

Heat Sealing Technology And Engineering For Packaging

Cartons, Crates and Corrugated Board, Second Edition
Industrial Sealing Technology
Food Process Engineering and Technology
The Science and Technology of Flexible Packaging
Fluoroelastomers Handbook
Food and Package Engineering
Validating Medical Packaging
Food Packaging Handbook of Plastics Joining
Rules of Thumb for Mechanical Engineers
Introduction to Food Engineering
Surface Treatment in Bonding Technology
System on Package
Mechanical Engineer's Reference Book
Package Engineering
Condensed Encyclopedia of Polymer Engineering Terms
Eighteenth IAPRI World Packaging Conference
Fuel Cell Science and Engineering, 2 Volume Set
Joining Technologies
Vacuum Sealing Techniques
Handbook of Food Science, Technology, and Engineering - 4 Volume Set
Heat Transfer
Packaging
Heat Sealing Technology and Engineering for Packaging
Vacuum Deposition onto Webs, Films and Foils
Fluid Sealing Technology
Gas Turbine Engineering Handbook
Impact of Thermal Conductivity on Energy Technologies
Package Engineering Including Modern Packaging
Joining Textiles
Heat Treating and Surface Engineering
Fundamentals and Applications of Supercritical Carbon Dioxide (SCO₂) Based Power Cycles
Micromachining of Engineering Materials
Packaging Closures and Sealing Systems
Process Heat Transfer
Packaging Technology and Engineering
Intermediate Heat Transfer
Handbook of Induction Heating
Emerging Concepts in Analysis

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and Applications of HydrogelsElectrical Engineering

Cartons, Crates and Corrugated Board, Second Edition

Joining and welding are two of the most important processes in manufacturing. These technologies have vastly improved and are now extensively used in numerous industries. This book covers a wide range of topics, from arc welding (GMAW and GTAW), FSW, laser and hybrid welding, and magnetic pulse welding on metal joining to the application of joining technologies for textile products. The analysis of temperature and phase transformation is also incorporated. This book also discusses the issue of dissimilar joint between metal and ceramic, as well as the technology of diffusion bonding.

Industrial Sealing Technology

Market: Scientists, engineers, and graduate students in vacuum technology. This volume presents numerous techniques developed in the early 1960s for the efficient construction of reliable vacuum seals, and provides critical insights into the design, construction, and assembly of vacuum systems. Extensively researched, this work covers a variety of sealing techniques and design concepts that remain as technologically relevant now as they were nearly three decades ago.

Food Process Engineering and

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Technology

The second edition of the Handbook of Induction Heating reflects the number of substantial advances that have taken place over the last decade in theory, computer modeling, semi-conductor power supplies, and process technology of induction heating and induction heat treating. This edition continues to be a synthesis of information, discoveries, and technical insights that have been accumulated at Inductoheat Inc. With an emphasis on design and implementation, the newest edition of this seminal guide provides numerous case studies, ready-to-use tables, diagrams, rules-of-thumb, simplified formulas, and graphs for working professionals and students.

The Science and Technology of Flexible Packaging

Mechanical Engineer's Reference Book, 12th Edition is a 19-chapter text that covers the basic principles of mechanical engineering. The first chapters discuss the principles of mechanical engineering, electrical and electronics, microprocessors, instrumentation, and control. The succeeding chapters deal with the applications of computers and computer-integrated engineering systems; the design standards; and materials' properties and selection. Considerable chapters are devoted to other basic knowledge in mechanical engineering, including solid mechanics, tribology, power units and transmission, fuels and combustion, and alternative energy sources. The remaining chapters explore other engineering fields

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related to mechanical engineering, including nuclear, offshore, and plant engineering. These chapters also cover the topics of manufacturing methods, engineering mathematics, health and safety, and units of measurements. This book will be of great value to mechanical engineers.

Fluoroelastomers Handbook

Food engineering is a required class in food science programs, as outlined by the Institute for Food Technologists (IFT). The concepts and applications are also required for professionals in food processing and manufacturing to attain the highest standards of food safety and quality. The third edition of this successful textbook succinctly presents the engineering concepts and unit operations used in food processing, in a unique blend of principles with applications. The authors use their many years of teaching to present food engineering concepts in a logical progression that covers the standard course curriculum. Each chapter describes the application of a particular principle followed by the quantitative relationships that define the related processes, solved examples, and problems to test understanding. The subjects the authors have selected to illustrate engineering principles demonstrate the relationship of engineering to the chemistry, microbiology, nutrition and processing of foods. Topics incorporate both traditional and contemporary food processing operations.

Food and Package Engineering

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The new edition of this bestselling reference provides fully updated and detailed descriptions of plastics joining processes, plus an extensive compilation of data on joining specific materials. The volume is divided into two main parts: processes and materials. The processing section has 18 chapters, each explaining a different joining technique. The materials section has joining information for 25 generic polymer families. Both sections contain data organized according to the joining methods used for that material. * A significant and extensive update from experts at The Welding Institute * A systematic approach to discussing each joining method including: process, advantages and disadvantages, applications, materials, equipment, joint design, and welding parameters * Includes international suppliers' directory and glossary of key joining terms * Includes new techniques such as flash free welding and friction stir welding * Covers thermoplastics, thermosets, elastomers, and rubbers.

Validating Medical Packaging

Explaining principles underlying the main micromachining practices currently being used and developed in industrial countries around the world, *Micromachining of Engineering Materials* outlines advances in material removal that have led to micromachining, discusses procedures for precise measurement, includes molecular-level theories, describes vaporizing workpiece material with spark discharges and photon light energy, examines mask-based and maskless anodic dissolution processes,

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investigates nanomachining by firing ions at surfaces to remove groups of atoms, analyzes the conversion of kinetic to thermal energy through a controlled fine-focused beam of electrons, and more.

Food Packaging

Handbook of Plastics Joining

Food Packaging: Principles and Practice, Third Edition presents a comprehensive and accessible discussion of food packaging principles and their applications. Integrating concepts from chemistry, microbiology, and engineering, it continues in the tradition of its bestselling predecessors and has been completely revised to include new, updated, and expanded content and provide a detailed overview of contemporary food packaging technologies. Features Covers the packaging requirements of all major food groups Includes new chapters on food packaging closures and sealing systems, as well as optical, mechanical, and barrier properties of thermoplastic polymers Provides the latest information on new and active packaging technologies Offers guidance on the design and analysis of shelf life experiments and the shelf life estimation of foods Discusses the latest details on food contact materials including those of public interest such as BPA and phthalates in foods Devotes extensive space to the discussion of edible, biobased and biodegradable food packaging materials An in-depth exploration of the field, Food Packaging: Principles and Practice includes all-new worked

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examples and reflects the latest research and future hot topics. Comprehensively researched with more than 1000 references and generously illustrated, this book will serve students and industry professionals, regardless of their level or background, as an outstanding learning and reference work for their professional preparation and practice.

Rules of Thumb for Mechanical Engineers

Presents an introduction to different phases of heat sealing. This book features reliable measuring methods to control heat seal quality, and offers methods for using peel seal and tear seal.

Introduction to Food Engineering

Surface Treatment in Bonding Technology

The Gas Turbine Engineering Handbook has been the standard for engineers involved in the design, selection, and operation of gas turbines. This revision includes new case histories, the latest techniques, and new designs to comply with recently passed legislation. By keeping the book up to date with new, emerging topics, Boyce ensures that this book will remain the standard and most widely used book in this field. The new Third Edition of the Gas Turbine Engineering Hand Book updates the book to cover the new generation of Advanced gas Turbines. It examines the benefit and some of the major problems

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that have been encountered by these new turbines. The book keeps abreast of the environmental changes and the industries answer to these new regulations. A new chapter on case histories has been added to enable the engineer in the field to keep abreast of problems that are being encountered and the solutions that have resulted in solving them. Comprehensive treatment of Gas Turbines from Design to Operation and Maintenance. In depth treatment of Compressors with emphasis on surge, rotating stall, and choke; Combustors with emphasis on Dry Low NO_x Combustors; and Turbines with emphasis on Metallurgy and new cooling schemes. An excellent introductory book for the student and field engineers A special maintenance section dealing with the advanced gas turbines, and special diagnostic charts have been provided that will enable the reader to troubleshoot problems he encounters in the field The third edition consists of many Case Histories of Gas Turbine problems. This should enable the field engineer to avoid some of these same generic problems

System on Package

This is a must-have reference for materials scientists and engineers in the automotive, aerospace, chemical, chemical process, and power generation industries. Fluoroelastomers are growing as products of choice for critical components such as O-rings, hoses and seals in hostile fluid and temperature conditions.

Mechanical Engineer's Reference Book

Package Engineering

For the first time, engineering for the packaging industry and for the biggest packaging user, food processing is presented in a way that clearly demonstrates its interconnected, globally integrated nature. Food and Package Engineering is a groundbreaking work that serves as a comprehensive guide to the complexities and the potential of the industry. Packaging draws on nearly every aspect of science, technology, business, social science, and engineering. Rather than present a traditionally linear view of these topics, the author takes a "Packaging Cycle" approach by guiding readers through the life of the package from raw materials and conversion, operations, distribution, retail, all the way to recycling or disposal by the consumer. Food and Package Engineering includes many essential topics usually not addressed in other food engineering or packaging texts, including: Raw materials production and conversion Inventory management and production scheduling Regulations, security and food safety Recycling and landfill issues Transportation systems and distribution packaging Evaluation of developing technologies The comprehensive approach of this volume provides a framework to discuss critical interrelated topics such as economics, politics, and natural resources. Intended for readers with varying levels of experience, Food and Package Engineering provides multi-level accessibility to each topic,

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allowing both students and professionals to find useful information and develop technical expertise. Rather than being a simple exposition of technical knowledge, the book provides both real-world examples and challenging problems that require consideration at several different levels. Extensively illustrated and meticulously researched, Food and Package Engineering offers both a technical and a real-world perspective of the field. The text serves the student or industry professional at any level or background as an outstanding learning and reference work for their professional preparation and practice.

Condensed Encyclopedia of Polymer Engineering Terms

Eighteenth IAPRI World Packaging Conference

The packaging closure is the primary interface between the product and the customer. Closures have undergone much evolution and development in recent years. The basic function of a closure is to allow easy access to a packaged product and to reclose the package, when the contents are not used fully in a single serve. However, closures are now expected to deliver a wide variety of additional functions, such as ensuring that the package has not been opened prior to the first opening by the consumer, facilitating the dispensing of the product (especially for food and pharmaceuticals) and supporting the brand equity value of the product. This volume considers the

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technologies relevant to packaging closures and sealing systems, structured by types of pack. It is directed at packaging technologists, those involved in the design and development of packaging and those who specify or purchase packaging.

Fuel Cell Science and Engineering, 2 Volume Set

According to the FDA Quality System Regulations, manufacturers must ensure that "device packaging and shipping containers are designed and constructed to protect the device from alteration or damage during the customary conditions of processing, storage, handling, and distribution." As specific as this statement is, the FDA does not provide instruc

Joining Technologies

System-on-Package (SOP) is an emerging microelectronic technology that places an entire system on a single chip-size package. Where "systems" used to be bulky boxes housing hundreds of components, SOP saves interconnection time and heat generation by keep a full system with computing, communications, and consumer functions all in a single chip. Written by the Georgia Tech developers of the technology, this book explains the basic parameters, design functions, and manufacturing issues, showing electronic designers how this radical new packaging technology can be used to solve pressing electronics design challenges.

Vacuum Sealing Techniques

"Assists users, developers, researchers, and manufacturers in the design, selection, development, and application of seals and sealing systems for fluids."

Handbook of Food Science, Technology, and Engineering - 4 Volume Set

The Science and Technology of Flexible Packaging: Multilayer Films from Resin and Process to End Use provides a comprehensive guide to the use of plastic films in flexible packaging, covering scientific principles, properties, processes, and end use considerations. The book brings the science of multilayer films to the practitioner in a concise and impactful way, presenting the fundamental understanding required to improve product design, material selection, and processes, and includes information on why one material is favored over another for a particular application, or how the film or coating affects material properties. Detailed descriptions and analysis of the key properties of packaging films are provided from both an engineering and scientific perspective. End-use effects are also covered in detail, providing key insights into the way the products being packaged influence film properties and design. The book bridges the gap between key scientific literature and the practical challenges faced by the flexible packaging industry, providing essential scientific insights, best practice techniques, environmental sustainability

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information, and key principles of structure design to enable engineers and scientists to deliver superior products with reduced development time and cost. Provides essential information on all aspects of multilayer films in flexible packaging Aids in material selection and processing, shortening development times and delivering stronger products Bridges the gap between scientific principles and key challenges in the packaging industry, with practical explanations to assist practitioners in overcoming those challenges

Heat Transfer

Fundamentals and Applications of Supercritical Carbon Dioxide (SCO₂) Based Power Cycles aims to provide engineers and researchers with an authoritative overview of research and technology in this area. Part One introduces the technology and reviews the properties of SCO₂ relevant to power cycles. Other sections of the book address components for SCO₂ power cycles, such as turbomachinery expanders, compressors, recuperators, and design challenges, such as the need for high-temperature materials. Chapters on key applications, including waste heat, nuclear power, fossil energy, geothermal and concentrated solar power are also included. The final section addresses major international research programs. Readers will learn about the attractive features of SCO₂ power cycles, which include a lower capital cost potential than the traditional cycle, and the compounding performance benefits from a more efficient thermodynamic cycle on balance of plant

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requirements, fuel use, and emissions. Represents the first book to focus exclusively on SC02 power cycles Contains detailed coverage of cycle fundamentals, key components, and design challenges Addresses the wide range of applications of SC02 power cycles, from more efficient electricity generation, to ship propulsion

Packaging

Fluids -- Heat transfer -- Thermodynamics -- Mechanical seals -- Pumps and compressors -- Drivers -- Gears -- Bearings -- Piping and pressure vessels -- Tribology -- Vibration -- Materials -- Stress and strain -- Fatigue -- Instrumentation -- Engineering economics.

Heat Sealing Technology and Engineering for Packaging

"Use of packaging is often thought of as an industrial age concept but this is entirely untrue. In more ancient times products of economic or nutritional value were always wrapped in a suitable material to convey the need to protect the contents. The Roman emperors and Byzantine kings frequently wrapped precious good in all manner of materials from woven rattan baskets to carved and gilded in-laid ebony boxes. Expensive luxury goods such as chalices, and ceremonial goods are almost always stored in a suitable presentation case that demonstrated the value of the product contained within. Perfumes, chrism oils and ceremonial jewellery has always been containered in sculpted and carved lidded-boxes and

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glazed pottery. The use of bespoke packaging is really a modern age phenomenon. However, the footsteps of packaging use began with leaves and birch bark and other natural materials. In antiquity and prehistoric times humans wrapped their foods in crudely fashioned carriers and containers but also pelts and hides. Mass production of containers later involved woven materials e.g. rushes and reeds to create baskets and carriers but also the use of, textiles, pottery and bronze amphora and carved objects e.g. ivory, antler horn and wood. Recent estimates place "crude glass" or vitrified materials and wood packaging use to at least 3000 BC and these artifacts come from the Indus Valley civilisations and Mesopotamia"--

Vacuum Deposition onto Webs, Films and Foils

The First Law of Thermodynamics states that energy can neither be created nor destroyed. Heat exchangers are devices built for efficient heat transfer from one fluid to another. They are widely used in engineering processes and include examples such as intercoolers, preheaters, boilers and condensers in power plants. Heat exchangers are becoming more and more important to manufacturers striving to control energy costs. Process Heat Transfer Rules of Thumb investigates the design and implementation of industrial heat exchangers. It provides the background needed to understand and master the commercial software packages used by professional engineers for design and analysis of heat exchangers.

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This book focuses on the types of heat exchangers most widely used by industry, namely shell-and-tube exchangers (including condensers, reboilers and vaporizers), air-cooled heat exchangers and double-pipe (hairpin) exchangers. It provides a substantial introduction to the design of heat exchanger networks using pinch technology, the most efficient strategy used to achieve optimal recovery of heat in industrial processes. Utilizes leading commercial software important to professional engineers designing heat exchangers Illustrates design procedures using complete step-by-step worked examples Provides details on how to develop an initial configuration for a heat exchanger and how to systematically modify it to obtain a final design Abundant example problems solved manually and with the integration of computer software

Fluid Sealing Technology

Surface Treatment in Bonding Technology provides valuable advice on the surface treatment methods, modern measuring devices, and appropriate experimentation techniques which are essential to creating strong joints with a reliable service life. The focus of the book is on detailed and up to date analysis of surface treatment methods for metallic and polymer substrates. An analysis of the factors affecting the surface preparation stage, together with advice on selection, is also provided. Essential theory is combined with experimentation techniques and industry practice to provide a guide that is both practical and academically rigorous. Including a

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general introduction to bonding, as well as coverage of mechanical, chemical and electrochemical methods, this book is the ideal primer for anyone working with or researching adhesive bonding. Detailed descriptions of surface treatments and their mechanisms will help readers build a deep understanding of these fundamental techniques. Includes a thorough survey of recent advances in research in surface treatments of metals and polymers. Provides technical advice on experimental testing methods throughout the book.

Gas Turbine Engineering Handbook

Vacuum Deposition onto Webs: Films and Foils, Third Edition, provides the latest information on vacuum deposition, the technology that applies an even coating to a flexible material that can be held on a roll, thereby offering a much faster and cheaper method of bulk coating than deposition onto single pieces or non-flexible surfaces such as glass. This technology has been used in industrial-scale applications for some time, including a wide range of metalized packaging. Its potential as a high-speed, scalable process has seen an increasing range of new products emerging that employ this cost-effective technology, including solar energy products that are moving from rigid panels onto cheaper and more versatile flexible substrates, flexible electronic circuit 'boards', and flexible displays. In this third edition, all chapters are thoroughly revised with a significant amount of new information added, including newly developed barrier measurement techniques,

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improved in-vacuum monitoring technologies, and the latest developments in Atomic Layer Deposition (ALD). Provides the know-how to maximize productivity of vacuum coating systems Thoroughly revised with a significant amount of new information added, including newly developed barrier measurement techniques, improved in-vacuum monitoring technologies, and the latest on Atomic Layer Deposition (ALD) Presents the latest information on vacuum deposition, the technology that applies an even coating to a flexible material that can be held on a roll, thereby offering a much faster and cheaper method of bulk coating Enables engineers to specify systems more effectively and enhances dialogue between non-specialists and suppliers/engineers Empowers those in rapidly expanding fields such as solar energy, display panels, and flexible electronics to unlock the potential of vacuum coating to transform their processes and products

Impact of Thermal Conductivity on Energy Technologies

This book is intended to provide a deep understanding on the advanced treatments of thermal properties of materials through experimental, theoretical, and computational techniques. This area of interest is being taught in most universities and institutions at the graduate and postgraduate levels. Moreover, the increasing modern technical and social interest in energy has made the study of thermal properties more significant and exciting in the recent years. This book shares with the international

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community a sense of global motivation and collaboration on the subject of thermal conductivity and its wide spread applications in modern technologies. This book presents new results from leading laboratories and researchers on topics including materials, thermal insulation, modeling, steady and transient measurements, and thermal expansion. The materials of interest range from nanometers to meters, bringing together ideas and results from across the research field.

Package Engineering Including Modern Packaging

Part of a series based on an important global packaging meeting, which brings together packaging researchers from universities and industry, this book covers subjects such as: active/intelligent packaging, distribution packaging, medical, cosmetic and pharmaceutical packaging, food and agricultural packaging, and hazardous materials containers.

Joining Textiles

This book is an Up-to-date and authoritative account on physicochemical principles, pharmaceutical and biomedical applications of hydrogels. It consists of eight contributions from different authors highlighting properties and synthesis of hydrogels, their characterization by various instrumental methods of analysis, comprehensive review on stimuli-responsive hydrogels and their diverse applications, and a special section on self-healing hydrogels. Thus, this book will

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equip academia and industry with adequate basic and applied principles related to hydrogels.

Heat Treating and Surface Engineering

Understanding the techniques for joining fabrics together in a way that considers durability, strength, leak-tightness, comfort in wear and the aesthetics of the joints is critical to the production of successful, structurally secure fabric products. *Joining Textiles: Principles and Applications* is an authoritative guide to the key theories and methods used to join fabrics efficiently. Part one provides a clear overview of sewing technology. The mechanics of stitching, sewing and problems related to sewn textiles are discussed, along with mechanisms of sewing machines and intelligent sewing systems. Part two goes on to explore adhesive bonding of textiles, including principles, methods and applications, along with a review of bonding requirements in coating and laminating of textiles. Welding technologies are the focus of part three. Heat sealing, ultrasonic and dielectric textile welding are covered, as are laser seaming of fabrics and the properties and performance of welded or bonded seams. Finally, part four reviews applications of joining textiles such as seams in non-iron shirts and car seat coverings, joining of wearable electronic components and technical textiles, and the joining techniques involved in industrial and medical products including nonwoven materials. With its distinguished editors and international team of expert contributors, *Joining Textiles* is an important reference work for textile

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product manufacturers, designers and technologists, fibre scientists, textile engineers and academics working in this area. Provides an authoritative guide to the key theories and methods used to efficiently join fabrics Discusses the mechanics of stitching and sewing and problems related to sewn textiles, alongside mechanisms of sewing machines, and intelligent sewing systems Explores adhesive bonding of textiles, including principles, methods and applications, along with a review of bonding requirements in coating and laminating of textiles

Fundamentals and Applications of Supercritical Carbon Dioxide (SCO₂) Based Power Cycles

Equipping practicing engineers and students with the tools to independently assess and understand complex material on the topic, this text is an ideal precursor to advanced heat transfer courses. Intermediate Heat Transfer discusses numerical analysis in conduction and convection, temperature-dependent thermal conductivity, conduction through a sla

Micromachining of Engineering Materials

Shows how to identify and solve all kinds of sealing problems, bringing together data previously scattered throughout the literature. Discusses basic principles of how seals work, what different kinds of seals can accomplish, and what range of environmental and mechanical specifications each seal type is suited for.

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Covers all major categories of seals, explaining what seals are available, how they function, who can fabricate them, and how they behave in the field. Also examines packings—both mathematically and empirically—and reciprocating shafts.

Packaging Closures and Sealing Systems

In the wake of energy crisis due to rapid growth of industries, the efficient heat transfer could play a vital role in energy saving. Industries, household equipment, transportation, offices, etc., all are dependent on heat exchanging equipment. Considering this, the book has incorporated different chapters on heat transfer phenomena, analytical and experimental heat transfer investigations, heat transfer enhancement and applications.

Process Heat Transfer

Advances in food science, technology, and engineering are occurring at such a rapid rate that obtaining current, detailed information is challenging at best. While almost everyone engaged in these disciplines has accumulated a vast variety of data over time, an organized, comprehensive resource containing this data would be invaluable to have. The

Packaging Technology and Engineering

New expanded second edition with key technical, regulatory and marketing developments from the past 10 years in the packaging industryCovers the

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materials, processes, and design of virtually all paper and fiberboard packaging for end-products, displays, storage and distribution. New information on European and global standards, selection criteria for paperboard, as well as emerging sustainability initiatives. Explains recent tests, measurements and costs with ready-to-use calculations. Ten years ago, the first edition of *Cartons, Crates and Corrugated Board* quickly became the standard reference book for wood- and paper-based packaging. Endorsed by TAPPI and other professional societies and used as a textbook worldwide, the book has now been extensively revised and updated by a team formed by the original authors and two additional authors. While preserving the critical performance and design data of the previous edition, this second expanded edition offers new information on the technologies, tests and regulations impacting the paper and corrugated industries worldwide, with a special focus on Europe and Japan. New information has been added on tests and novel designs for folded cartons, as well as expanded discussions of paperboard selection for specific applications, emerging barrier packaging, food contact and migration, and the dynamics and opportunities of corrugated in distribution systems. Recent developments on recycling and sustainability are also highlighted.

Intermediate Heat Transfer

This reference book provides a comprehensive overview of the nature, manufacture, structure, properties, processing, and applications of

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commercially available polymers. The main feature of the book is the range of topics from both theory and practice, which means that physical properties and applications of the materials concerned are described in terms of the theory, chemistry and manufacturing constraints which apply to them. It will therefore enable scientists to understand the commercial implications of their work as well as providing polymer technologists, engineers and designers with a theoretical background. Provides a comprehensive overview of commercially available polymers Offers a unique mix of theory and application Essential for both scientists and technologists

Handbook of Induction Heating

Fuel cells are expected to play a major role in the future power supply that will transform to renewable, decentralized and fluctuating primary energies. At the same time the share of electric power will continually increase at the expense of thermal and mechanical energy not just in transportation, but also in households. Hydrogen as a perfect fuel for fuel cells and an outstanding and efficient means of bulk storage for renewable energy will spearhead this development together with fuel cells. Moreover, small fuel cells hold great potential for portable devices such as gadgets and medical applications such as pacemakers. This handbook will explore specific fuel cells within and beyond the mainstream development and focuses on materials and production processes for both SOFC and lowtemperature fuel cells, analytics and diagnostics for fuel cells, modeling and simulation

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as well as balance of plant design and components. As fuel cells are getting increasingly sophisticated and industrially developed the issues of quality assurance and methodology of development are included in this handbook. The contributions to this book come from an international panel of experts from academia, industry, institutions and government. This handbook is oriented toward people looking for detailed information on specific fuel cell types, their materials, production processes, modeling and analytics. Overview information on the contrary on mainstream fuel cells and applications are provided in the book 'Hydrogen and Fuel Cells', published in 2010.

Emerging Concepts in Analysis and Applications of Hydrogels

Food Process Engineering and Technology, Third Edition combines scientific depth with practical usefulness, creating a tool for graduate students and practicing food engineers, technologists and researchers looking for the latest information on transformation and preservation processes and process control and plant hygiene topics. This fully updated edition provides recent research and developments in the area, features sections on elements of food plant design, an introductory section on the elements of classical fluid mechanics, a section on non-thermal processes, and recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail. Provides a strong emphasis on the relationship between engineering and product quality/safety

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Considers cost and environmental factors Presents a fully updated, adequate review of recent research and developments in the area Includes a new, full chapter on elements of food plant design Covers recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail

Electrical Engineering

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