Solving Strategies sections to improve clarity.
- Includes a new chapter on Op-Amps that gives readers a deeper explanation of theory.
- The text's pedagogical structure has been revised to enhance learning.

Intended Audience: Electrical and computer engineers, and electrical and computer engineering students.

0-471-48728-7 • Nov 04 • Cloth • 816pp

Low-Voltage CMOS VLSI Circuits

JAMES B. KUO, JEA-HONG LOU

Low-voltage very large scale integration (VLSI) circuits represent the electronics of the future. All electronic products are striving to reduce power consumption to create more economical, efficient, and compact devices. Despite the inevitable trend towards low-voltage, few books address the technology needed. Geared to the needs of engineers and designers in the field, this comprehensive volume presents a remarkably detailed analysis of one of today's hottest and most compelling research techniques for VLSI systems.

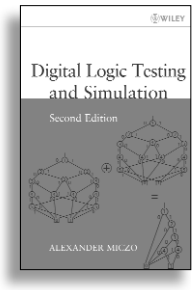
Provides complete guidelines to diversified low-voltage and low-power circuit techniques, emphasizing the role of submicron and processing technology.

- Contains 431 ready-to-use circuit diagrams and related figures of CMOS static and dynamic logic circuits.
- Details volatile and nonvolatile VLSI memory Circuits, including the newly-introduced ferroelectric RAM (FRAM).
- Features 293 valuable references from the latest research papers.
- Discusses the components and microprocessor systems associated with and benefiting from low-voltage VLSI technology.

Intended Audience: Semiconductor Engineers, CAD and VLSI Designers, Researchers in academia and in the computer and defense industries.

0-471-71979-X • Sep 04 • Paper • 456pp

Digital Logic Testing and Simulation



ALEXANDER MICZO,

Today, digital logic devices are common in products that impact public safety, including applications in transportation and human implants. Accurate testing has become more critical to reliability, safety, and the bottom line. Yet, as digital systems become more ubiquitous and complex, the challenge of testing them has become more difficult. As one development group designing a RISC stated, "the work required to … test a chip of this size approached the amount of effort required to design it." A valued reference for nearly two decades, Digital Logic Testing and Simulation has been significantly revised and updated for designers and test engineers who must meet this challenge.

There is no single solution to the testing problem. Organized in an easy-to-follow, sequential format, this Second Edition familiarizes the reader with the many different strategies for testing and their applications, and assesses the strengths and weaknesses of the various approaches. The book reviews the building blocks of a successful testing strategy and guides the reader on choosing the best solution for a particular application. Digital Logic Testing and Simulation, Second Edition covers such key topics as:

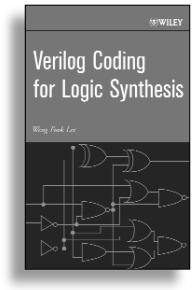
- Binary Decision Diagrams (BDDs) and cycle-based simulation
- Tester architectures/Standard Test Interface Language (STIL)
- Practical algorithms written in a Hardware Design Language (HDL)
- Fault tolerance
- Behavioral Automatic Test Pattern Generation (ATPG)
- The development of the Test Design Expert (TDX), the many obstacles encountered and lessons learned in creating this novel testing approach

Up-to-date and comprehensive, Digital Logic Testing and Simulation is an important resource for anyone charged with pinpointing faulty products and assuring quality, safety, and profitability.

Intended Audience: CAD Developers, ASIC, and Systems Designers; Senior and Graduate Level Students in digital logic testing and test engineering.

0-471-43995-9 • Jul 03 • Cloth • 696pp

Verilog Coding for Logic Synthesis



WENG FOOK LEE, Advanced Micro Devices (AMD) Design Center

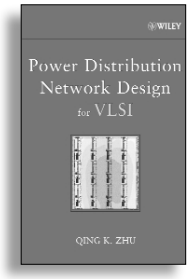
Rapid change in IC chip complexity and the pressure to design more complex IC chips at a faster pace has forced design engineers to find a more efficient and productive method to create schematics with large amounts of logic gates. This has led to the development of Verilog; one of the two types of Hardware Description Language (HDL) currently used in the industry.

Verilog Coding for Logic Synthesis is a practical text that has been written specifically for students and engineers who are interested in learning how to write synthesizable Verilog code. Starting with simple verilog coding and progressing to complex real-life design examples, Verilog Coding for Logic Synthesis prepares you for a variety of situations that are bound to occur while utilizing Verilog.

Intended Audience: VLSI design engineers and seniors and graduate students.

0-471-42976-7 • Apr 03 • Cloth • 336pp

Power Distribution Network Design for VLSI



QING K. ZHU, Intel Corporation, Matrix Semiconductor Inc., USA

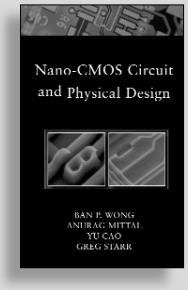
The primary goal in VLSI (very large scale integration) power network design is to provide enough power lines across a chip to reduce voltage drops from the power pads to the center of the chip. Voltage drops caused by the power network's metal lines coupled with transistor switching currents on the chip cause power supply noises that can affect circuit timing and performance, thus providing a constant challenge for designers of high-performance chips.

Power Distribution Network Design for VLSI provides detailed information on this critical component of circuit design and physical integration for high-speed chips. A vital tool for professional engineers (especially those involved in the use of commercial tools), as well as graduate students of engineering, the text explains the design issues, guidelines, and CAD tools for the power distribution of the VLSI chip and package, and provides numerous examples for its effective application.

Intended Audience: Professional Engineers, especially those heavily involved with using commercial tools, Graduate Students.

0-471-65720-4 • Feb 04 • Cloth • 207pp

Nano-CMOS Circuit and Physical Design



BAN WONG, Senior Engineering Manager for NVIDIA Corporation, ANURAG MITTAL, Senior Staff Engineer for Virage Logic, Inc., YU CAO, Berkeley Wireless Research Center at UC Berkeley, GREG STARR, Design Manager, Altera Corporation

The fast pace of new technology and the challenges of nano-scaling are bringing together the once-separate disciplines of circuit design, technology device physics, and physical implementation. A good understanding of the underlying physical constraints of device, interconnect, and manufacturing is crucial for designing circuit systems and devices and making sound technology decisions.

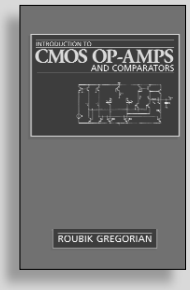
Nano-CMOS Circuit and Physical Design integrates the nanometer process, device manufacturability, advanced circuit design, and related physical implementation into a single, seamless approach to advanced semiconductor technology. This comprehensive volume explores new developments in devices and processing; presents design issues, paying special attention to technology/design interactions such as signal integrity and interconnects; and addresses the impact of design for manufacturability and variability. Important topics include:

Written by expert practitioners, Nano-CMOS Circuit and Physical Design is a useful resource for IC designers and professionals in the field, providing them with practical design solutions and approaches.

Intended Audience: Circuit engineers and designers, instructors.

0-471-46610-7 • Nov 04 • Cloth • 416pp

Introduction to CMOS OP-AMPs and Comparators



ROUBIK GREGORIAN

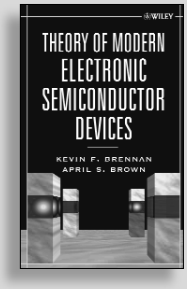
A step-by-step guide to the design and analysis of CMOS operational amplifiers and comparators

The book covers the physical operation of these components, their design procedures, and applications to analog MOS circuits—particularly those involving switched-capacitor circuits, and analog-to-digital (A/D) and digital-to-analog (D/A) converters. Roubik Gregorian, a leading authority in the field, gives circuit designers the technical knowledge they need to design high-performance op-amps and comparators suitable for most analog circuit applications. In this self-contained treatment, which is loosely based on his well-received 1986 book, Analog MOS Integrated Circuits for Signal Processing (coauthored with Gabor C. Temes), Gregorian reviews the required basics before advancing to state-of-the-art topics and problem-solving techniques. This valuable guide:

- Clearly explains configuration and performance limitation issues affecting the operation of CMOS op-amps and comparators
- Details advanced design procedures to improve performance
- Provides practical design examples suitable for a broad range of analog circuit applications
- Incorporates hundreds of illustrations into the text
- Concludes each chapter with problems and references to advanced topics, useful in textbook adoptions

0-471-31778-0 • Feb 99 • Cloth • 376pp

Theory of Modern Electronic Semiconductor Devices



KEVIN F. BRENNAN, Georgia Institute of Technology, APRIL S. BROWN, Georgia Institute of Technology

Engineers continue to develop new electronic semiconductor devices that are almost exponentially smaller, faster, and more efficient than their immediate predecessors. Theory of Modern Electronic Semiconductor Devices endeavors to provide an up-to-date, extended discussion of the most important emerging devices and trends in semiconductor technology, setting the pace for the next generation of the discipline's literature.

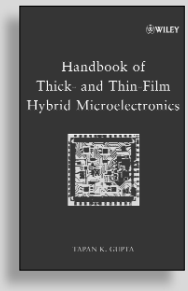
Kevin Brennan and April Brown focus on three increasingly important areas: telecommunications, quantum structures, and challenges and alternatives to CMOS technology. Specifically, the text examines the behavior of heterostructure devices for communications systems, quantum phenomena that appear in miniaturized structures and new nanoelectronic device types that exploit these effects, the challenges faced by continued miniaturization of CMOS devices, and futuristic alternatives. Device structures on the commercial and research levels analyzed in detail include:

- Heterostructure field effect transistors
- Bipolar and CMOS transistors
- Resonant tunneling diodes
- Real space transfer transistors
- Quantum dot cellular automata
- Single electron transistors

Intended Audience: Practitioners in semiconductor device design; engineers; researchers in device theory.

0-471-41541-3 • Feb 02 • Cloth • 448pp

Handbook of Thick- and Thin-Film Hybrid Microelectronics



TAPAN K. GUPTA, RMD, INC.

This is the first handbook on the fabrication and design of hybrid microelectronic circuits.

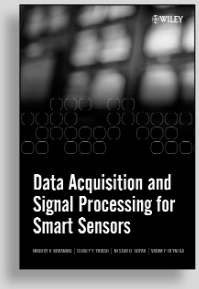
- Deals with all aspects of the technology, design, layout and processing of materials.
- Fills the need for a comprehensive survey of a widely-used technology.

Intended Audience: Engineers, manufacturers, graduate-level engineering students.

0-471-27229-9 • Apr 03 • Cloth • 424pp

Enrich your library by recommending our title to your Librarian!

Data Acquisition and Signal Processing for Smart Sensors



NIKOLAY V. KIRIANAKI, International Frequency Sensor Association, Lviv, Ukraine, SERGEY Y. YURISH, International Frequency Sensor Association, Lviv, Ukraine, NESTOR O. SHPAK, Institute of Computer Technologies, Lviv, Ukraine, VADIM P. DEYNEGA, State Univ. Lviv Polytechnic, Ukraine

Advanced microsensor technology is making a significant impact in fields as diverse as wireless communications and automotive, biomedical and chemical engineering. *Data Acquisition and Signal Processing for Smart Sensors* draws on the authors' collective practical experience in the design of sensor instrumentation to provide a systematic treatment of smart sensors and sensor systems. This unique reference presents an alternative to the classical approach to data acquisition and covers signal processing methods for digital and quasi-digital sensors.

Features Include:

- Introduction to the authors' novel Method of the Dependent Count™ for frequency (period) conversion and measurement and its applications.
- Consideration of modern sensor interface circuits and buses, along with an introduction to the Universal Transducer Interface (UTI) and Time to Digital Converter (TDC).
- Methods of frequency-to-code conversion for smart sensors, including direct, indirect, combined, interpolation and Fourier transform based techniques as well as advanced and self-adapting conversion methods.
- Comparative analysis of smart sensor systems with time- and space-division channelling functions.
- Detailed glossary of related terms accompanied by a guide to related web resources.

Intended Audience: Measurement engineers, researchers and developers working in microsensors, MEMS and microsystems; advanced undergraduates and graduates in electrical and mechanical engineering.

0-470-84317-9 • Mar 02 • Cloth • 298pp

Complete Guide to Semiconductor Devices

KWOK K. NG, Bell Laboratories, Lucent Technologies, Murray Hill, New Jersey

Semiconductor devices, the basic components of integrated circuits, are responsible for the rapid growth of the electronics industry over the past fifty years. Because there is a growing need for faster and more complex systems for the information age, existing semiconductor devices are constantly being studied for improvement, and new ones are being continually invented. As a result, a large number of types and variations of devices are available in the literature. The Second Edition of this unique engineering guide continues to be the only available complete collection of semiconductor devices, identifying 74 major devices and more than 200 variations of these devices.

The Second Edition has been significantly updated with eight new chapters, and the material rearranged to reflect recent developments in the field. As such, it remains an ideal reference source for graduate students who want a quick survey of the field, as well as for practitioners and researchers who need quick access to basic information, and a valuable pragmatic handbook for salespeople, lawyers, and anyone associated with the semiconductor industry.

Intended Audience: Practitioners and researchers who need quick access to basic information; sales people, lawyers and anyone associated with the semiconductor industry; graduate students.

0-471-20240-1 • Jul 02 • Cloth • 768pp

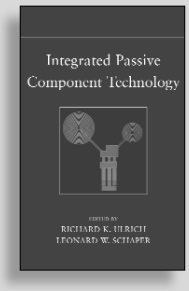
Emerging Actuator Technologies – A Mechatronic Approach

JOSE PONS, Instituto de Automática Industrial, Spain

Remarkable developments have taken place in the field of mechatronics in recent years. The technology of integrating electronic and mechanical devices in a single structure is already growing around the world. However, traditional actuator technologies using electromagnetic, pneumatic, hydraulic motors are not suitable for biomedical, prosthetics and orthotics applications, which require high power-density (reduced size, weight while keeping relevant power). Moreover, traditional actuators do not perform well under scaling to micro and nano domains. This book is application oriented and intends to provide an integrated overview of emerging actuator technologies with rigorous sections on principles. The book outlines the principles and characteristics of the technology and deals with the integration into control systems as well as looking at expected application fields. Starting with a general description of actuators and mechatronics, the book presents a comprehensive overview of the technology. Each chapter is dedicated to a particular novel actuator and dealt with in detail. This book covers piezoelectric actuators, shape memory actuators, electro-active polymers, electro and magneto-rheological fluid actuators and magnetostrictive actuators. By bridging the gap between application requirements and actuator performance, this title is the ideal reference for researchers and professionals in the field.

0-470-09197-5 • Mar 05 • Cloth • 300pp

Integrated Passive Component Technology



**RICHARD K. ULRICH, University of Arkansas,
LEONARD W. SCHAPER, University of Arkansas**

This book provides an overview of the technology, potential applications, motivations, and problems associated with integrating resistors, capacitors, and inductors into circuit boards instead of mounting them as discrete components on the surface. Written primarily for engineers and scientists in industry who want to determine if passive integration is a viable option for a particular product, the text describes the processes available for designing and fabricating integrated passives, measuring their properties, and applying them to microelectronic systems.

In order to bring professionals up to date in this fast-moving technology and enable them to implement it into their own manufacturing environments, the editors address some basic questions concerning the tradeoffs between discrete and integrated approaches, including:

- What are the advantages and disadvantages of integrated passives?
- Is this processing compatible with existing substrates?
- Can integrated passives be made with conventional PWB fabrication equipment?
- How do the electrical characteristics of integrated passives differ from discretes?
- How are integrated passives designed?
- What must be considered in the economic analysis?

Intended Audience: Electrical, chemical, mechanical, and industrial engineers in the microelectronic manufacturing industry.

0-471-24431-7 • Jun 03 • Cloth • 379pp

Survey of Semiconductor Physics

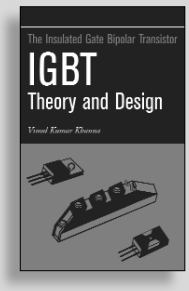
KARL W. B&OUML;ER, Univ. of Delaware

Concentrating on the physics, materials, and surface science of semiconductors rather than the individual devices themselves, the two volumes of this Second Edition present a condensate of the existing knowledge of semiconductor physics. The work contains everything a researcher needs in order to understand the functionality of semiconductor devices including bonds and bands; phonons, photons, and excitons; transport and optics; impurities and defects; carriers; fields; phase transitions; superconducity; noise; photoconductivity; space-charge effects; Schottky barriers; materials; and solar cells.

Intended Audience: Physicists, chemists, materials scientists, and engineers working with semiconductors.

0-471-35572-0 • Apr 02 • Cloth • 2562pp

Insulated Gate Bipolar Transistor IGBT Theory and Design



VINOD KUMAR KHANNA, Central Electronics Engineering Research Institute, India

Semiconductor devices, particularly the insulated gate bipolar transistor (IGBT), form the heart of the power electronics industry and play a pivotal role in the regulation and distribution of energy in the world. Since its conception as a switching device, improvements and innovative design ideas have established IGBT as a rugged contender in the competitive electronics field.

Insulated Gate Bipolar Transistors (IGBT): Theory and Design covers basic theory and design aspects of IGBTs, including the selection of silicon, achieving targeted specifications through device and process design, and device packaging. After laying the groundwork in MOS and bipolar disciplines, the author constructs the foundation of power device physics necessary for clearly understanding the subject matter, including chapters on:

- Non-punchthrough, punchthrough, vertical double diffused MOSFET and trench-gate IGBTs; improved lateral and novel IGBT structures; and emerging technologies
- Steady-state and dynamic operation, and soft switching performance; safe operating area and reliability tests of IGBT
- IGBT physics, device and circuit models
- IGBT unit cell design and latching suppression techniques
- IGBT fabrication steps and process design
- IGBT power modules

Intended Audience: Scientists, engineers, students, IEEE Societies.

0-471-23845-7 • Aug 03 • Cloth • 648pp

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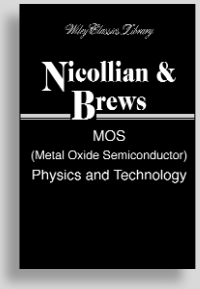
MOS (Metal Oxide Semiconductor) Physics and Technology



E. H. NICOLLIAN, J. R. BREWS

The Wiley Classics Library consists of selected books that have become recognized classics in their respective fields. With these new unabridged and inexpensive editions, Wiley hopes to extend the life of these important works by making them available to future generations of mathematicians and scientists.

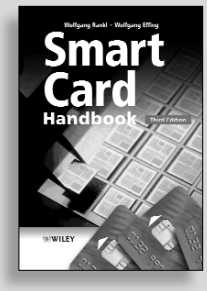
Key Features: Explains the theoretical and experimental foundations of the measurement of the electrical properties of the MOS system and the technology for controlling its properties.

- Emphasizes the silica and the silica-silicon interface.
- Provides a critical assessment of the literature, corrects incomplete or incorrect theoretical formulations, and gives critical comparisons of measurement methods.
- Contains information needed to grow an oxide, make an MOS capacitor array, and fabricate an integrated circuit with optimal performance and stability.

Intended Audience: Engineers in the semiconductor industry.

0-471-43079-X • Nov 02 • Paper • 906pp

Smart Card Handbook



WOLFGANG RANKL, Giesecke & Devrient GmbH, Munich, Germany, WOLFGANG EFFING, Giesecke & Devrient GmbH, Munich, Germany

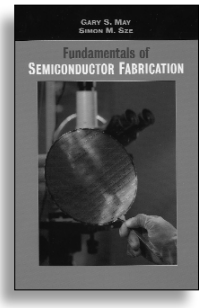
"The book is filled with information that students, enthusiasts, managers, experts, developers, researchers and programmers will find useful. The book is well structured and provides a good account of smart card state-of-the-art technology... There is a lot of useful information in this book and as a practicing engineer I found it fascinating, and extremely useful."
— REVIEW OF SECOND EDITION IN *MEASUREMENT AND CONTROL.*

Building on previous editions, this third edition of the *Smart Card Handbook* offers a completely updated overview of the state of the art in smart card technology. Everything you need to know about smart cards and their applications is covered! Fully revised, this handbook describes the advantages and disadvantages of smart cards when compared with other systems, such as optical cards and magnetic stripe cards and explains the basic technologies to the reader. This book also considers the actual status of appropriate European and international standards.

Intended Audience: Computer and electronics engineers in security system development; microchip designers and professionals working in the smart card industry.

0-470-85668-8 • Nov 03 • Cloth • 1120pp

Fundamentals of Semiconductor Fabrication



GARY S. MAY, School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia, SIMON M. SZE, National Chiao Tung Univ., National Nano Device Laboratories, Hsinchu, Taiwan

Offers a basic, up-to-date introduction to semiconductor fabrication technology, including both the theoretical and practical aspects of all major steps in the fabrication sequence

Presents comprehensive coverage of process sequences

Introduces readers to modern simulation tools

Addresses the practical aspects of integrated circuit fabrication Clearly explains basic processing theory

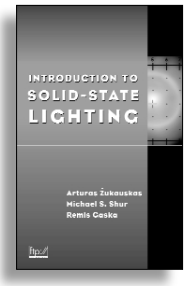
Key Features: Presents comprehensive coverage of process sequences.

- Introduces readers to modern simulation tools.
- Addresses the practical aspects of integrated circuit fabrication.
- Clearly explains basic processing theory.

Intended Audience: Practicing engineers and scientists in the semiconductor industry.

0-471-23279-3 • Mar 03 • Cloth • 320pp

Introduction to Solid-State Lighting



ARTÙRAS ŽUKAUSKAS, Vilnius Univ., MICHAEL S. SHUR, Rensselaer Polytechnic Institute, REMIS GASKA, Sensor Electronic Technology, Inc.

Solid-state lighting is a rapidly emerging field. Light Emitting Diodes are already used in traffic signals, signage/contour lighting, large area displays, and automotive applications. But its greatest future lies in the possibility of applying solid-state lamps to general lighting. Solid-state lighting promises to reduce energy consumption as much as fifty percent, cut down on carbon-dioxide emission, and even spur the development of a completely new lighting industry.

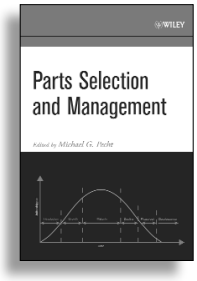
Giving this important emerging field the attention it deserves, Introduction to Solid-State Lighting comprehensively covers:

- The history of lighting
- The characterization of visible light
- Conventional light sources
- LED basics
- Extraction of light from high-brightness LEDs
- White LED
- Applications of solid-state lamps

Intended Audience: Semiconductor physicists, chemists, materials scientists, opticists, lighting engineers, as well as business people in the lighting industry.

0-471-21574-0 • Apr 02 • Cloth • 224pp

Parts Selection and Management



MICHAEL PECHT

Increase profitability and reduce risk through effective parts selection and management

Corporations recognize that technology can be the key to fueling product design and development. But just as crucial – if not more – to a company's success are the decisions about when, what, and how a technology will be used. Few companies have failed because the right technology was not available; many have failed when a technology was not effectively selected and managed.

Parts Selection and Management is a guide to increasing company profitability and reducing the time-to-profit through the efficient management of the process of parts selection and management. Taking an "eyes-on, hands-off" approach to parts selection, this guidebook addresses risk-assessment, decision-making steps, and subsequent management activities. The book covers everything from methodologies for parts selection and management, product requirements and specifications, and manufacturer assessment procedures to ways to track part changes through the supply chain, reliability assessment, and environmental, legislative, and legal issues.

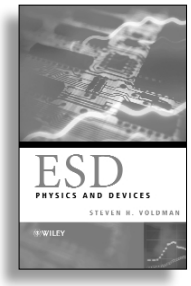
Written by a seasoned professional, teacher, and author in the field, the book enables companies to:

- Employ effective risk assessment and mitigation techniques
- Make an informed company-wide decision about parts selection and management
- Choose parts to fit the functionality of the product and other constraints
- Maximize system supportability by preparing for parts obsolescence
- Improve supply-chain interactions and communications with customers and regulatory agencies to minimize time-to-profit

Intended Audience: Researchers involved in the fields of electronic component design, marketing, and management.

0-471-47605-6 • Jan 04 • Cloth • 321pp

ESD Physics and Devices



STEVEN HOWARD VOLDMAN, IBM, USA

In the continued quest to obtain a better understanding of Electrostatic Discharge (ESD), this book aims to provide a clear insight into how changes in semiconductor technology over the last 15 years have influenced the ESD robustness of semiconductor components. *ESD Physics and Devices* offers an accessible introduction to the subject covering thermal, mechanical and electrostatic phenomena as well as the techniques from physics and mathematics that are useful for electro-thermal and failure physics.

- Addresses the physics of ESD protection in CMOS, silicon on insulator (SOI), and Silicon Germanium (SiGe), and future technologies from FinFETs to Carbon nano-tubes.
- Derives electro-thermal models from first principles highlighting early research, electro-thermal physical models and techniques.
- Introduces traditional and modern techniques to old problems in ESD, covering Boltzmann transforms and the Duhamel principle, as well as transmission line representations and transfer resistance models.

Intended Audience: EMC nonspecialist engineers and researchers working in the fields of IC and transistor design; semiconductor process and device technologists looking for a foundation in ESD; researchers in the fields of device/circuit modelling and semiconductor reliability.

0-470-84753-0 • Sep 04 • Cloth • 420pp

Phase-Locking in High-Performance Systems

From Devices to Architectures

BEHZAD RAZAVI, AT&T Bell Laboratories

The rapid growth of high-speed semiconductor and communication technologies has helped make phase-locked loops (PLLs) an essential part of memories, microprocessors, radio-frequency (RF) transceivers, broadband data communication systems, and other burgeoning fields. Complementing his 1996 Monolithic Phase-Locked Loops and Clock Recovery Circuits (Wiley-IEEE Press), Behzad Razavi now has collected the most important recent writing on PLL into a comprehensive, self-contained look at PLL devices, circuits, and architectures.

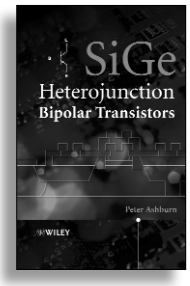
Phase-Locking in High-Performance Systems: From Devices to Architectures' five original tutorials and eighty-three key papers provide an eminently readable foundation in phase-locked systems. Analog and digital circuit designers will glean a wide range of practical information from the book's . . .

- Tutorials dealing with devices, delay-locked loops (DLLs), fractional-N synthesizers, bang-bang PLLs, and simulation of phase noise and jitter
- In-depth discussions of passive devices such as inductors, transformers, and varactors
- Papers on the analysis of phase noise and jitter in various types of oscillators
- Concentrated examinations of building blocks, including the design of oscillators, frequency dividers, and phase/frequency detectors
- Articles addressing the problem of clock generation by phase-locking for timing and digital applications, RF synthesis, and the application of phase-locking to clock and data recovery circuits

Intended Audience: This book will benefit both practicing engineers and graduate students doing research in related areas.

0-471-44727-7 • Feb 03 • Cloth • 736pp

SiGe Heterojunction Bipolar Transistors



PETER ASHBURN, Univ. of Southampton, Southampton, UK

Remarkable developments in bipolar technology over the past decade have seen the silicon–germanium heterojunction bipolar transistor (SiGe HBT) emerge from research labs to enter production in radio frequency technologies. These developments have allowed SiGe BiCMOS transistors to address high-frequency wireless and optical communications applications that were previously only possible in III/V and II/VI devices. This book brings together for the first time all the new developments and describes in a unified manner the physics, materials science and technology of silicon bipolar transistors and SiGe HBTs.

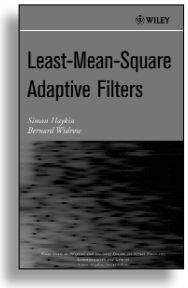
Featuring:

- Basic device physics concepts presented in a simple and concise way.
- All the key technology innovations in detail, including polysilicon emitters, selective implanted collectors, selective and differential SiGe(C) epitaxy, and technology case studies.
- Compact models of bipolar transistors, including Gummel Poon, Mextram and VBIC.
- Overall bipolar technology, device and circuit optimisation.

Intended Audience: Practicing microelectronics engineers and researchers; Optical communications engineers and communication technology engineers.

0-470-84838-3 • Oct 03 • Cloth • 286pp

Least-Mean-Square Adaptive Filters



SIMON HAYKIN, B. WIDROW

Today, working efficiently with LMS adaptive filters not only involves understanding their fundamentals, it also means staying current with their many applications in practical systems. However, no single resource has presented an up-to-the-minute examination of these and all other essential aspects of LMS filters–until now.

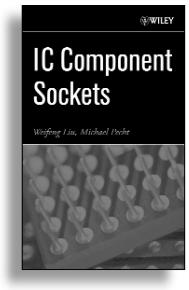
Edited by Simon Haykin and Bernard Widrow, the original inventor of the technology, Least-Mean-Square Adaptive Filters offers the most definitive look at the LMS filter available anywhere. Here, readers will get a commanding perspective on the desirable properties that have made LMS filters the turnkey technology for adaptive signal processing. Just as importantly, Least-Mean-Square Adaptive Filters brings together the contributions of renowned experts whose insights reflect the state-of-the-art of the field today. In each chapter, the book presents the latest thinking on a wide range of vital, fast-emerging topics, including:

- Traveling-wave analysis of long LMS filters
- Energy conservation and the learning ability of LMS adaptive filters
- Robustness of LMS filters
- Dimension analysis for LMS filters
- Affine projection filters
- Proportionate adaptation
- Dynamic adaptation
- Error whitening Wiener filters

Intended Audience: Researchers working on LMS Filters and practicing engineers designing adaptive systems.

0-471-21570-8 • Aug 03 • Cloth • 512pp

IC Component Sockets



WEIFENG LIU, Hewlett Packard, MICHAEL PECHT

The first and only comprehensive resource on IC (Integrated Circuit) socket technology, IC Component Sockets offers a complete overview of socket technology and design in order to provide engineers and their managers with a good understanding of these specialized technologies and the processes for evaluating them. The authors, both acknowledged experts in the field, address all relevant aspects of the subject–including materials, design, performance characteristics, failure modes and mechanisms, and qualification and reliability assessment–with emphasis on the technology's inherent advantages and challenges.

Topics of interest include:

- Socket design and contact technologies
- Performance characteristics and material properties
- Contact failure modes and mechanisms
- Qualification testing conditions
- Qualification sequences and setup
- IEEE prediction methodology
- Theoretical calculation of contact reliability

Intended Audience: Electrical Engineers and other professionals in the electronics industry.

0-471-46050-8 • Mar 04 • Cloth • 219pp

Advanced Electronic Packaging

WILLIAM D. BROWN, University of Arkansas, RICHARD K. ULRICH, University of Arkansas

This updated edition of the widely adopted industry classic *Advanced Electronic Packaging, Second Edition* now features a new focus on the current practices in electronic packaging. Since electronic packaging is a constantly and rapidly changing field, there is a continuing need to educate students, not only on the fundamentals of packaging, but also on current and future technologies. Much of the material contained in the first edition of the book, primarily the background material, has been transferred directly to the second edition.

Key Features: Addresses all aspects of electronic packaging with an emphasis on advanced packaging technologies.

- Covers packaging materials and applications, analytical techniques for materials, fabrication technologies in packaging, substrate technologies, basic electrical, mechanical, and thermal considerations, package design, modeling and simulation, integrated passive devices, MEMS packaging, RF and microwave packaging, reliability considerations, cost evaluation and analysis, and three-dimensional packaging.
- Several chapters on multichip modules (MCMs) have been eliminated, others have been updated, and new chapters have been added.

Intended Audience: Engineers employed in the electronics packaging area, and engineers and scientists who are entering the electronics packaging area for the first time; graduate students.

0-471-46609-3 • Jul 05 • Cloth • 800pp

Semiconductor Devices: Basic Principles

JASPRIT SINGH

*If you are an instructor, you may **request an evaluation copy** for this title.*

From physical process to practical applications – Singh makes the complexities of modern semiconductor devices clear! The semiconductor devices that are driving today's information, technologies may seem remarkably complex, but they don't have to be impossible to understand. Filled with figures, flowcharts, and solved examples, Jasprit Singh's Semiconductor Devices provides an accessible, well-balanced introduction to semiconductor physics and its application to modern devices. Beginning with the physical process behind semiconductor devices, Singh clearly explains difficult topics, including bandstructure, effective masses, holes, doping, carrier transport, and lifetimes.

0-471-36245-X • Jul 00 • Cloth • 576pp

Fiber Lasers and Amplifiers

JOHN R. MARCIANTE

This book examines issues relevant to the industrial-level manufacturing of microelectronic device and circuits, including fabrication sequences, process control, experimental design, process modeling, yield modeling, and CIM/CAM systems. The book includes theoretical and practical descriptions of basic manufacturing concepts, as well as case studies, sample problems, and suggested exercises for each chapter. It treats system and software technology and management of the overall manufacturing system together, an approach previously lacking in the literature.

Intended Audience: Engineers; Researchers; Graduate-level students in optics and telecommunications.

0-471-26734-1 • Aug 05 • Cloth • 600pp

Implementing Lead Free Solder in Electronics Manufacturing

EDWIN BRADLEY, Motorola, Inc., CAROL HANDWERKER, National Institute of Standards and Technology, JOHN E. SOHN, Lucent Technologies, JASBIR BATH, Solectron Corp., RICHARD PARKER, Delphi Delco Electronic Systems

Based on the results of a more than two-year study, *Implementing Lead Free Solder in Electronics Manufacturing* is the first practical, primary reference to cover Pb-free solder assembly as well as the analysis and reasoning behind the selection of Sn-Ag-Cu as the recommended Pb-free replacement for Sn-Pb.

Reflecting the results of a two-year study, *Implementing Lead Free Solder in Electronics Manufacturing* provides full coverage of the issues surrounding the implementation of Pb-free solder into electronic board assembly. This book is extremely timely–most electronic manufacturers are going to change over to Pb free soldering by 2006 to meet new European laws. All manufacturers around the globe are going to be affected by this change. The text provides specific results from the thirty company NEMI project activities. It contains integrated and fully documented book chapters with references to existing published work in the area. These serve as tremendous resources for engineers and companies faced with making the switch to Pb-free solder assembly.

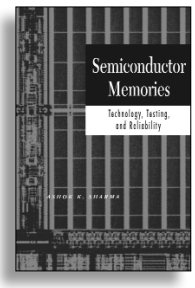
Intended Audience: Electronic Manufacturers and Manufacturers around the world.

0-471-44887-7 • Aug 05 • Cloth • 500pp

Semiconductor Memories

Technology, Testing, and Reliability

ASHOK K. SHARMA



Semiconductor Memories provides in-depth coverage in the areas of design for testing, fault tolerance, failure modes and mechanisms, and screening and qualification methods including.

- Memory cell structures and fabrication technologies.
- Application-specific memories and architectures.
- Memory design, fault modeling and test algorithms, limitations, and trade-offs.
- Space environment, radiation hardening process and design techniques, and radiation testing.
- Memory stacks and multichip modules for gigabyte storage.

0-7803-1000-4 • Aug 02 • Cloth • 480pp

Long-Wavelength Infrared Semiconductor Lasers

HONG K. CHOI, Kopin Corp.

Because of very strong molecular absorption between 2 mm to 1000 mm, compact semiconductor lasers in this spectral range are ideal components for a wide variety of applications ranging from ultra-sensitive detection of molecules, to the study of fine structures of molecules, to studies of the origin of the universe. However, because of the very rapid progress made in these long-wavelength semiconductor lasers in recent years, no comprehensive information covering the entire field has been available up to this point.

Long-Wavelength Infrared Semiconductor Lasers fills the need for a reference that covers the vast scope of coherent semiconductor sources that emit in this important spectral region. Written by today's foremost experts in the field, the book covers the latest knowledge in the areas of:

- Quantum cascade lasers
- Interband mid-infrared lasers fabricated from InGaAs,antimonides, and lead-salt materials
- Hot-hole lasers
- Photomixers

Intended Audience: Applications engineers using mid- to far-infrared emitters for spectroscopy, astrophysics, environmental monitoring, and process control; researchers and students.

0-471-39200-6 • Mar 04 • Cloth • 395pp

Semiconductor Memories

ASHOK K. SHARMA, NASA

- Details the latest SRAM developments
- Explains how to use advanced memory configurations
- Covers memory chip to system level designs including megabyte and gigabyte mass storage memories
- Also covers radiation effects on these technologies for use in military and space applications

This book will be a valuable resource for those interested in:

- how to use advanced memory configurations,
- memory chip to system level designs including megabyte and gigabyte mass storage memories,
- and radiation effects on these technologies for use in military and space applications

0-471-46243-8 • Jan 03 • Cloth • 1128pp

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Solid State Engineering for the 21st Century

ELLIOTT R. BROWN

Addressing all key issues in a comprehensive fashion, *Solid State Engineering for the Twenty-First Century* provides the only solid state book aimed at electrical and mechanical engineering students. The text educates engineers in fundamental concepts, from semiconduting and mettalic electrical transport to ferroelectricity and ferromagnetics, without losing sight of the integration. This focus on integration sets this book apart from existing texts, which focus on just one or a few aspects of the integration. An accompanying Instructors Guide and Solutions Manual provide additional resources. This comprehensive reference will prove invaluable for students of electrical engineering, mechanical engineering, and materials science, as well as practicing engineers and physicists.

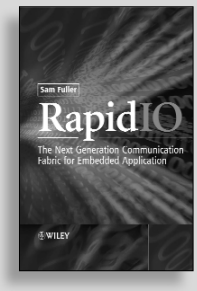
Key Features: Addresses all the key issues in a comprehensive fashion.

- The only solid state book aimed at electrical and mechanical engineering students.
- Accompanied by Instructors Guide and Solutions Manual.
- This is the only book concentrating on the integration of technologies, an important but rarely addressed concept.

Intended Audience: Students of Electrical Engineering, Mechanical Engineering, and Materials Science; Practicing engineers and physicists;Technical libraries; Private and government research institutions.

0-471-43965-7 • Jul 05 • Cloth • 700pp

RapidIO – The Embedded System Interconnect



SAM FULLER, RapidIO Trade Association, USA

Providing a detailed description of RapidIO applications in several types of system, *RapidIO: The Embedded System Interconnect* is the first comprehensive reference on the RapidIO interconnect technology. RapidIO was developed specifically to achieve high-performance, low-cost, reliable and scalable system connectivity in embedded, networking, and communications devices. This book presents the motivations for RapidIO and describes how it compares with other interconnect technologies.

Written by one of the founders of the RapidIO Trade Association, this unique resource:

- Presents an introductory section detailing the history of the RapidIO technology
- Provides a practical guide for all of the RapidIO logical layer protocols, network, link and physical layer technologies
- Discusses the usage of RapidIO in embedded systems such as enterprise storage and wireless infrastructure
- Illustrates newly defined technologies such as the RapidFabric dataplane extensions
- Describes case studies of RapidIO usage in real system architectures
- Evaluates the programming models associated with RapidIO
- Reviews related mechanical standards such as the VME Switched Serial Extensions and the PICMG Advanced Telecommunications Architecture (ATCA) standards.

0-470-09291-2 • Nov 04 • Cloth • 328pp

Polar Oxides

Properties, Characterization and Imaging

ULRICH BÖTTGER, RWTH Aachen University, STEPHAN TIEDKE, aixACCT Systems GmbH, RAINER WASER, Institute of Solid State Research, Research Centre Jülich, Germany

Here, more than 20 experts from leading research institutes around the world present the entire scope of this rapidly developing field. In so doing, they cover a wide range of topics, including the characterization and investigation of structural, dielectric and piezoelectric properties of ceramic materials, a well as phase transitions, electrical and optical properties and microscopic investigations. Another feature is a complete profile of the properties of polar oxides — from their proof to their latest applications.

Throughout, the authors review, discuss and assess the material properties with regard to new and advanced characterization and imaging techniques.

For physicists, physicochemists, semiconductor and solid state physicists, materials scientists, and students of chemistry and physics.

Intended Audience: Physicists, physicochemists, semiconductor physicists, solid state physicists, materials scientists, students in chemistry, and students in physics.

3-527-40532-1 • Jan 05 • Cloth • 400pp

Nanotechnology Global Strategies, Industry Trends and Applications

JURGEN SCHULTE, Asia Pacific Nanotechnology Forum, Hong Kong

Miniaturisation has revolutionised the semiconductor industry by making possible inexpensive integrated electronic circuits comprised of devices and wires with sub-micrometer dimensions. This is a very hot area of research with large amounts of venture capital and government funding being invested worldwide. This book highlights the growing information need in this area, presenting readers with an insider's view of the opportunities and risks associated with the development of nanotechnology initiatives.

It is ideal for executives and investors with limited understanding of the technology itself who need to know how it will impact on them and what the future developments are likely to be. Written by leading authorities from around the world, Nanotechnology: Applications and Trends provides a unique global perspective on this hot new area of research and development.

Intended Audience: Industrialists working in nanoscale research and development and practicing engineers working within the defense industry; Government technology policy makers, market analysts and investors; Graduate students and researchers with a background in electronic engineering, physics, chemistry, biology and materials science.

0-470-85400-6 • Mar 05 • Cloth • 208pp

Device Electronics for Integrated Circuits

RICHARD S. MULLER, Univ. of California, Berkeley, THEODORE I. KAMINS, Hewlett-Packard Laboratories, Palo Alto, California, and Stanford Univ., California

Focusing specifically on silicon devices, the Third Edition of Device Electronics for Integrated Circuits takes students in integrated-circuits courses from fundamental physics to detailed device operation. Because the book focuses primarily on silicon devices, each topic can include more depth, and extensive worked examples and practice problems ensure that students understand the details.

Intended Audience: Undergraduate and graduate students, instructors in electrical engineering.

0-471-59398-2 • Oct 02 • Cloth • 560pp

Ferroelectricity

The Fundamentals Collection

JULIO A. GONZALO, Material Physics Department, Autonomous University of Madrid, Spain, BASILIO JIMÉNEZ DIAZ, CISC, Madrid, Spain

This indispensable collection of seminal papers on ferroelectricity provides an overview over almost a hundred years of basic and applied research. Containing historic contributions from renowned authors, this book presents developments in an area of science that is still rapidly growing. Although primarily aimed at scientists and academics involved in research, this will also be of use to students as well as newcomers to the field.

Key Features:

- Ferroelectricity continues to be a fast-evolving scientific field that is relevant to physicists and materials scientists, as well as electrical and electronic engineers.
- The first historical account of a subject of interest to newcomers and experts alike.
- The contributing authors are leading experts in the field.
- A must-have for scientists working in this area.

Intended Audience: Materials scientists, electrical engineers, physicists.

3-527-40486-4 • Jan 05 • Cloth • 220pp

ULSI Semiconductor Technology Atlas

CHIH-HANG TUNG, GEORGE T. T. SHENG, CHIH-YUAN LU

The natural outgrowth of VLSI (Very Large Scale Integration), Ultra Large Scale Integration (ULSI) refers to semiconductor chips with more than 10 million devices per chip. Written by three renowned pioneers in their field, ULSI Semiconductor Technology Atlas uses examples and TEM (Transmission Electron Microscopy) micrographs to explain and illustrate ULSI process technologies and their associated problems.

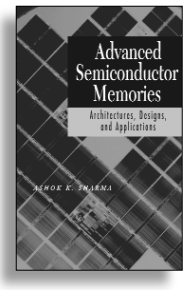
The first book available on the subject to be illustrated using TEM images, ULSI Semiconductor Technology Atlas is logically divided into four parts:

- Part I includes basic introductions to the ULSI process, device construction analysis, and TEM sample preparation
- Part II focuses on key ULSI modules—ion implantation and defects, dielectrics and isolation structures, silicides/salicides, and metallization
- Part III examines integrated devices, including complete planar DRAM, stacked cell DRAM, and trench cell DRAM, as well as SRAM as examples for process integration and development
- Part IV emphasizes special applications, including TEM in advanced failure analysis, TEM in advanced packaging development and UBM (Under Bump Metallization) studies, and high-resolution TEM in microelectronics

Intended Audience: Engineers and managers in the microelectronics industry, particularly in the semiconductor industry; Graduate students in electrical and electronics engineering, materials science, and other solid state physics related fields

0-471-45772-8 • Sep 03 • Cloth • 666pp

Advanced Semiconductor Memories



Architectures, Designs, and Applications

ASHOK K. SHARMA, NASA

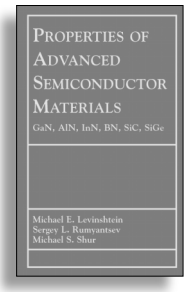
DRAMs are the technology drivers of high volume semiconductor fabrication processes for new generation products that, in addition to computer markets, are finding increased usage in automotive, aviation, military and space, telecommunications, and wireless industries. A new generation of high-density and high-performance memory architectures evolving for mass storage devices, including embedded memories and nonvolatile flash memories, are serving a diverse range of applications. Comprehensive and up to date, Advanced Semiconductor Memories: Architectures, Designs, and Applications offers professionals in the semiconductor and related industries an in-depth review of advanced semiconductor memories technology developments. It provides details on:

- Static Random Access Memory technologies including advanced architectures, low voltage SRAMs, fast SRAMs, SOI SRAMs, and specialty SRAMs (multiport, FIFOs, CAMs)
- High Performance Dynamic Random Access Memory–DDRs, synchronous DRAM/SGRAM features and architectures, EDRAM, CDRAM, Gigabit DRAM scaling issues and architectures, multilevel storage DRAMs, and SOI DRAMs
- Applications-specific DRAM architectures and designs–VRAMs, DDR SGRAMs, RDRAMs, SLDRAMs, 3-D RAM
- Advanced Nonvolatile Memory designs and technologies, including floating gate cell theory, EEPROM/flash memory cell design, and multilevel flash.
- FRAMs and reliability issues
- Embedded memory designs and applications, including cache, merged processor, DRAM architectures, memory cards, and multimedia applications
- Future memory directions with megabytes to terabytes storage capacities using RTDs, single electron memories, etc.

Intended Audience: Engineers and Managers in PC and consumer electronics, telecommunications and mobile communications applications, aerospace systems, reliability in military and space applications, and the automotive industry.

0-471-20813-2 • Sep 02 • Cloth • 672pp

Properties of Advanced Semiconductor Materials



GaN, AlN, InN, BN, SiC, SiGe

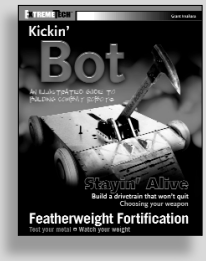
MICHAEL E. LEVINSHTEIN (Editor), SERGEY L. RUMYANTSEV (Editor), MICHAEL S. SHUR (Editor)

Containing the most reliable parameter values for each of these semiconductor materials, along with applicable references, these data are organized in a structured, logical way for each semiconductor material.

- Reviews traditional semiconductor materials as well as new, advanced semiconductors.
- Essential authoritative handbook on the properties of semiconductor materials.

0-471-35827-4 • Feb 01 • Cloth • 216pp

Kickin' Bot



An Illustrated Guide to Building Combat Robots

GRANT IMAHARA, Industrial Light and Magic, Marin County, CA

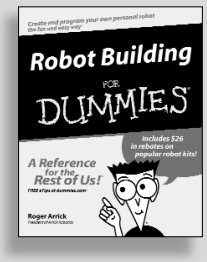
Do you have what it takes to build a battle-ready robot? You do now. Here are the plans, step-by-step directions, and expert advice that will put you in competition-while you have a heck of a lot of fun getting there.

Grant Imahara, the creator of the popular BattleBot Deadblow, shares everything he's learned about robot design, tools and techniques for metal working, the parts you need and where to get them, and plenty of tips to keep you off the ropes. When you're finished, you'll be ready to rumble.

Intended Audience: Robot enthusiasts; those who are technically inclined and looking for a fun, new project.

0-7645-4113-7 • Nov 03 • Paper • 528pp

Robot Building For Dummies®



ROGER ARRICK, Hurst, TX, Arrick Robotics, NANCY STEVENSON, Port Townsend, WA

Ready to enter the robot world? This book is your passport! It walks you through building your very own little metal assistant from a kit, dressing it up, giving it a brain, programming it to do things, even making it talk. Along the way, you'll gather some tidbits about robot history, enthusiasts' groups, and more.

Intended Audience: The growing number of people that are fascinated with technology and specifically robotics.

0-7645-4069-6 • Sep 03 • Paper • 384pp

Sensing, Intelligence Motion

How Robots and Humans Plan Their Motion

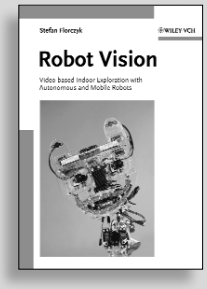
VLADIMIR LUMELSKY

This is a research monograph/graduate text on robot motion dealing specifically with the techniques for handling motion planning in unstructured environments. This is a key emerging area in robotics as the application of robots migrates from specialized applications in factories to widespread use in society where autonomous robot motion will be a requirement.

This book describes techniques for handling motion planning tasks in unstructured environments. An unstructured environment is one that cannot be modified at our will - as opposed to a structured environments that can be made fit the robot requirements (an automotive plant is a good example of the latter). There is very little literature on this topic; what exists, deals primarily with mobile robots, whereas a large part of this book is devoted to robot manipulator arms. The specific directions that the book covers sensor-based motion planning, and human performance in motion planning have become "hot" in recent years, reflecting the developments in high-tech automation.

0-471-70740-6 • Aug 05 • Cloth • 550pp

Robot Vision



Video-based Indoor Exploration with Autonomous and Mobile Robots

STEFAN FLORCZYK, Munich University of Technology

The book is intended for advanced students in physics, mathematics, computer science, electrical engineering, robotics, engine engineering and for specialists in computer vision and robotics on the techniques for the development of vision-based robot projects. It focusses on autonomous and mobile service robots for indoor work, and teaches the techniques for the development of vision-based robot projects. A basic knowledge of informatics is assumed, but the basic introduction helps to adjust the knowledge of the reader accordingly.

A practical treatment of the material enables a comprehensive understanding of how to handle specific problems, such as inhomogeneous illumination or occlusion. With this book, the reader should be able to develop object-oriented programs and show mathematical basic understanding. Such topics as image processing, navigation, camera types and camera calibration structure the described steps of developing further applications of vision-based robot projects.

Intended Audience: Graduate Students, Students in Physics, Students in Mathematics, Students in Electrical Engineering, Students in Robotics, Aircraft and Space Industry, Automobile Industry, Engineers for Motors and Drives, Electrical Engineers, Robotics Engineers, Aerospace Physicians, Aerospace Engineers, Robotics Engineers, Computer Specialists, Company Libraries, Libraries at Universities, Libraries at University Institutes.

3-527-40544-5 • Dec 04 • Cloth • 216pp

Handbook of Industrial Robotics, 2nd Edition

SHIMON Y. NOF (Editor)

"Once again, the Handbook of Industrial Robotics, in its Second Edition, explains the good ideas and knowledge that are needed for solutions."

— CHRISTOPHER B. GALVIN, CHIEF EXECUTIVE OFFICER, MOTOROLA, INC.

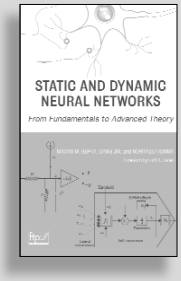
"This Handbook describes very well the available and emerging robotics capabilities. It is a most comprehensive guide, including valuable information for both the providers and consumers of creative robotics applications."

— DONALD A. VINCENT, EXECUTIVE VICE PRESIDENT, ROBOTIC INDUSTRIES ASSOCIATION

120 leading experts from twelve countries have participated in creating this Second Edition of the Handbook of Industrial Robotics. Of its 66 chapters, 33 are new, covering important new topics in the theory, design, control, and applications of robotics. Other key features include a larger glossary of robotics terminology with over 800 terms and a CD-ROM that vividly conveys the colorful motions and intelligence of robotics. With contributions from the most prominent names in robotics worldwide, the Handbook remains the essential resource on all aspects of this complex subject.

0-471-17783-0 • Feb 99 • Cloth • 1378pp

Static and Dynamic Neural Networks



From Fundamentals to Advanced Theory

MADAN M. GUPTA, LIANG JIN, NORIYASU HOMMA

Since the 1980s, the field of neural networks has undergone exponential growth. Robots in manufacturing, mining, agriculture, space and ocean exploration, and health sciences are just a few examples of the challenging applications where human-like attributes such as cognition and intelligence are playing an important role. Neural networks and related areas such as fuzzy logic and soft-computing in general are also contributing to complex decision-making in such fields as health sciences, management, economics, politics, law, and administration. In the future, robots could evolve into electro-mechanical systems with cognitive skills approaching human intelligence.

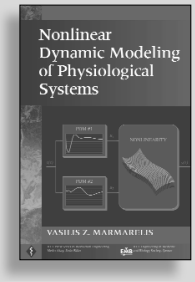
With a fascinating blend of heuristic concepts and mathematical rigor, Static and Dynamic Neural Networks: From Fundamentals to Advanced Theory outlines the basic concepts behind neural networks and leads the reader onward to more advanced theory and applications. Pedagogically sound and clearly written, this text discusses:

- Neuronal morphology and neuro-computational systems
- Threshold logic, adaptation, and learning
- Static neural networks–MFNNs, XOR Neural Networks, and Backpropagation Algorithms
- Dynamic neural networks–both continuous-time and discrete-time
- Binary neural networks, feedback binary associative memories, fuzzy sets, and other advanced topics

Intended Audience: Researchers and practioners in engineering and computer science; students in these fields.

0-471-21948-7 • Mar 03 • Cloth • 752pp

Nonlinear Dynamic Modeling of Physiological Systems



PROFESSOR VASILIS Z. MARMARELIS, University of Southern California

Nonlinear modeling of physiological systems from stimulus-response data is a long-standing problem that has substantial implications for many scientific fields and associated technologies. These disciplines include biomedical engineering, signal processing, neural networks, medical imaging, and robotics and automation. Addressing the needs of a broad spectrum of scientific and engineering researchers, this book presents practicable, yet mathematically rigorous methodologies for constructing dynamic models of physiological systems.

Nonlinear Dynamic Modeling of Physiological Systems provides the most comprehensive treatment of the subject to date. Starting with the mathematical background upon which these methodologies are built, the book presents the methodologies that have been developed and used over the past thirty years. The text discusses implementation and computational issues and gives illustrative examples using both synthetic and experimental data. The author discusses the various modeling approaches – nonparametric, including the Volterra and Wiener models; parametric; modular; and connectionist – and clearly identifies their comparative advantages and disadvantages along with the key criteria that must guide successful practical application. Selected applications covered include neural and sensory systems, cardiovascular and renal systems, and endocrine and metabolic systems.

Intended Audience: Biomedical engineers; system physiologists including system neuroscientists; and system scientists and engineers in this area.

0-471-46960-2 • Aug 04 • Cloth • 541pp

Reference Manual for Telecommunications Engineering, 3rd Edition (2-Volume Set)

ROGER L. FREEMAN, Raytheon Company

This Third Edition provides a wealth of new and revised tables, figures, nomograms, formulas, statistics, standards, regulations, and explanatory text required for the daily professional needs of telecommunications engineers, managers, and technicians. Gathering a wide range of carefully selected information from industry, government, and academia, this central source of telecommunications information eliminates the need for other references, both print and electronic, by providing a huge supply of data in one convenient package.

0-471-41718-1 • Dec 01 • Cloth • 3648pp

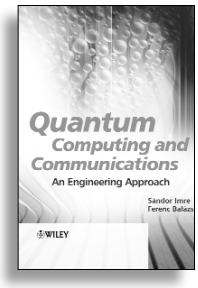
RFID Handbook: Fundamentals and Applications in Contactless Smart Cards and Identification, 2nd Edition

KLAUS FINKENZELLER GIESECKE & DEVRIENT GmbH, Germany

RFID is a major growth area in auto ID, allowing emergency vehicles to safely trip traffic signals, and providing the technology behind contactless smart cards, "autopiloting" cars, and production automation. Finkenzeller has updated his well-received book to include the latest information on industry standards and applications, making it the standard reference for people working with RFID technology. Expanded sections explain exactly how RFID systems work, and provide up-to-date information on the development of new tags such as the smartlabel.

0-470-84402-7 • May 03 • Cloth • 446pp

Quantum Computing and Communications



SANDOR IMRE, Mobile Communications Laboratory, Hungary, FERENC BALAZS, Budapest University of Technology, Hungary

Key Features: Quantum computers hold the promise of solving problems that would otherwise be intractable with conventional computers.

- Serves as an introduction to quantum computing, quantum algorithms, quantum assisted solutions for telecommunication problems, and quantum-based communications
- Introduces several computationally hard telecommunications problems and their quantum-assisted solutions

0-470-86902-X • Nov 04 • Cloth • 256pp

High Performance Computing

Paradigm and Infrastructure

LAURENCE T. YANG, Department of Computer Science, St. Francis Xavier University, Canada, MINYI GUO, Department of Computer Software, The University of Aizu, Japan

The coming years will witness a proliferation in the use of parallel and distributed computers. With hyperthreading in Intel processors, hypertransport links in next generation AMD processors, multi-core silicon in today's high-end microprocessors from IBM and emerging grid computing, parallel and distributed computers have moved into the mainstream. To fully exploit these advances in computer architecture, researchers must start to write parallel or distributed software and algorithms. The purpose of this title is to allow computer scientists, computational scientists and engineers, applied mathematicians, and researchers in other science and engineering disciplines to present, discuss, and exchange their recent advances, new ideas, results, works-in-progress, and experiences in the areas of parallel and distributed computing for science and engineering applications.

0-471-65471-X • Jun 05 • Cloth • 500pp

Advanced Computer Architecture and Parallel Processing

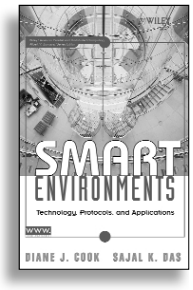
HESHAM EL-REWINI, Southern Methodist Univ., MOSTAFA ABD-EL-BARR, Kuwait Univ.

Computer architecture deals with the physical configuration, logical structure, formats, protocols, and operational sequences for processing data, controlling the configuration, and controlling the operations over a computer. It also encompasses word lengths, instruction codes, and the interrelationships among the main parts of a computer or group of computers. This two-volume set offers a comprehensive coverage of the field of computer organization and architecture.

0-471-46740-5 • Dec 04 • Cloth • 288pp

Smart Environments

Technology, Protocols and Applications



DIANE COOK, Department of Computer Science and Engineering at the University of Texas at Arlington, SAJAL DAS, Professor of Computer Science and Engineering and also the Founding Director of the Center for Research in Wireless Mobility and Networking (CReWMaN) at the University of Texas at Arlington

Smart Environments contains contributions from leading researchers, describing techniques and issues related to developing and living in intelligent environments. Reflecting the multidisciplinary nature of the design of smart environments, the topics covered include the latest research in smart environment philosophical and computational architecture considerations, network protocols for smart environments, intelligent sensor networks and powerline control of devices, and action prediction and identification.

0-471-54448-5 • Oct 04 • Cloth • 404pp

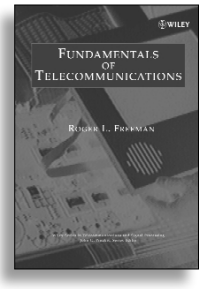
Grid Computing and Data Management in Highly Clustered and GRID Environments

MICHAEL DI STEFANO

Grid Computing is entering the IT mainstream driven by cost controls, business needs, and technology conditions. Developed by practitioners in the field, this book presents a balanced review of the field as well as an introduction to some of the more advanced concepts pivotal in real-world implementations. It also focuses on data management issues and techniques in Grid Computing.

0-471-68719-7 • Jun 05 • Cloth • 300pp

Fundamentals of Telecommunications



ROGER L. FREEMAN

With the rapid growth and increasing vitality of the telecommunications field, many of today's professionals-from marketing and sales personnel to engineers and scientists find themselves interacting with telecommunication equipment and encountering technical terms with which they are entirely unfamiliar. This excellent, comprehensive introduction gives readers a straightforward overview of the science and terminology of telecommunications so they can quickly take advantage of the vast range of newly-available technology. The author begins with the basics and covers all areas of interest in a non-technical manner.

0-471-70961-1 • Sep 04 • Paper • 676pp

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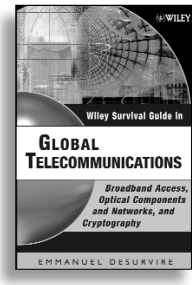
Wiley Survival Guide in Global Telecommunications



Broadband Access, Optical Components and Networks, and Cryptography

EMMANUEL DESURVIRE, Alcatel Technical Academy

Readers will now be able to quickly learn about the exciting field of telecom technologies with this introductory book. This new series presents the material in an easy-to-understand that helps broaden conceptual horizons, focusing on the applied areas of broadband and cryptography.

0-471-67520-2 • Sep 04 • Cloth • 528pp

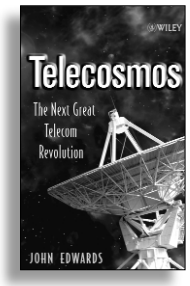
Broadband Circuits for Optical Fiber Communication

EDUARD SÄCKINGER

Based on the author's lectures and seminars at Agere Systems, Lucent Technologies seminars and VLSI symposium as well as a Microelectronics course he gave at MEAD, *Broadband Circuits for Optical Fiber Communication* covers five types of broadband circuits: transimpedance amplifiers, limiting amplifiers, automatic gain control amplifiers, laser drivers, and modulator drivers. These circuits are discussed and the general concepts are illustrated with practical implementations taken from the literature.

0-471-71233-7 • Mar 05 • Cloth • 440pp

Telecosmos



The Next Great Telecom Revolution

JOHN EDWARDS, Writer for The New York Times, The Washington Post, The Philadelphia Inquirer, Newsday, CIO Magazine, CFO Magazine, Men's Health and American Way, Oracle Magazine, Electronic Business, Upside, Wireless Week, Laptop Magazine and PC Magazine, PC Week and MacWeek.

Written for business people and tech buffs who want a look at what's ahead in the world of telecommunications, this lucid overview describes cutting-edge technologies now on the drawing board at research laboratories around the world. From next-generation WLANs, nanophotonics, and VoIP telephony to ultrawideband radio and chip implants, it previews telecom marvels that will soon be part of our lives.

0-471-65533-3 • Oct 04 • Paper • 256pp

Radio Frequency Propagation Modeling

JOHN S. SEYBOLD

Radio Frequency Propagation Modeling provides readers with a broad overview of antenna property definitions, antenna design fundamentals and considerations, numerous antenna types, and RF propagation fundamentals. This important publication shows how antenna properties and radio wave propagation characteristics affect communication system performance.

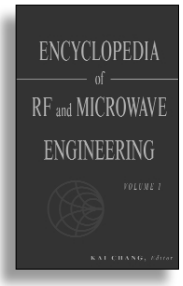
0-471-65596-1 • Sep 05 • Cloth • 250pp

Introduction to MPEG-7 Audio

HYOUNG-GOOK KIM, Technical University of Berlin, Germany, NICHOLAS MOREAU, Technical University of Berlin, Germany, THOMAS SIKORA, Technical University of Berlin, Germany

0-470-09334-X • Jul 05 • Cloth • 320pp

Encyclopedia of RF and Microwave Engineering

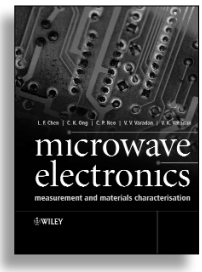


KAI CHANG

RF and Microwave Engineering is one of the fastest growth areas of the past decade and will probably continue to be a very active area of research and application in a large variety of fields. The six volume set of *Encyclopedia of RF and Microwave Engineering* illustrates how this field has been the key to enabling technology responsible for the phenomenal growth of wireless communications. This set also examines how RF and microwave engineering continues to have great influence as the technology behind such important applications as radar, remote sensing, remote control, sensors, navigation, surveillance, electronic warfare, radiometers, plasma research, and imaging.

0-471-27053-9 • Jan 05 • Cloth • 5856pp

Microwave Electronics



Measurement and Materials Characterization

L. F. CHEN, National Univ. of Singapore, C. K. ONG, National University of Singapore, C. P. NEO, National Univ. of Singapore, V. V. VARADAN, Pennsylvania State University, USA, V. K. VARADAN, Pennsylvania State University, USA

Readers will find a concise introduction to microwave theory along with an outline of the methods used to characterize microwave material properties. This book includes in-depth coverage of both established and emerging techniques in microwave measurement. It also offers practical examples of the use of microwave materials across a wide range of fields as well as guidance on the application of microwave theory and the appropriate measurement techniques.

0-470-84492-2 • Mar 04 • Cloth • 552pp

UMTS Signaling

UMTS Interfaces, Protocols, Message Flows and Procedures Analyzed and Explained

RALF KREHER, Tektronik Berlin GmbH, Germany, JURGEN PLACHT, Tektronik Berlin GmbH, Germany, TORSTEN RUDEBUSCH, Tektronik Berlin GmbH, Germany

0-470-01351-6 • Feb 05 • Cloth • 432pp

Ultra-wideband Radio Technology

KAZIMIERZ SIWIAK, TimeDerivative Inc., USA, DEBRA McKEOWN, TimeDerivative Inc., USA

Written by two experts on the subject, *Ultra-Wideband Radio Technology* is the first book to explain the technological basics and performance potential of UWB. The two authors bring together their years of technical experience in commercial radio technologies, technical writing, and the media.

0-470-85931-8 • Apr 04 • Cloth • 264pp

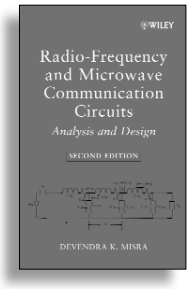
Mathematical Techniques for Wireless Communication Systems Design and Analysis

C TELLAMBURA, University of Alberta, Canada

This book presents the latest mathematical techniques for the design and analysis of wireless communication systems. It fills a gap in the current literature by presenting alternative frequency domain analysis techniques not previously discussed in one volume. Divided into three parts this volume will cover subjects ranging from the mathematical preliminaries through to spread spectrum radio networks with packet diversity.

0-470-09310-2 • Jun 05 • Cloth • 832pp

Radio-Frequency and Microwave Communication Circuits



Analysis and Design

DEVENDRA K. MISRA, University of Wisconsin, Milwaukee

The products that drive the wireless communication industry, such as cell phones and pagers, employ circuits that operate at radio and microwave frequencies. Now in its second edition, this reference provides readers with a detailed introduction to RF and microwave circuits. Throughout, examples from real-world devices and engineering problems are used to illustrate circuit concepts.

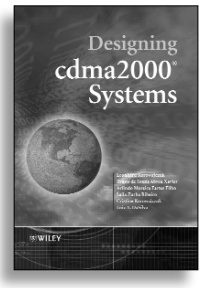
0-471-47873-3 • Jul 04 • Cloth • 632pp

Next Generation CDMA Technologies

HSIAO-HWA CHEN, National Sun Yat-Sen University, Taiwan

0-470-02294-9 • Aug 05 • Cloth • 544pp

Designing cdma2000® Systems

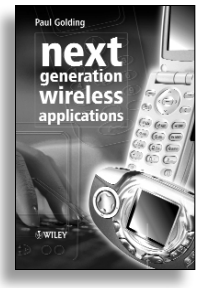


LEONHARD KOROWAJCZUK, CelPlan Technologies, Inc., BRUNO DE SOUZA ABREU XAVIER, CelTec Technologia de Telecommunicacóes, Ltda., ARLINDO MOREIRA FARTES FILHO, CelTec Technologia de Telecommunicacóes, Ltda., LEILA ZURBA RIBEIRO, CelPlan Technologies, Inc., CRISTINE KOROWAJCZUK, CelPlan Technologies, Inc., LUIZ A. DASILVA, Virginia Tech

CDMA (Code Division Multiple Access) refers to any of several protocols used in second generation (2G) and third generation (3G) wireless communications. CDMA is a form of multiplexing which allows numerous signals to occupy a single channel optimizing the available bandwidth. This book describes in detail the structure of CDMA 2000 systems and provides guidelines for their design and optimisation. It fills a gap in the information available today. It provides coverage from the introductory to specialist level and includes information only topically covered in other books.

0-470-85399-9 • Feb 04 • Cloth • 936pp

Next Generation Wireless Applications

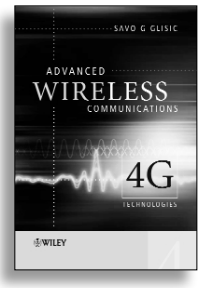


PAUL GOLDING, Magic E Company, UK

This book provides a fundamental understanding of how the many key technologies in wireless IT, such as J2EE (Java 2 Enterprise Edition), 3G, GPRS, HTTP, WLS (Web Logic Server), and J2ME (Java 2 Micro Edition), all work together and may be used to enhance functionality and to build wireless applications. Based on author's extensive experience building wireless applications and training on the topic, *Next Generation Wireless Applications* brings together software development expertise with an understanding of wireless issues.

0-470-86986-0 • Jun 04 • Cloth • 588pp

Advanced Wireless Communications



4G Technologies

SAVO G. GLISIC, Univ. of Oulu, Finland

- 4G (fourth generation wireless) is expected to deliver more advanced versions of the same improvements promised by 3G
- Provides a comparative study of WCDMA, ATDMA, OFDMA and UWB principles and an insight into the advantages and disadvantages of using these techniques
- Offers a comprehensive understanding of the relationship between the systems performance, its complexity/reliability, and cost effectiveness
- Gives an insight into the impact of existing and new technologies on the receiver structure.

0-470-86776-0 • Apr 04 • Cloth • 878pp

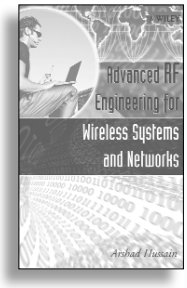
4G Mobile Technology

Services with Initiative

HENDRIK BERNDT, DoCoMo Eurolab, Munich, Germany

0-470-01031-2 • Aug 05 • Cloth • 384pp

Advanced RF Engineering for Wireless Systems and Networks



ARSHAD HUSSAIN, AT&T Labs & Stevens Institute of Technology, NJ

The design and behavior of wireless systems is based on Radio Frequency (RF) and microwave devices, and anyone working on wireless systems must have a good grounding in these technologies. This unique book enables readers to acquire that advanced mastery of RF engineering. It helps the reader learn how to design an entire second generation or third generation radio system from the ground up, avoiding an arduous trek through theory and mathematical derivations (cutting-edge filters, amplifiers, RF switches, oscillators for the second and third generation wireless systems and networks).

0-471-67421-4 • Nov 04 • Cloth • 576pp

Next Generation Wireless Systems and Networks

HSIAO-HWA CHEN, National Sun Yat-Sen University, Taiwan

0-470-02434-8 • Sep 05 • Cloth • 512pp

4G Mobile Networks

Technologies for mobile communications of the future

MINORU ETOH, DoCoMo Communications Laboratories, USA

What is a 4G (4th generation) system? *4G Mobile Networks* does not restrict its definition of 4G solely to wireless access technologies, air interfaces, an IP backbone, or the amount of bandwidth. Instead it defines 4G as service ubiquity: an inclusive definition that encompasses all 4 of these vital components as well as important characteristics the system must display, such as heterogeneity and openness. The book examines the research issues driving the wireless world and provides a comprehensive overview of how current technologies are evolving to suit next generation mobile systems.

0-470-09151-7 • Mar 05 • Cloth • 384pp

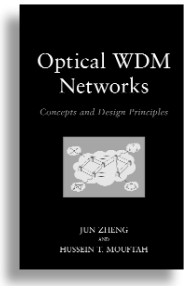
Concepts of Networking Technology

Uncertainties in Next-Generation Networks

ASHWIN GUMASTE, Fujitsu Laboratories, USA, SI QING ZHENG, University of Texas at Dallas, USA

0-470-01464-4 • Sep 05 • Cloth • 384pp

Optical WDM Networks



Concepts and Design Principles

JUN ZHENG, Queen's Univ., Ontario, Canada, HUSSEIN T. MOUFTAH, University of Ottawa (School of Information & Engineering)

Wavelength Division Multiplexing (WDM) has emerged as an efficient technology for exploiting the huge bandwidth capacity inherent in optical fibers. *Optical WDM Networks* introduces fundamental WDM concepts and design principles in an easy-to-understand manner while including state-of the-art technologies that have been recently proposed to address the design issues. It is organized into eight chapters, covering the most important networking aspects of WDM networks, including network architectures, routing and wavelength assignment, virtual topology configuraton and reconfiguration, distributed lightpath control, optical-layer protection and restoration, and next generation optical Internet.

0-471-67170-3 • Jul 04 • Cloth • 312pp

The Grid

Core Technologies

MAOZHEN LI, Distributed Systems at Brunel Univ., UK, MARK BAKER, Univ. of Portsmouth, UK

Taking an application-oriented viewpoint, *The Grid* explains the need for the Grid as a new form of infrastructure for distributed and collaborative systems — supporting data, information, knowledge, simulations, and distributed organizations. The book begins with a discussion of the types of distributed and collaborative applications that have the potential for enabling significant advances in fields, such as science, engineering, healthcare, government, and business. The second section examines the Grid as a distributed operating system in relation to existing and emerging technologies (such as Web Services, CORBA, Globus, Jini, and JXTA). The third section of the book examines applications in key areas, and the final section of the book summarizes the case for the Grid made in the earlier sections, and makes some comments on the likely future evolution of the Grid.

0-470-09417-6 • Mar 05 • Paper • 256pp

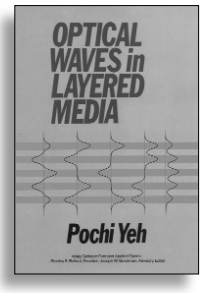
Handbook of Plastic Optics

STEFAN BÄUMER, Philips Inc., Netherlands

The most up-to-date work available to focus entirely on all aspects of plastic optics, *Handbook of Plastic Optics* provides in-depth coverage of opto-mechanical design principles specific to plastic optics.

3-527-40424-4 • Feb 05 • Cloth • 350pp

Optical Waves in Layered Media



POCHI YEH, Rockwell International Science Center, Thousand Oaks, California

0-471-82866-1 • Jul 04 • Cloth • 416pp

Next Generation SDH/SONET

Evolution or Revolution

HUUB VAN HELVOORT

Together, SDH and SONET ensure standards so that digital networks can interconnect internationally and that existing conventional transmission systems can take advantage of optical media through tributary attachments. This practical guide explores the extensions to the SDH/SONET standards, which provide more granularity to transport bit rates used by data signals. Current hot topics are also discussed including contiguous concatenation and virtual concatenation.

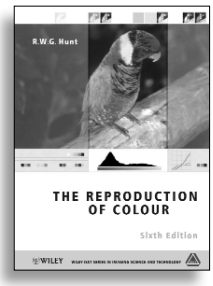
0-470-09120-7• Feb 05 • Cloth • 256pp

Advanced Digital Signal Processing and Noise Reduction

SAEED V. VASEGHI, Brunel University, UK

0-470-09494-X • Apr 05 • Cloth • 480pp

The Reproduction of Colour

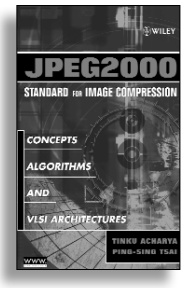


R.W.G. HUNT, University of Derby, UK

Completely revised and updated, this book has become a standard work in this area and is widely used as a basis for lectures in universities and specialist institutions. It includes information on the latest digital and printing technologies and is illustrated with many new photographs and diagrams. *The Reproduction of Colour* presents a tried-and-tested balance of theory and practical application to both students and practicing engineers.

0-470-02425-9 • Sep 04 • Cloth • 724pp

JPEG2000 Standard for Image Compression



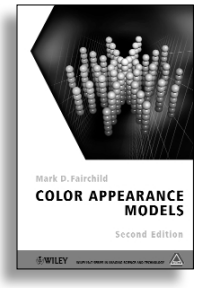
Concepts, Algorithms and VLSI Architectures

TINKU ACHARYA, Avisere Inc., Chief Science Officer & Arizona State Ubiv., Adjunct Professor, PING-SING TSAI, Univ. of Texas, Pan American

JPEG2000 Standard for Image Compression presents readers with the basic background to this multimedia compression technique and prepares the reader for a detailed understanding of the JPEG2000 standard, using both the underlying theory and the principles behind the algorithms of the JPEG2000 standard for scalable image compression. It introduces the VLSI architectures and algorithms for implementation of the JPEG2000 standard in hardware (not available in the current literature), an important technology for a number of image processing applications and devices such as digital camera, color fax, printer, and scanners.

0-471-48422-9 • Oct 04 • Cloth • 274pp

Color Appearance Models



MARK D. FAIRCHILD, Munsell Color Science Laboratory, Rochester Institute of Technology, USA

Color Appearance Models, Second Edition brings the fundamental issues and current solutions in the area of color appearance modelling together in a single place for those needing to solve practical problems or looking for background for ongoing research projects. The book provides the relevant information for an updated review of color appearance and provides details of many of the most widely used models to date. It also includes the recently formulated CIECAM02 model that represents a significant improvement of CIECAM97S and is the best possible model based on current knowledge. Fairchild presents an updated overview of device-independent color imaging and finally introduces the concept of image appearance modelling as a potential future direction for color appearance modelling research.

0-470-01216-1 • Nov 04 • Cloth • 368pp

Polarization Engineering for LCD Projection

JIANMIN CHEN, Colorlink Inc, USA, MICHAEL ROBINSON, Colorlink Inc, USA, GARY SHARP, Colorlink Inc, USA

0-470-87105-9 • Jun 05 • Cloth • 320pp

Flexible Flat Panel Displays

GREGORY CRAWFORD, Brown University, USA

0-470-87048-6 • Apr 05 • Cloth • 448pp

Introduction to Microdisplays

DAVID ARMITAGE, Technical Consultant, Los Altos,USA, IAN UNDERWOOD, MicroEmissive Displays Ltd, Edinburgh, Scotland, SHIN-TSON WU, University of Central Florida, USA

Introduction to Microdisplays covers the structure and performance of microdisplays and their associated optical imaging systems. The book includes an overview of current applications which will be provided alongside a guide to future developments in the field.

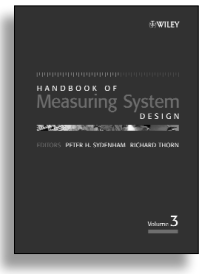
0-470-85281-X • Jun 05 • Cloth • 384pp

Optimization of Colour Reproduction

NOBORU OHTA, Rochester Institute of Technology, Canada, MITCHELL ROSEN, Rochester Institute of Technology, Canada

0-470-01362-1 • Jun 05 • Cloth • 256pp

Handbook of Measuring System Design

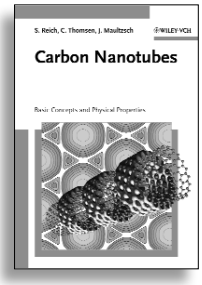


P. H. SYDENHAM, South Australian Institute of Technology, Adelaide

Measurement is a fundamental procedure in obtaining knowledge and in controlling systems. The recent and increasing popularity of quality system standards such as ISO 9000 and the growth of numerous offshoot industries such as calibration laboratory accreditation have raised the profile of measurement within the entire engineering community. As quality standards proliferate, measurements and metrics are becoming more and more crucial in fields that previously had little interest in them (e.g. metric of business effectiveness). This comprehensive measurement reference details sophisticated and multi-dimensional measurements, measurement equipment, and their applications. The use of "smart" materials, the rapid growth of miniaturization technologies as represented by microelectromechanical systems (MEMS), and devloping interest in neuro-fuzzy applications have all contributed to changes in the components of the traditional measurement system. This work documents these changes and provides a detailed overview of the discipline, facilitating further advance of these technologies.

0-470-02143-8 • Jan 05 • Cloth • 1800pp

Carbon Nanotubes



Basic Concepts and Physical Properties

STEPHANIE REICH, University of Cambridge, UK, CHRISTIAN THOMSEN, Technical University of Berlin, Germany, JANINA MAULTZSCH, Technical University of Berlin, Germany

Carbon nanotubes are extremely thin, hollow cylinders made of carbon atoms and can be either metals or semiconductors depending on their structure. They are also extremely strong and have good thermal conductivity. This book examines these characteristics, which have led to great interest in their possible use in nano-electronic and nano-mechanical devices.

3-527-40386-8 • Feb 04 • 224pp • Cloth

Smart Material Systems and MEMS

Design and Development Methodologies

V. K. VARADAN, Pennsylvania State University, USA, K. J. VINOY, Indian Institute of Science, Bangalore, India, S. GOPALAKRISHNAN, Indian Institute of Science, Bangalore, India

0-470-09361-7 • Jul 05 • Cloth • 512pp

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Nanoscale Calibration Standards and Methods

Dimensional and Related Measurements in the Micro- and Nanometer Range

GÜNTER WILKENING, Physikalisch-Technische Bundesanstalt, Braunschweig, LUDGER KOENDERS, Physikalisch-Technische Bundesanstalt, Braunschweig

The quantitative determination of the properties of micro- and nanostructures is essential in research and development. Here, peer-reviewed papers are presented with contributions for the NanoScale 2004 seminar at the Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany in March 2004. Topics include problems of quantitative measurement as well as methods of calibration, correction and instrumentation.

The seminar stimulates the exchange of information between users in science and industry and manufacturers of the relevant hard- and software.

3-527-40502-X • Feb 05 • Cloth • 400pp

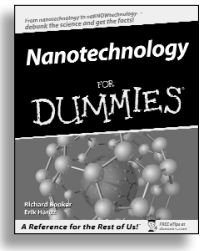
Nanoelectronics and Information Technology

RAINER WASER, HGF Research Center Jülich, Germany

Providing an introduction to electronic materials and device concepts for the major areas of current and future information technology, the value of this book in its second, completely revised edition lies in its focus on the underlying principles. Illustrated by contemporary examples, these basic principles will hold, despite the rapid developments in this field, especially emphasizing nanoelectronics.

3-527-40542-9 • Mar 05 • Cloth • 1000pp

Nanotechnology For Dummies®



RICHARD BOOKER, ERIK HAROZ

- Some of the applications discussed include scratch-proof glass, corrosion-resistant paints, stain-free clothing, glare-reducing eyeglass coatings, drug delivery systems, medical diagnostic tools, burn and wound dressings, sugar-cube-sized computers, mini-portable power generators, and even longer-lasting tennis balls!
- Investment in nanotechnology is exploding, with $3.7 billion in nanotechnology R&D spending authorized by the U.S. government in 2003 and international investment reported at over $2 billion

0-7645-8368-9 • Jun 05 • Paper • 336pp

Future Trends in Microelectronics

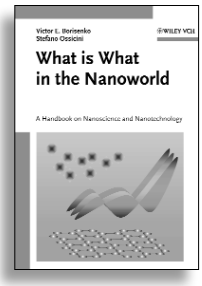
The Nano, the Giga, and the Ultra

SERGE LURYI, State Univ. of New York, STONY BROOK, JIMMY XU, Univ. of Toronto, ALEX ZASLAVSKY, Electrical Engineering Department at Brown University

The continuing miniaturization in silicon devices has led to current research in such topics as nanoelectronics, quantum cascade lasers, nanomaterials, and applications in biology. In this book, leading professionals in the semiconductor microelectronics field discuss the future evolution of their profession. As the end of CMOS scaling is approaching, what kind of research does the silicon industry need to continue its expansion? What is its future beyond shrinking silicon devices? Is there practicality in such fashionable topics as quantum computing, molecular computing, spintronics, and similar research trends? What is the most likely future of microelectronics in the near and long term?

0-471-48405-9 • Aug 04 • Cloth • 424pp

What is What in the Nanoworld



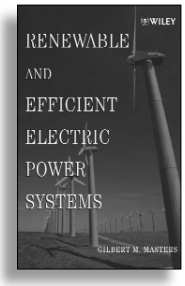
A Handbook on Nanoscience and Nanotechnology

VICTOR E. BORISENKO, Belarusian State University, Minsk, BELARUS, STEFANO OSSICINI, University of Modena and Reggio Emilia, Italy

This introductory, reference handbook summarizes the terms and definitions, most important phenomena, and regulations discovered in the physics, chemistry, technology, and application of nanostructures. The short form of information taken from textbooks, special encyclopedias, recent original books and papers provides fast support in understanding "old" and new terms of nanoscience and technology widely used in scientific literature on recent developments. A representative collection of fundamental terms and definitions accompanies recommended second sources (books, reviews, websites) for an extended study of a subject. Each entry interprets the term or definition under consideration and briefly presents main features of the phenomena behind it. Features more than 1,000 entries, from a few sentences to a page in length.

3-527-40493-7 • Sep 04 • Cloth • 347pp

Renewable and Efficient Electric Power Systems

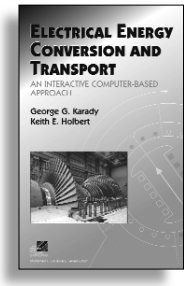


GILBERT M. MASTERS, Stanford University

This is a comprehensive textbook for the new trend of distributed power generation systems and renewable energy sources in electric power systems. It covers the complete range of topics from fundamental concepts to major technologies as well as advanced topics for power consumers. As a textbook it will serve undergraduate students from a variety of disciplines such as mechanical, chemical, civil and environmental engineering, and electrical engineering.

0-471-28060-7 • Jul 04 • Cloth • 680pp

Electrical Energy Conversion and Transport



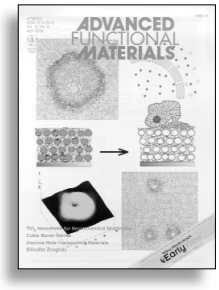
An Interactive Computer-Based Approach

DR. GEORGE G. KARADY, Arizona State Univ., DR. KEITH E. HOLBERT, Arizona State Univ.

Electrical energy generation and transport has come to be recognized as a major component of the national infrastructure, and there is a growing market for electrical engineers experienced in this area. This in-depth introduction to the basic concepts of electric motor operation and energy transport is uniquely designed to support interactive teaching and computer-assisted self-learning. It schools the reader in using Mathcad and MATLAB and then shows how to apply the programs to solve problems. In addition to the text and numerous examples, a set of Powerpoint slides is provided to assist the instructor.

0-471-47652-8 • Nov 04 • Cloth • 712pp

Advanced Functional Materials



Advanced Functional Materials publishes in-depth reports of high-quality innovative research. Covering research topics in high standards, and in full-paper format, its ISI Impact Factor of 4.798 shows the fantastic influence this journal has gained since its launch in 2001.

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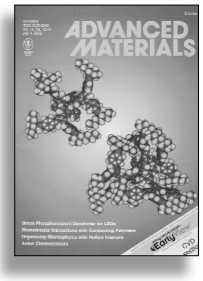
Print ISSN: 1616-301X • Online ISSN: 1616-3028
2005, Volume 15, 12 Issues

Advanced Materials



Advanced Materials has been bringing you the latest progress in materials science for more than 15 years. With a further increase in ISI Impact Factor to 7.305 this year, *Advanced Materials* continues to deliver the highest quality research reports every two weeks. Read carefully selected, top-quality reviews, communications, and research news at the cutting edge of the chemistry and physics of functional materials as well as book reviews, product information, interviews, and a conference calendar.

2004 Special Issue: "Soft Lithography and the Art of Patterning" dedicated to George Whitesides, the pioneer of soft lithography (Volume 16, Issue 15).

Since mid-1995 the journal *Chemical Vapor Deposition* has been part of the subscription to *Advanced Materials*. As of 2005 *Chemical Vapor Deposition* will publish 12 issues per year and will be separate from *Advanced Materials*. Don't miss out on Chemical Vapor Deposition, and contact Customer Service for further information and to subscribe!

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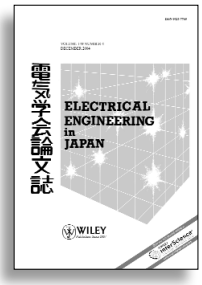
Print ISSN: 0935-9648 • Online ISSN: 1521-4095
2005, Volume 17, 24 Issues

Electrical Engineering in Japan



EDITOR: AKIHIRO AMETANI

This authoritative journal is a translation of the *Transactions of the Institute of Electrical Engineers of Japan* and publishes original research findings in power generation, transmission and conversion, electrical machinery, control theory and industrial controls, robotics, electrical transportation equipment (including magnetic levitation devices), insulation, solar energy, high-power semiconductors, as well as economic and environmental aspects of energy production and distribution.

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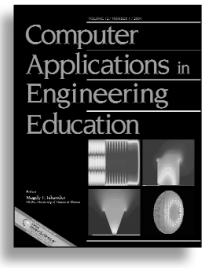
Print ISSN: 0424-7760 • Online ISSN: 1520-6416
2005, Volumes 150–153, 16 Issues

Computer Applications in Engineering Education



EDITOR: MAGDY F. ISKANDER, College of Engineering, University of Hawaii at Manoa

Computer Applications in Engineering Education provides a forum for publishing peer-reviewed, timely information on the innovative uses of computers and software tools in education, and for accelerating the integration of computers into the engineering curriculum.

The journal encourages articles that present:

- New software for engineering education
- New educational technologies, such as interactive video and multimedia presentations
- Computer use in laboratories
- Visualization, computer graphics, video, and I/O issues
- Computer-based engineering curricula
- Computer uses in classroom or independent study situations
- Use of commercial and government-owned software in education
- Engineering software development and funding opportunities

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Print ISSN: 1061-3773 • Online ISSN: 1099-0542
2005, 4 issues

Electronics and Communications in Japan

(Part I: Communications)
(Part II: Electronics)
(Part III: Fundamental Electronic Science)

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EDITOR: MICHIYUKI UENOHARA

This journal is a translation of papers from the *Transactions of the Institute of Electronics, Information and Communication Engineers of Japan*, the foremost Japanese publication in the field. Published in three parts (Part I-Communications; Part II-Electronics; Part III-Fundamentals of Electronic Science), the journal covers the entire field of electronic engineering, including circuits and networks; signal and image processing; communication theory and systems; electromagnetic theory; switching, optical, microwave and millimeter-wave technology; quantum electronics; semiconductor technology and integrated circuits; artificial intelligence; and applied mathematics.

(PART I: COMMUNICATIONS)
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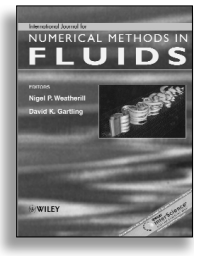
Print ISSN: 8756-6621 • Online ISSN: 1520-6424
2005, Volumes 88, 36 Issues

International Journal for Numerical Methods in Fluids



The main objective of the Journal *Numerical Methods in Fluids* is to provide a timely and readily accessible reference for those engaged in computer aided design and research in computational fluid dynamics. The topics suitable for inclusion range from potential flow, through viscous flow (incompressible and compressible) and even to those problems in which turbulence is the dominant feature. Methods for solving ancillary equations, such as transport and diffusion, are also quite relevant.

The expressed intention of the Journal is the dissemination of information relating to the development, refinement, and application of computer-based numerical techniques for solving problems in fluids. These include, but are not limited to, the Finite Difference and Finite Element methods, in each of which the manner of imposing boundary conditions to obtain a numerical solution can be quite important. The submission of manuscripts in which the primary contribution is experimental is encouraged, if such results are compared with previously published numerical predictions. Also encouraged are papers in which an established numerical technique is used to study some of the subtleties associated with the physics of fluids. Indeed, even papers presenting closed form solutions directly related to engineering problems and demonstrated to be effective will be published.

Although it is not practicable to publish complete computer codes, the salient features of a new code will be accepted as technical notes, which should include examples illustrating the advantage of the techniques. It is envisaged that such codes should be made available at the discretion of the authors. Contributions relating to aids in teaching and design will be processed in a similar manner.

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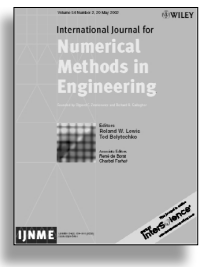
Print ISSN: 0271-2091 • Online ISSN: 1097-0363
2005, Volumes 47–49, 36 Issues

International Journal for Numerical Methods in Engineering



The *International Journal for Numerical Methods in Engineering* publishes refereed papers describing significant developments in numerical techniques that are applicable to the solution of engineering problems in the areas of solids, structures, fluid-structure interaction, incompressible fluid flow, heat transfer and related areas. The Editors also encourage contributions in the areas of multi-physics, multi-disciplinary and multi-scale problems.

Papers featuring the advancement of the theory and applications of a particular class of problems are also appropriate for the journal. Numerical examples that help illustrate the methodology of the techniques proposed, or which verify their validity, are also encouraged, as are descriptions of practical applications.

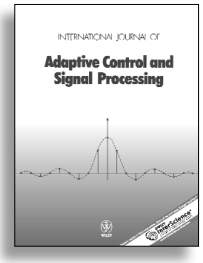
The journal publishes full-length papers, which should normally be less than 25 journal pages in length. Discussions of papers already in print are also considered. Two part papers will be discouraged unless considered necessary by the Editors. The Journal is a companion journal to *Communications in Numerical Methods in Engineering*, which considers short manuscripts for rapid publication.

New ISI Impact Factor 1.691

www.interscience.wiley.com/journal/NME

Print ISSN: 0029-5981 • Online ISSN: 1097-0207
2005, Volumes 62-64, 45 Issues

International Journal of Adaptive Control and Signal Processing



MANAGING EDITOR: MIKE J. GRIMBLE,
University of Strathclyde, UK

Adaptive Control and Adaptive Signal Processing are areas of sufficient importance and maturity to warrant the publication of a journal exclusively devoted to these topics.

The *International Journal of Adaptive Control and Signal Processing* is concerned with the design, synthesis and application of estimators or controllers for uncertain systems. Papers which cover all aspects of the theory and application of adaptive systems are of interest. Contributions which explore the links between Adaptive Signal Processing and Control will be encouraged. Some papers on the design of controllers or estimators for uncertain systems which may not be strictly adaptive also fall within the scope of the journal.

Application papers are particularly encouraged along with those which deal with the numerical aspects of the algorithms. Papers on the related aspects of software engineering, expert systems, intelligent control and filtering algorithms are also sought. Principal areas to be addressed include:

- Self-Tuning Control
- Model Reference and Adaptive Controllers
- Robust and Intelligent Controllers
- Adaptive Signal Processing
- Adaptive Control Applications
- Adaptive Signal Processing Applications
- VLSI Implementation of Adaptive Systems
- Discrete Event Processes
- Computer Networks
- Dynamic Routing
- Adaptive Control of Queueing
- Fault-tolerant Control (system supervision and diagnosis)

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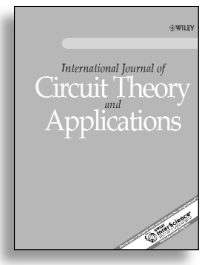
Print ISSN: 0890-6327 • Online ISSN: 1099-1115
2005, Volume 10, 10 Issues

International Journal of Circuit Theory and Applications



EDITOR: PROFESSOR J. O. SCANLAN,
University College Dublin, Dublin 4, Ireland

The scope of the Journal comprises all aspects of the theory and design of analog and digital circuits together with the application of the ideas and techniques of circuit theory in other fields of science and engineering.
Examples of the areas covered include: Fundamental Circuit Theory together with its mathematical and computational aspects; Circuit modeling of devices; Synthesis and design of filters and active circuits; Neural networks; Nonlinear and chaotic circuits; Signal processing and VLSI; Distributed, switched and digital circuits; Power electronics; Solid state devices. Contributions to CAD and simulation are welcome.

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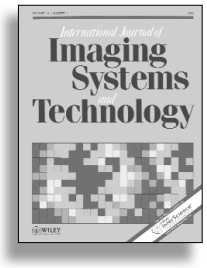
Print ISSN: 0098-9886 • Online ISSN: 1097-007X
2005, Volume 33, 6 Issues

International Journal of Imaging Systems and Technology



EDITORS: Z. H. CHO, University of California and L. A. Shepp, Rutgers University

International Journal of Imaging Systems and Technology welcomes papers authored by physicists, mathematicians, engineers, statisticians, computer scientists, as well as end users–radiologists, geologists, astronomers. The scope of the Journal includes, but is not limited to, the following:

- Acoustical imaging;
- Biophysical imaging;
- Computer vision;
- Cosmological imaging;
- High definition television;
- Medical imaging;
- Microscopy;
- Multidimensional image processing and tomography;
- Nuclear and particle physics imaging;
- Optical imaging and holography;
- Pattern recognition;
- Physiological imaging;
- Radar and synthetic aperture imaging;
- Seismic and geophysical imaging.

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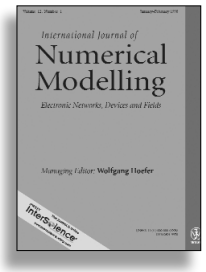
Print ISSN: 0899-9457 • Online ISSN: 1098-1098
2005, Volume 15, 6 Issues

International Journal of Numerical Modelling: Electronic Networks, Devices and Fields



MANAGING EDITOR: WOLFGANG J. R. HOEFER, University of Victoria, Canada

The *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields* provides a communication vehicle for numerical modelling methods and data preparation methods associated with electrical and electronic circuits and fields. It concentrates on numerical modelling rather than abstract numerical mathematics.

Contributions on numerical modelling will cover the entire subject of electrical and electronic engineering. They will range from electrical distribution networks to integrated circuits on VLSI design, and from static electric and magnetic fields through microwaves to optical design. They will also include the use of electrical networks as a modelling medium.

Principal Topics

- Electromagnetic field modelling from d.c. to optical frequencies
- Modelling of information networks, analogue and digital circuits, power distribution
- Modelling of solid state devices, electronic tubes, electrical components
- Moving boundary problems, coupled problems
- Network modelling, energy and moment methods, element and ray methods, graphs
- Pre- and post-processing of data

www.interscience.wiley.com/journal/NUM

Print ISSN: 0894-3370 • Online ISSN: 1099-1204
2005, Volume 18, 6 Issues

International Journal of RF and Microwave Computer-Aided Engineering

EDITOR: INDER J. BAHL, M/A-COM, USA

International Journal of RF and Microwave Computer-Aided Engineering provides a common forum for the dissemination of research and development results in the areas of computer-aided design and engineering of RF, microwave, and millimeter-wave components, circuits, subsystems, and antennas. The journal is intended to be a single source of valuable information for all engineers and technicians, RF/microwave/mm-wave CAD tool vendors, researchers in industry, government and academia, professors and students, and systems engineers involved in RF/microwave/mm-wave technology.

Multidisciplinary in scope, the journal publishes peer-reviewed articles and short papers on topics that include, but are not limited to …

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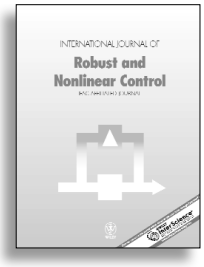
Print ISSN: 1096-4290 • Online ISSN: 1099-047X
2005, Volume 15, 6 Issues

International Journal of Robust and Nonlinear Control



MANAGING EDITOR: MIKE J. GRIMBLE, University of Strathclyde, UK

The intention of the *International Journal of Robust and Nonlinear Control* is to encourage the development of analysis and design techniques for uncertain systems. The Journal will provide a natural forum for papers on the theory and application of robust control system design, including contributions on the H^{∞} and loop transfer recovery design philosophies. Papers will also be welcome on methods of improving the robustness of well-established design procedures such as the Inverse Nyquist Array, Sequential Return Difference, Characteristic Loci and Linear Quadratic Gaussian methods.

The wider issues of modelling and identifying uncertain systems will also be addressed, and analysis procedures such as the Structured Singular Value will be of interest. Papers on applications will be particularly encouraged. Control techniques based on Heuristic or rule based design methods for uncertain systems will be considered, together with procedures based on fuzzy set theory.

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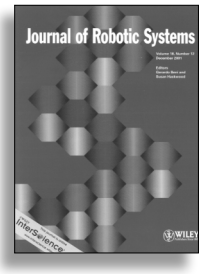
Print ISSN: 1049-8923 • Online ISSN: 1099-1239
2005, Volume 15, 18 Issues

Journal of Robotic Systems



EDITORS: GERARDO BENI AND SUSAN HACKWOOD, California Council on Science & Technology Riverside, California

The *Journal of Robotic Systems* publishes archival papers in all aspects of basic and applied research on the analysis, design, realization, and use of robots, robot components, and robot systems. The Journal places particular emphasis on publishing research contributions in emerging fields of robot system design and integration.

The study of robotic systems is the theory and methodology common to all collections of interacting, functional units that together achieve a definite purpose. Practically, it is concerned with the engineering design of interrelated, flexible automation units in addition to the basic problems of individual robots and robot components.

Robot systems have become increasingly more complex. Advances are still being made in the basic disciplines of mechanics, control, and sensors. However, there are emerging fields in robotics that are less conventional. The *Journal of Robotic Systems* places particular attention on the publication of such articles in a section entitled *Emerging Fields*. This section will publish two or three articles in each issue in the newer fields of robot system design.

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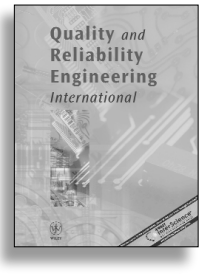
2005, Volume 22, 12 Issues

Quality and Reliability Engineering International



CHIEF EDITORS: FINN JENSEN, FJRC, UK AND DOUGLAS C. MONTGOMERY, Arizona State University, USA

Quality and Reliability Engineering International is a journal devoted to practical engineering aspects of quality and reliability. A refereed bimonthly technical journal, it covers the development and practical application of existing theoretical methods, research and industrial practices. Articles in the journal will be concerned with case studies, tutorial-type reviews and also with applications of new or well-known theory to the solution of actual quality and reliability problems in engineering.

Papers describing the use of mathematical and statistical tools to solve real life industrial problems are encouraged, provided that the emphasis is placed on practical applications and demonstrated case studies.

The scope of the journal is intended to include components, physics of failure, equipment and systems from the fields of electronic, electrical, mechanical and systems engineering. The areas of communications, aerospace, automotive, railways, shipboard equipment, control engineering and consumer products are all covered by the journal.

Quality and reliability of hardware as well as software are covered. Papers on software engineering and its impact on product quality and reliability are encouraged. The journal will also cover the management of quality and reliability in the engineering industry.

Special issues on a variety of key topics are published every year and contribute to the enhancement of *Quality and Reliability Engineering International* as a major reference in its field.

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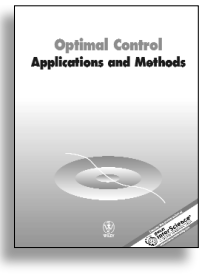
Print ISSN: 0748-8017 • Online ISSN: 1099-1638
2005, Volume 21, 8 Issues

Optimal Control Applications and Methods



EXECUTIVE EDITOR: BION L. PIERSON, Iowa State University, USA

Optimal Control Applications & Methods provides an interdisciplinary forum for the reporting of interesting optimal control applications in order to emphasize both the commonality of the underlying theory and the diversity of its applications. The major thrust is on applications, which include: aerospace, marine and automotive systems, structural and mechanical design, robots and manufacturing systems, chemical and industrial processes, electric power systems and energy management, operations research and business, socio-economic models, biomedical systems, environmental control and ecology management, and electrical and electronic systems. A second, and complementary, objective is to provide a focal point for the development, comparison and testing of computational algorithms for solving optimal control problems.

The usual definition of optimal control implies the optimization of systems described by differential equations and at least one control function. More specifically, the class of problems appropriate for this journal includes linear-quadratic control (deterministic and stochastic), optimal adaptive control (including self-tuning), optimal shape design, dynamic programming, optimal stochastic control, periodic optimal control, optimal estimation, multi-criteria optimal control, singular perturbation methods in optimal control and the optimal control of large-scale systems, time-delay systems and non-linear feedback systems. Non-linear programming techniques are included if used in the context of solving discrete-time optimal control problems or a discrete approximation of the original optimal control problem.

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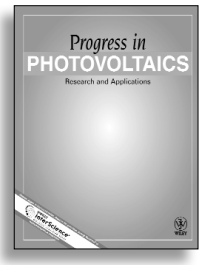
2005, Volume 26, 6 Issues

Progress in Photovoltaics: Research and Applications



EDITOR-IN-CHEF: MARTIN A. GREEN, University of New South Wales, Australia

Progress in Photovoltaics offers a prestigious forum for reporting advances in this rapidly developing technology, right through from research to practical application, and aims to reach all interested professionals, researchers, and energy policy-makers. The journal's Editorial Board is drawn from many countries with a deliberate balance of interests between research, industrial development and practical operation of PV systems, and plays an essential role in the refereeing of contributions.

Contributions in the form of Full Papers and Short Communications are invited on the full range of PV topics and concerns. All submissions are rigorously peer reviewed.

New ISI Impact Factor 1.085

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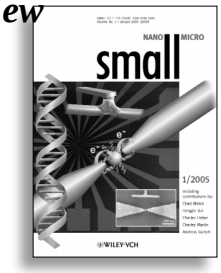
Print ISSN: 1062-7995 • Online ISSN: 1099-159X
2005, Volume 13, 8 Issues

Small

New



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- Discover and contribute to an attractive mix of peer-reviewed Communications, Reviews, Concepts, Highlights, Essays, and Full Papers.
- *Small* is published in conjunction with *Advanced Materials*, the number one materials science journal (Impact Factor 6.801) and is supported by an Editorial Advisory Board that comprises many of the leading players in both industry and academia, and which includes the Nobel Laureates Alan Heeger, Harold Kroto, Jean-Marie Lehn, and Richard Smalley among its esteemed Honorary Members.

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Print ISSN: 1613-6810 • Online ISSN: 1613-6829
2005, Volume 1, 12 Issues

Microwave and Optical Technology Letters

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- Submillimeter-Wave and Infrared Technology
- Optical Engineering
- All papers are subject to peer review before publication.

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Print ISSN: 0895-2477 • Online ISSN: 1098-2760
2005, Volumes 44–47, 24 Issues

Systems and Computers in Japan

EDITOR: MICHIYUKI UENOHARA

Systems and Computers in Japan is a translation of the principal Japanese periodical in information engineering, computer systems, and cognitive science.

The journal publishes research papers in areas such as computer architecture and advanced digital circuitry, interface devices, computer networks, computer theory, formal languages, signal and image processing, optical computing, software engineering, information security, and biomedical applications of computers.

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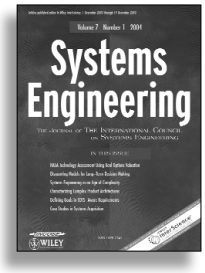
Print ISSN: 0882-1666 • Online ISSN: 1520-684X
2005, Volume 36, 14 Issues

Systems Engineering



EDITOR-IN-CHIEF: ANDREW P. SAGE, George Mason University

Systems Engineering, The Journal of the International Council on Systems Engineering (INCOSE), is a primary source of multidisciplinary information for the systems engineering and management of products and services, and processes of all types. Systems engineering activities involve the technologies, processes, and systems management approaches needed for: definition of systems, including identification of user requirements and technological specifications; development of systems, including conceptual architectures, tradeoff of design concepts, configuration management during system development, integration of new systems with legacy systems, and integrated product and process development; and deployment of systems, including operational test and evaluation, maintenance over an extended lifecycle, and reengineering. Modern systems, including both products and services, are often very knowledge intensive, and are found in both the public and private sectors. The journal emphasizes strategic and program management of these, and the information and knowledge base for knowledge principles, knowledge practices, and knowledge perspectives for the engineering of systems. Definitive case studies involving systems engineering practice are especially welcome.

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2005, Volume 8, 4 Issues

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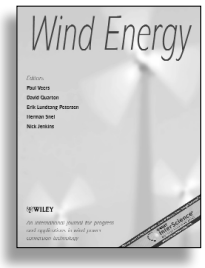
Wind Energy



EDITOR-IN-CHIEF: PAUL VEERS, Sandia National Laboratories, USA

The international Editorial Board presiding over the journal plays an essential role in the rigorous peer-reviewing of contributions to ensure delivery of high-quality and useful information.

Principal Topics

- Wind rotor technology – aerodynamics, aeroacoustics, wakes, blade design.
- Structural and mechanical engineering of wind power – drive trains, hydraulics, fluid mechanics and mechanical components.
- Electrical engineering of wind power – electrical components, power electronics and controls, generators, grid connection, power transmission and distribution.
- Dynamics and control – materials, fatigue, testing, reliability and certification.
- Resource assessment – prediction, modelling, wind farm planning, siting (including off-shore developments), economics and environmental issues.
- Systems – design, installation, operation, performance, optimisation and control; small, hybrid and autonomous systems and applications other than grid connection such as desalination, water pumping and heating.

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Print ISSN: 1095-4244 • Online ISSN: 1099-1824
2005, Volume 8, 4 Issues

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