Book Reviews

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1 Introduction to Radiometry and Photometry

by: W.R. McCluney
Published 2014, Second Edition
by Artech House, 685 Canton Street, Norwood, MA 02062,
Boston, London, 461pp, Artechhouse.com
ISBN 13: 978-1-60807-833-2

This second edition of an Artech House classic describes in detail the relationship between radiometry and photometry. It covers information needed to solve problems in radiation transfer and detection, detectors, measuring instruments, and concepts in calorimetry.

This revised resource presents an updated treatment of modern radiometry and photometry, including updates sections on applications and developments in light sources and scientific instruments for measuring radiation and light. Engineers are also provided with an exciting new chapter on the use of computerised optical ray tracing for 'virtual' experiments on optical system.

This book can be used as a reference text by people working intermittently in radiometry and photometry and needing a concise introduction or refresh course periodically. It can also be used as a textbook in a short course on radiometry and photometry at college or graduate level or for short courses offered by universities and professional societies. With relevant supplementary material, it can be the textbook for a one-semester college course on the subject.

As such, it is presumed herein that the reader has general knowledge of basic physics at the college level, including knowledge of electromagnetic wave propagation. The mathematical skills presumed on the part of the reader include algebra at the high school and college levels, high school geometry, the basics of differential and integral calculus, and some familiarity with basic analytic geometry.

Contents Overview: Induction; Fundamental Concepts of Radiometry; Fundamental Concepts of Photometry; Blackbodies and Other Sources; Source/ Receiver Flux Transfer Calculations; The Invariance of Radiance and the Limits of Optical Concentration; Optical Properties of Materials; The Detection of Radiation; Optical Systems; Radiometers and Photometers; Matric Primer and Additional Radiometric and Photometers; Metric Primer and Additional Radiometric and Photometric Quantities and Units; Computerised Optical Ray Trance Analysis; Basic Concepts of Colour Science.

2 Understanding Quartz Crystals and Oscillators
by: R.M. Cerda
Published 2014
by Artech House, 685 Canton Street, Norwood, MA 02062, Boston, London, 299pp, Artechhouse.com
ISBN 13: 978-1-60807-118-0

Quartz, unique in its chemical, electrical, mechanical, and thermal properties, is used as a frequency control element in applications where stability of frequency is an absolute necessity. Without crystal controlled transmission, radio and television would not be possible in their present form. The quartz crystals allow the individual channels in communication systems to be spaced closer together to make better use of one of the most precious resources – wireless bandwidth.

This book describes the characteristics of the art of crystal oscillator design, including how to specify and select crystal oscillators. While presenting various types of crystal oscillators, this resource also provides microwave engineers with Mathcad and GENESYS simulations.

Contents Overview: Induction to Quartz Crystal Resonators; Quartz Crystal Characteristics; Advanced Crystal Resonator Topics; MEMS Resonators and Oscillators; Choosing the correct Crystal for application; Basic Oscillator Theory; Jitter and Phase Noise; Specifying Crystal Oscillators; Pierce-Gate Crystal Oscillators; Colpitts Crystal Oscillators Design; Butler Gate Oscillators Design; Characterisation of High-Performance Crystal Oscillators; Techniques of High Frequency Oscillator Designs; Crystal Oscillators Requirements in Telecommunications; Testing Crystal Oscillators.

Practicing and new engineers faced with the task of specifying a quartz crystal or even designing a simple crystal oscillator may be in the dark on how to accomplish the task. Crystal oscillators are considered by some to be black magic, like Rf. If you were one of those fortunate engineers who took a course in college on crystal oscillators, it was either so theoretical or so cookbook that it was useless to the practicing engineer. Frustrated with this situation, you try to find textbooks with concise and reliable design information, but cannot find any. I also could not find many understandable texts as a practicing engineer. Sure, there are some very good textbooks for the hardcore oscillator design engineer, but in contrast to these advanced text, this book offers a complete introduction to the subject matter. The goal of the author is to present the practicing and new engineer with comprehensible material about quartz crystal and oscillators to demystify the field.

3 Handbook on the Economics of Cultural Heritage
by: Ilde Rizzo and Anna Mignosa
Published 2013
by Edward Elgar Publishing Limited, The Lypiatts, 15 Lansdown Road, Cheltenham, Glos GL50 2JA, UK, Northampton, MA, USA, 640pp
ISBN: 978 0 85793 099 6 (cased)

Cultural heritage is a complex and elusive concept, constantly evolving through time, and combining cultural, aesthetic, symbolic, spiritual, historical and economic values.

The *Handbook on the Economics of Cultural Heritage* outlines the contribution of economics to the design and analysis of cultural heritage policies and to addressing issue related to the conservation, management and enhancement of heritage.

The handbook takes a multidisciplinary approach, using cultural economics as a theoretical framework to illustrate how crucial and stimulating cross-disciplinary dialogue actually is. Contributors scrutinise the co-existence of cultural and economic values as well as the new challenges that arise from changes brought about by technology, and relationships between the different actors engaged in the production, distribution and consumption of heritage services. The roles of public, private and non-profit organisations are also explored. Case studies underpin the discussion demonstrating the clear and vital link between theory and practice.

The book contains the following chapters:

- Part I: Public intervention and policy analysis
- Part II: Private actors
- Part III: The international dimension
- Part IV: Management: strategies and tools
- Part V: Technologies: issues and opportunities
- Part VI: Conservation of built heritage
- Part VII: Cultural heritage and the economy
- Part VIII: Values and evaluation
- Part IX: Case studies

This highly unique handbook will provide a fascinating and informative read for academic, researchers, students and policymakers with an interest in cultural economics.

4 Knowledge, Diversity and Performance in European Higher Education: A Changing Landscape

by: A. Bonaccorsi
Published 2014
by Edward Elgar Publishing Limited, The Lypiatts, 15 Lansdown Road, Cheltenham, Glos GL50 2JA, UK, Northampton, MA, USA, 314pp
ISBN: 978 1 78254 071 7

This highly original book analyses the results of a pioneering set of microdata on higher education institutions in 27 European countries in order to address key issues in higher education and research.

For the first time, data on individual European higher education institutions is used in order to examine a wide range of issues that are both theoretically challenging and relevant from policy-making and societal perspectives. The contributors integrate statistics on universities and colleges with other sources of information such as patents, start-up firms and bibliometric data, and employ rigorous empirical methods to address a range of key questions, including: what is the role on non-university tertiary education

such as vocational training? How important is the private sector? Are they efficient from the point of view of costs and educational output? Are there pure research universities Europe? How do universities contribute to economic growth?

The book contains the following chapters:

- Part I: Mapping diversity in the European higher education landscape.
- Part II: The missions of universities: research, education and third mission.
- Part III: Efficiency and productivity of higher education.

By furthering the current debate on the future and competitiveness of the European university model compared to the of the USA and Asia, this book will provide an invaluable reference tool for academics and researchers in the fields of sociology of higher education and economics, particularly the economics of innovation, science and education. University decision-makers and administrators as well as policy-makers at local and European levels will also find this book to be useful and enlightening read.

5 Colloid and Surface Chemistry: A Laboratory Guide for Exploration of the Nano World
by: S. Bucak and D. Rende
Published 2014
by CRC Press, Taylor & Francis Group, Boca Raton, Landon, New York, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742, 245pp
ISBN-13: 978-1-4665-5310-1 (Paperback)

With principles that are shaping today's most advanced technologies, from nanomedicine to electronic nanorobots, colloid and interface science has become a truly interdisciplinary field, integrating chemistry, physics, and biology. *Colloid and Surface Chemistry: A Laboratory Guide for Exploration of the Nano World* explains the basic principles of colloid and interface science through experiments that emphasise the fundamentals. It bridges that gap between the underlying theory and practical applications if colloid and surface chemistry.

This laboratory book is designed to help students to understand the basic principles of colloid and interface science through experiments understanding the fundamental principles. We aimed to introduce these concepts to junior- and senior-level undergraduate students, from various disciplines, such as chemistry, chemical engineering, materials science and engineering, as well as biological science and engineering, who are introduced to the subject matter for the first time. The objective of this book is to bridge the gap between the theory behind the colloids and surface chemistry and applications in the field.

In this book, the authors aimed to present the concepts through experiments such that principles and laboratory techniques are learned as fundamental research tools and the applications are seamlessly integrated with theory.

Chapter 1 starts with aspects of research methodology in science and exemplifies the landmarks of designing successful experiments.

Chapter 2 reviews the techniques that are frequently used in the characterisation and analysis of colloidal structures to perform successful experiments.

Chapter 3 contains 11 experiments about colloids and surface. This chapter starts with a sedimentation experiment, which emphasises the importance of practical size and medium in the sedimentation process.

Chapter 4 covers the different techniques of preparing nanoparticles. The first three experiments in the chapter explain straightforward protocols to synthesise silver nanoparticles with a reduction, magnetic nanoparticles with co-precipitation reaction, and silica nanoparticles with a hydrolysis condensation reaction.

Chapter 5 shows how theory turns into practical and contains experiments of general applications, which students come across every day. The first experimental in this chapter explains the preparation of mayonnaise from a colloidal science perspective.

6 Introduction to Instrumentation and Measurements
by: R.B. Northrop
Published 2014, Third Edition
by CRC Press, Taylor & Francis Group, Boca Raton, Landon, New York, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742, 921pp
ISBN-13: 978-1-4665-9677-1 (Hardback)

Welding in on the growth of innovative technologies, the adoption of new standers, and the lock of educational development as it relates to current and emerging application, the third edition of Introduction to Instrumentation and Measurements uses the authors' 40 years of teaching experimental to expound on the theory, science, and art of modern instrumentation and measurements.

What's new in this edition

This includes material on modern integrated circuit (IC) and photonic sensors, micro-electro-mechanical (MEM) and nano-electro-mechanical (NEM) sensors, chemical and radiation sensors, signal conditioning, noise, data interfaces, and basic digital signal processing (DSP), and upgrades every chapter with the latest advancements. It contains new material on the designs of micro-electro-mechanical (MEMS) sensors, add two new extensive biometrical examples and problems.

The book contains the following chapters:

- Describes sensor dynamics, single conditioning, and data display and storage
- Focuses on means of conditioning the analogue outputs of various sensors
- Considers noise and coherent interference in measurements in depth
- Covers the traditional topic of DC null methods of measurement and AC null measurement
- Examines Wheatstone and Kelvin bridges and potentiometers
- Explores the major AC bridges used to measure inductance, Q, capacitance, and D
- Presents a survey of sensors mechanism

- Includes a description and analysis of sensors based on the giant magnetoresistive effect (GMR) and anisotropic magnetoresistive (AMR) effect
- Provides a detailed analysis of mechanical gyroscopes, clinometers, and accelerometers
- Contains the classic means of measurement systems
- Defines digital signal conditioning in instrumentation
- Addresses solid*state chemical microsensors and wireless instrumentation
- Introduces mechanical microsensors (MEMS and NEMS)
- Details examples of the design of measurement systems

Introduction to Instrumentation and Measurements is written with practicing engineers and scientists in mind and is intended to be used in s classroom course or as a reference. It is assumed that the reader has taken core EE curriculum courses or their equivalents.

7 Fundamentals of Manufacturing Engineering

by: D.K. Singh
Published 2014, 3rd Edition
by Taylor & Francis Group, Boca Raton, Landon, New York,
6000 Broken Sound Parkway NW, Suite 300, Boca Raton,
FL 33487 USA, Ane Books Pvt. Ltd., 4821 Parwana Bhawan,
1st Floor, 24 Ansari Road, Darya Ganj, New Delhi-110 002, India, 599pp
ISBN: 978-1-4822-5443-3

Manufacturing engineering is an interesting field and it has vast scope, as it finds extensive application in many types of industries. This author has made an attempt to sincerely present the subject in an interesting manner using simplified language. This subject forms the core subject for all branches of engineering, which shows its importance. The entire subject is divided into 22 chapters and each chapter contains a number of multiple choice questions along with many short questions to test the knowledge of the readers. The questions will certainly raise curiosity in the minds of the readers.

Contents

7 Design Consideration in Casting

8 Introduction to Joining Processes

9 Gas Welding Processes

10 Arc Welding Processes

11 Solid State Welding Processes

12 Resistance Welding Processes

13 Modern Welding Processes

14 Soldering, Brazing and Adhesive Bonding

15 Design Consideration Joining Processes

16 Theory of Mental Cutting

17 Machining Operations

18 Cutting Tool Materials

19 Metrology

20 Manufacturing Tools and Workshop Application, Bibliography, Index

The third edition of the book contains a large number of short answer questions which are added to every chapter. Two separate sections on Flux and another on Forging Defects have also been added. Forging section has been rewritten to include its important advantages and limitations. Simultaneously, the whole book has been thoroughly revised to eliminate the printing errors noticed in the previous editions of the book.

8 Properties of Materials

by: P.F. Kelly
Published 2015
by CRC Press, Taylor & Francis Group, Boca Raton, Landon, New York, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742, 411pp
ISBN: 978-1-4822-0622-7

The second volume in the author's three-part series, *Properties of Materials* uses the principles of classical mechanics to qualitatively and quantitatively model specific features of matter.

The text develops linear models of elasticity to correlate and quantify the changes in an object's shape induced by the application of a constant force. It describes quiescent and flowing liquids and gases and examines the behaviour of oscillating systems subjected to time-dependent external applied forces. The author employs linear superposition to analyse the combined effects of two or more waves simultaneously present in a medium, such as standing waves, beating, interference, and diffraction.

The book considers acoustics, including the production, propagation, and perception of sound, as well as optics, including the laws of reflection and refraction. It also treats temperature, heat, and thermometry before applying the laws of thermodynamics to ideal gas systems. Throughout the investigations of particular phenomena, the author emphasises the modelling of composite systems assembled from simple constituents.

This text extends the rigorous calculus-based introduction to classical physics begun in his *Elements of Mechanics*. With more than 300 problems, it can serve as a primary textbook in an introductory physics course, as a student supplement, or as an exam review for graduate or professional studies.

9 The Materials Physics Companion
by: A.C. Fischer-Cripps
Published 2015, 2nd Edition
by CRC Press, Taylor & Francis Group, Boca Raton, Landon, New York, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742, 224pp
ISBN-13: 987-1-4665-1782-0 (Paperback)

Updated and expanded with new topics, The Materials Physics Companion 2nd Edition puts the physics of the solid state within your reach by offering an easy-to-navigate pathway from basic knowledge through to advanced concepts. In an accessible why, this edition illustrates how electrical and magnetic properties of matter arise from the basic principles of quantum mechanics.

The book uses the unique signature style of the author's other companion books, providing detailed graphics, simple and clear explanations of difficult concepts, and annotated mathematical treatments. It covers quantum mechanics, x-ray analysis, solid-state physics, the mechanical and thermal properties of solids, the electrical and magnetic properties of solid, and superconductivity, assuming no prior knowledge of these advanced areas.

The book contains the following chapters:

- Provides succinct but detailed accounts of materials physics at an intermediate level.
- Enables you to quickly locate essential equations and review the necessary theory.
- Presents the topic in a concise format with numerous diagrams and annotated equations.
- Includes quantum physics, x-ray diffraction, polarisability, magnetic properties, ferrites, and more.

10 Cavitation: A Novel Energy-Efficient Technique for the Generation of Nanomaterials
by: S. Manickam and M. Ashokkumar
Published 2014
by Pan Stanford Publishing, Penthouse Level, Suntec Tower 3, 8 Temasek Boulevard, Singapore 038933, 433pp
ISBN: 978-981-4411-54-7 (Hardcover)
ISBN: 978-981-4411-55-4 (eBook)

Nanomaterials and their end products have started occupying the pinnacle position of consumer markets. At this juncture it becomes vital to consider the processing means through which nanomaterials are generated. Especially, energy efficacy is the foremost concern while dealing with the processing of nanomaterials regardless of the scale of operation. Conventionally a gamut of top-down and bottom up techniques are explored to obtain these nanomaterials. One of the green chemistry principles underlines the need for unusual energy sources to generate nanomaterials. Utilising the energy from the collapse of cavitation bubbles, generated either by ultrasound or hydrodynamic forces, for the generation of nanomaterials is a merit to consider in this "green chemical processing era".

The past decade has witnessed the development of a wide range of nanomaterials using cavitation. A step forward is the coupling of cavitation with other techniques such as microwave, photochemistry, and electrochemistry, which have seen in numerous advantages in the generation of nanomaterials. In many instances, nanomaterials are attained with unique morphologies, a reduction in size, and narrow size distribution. While a few currently available books deal with the fundamental aspects of cavitation and sonochemistry, there is no book devoted specifically to the technologically important nanomaterials obtained by cavitation.

This stimulus made us think about it, and we ended up editing this book. The chapters have been contributed by leading researchers working on utilising cavitation for the generation of nanomaterials. This book will be most useful to those who explore cavitation for the facile synthesis of diverse nanomaterials. Some fundamental aspects of cavitation have been discussed only to a certain extent, as the core theme of this book is to understand the nanomaterials generated by cavitation.

11 Surfactants in Tribology
by: G. Biresaw and K.L. Mittal
Published 2015, Volume 4
by CRC Press, Taylor & Francis Group, Boca Raton, Landon, New York, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742, 515pp
ISBN-13: 987-1-4665-1782-0 (Paperback)

Surface science and tribology play very critical roles in many industries. Manufacture and use of almost all consumer and industrial products relay on the application of advanced surface and tribological knowledge. The fourth in a series, surfactants in tribology, Volume 4 provides an update on research and development activities connecting surfaces and tribological phenomena.

Written by renowned subject matter experts, it demonstrates how improved design of surfactants can be harnessed to control tribological phenome. Generously illustrated and copiously referenced, the chapters also discuss novel approaches to control tribological phenomena using surfactants including green surfactants. It also discusses the underlying tribiological and surface science issue relevant to many situations in diverse industries.

The information in this volume provides a cutting-edge reference connecting the fields of surfactants and tribology as a way forward to novel enhanced methods of controlling lubrication, friction, and wear. It reflects the latest developments, highlighting the relevance of surfactants in tribological phenomena in a broad range of industries. As we learn more about the connection between surfactants and tribology, new and improved ways to control lubricant, fraction, and wear utilising surfactants will emerge. This book takes us farther on the oath toward this goal.

The book contains the following chapters:

- Advanced Tribological Concepts
- Nanotribological Aspects
- Ionic Liquids and Aqueous Surfactant Assemblies
- High-Demanding Application
- Bio-based Lubricants and Fuels.

12 Biometrila Applications: Macro to Nanoscales
by: S. Thomas, N. Kalarikkal, W. Yang and S.S. Babu
Published 2015
by Apple Academic Press, 3333 Mistwell Crescent, Oakville, ON L6L 0A2, Canada, 213pp
ISBN-13: 978-1-77188-027-5 (Hardcover)

Natural polymers and biomaterials have always played a very important role in our lives, and the research in this field has increased tremendously over the last few decades and has led to many technological and commercial developments. *ICNP 2012 – Third International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, Their Composites, Blends, IPNs, Polyelectrolytes and Gels: Macro to Nano Scales* took place at Mahatma Gandhi University, India, 2012. It was jointly organised by Beijing University of Chemical Technology, China.

During the three-day conference, distinguished scientists specialising in various disciplines discussed recent advances, difficulties, and breakthroughs in the field of natural polymers and biomaterials. The conference included keynote addresses, a number of plenary sessions, invited talks and contributed lectures focusing on the diverse aspects of natural polymers and biomaterials.

Additionally, there was a poster session with more than 50 posters to encourage budding scientists and researchers in this field. The conference had over 200 delegates from all over the world.

This book, titled *Biomaterial Applications: Macro to Nano Scales*, is a collection of chapters from the delegates who presented their papers during the conference.

The book contains the following chapters:

- Green Organic-inorganic Hybrid Material from Plant Oil Polyo
- Bio-Hybrid 3D Tubular Scaffolds for Vascular Tissue Engineering – A Materials Perspective
- Polymers for Use in the Monitoring and Treatment of Waterborne Protozoa
- Synthesis of Polypyrrole/TiO_2 Nanoparticles in Water by Chemical Oxidative Polymerisation
- Poly (Lactic Acid) Based Hybrid Composite Films Containing Ultrasound Treated Cellulose and Poly (Ethylene Glycol) As Plasticiser and Reaction Media
- An Experimental Observation of Disparity in Mechanical Properties of Turmeric Fiber Reinforced Polyester Composites
- Wavelength Dependence of SERS Spectra of Pyrene
- Emerging Therapeutic Applications of Bacterial Exopolysaccharides
- Preparation and Properties of Composite Films from Modified Cellulose Fiber-Reinforced With Different Polymers
- Natural Bio Resources: The Unending Source of Nanofactory

13 Safety of Nanomaterials along Their Lifecycle: Release, Exposure, and Human Hazards

by: W. Wohlleben, T.A.J. Kuhlbusch, J. Schnekenburger and C.M. Lehr
Published 2015
by CRC Press, Taylor & Francis Group, Boca Raton, Landon, New York, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742, 444pp
ISBN-13: 987-1-4665-6786-3 (Hardback)

The incorporation of nanomaterials into products can improve performance, efficiency, and durability in various fields ranging from construction, energy management, catalysis, microelectronics, plastics, coatings, and paints to consumer articles such as food and cosmetics. But innovation never comes at zero risk. The potential hazards resulting from human exposure during production, use, or disposal has raised concerns and targeted research early on.

Safety of Nanomaterials along Their Lifecycle: Release, Exposure, and Human Hazards presents the state-of-the-art in nanosafety research from a lifecycle perspective. Although major knowledge gaps still exist, solid data are now available to identify scenarios of critical risk as well as those of safe nanomaterial use for our benefit.

The book is divided into four parts: characterisation, hazard, release and exposure, and real-life case studies. To improve coherence throughout the book, various chapters review the same suite of well-characterised, judiciously chosen, and identical industrial

nanomaterials. The book is a helpful resource to professionals in product development, industrial design, regulatory agencies, and materials scientists and engineers involved in the safety of nanomaterials.

14 Sun above the Horizon: Meteoric Rise of the Solar Industry

by: Pan Stanford
Published 2014, Volume 5, Series on Renewable Energy, by Pan Stanford Publishing, Penthouse Level, Suntec Tower 3, 8 Temasek Boulevard, Singapore 038933, 537pp
ISBN-13: 987-981-4663-80-5 (Hardback)
ISBN-13: 987-981-4613-29-3 (Paperback)
ISBN-13: 987-981-4663-81-2 (eBook)

The age of electricity started during the middle of the 19th century and by now in the 21st century our life and the quality of our life is unimaginable without the use of electricity. In order to satisfy our appetite for electricity, we are drilling holes miles deep under the surface of the oceans, fracturing stones in the crust of the Earth, and transporting fuel in huge ships and pipelines from one side of the Earth to the other to operate machinery to produce electricity.

Today most people know that in contrast to oil or nuclear, solar energy is a 'renewable' clean energy source. But even today only few people realise that without the direct conversion of solar energy to electricity by solar cells, many important things we are using in our life such as the global phone service, cell phones, TV, internet, global weather service, the GPS system, manned space station, and machinery exploring the surface of Mars would not be possible. Solar cells opened up for mankind the utilisation and exploration of the universe.

The idea and the basics of the technology were known, the problem was that for the widespread terrestrial utilisation of solar cells they had to be produced inexpensively and in large quantities.

Several people believed that a lot of research will be needed to achieve this, but a few had the idea that simply with changed technology very inexpensive solar cells could be made for terrestrial applications and what was needed was to start a manufacturing industry the purpose of which should be to utilise a changed technology to reduce the manufacturing cost and find market and with increased volume, prices will come down and that will open new markets.

The meteoric rise of photovoltaic (PC) industry is an incredible story. In 2013, Google's investment PV system totalled about half a billion dollars, and Warren Buffer, one of the famous investors, invested US$ 2.5 billion in the world's largest PY system in California. These gigantic investments by major financial players were made only 40 years after the first two terrestrial PV companies, Solarex and Solar Power Corporation, were formed in the USA. Today, the worldwide capacity of operating PV electric generators equals the capacity of about 25 nuclear power plants. The PV industry is growing at an annual rate of 30% equivalent to about five new nuclear power plants per year. This book describes how this happened and what lies ahead for power generation.

15 Fundamentals of Machining Process: Conventional and Nonconventional Process
by: H.A.G. El-Hofy
Published 2014, Second Edition
by CRC Press, Taylor & Francis Group, Boca Raton, Landon, New York, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742, 515pp
Includes bibliographical references and index
ISBN: 978-1-4665-7702-2 (hardcover: alk. paper) 1. Machining I. Title

Completely revised and update, this second edition covers the fundamentals machining by cutting, abrasion, erosion and combined processes. The new edition has been expanded with two additional chapters covering the concept of machinability and the roadmap of selecting machining processes that meet required design specification.

The book contains the following chapters:

- Explanation of the definition of the relative machinability index and how the machinability is judged.
- Important factors affecting the machinability ratings.
- Machinability rating of common engineering materials by conventional and nonconventional methods.
- Factors to be considered when selecting a machining process that meet the design specifications, including part features, materials, product accuracy, surface texture, surface integrity, cost, environmental impacts and the process and the machine selected capabilities.
- Introduction to new magnetic field assisted finishing processes.

The author presented the principles and theories of material removal and applications for conventional and nonconventional machining processes, discusses the role of machining variables in the technological characteristic of each process, and provides treatment of current technologies in high speed machining and micromachining.

The treatment of the different subjects has been developed from basics and does not require the knowledge of advanced mathematics as a prerequisite. A fundamentals textbook for undergraduate students, this book contains machining data, solved examples and review questions which are useful for students and manufacturing engineers.