Handbook Of Medical Textiles Woodhead Publishing Series In Textiles

Edited by a leading expert in the field with contributions from experienced researchers in fibers and textiles, this handbook reviews the current state of fibrous materials and provides a broad overview of their use in research and development. Volume One focuses on the classes of fibers, their production and characterization, while the second volume concentrates on their applications, including emerging ones in the areas of energy, environmental science and healthcare. Unparalleled knowledge of high relevance to academia and industry. Medical textiles are a major growth area within the technical textiles industry and the range of applications continues to grow and increase in diversity with every new development. Recent innovations include novel chitosan-alginate fibres for advanced wound dressings, ultrasonic energy for bleaching cotton medical textiles, durable and rechargeable biocidal textiles, spider silk supportive matrix for cartilage regeneration, barbed bi-directional surgical sutures and intelligent textiles for medical applications. Medical textiles and biomaterials for healthcare is a culmination of the worldwide research into medical textiles and biomaterials.

It is divided into eight parts covering the main areas of basic biomaterials, healthcare and hygiene products, infection control and barrier materials, bandaging and pressure garments, woundcare materials, implantable and medical devices and smart technologies. Each part contains a comprehensive overview written by leading experts in the area. The overviews are then followed by a selection of the best papers from the 2003 MEDTEX Conference, hosted by the University of Bolton. It has been extensively edited to produce what is expected to be the leading reference on this subject. Discusses worldwide research into medical textiles and biomaterials Invaluable reference for this developing area of technical textiles A selection of the best papers from the 2003 MEDTEX Conference, hosted by University of Bolton are included

This book discusses the properties of fibres used in manufacturing technical textiles, highlighting the importance of material selection in terms of cost, end-user requirements and properties. It also discusses the classification of technical textiles, and describes the details of each category, such as the properties, applications, advantages and drawbacks. As such, it is a valuable resource for all those interested in advanced textiles.

An evolution is currently underway in the textile industry and Textile for Industrial Applications is the guidebook for its growth. This industry can be classified into

three categories-clothing, home textile, and industrial textile. Industrial textiles, also known as technical textiles, are a part of the industry that is thriving and showing great

Carpets have been made throughout the world for hundreds of years. The manufacture of carpets has evolved over time and continues to improve in all areas. This book provides an overview of the developments and innovations within this area, whilst covering the many different types of carpet that are manufactured. Advances in carpet manufacture begins by covering the different types and requirements of carpets, along with the structure and properties of the carpet fibres and yarns that are used. The remainder of the book is dedicated to the developments that have occurred in the manufacture of carpets. Topics include the advances in carpet weaving and the reduction of static in carpets. A selection of carpet types are discussed, including wool carpets, textile sports surfaces and handmade carpets. With the variety of topics covered and its international team of contributors, this book is a valuable and informative reference for technologists in the carpet and associated industries. Provides an overview of recent developments and innovations in carpet manufacture Covers the structure and properties of different carpet fibres and yarns Examines advances in carpet weaving

The purpose of this book is mainly to guide new entrants in the textile field who would like to supervise and manage the various processes involved. Chemicals and chemical reactions are not discussed however, as the process parameters and chemicals used vary and this needs to be decided by senior technical personnel. This book does however give general guidelines that are applicable for all and which can be used as a guide for training technical staff. It is not possible to list all the value addition processes practiced worldwide in one book, and hence, an attempt is made to collect details of some of the commonly practiced value addition processes, especially for apparel purposes. The functional treatments given for various technical textiles like medical textiles, protective textiles, industrial textiles, agrotech materials, geotextiles, and sport tech, etc are not covered in this book.

Due to their complexity and diversity, understanding the structure of textile fibres is of key importance. This authoritative two-volume collection provides a comprehensive review of the structure of an extensive range of textile fibres. Volume 2 begins by reviewing natural fibres such as cellulosic, cotton, protein, wool and silk fibres. Part two considers regenerated cellulosic, protein, alginate, chitin and chitosan fibres. The final part of the book discusses inorganic fibres such as glass, carbon and ceramic fibres as well as specialist fibres such as

thermally and chemically-resistant fibres, optical and hollow fibres. Chapters review how fibre structure contributes to key mechanical properties. A companion volume reviews the structure of manufactured polymer fibres. Edited by leading authorities on the subject and with a team of international authors, the two volumes of the Handbook of textile fibre structure is an essential reference for textile technologists, fibre scientists, textile engineers and those in academia. Discusses how fibre structure contributes to key mechanical properties Reviews natural fibres such as cellulosic, cotton and silk fibres and considers various regenerated fibres Examines inorganic fibres including glass and carbon as well as specialist fibres such as chemically-resistant and optical fibres

This book provides an overview of the types of textiles used within the interior textile sector and key technological developments and safety issues affecting the industry. An understanding of these topics enables the designer or manufacturer to select the most appropriate fabrics for interior applications. The first group of chapters reviews types and selection of materials for interior textiles, including natural and synthetic fibres as well as knitted, woven and nonwoven fabrics. Further chapters review surface design of interior textiles and the use of textiles in carpets and floor coverings. The second part of the book discuses developments in such areas as joining furniture fabrics, the use of sustainable

and recycled textiles in interior applications, using interior textiles to minimise indoor environmental pollution, flame retardant materials and innovative textiles for seating. Interior textiles: design and developments is an important text for manufacturers, designers and buyers of interior textiles as well as being a valuable resource for students and academics studying interior design and materials. Provides a comprehensive review of the type of textiles used within the interior textile sector Considers environmental issues in interior textiles assessing different types of sustainable and recycled textiles Explores the important issues of surface design and flammability testing

This book presents five chapters, organised into two sections, on the latest developments in acrylate polymers materials in terms of properties, new ideas in design, synthesis and detailed applications. Section I presents three chapters on acrylate polymer properties and advanced applications such as pH dependence acrylate-derivative polyelectrolyte properties and polymer material classification as acrylic heat resistant glass and polycarbonate antiballistic glass. Section II includes two chapters on acrylic-based materials in the form of hydrogels, interpenetrated polymer networks, composites and nanocomposites for biomedical and bioengineering applications such as tissue engineering, antimicrobial therapy, orthopaedics and ophthalmologic devices.

This book explores in depth a wide range of new biomaterials that hold great promise for applications in regenerative medicine. The opening two sections are devoted to biomaterials designed to direct stem cell fate and regulate signaling pathways. Diverse novel functional biomaterials, including injectable nanocomposite hydrogels, electrosprayed nanoparticles, and waterborne polyurethane-based materials, are then discussed. The fourth section focuses on inorganic biomaterials, such as nanobioceramics, hydroxyapatite, and titanium dioxide. Finally, up-to-date information is provided on a wide range of smart natural biomaterials, ranging from silk fibroin-based scaffolds and collagen type I to chitosan, mussel-inspired biomaterials, and natural polymeric scaffolds. This is one of two books to be based on contributions from leading experts that were delivered at the 2018 Asia University Symposium on Biomedical Engineering in Seoul, Korea – the companion book examines in depth the latest enabling technologies for regenerative medicine.

An authentic resource for the fundamentals, applied techniques, applications and recent advancements of all the main areas of technical textiles Created to be a comprehensive reference, High Performance Technical Textiles includes the review of a wide range of technical textiles from household to space textiles. The contributors—noted experts in the field from all the continents—offer in-depth

coverage on the fibre materials, manufacturing processes and techniques, applications, current developments, sustainability and future trends. The contributors include discussions on synthetic versus natural fibres, various textile manufacturing techniques, textile composites and finishing approaches that are involved in the manufacturing of textiles for a specific high performance application. Whilst the book provides the basic knowledge required for an understanding of technical textiles, it can serve as a springboard for inspiring new inventions in hi-tech fibres and textiles. This important book: Contains a unique approach that offers a comprehensive understanding of the manufacturing and applications of technical textiles Includes a general overview to the fundamentals, current techniques, end use applications as well as the most recent advancements Explores the current standards in the industry and the ongoing research in the field Offers a comprehensive and single source reference on the topic Written for academics, researchers and professionals working in textile and related industries, High Performance Technical Textiles offers a systematic, structured, logical and updated source of information for understanding technical textiles.

Cold weather can be a potential hazard to human health, adversely affecting physiological functions, work performance and wellbeing. Designing suitable

apparel for cold environments is therefore a complex task. Textiles for cold weather apparel reviews the principles, materials and requirements of cold weather apparel and will stimulate ideas for future innovation and improved end performance. The first part of the book covers the fundamental scientific issues and types of materials suitable for cold weather clothing. Topics include how to achieve comfort and thermoregulation in cold weather clothing as well as the use of coated and laminated fabrics. It also discusses design and ergonomic aspects such as designing for ventilation. Part two discusses ways of evaluating cold weather clothing, including standards and legislation governing cold weather clothing and laboratory assessments. Part three concludes with applications including cold weather apparel for the military and footwear for cold weather conditions. With an array of international contributors, this book is a valuable reference for producers, manufacturers, retailers and all those wishing to improve and understand developments in cold weather apparel. Reviews the principles, materials and requirements of cold weather apparel Discusses design and ergonomic aspects including ventilation and insulation Examines methods used to evaluate cold weather clothing as well as standards and legislation in practice Smart clothes and wearable technology is a relatively novel and emerging area of interdisciplinary research within the fashion, textile, electronics and related

industries. This book provides a comprehensive review of the end-user's requirements and the technologies and materials available for the design and production of smart clothing. Part one looks at the design of smart clothing and wearable technology including the emergence of wearable computing, end-user requirements, and the design process from fibre selection to product launch. Part two examines the general requirements for merging of a range of textile structures with technology and communications for wearable technologies. Part three reviews the types of production technologies available for the development of smart clothing, including garment construction and fabric joining, and the final part discusses the application of these new technologies in smart clothing products and their presentation to consumers. Smart clothes and wearable technology is a unique and essential reference source for researchers, designers and engineers developing textiles and clothing products in this cross-disciplinary area. It is also beneficial for those in the healthcare industry and academics researching textiles, fashion and design. Examines this emerging area of textile research including a brief history and industry overview Assesses the technologies and materials available for the design and production of smart clothing Summarises requirements for smart textiles from both health and performance perspectives

Polyolefins are one of the most widely used commercial polymers. This book reviews the most important polyolefins, including polyethylene and polypropylene. These versatile fibres are durable, chemically resistant, lightweight, economical and functional. Polyolefin fibres: industrial and medical applications provides a comprehensive review of the structure and properties of this group of fibres, together with methods to improve the functionality of polyolefins and their range of applications. The first set of chapters discusses the different types of polyolefins, their structural and chemical properties as well as their production methods. The second group of chapters examines how to improve the functionality of polyolefin fibres. A final group of chapters addresses how polyolefins can be incorporated into specific applications such as industrial, medical and automotive products. Written by a distinguished team of international contributors, Polyolefin fibres: industrial and medical applications is a quintessential reference for textile technologists, fibre scientists, yarn and fabric manufacturers and also those in academia. Reviews the most important polyolefins including polyethylene and polyproplene, their structural and chemical properties as well as production methods Examines methods to improve the functionality of polyolefin fibres including production methods and quality control In today’s climate there is an increasing requirement for protective textiles,

whether for personal protection, protection against the elements, chemical, nuclear or ballistic attack. This comprehensive book brings together the leading protective textiles experts from around the world. It covers a wide variety of themes from materials and design, through protection against specific hazards, to specific applications. This is the first book of its kind to give a complete coverage of textiles for protection. Covers a wide variety of themes from materials and design, through protection against specific hazards, to specific applications The first book of its kind to give a complete coverage of textiles for protection Written by leading protective textiles experts from around the world

The first edition of Handbook of Technical Textiles has been an essential purchase for professionals and researchers in this area since its publication in 2000. With revised and updated coverage, including several new chapters, this revised two volume second edition reviews recent developments and new technologies across the field of technical textiles. Volume 2 – Technical Textile Applications offers an indispensable guide to established and developing areas in the use of technical textiles. The areas covered include textiles for personal protection and welfare, such as those designed for ballistic protection, personal thermal and fire protection, and medical applications; textiles for industrial, transport and engineering applications, including composite reinforcement and

filtration; and the growing area of smart textiles. Comprehensive handbook for all aspects of technical textiles Provides updated, detailed coverage of processes, fabric structure, and applications Ideal resource for those interested in high-performance textiles, textile processes, textile processing, and textile applications Many of the original, recognized experts from the first edition update their respective chapters

The second edition of this bestselling title provides the most up-to-date comprehensive review of all aspects of biomaterials science by providing a balanced, insightful approach to learning biomaterials. This reference integrates a historical perspective of materials engineering principles with biological interactions of biomaterials. Also provided within are regulatory and ethical issues in addition to future directions of the field, and a state-of-the-art update of medical and biotechnological applications. All aspects of biomaterials science are thoroughly addressed, from tissue engineering to cochlear prostheses and drug delivery systems. Over 80 contributors from academia, government and industry detail the principles of cell biology, immunology, and pathology. Focus within pertains to the clinical uses of biomaterials as components in implants, devices, and artificial organs. This reference also touches upon their uses in biotechnology as well as the characterization of the physical, chemical,

biochemical and surface properties of these materials. Provides comprehensive coverage of principles and applications of all classes of biomaterials Integrates concepts of biomaterials science and biological interactions with clinical science and societal issues including law, regulation, and ethics Discusses successes and failures of biomaterials applications in clinical medicine and the future directions of the field Cover the broad spectrum of biomaterial compositions including polymers, metals, ceramics, glasses, carbons, natural materials, and composites Endorsed by the Society for Biomaterials

This book covers all sustainable fibres applicable in the fashion sector and discusses their importance in the context of sustainability. It is the first of its kind to address all the minute details pertaining to these fibres and to connect these fibres with the world of sustainable fashion. It stresses their importance in developing sustainable apparel, since fibres play a major role as the starting point in the life cycle of clothing.

ICSSCCET 2015 will be the most comprehensive conference focused on the various aspects of advances in Systems, Science, Management, Medical Sciences, Communication, Engineering, Technology, Interdisciplinary Research Theory and Technology. This Conference provides a chance for academic and industry professionals to discuss recent progress in the area of Interdisciplinary

Research Theory and Technology. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in this important subject. The goal of this conference is to bring together the researchers from academia and industry as well as practitioners to share ideas, problems and solutions relating to the multifaceted aspects of Interdisciplinary Research Theory and Technology.

This book provides readers with a timely snapshot of ergonomics research and methods applied to the design, development and prototyping – as well as the evaluation, training and manufacturing – of products, systems and services. Combining theoretical contributions, case studies, and reports on technical interventions, it covers a wide range of topics in ergonomic design including: ecological design; educational and game design; cultural and ethical aspects in design; user research and human–computer interaction in design; as well as design for accessibility and extreme environments, and many others. The book places special emphasis on new technologies such as virtual reality, state-of-the-art methodologies in information design, and human–computer interfaces. Based on the AHFE 2017 International Conference on Ergonomics in Design, held on July 17–21, 2017, in Los Angeles, California, USA, the book offers a timely guide for both researchers and design practitioners, including industrial designers,

human–computer interaction and user experience researchers, production engineers and applied psychologists.

Dyeing is one of the most effective and popular methods for coloring textiles and other materials. Volume 1 of a two-volume series begins with a general introduction to dyeing. Chapters include the fundamental principles, chemistry, pre-treatment and an overview to dye fastness.

The technical developments in the sports clothing industry has resulted in the use of functional textiles for highly-specialised performances in different sports. Developments include thermal and functional properties and coated and laminated clothes. With bio- and smart materials providing such a strong focus in the textile industry generally, companies are going for ‘value-added’ textiles, such as in-built sensors which monitor performance. In-built wear comfort is a growing market trend and includes clothing which improves the skin’s performance. Written by a distinguished editor and a team of authors from the cutting edge of textile research, Textiles in sport discusses high-performance, high-function and intelligent textiles for sportswear. Invaluable for a broad range of readers Discusses high-performance, high-function and intelligent textiles for sportswear

Given its importance for consumer satisfaction and thus brand success, apparel

fit is a major challenge for retailers and brands across the industry. Consequently there have been major developments in sizing research and how it can be used in apparel design. This book reviews how these developments are affecting clothing design for different groups of consumers. Part one identifies various aspects of body shape, size, volume and the psychological aspects of designing apparel. This section covers topics such as body shape and its influence on apparel size and consumer choices, sizing systems, body shape and weight distribution (with a discussion of the Body Volume Index (BVI) versus the Body Mass Index (BMI)), and the psychological and sociological factors influencing consumers' choice of apparel. Part two outlines the challenges in understanding the sizing and shape requirements and choices of particular customer groups. This section discusses apparel designed for infants and children, older consumers, overweight and obese consumers, plus size Black and Latino women, apparel design for Asian and Caucasian ethnic groups, sizing requirements for male apparel, maternity apparel, intimate apparel for varying body shapes, and the challenges of designing headwear to fit the size and shape of Western and Asian populations. Designing apparel for consumers provides an invaluable reference for apparel designers, manufacturers, and R&D managers in the textile industry, as well as postgraduate students and academic researchers

in textiles. Reviews developments affecting clothing design for different groups of consumers Identifies various aspects of body shape, size, volume and the psychological aspects of designing apparel Outlines the challenges in understanding sizing and shape requirements and choices of particular customer groups

From a holistic perspective, this handbook explores the design, development and production of smart textiles and textile electronics, breaking with the traditional silo-structure of smart textile research and development. Leading experts from different domains including textile production, electrical engineering, interaction design and human-computer interaction (HCI) address production processes in their entirety by exploring important concepts and topics like textile manufacturing, sensor and actuator development for textiles, the integration of electronics into textiles and the interaction with textiles. In addition, different application scenarios, where smart textiles play a key role, are presented too. Smart Textiles would be an ideal resource for researchers, designers and academics who are interested in understanding the overall process in creating viable smart textiles.

This book summarizes all different fields of cotton fiber, including genetics, fiber chemistry, soft materials, textile, and fashion engineering. It also contains some new

applications such as biomaterials, nanocoated smart fabrics, and functional textiles. Moreover, the significant improvement recently in gene modification and gene technology is introduced. This book discusses all these aspects in a more straightforward way, and new illustrations will help readers to understand the contents. It is intended for undergraduate and graduate students who are interested in cotton science and processing technologies, researchers investigating the updated applications of cotton in various fields as well as industrialists who want to have a quick review of the cotton and its different stages.

Provides an overview of the different types of medical textiles. This title discusses the types and properties of medical textiles from reusable textiles to fabrics with cosmetic effects. It focuses on how textiles interact with skin. It provides the advanced developments in textiles for hygiene and infection control. With a rising population and the increasing range of textiles for medical products, the need to understand and improve medical textiles is gaining in importance. The Handbook of medical textiles provides an overview of the different types of medical textiles currently available as well as specific information on more specialised topics and applications. In part one, the types and properties of medical textiles are discussed, with chapters covering topics including reusable textiles, textiles for implants and textiles with cosmetic effects. Part two focuses on the interaction of textiles with the skin, examining key issues such as contact sensations, allergies and mechanical irritation. Chapters in part three provide

information on the latest developments in textiles for hygiene and infection control, while part four provides a range of applications and case studies, including improvements in medical occupational clothing, medical filters and superabsorbent fibres. With its expert editor and contributions from some of the world's leading authorities, the Handbook of medical textiles is a standard reference for designers and manufacturers of medical textile products, as well as for biomaterials scientists and medical professionals.

Polyesters and polyamides remain the most used group of synthetic fibres. This authoritative book reviews methods of their production, ways of improving their functionality and their wide range of applications. The first part of the book describes raw materials and manufacturing processes, including environmental issues. Part two considers ways of improving the functionality of polyester and polyamide fibres, including blending, weaving, coloration and other finishing techniques as well as new techniques such as nanotechnology. The final part of the book reviews the range of uses of these important fibres, from apparel and sportswear to automotive, medical and civil engineering applications. With its distinguished editors and international team of contributors, Polyesters and polyamides is a standard reference for all those using this important group of fibres. Reviews the chemical and physical properties of each fibre and their manufacture Analyses how the functionality of polyester and polyamides can be improved Provides examples of how the fibres are used in applications

Biotechnology and Bioengineering presents the most up-to-date research on biobased technologies. It is designed to help scientists and researchers deepen their knowledge in this critical knowledge field. This solid resource brings together multidisciplinary research, development, and innovation for a wide study of Biotechnology and Bioengineering.

Dyeing is one of the most effective and popular methods used for colouring textiles and other materials. Dyes are employed in a variety of industries, from cosmetic production to the medical sector. The two volumes of the Handbook of textile and industrial dyeing provide a detailed review of the latest techniques and equipment used in the dyeing industry, as well as examining dyes and their application in a number of different industrial sectors. Volume 2 deals with major applications of dyes and is divided into two parts. Part one covers textile applications, with chapters dealing with the dyeing of wool, synthetic and cellulosic fibres, and textile fibre blends. In part two, industrial applications of dyes are examined, with topics including dyes used in food and in the cosmetics industry. With its distinguished editor and contributions from some of the world’s leading authorities, the Handbook of textile and industrial dyeing is an essential reference for designers, colour technologists and product developers working in a variety of sectors, and will also be suitable for academic use. Provides a detailed review of the latest techniques and equipment used in the dyeing industry Industrial applications of dyes are examined, with topics including dyes used in food and in the

cosmetics industry Is appropriate for a variety of different readers including designers, colour technologists, product developers and those in academia

This book offers an extensive, interdisciplinary overview of dynamic textiles. Specifically, it discusses new findings and design concepts concerning the integration of smart materials into textile substrates and their corresponding dynamic behavior. Introducing the topic of dynamic color in textiles, it presents experimental procedures to achieve color change and dynamic light transmittance in thermochromic textiles, and examines their thermoresponsive behavior and respective electrical activation. Moreover, it also addresses the topic of dynamic form and reports on the authors' original findings using shape-memory alloys and geometric morphologies based on origami techniques. Covering innovative smart textiles and important considerations in terms of design variables when developing textiles with dynamic qualities, and providing extensive, practice-oriented insights into the interaction of textiles with light, it is primarily intended for academics, researchers and practitioners developing smart, dynamic and interactive textiles. The sections describing in detail the experimental work aimed at the integration of smart materials in textile substrates also appeal to professionals in the textile industry.

This major handbook provides comprehensive coverage of the manufacture, processing and applications of high tech textiles for a huge range of applications including: heat and flame protection; waterproof and breathable fabrics; textiles in

filtration; geotextiles; medical textiles; textiles in transport engineering and textiles for extreme environments. Handbook of technical textiles is an essential guide for textile yarn and fibre manufacturers; producers of woven, knitted and non-woven fabrics; textile finishers; designers and specifiers of textiles for new or novel applications as well as lecturers and graduate students on university textile courses. Comprehensive handbook for all aspects of technical textiles Detailed coverage of processes, fabric structure and applications Contributions from recognised experts world-wide Engineering Textiles: Integrating the Design and Manufacture of Textile Products, Second Edition is a pioneering guide to textile product design and development, enabling the reader to understand essential principles, concepts, materials and applications. This new edition is updated and expanded to include new and emerging topics, design concepts and technologies, such as sustainability, the use of nanotechnology, and wearable textiles. Chapters cover the essential concepts of fiber-to-fabric engineering, product development and design of textile products, different types of fibers, yarns and fabrics, the structure, characteristics and design of textiles, and the development of products for specific applications, including both traditional and technical textiles. This book is an innovative and highly valuable source of information for anyone engaged in textile product design and development, including engineers, textile technologists, manufacturers, product developers, and researchers and students in textile engineering. Presents an integrated approach to textile product design and

development Guides the reader from initial principles and concepts, to cutting-edge applications Includes cutting-edge design concepts and major new technologies
Smart or intelligent textiles are a relatively novel area of research within the textile industry with enormous potential within the healthcare industry. This book provides a unique insight into recent developments in how smart textiles are being used in the medical field. The first part of the book assesses trends in smart medical textiles. Chapters cover topics such as wound care materials, drug-based release systems and electronic sensors for health care. The second part of the book discusses the role of smart textile in monitoring the health of particular groups such as pregnant women, children, the elderly and those with particular physical disabilities. With its distinguished editor and team of international contributors, this book provides a unique and essential reference to those concerned with intelligent textiles in healthcare. Unlocks the significant potential of smart textiles within the healthcare industry Provides a unique insight into recent developments in this exciting field
An important and growing area of the textile industry is the medical sector. The extent of this growth is due to constant improvements in both textile technology and medical procedures. This collection provides a detailed review of how textiles are incorporated into wound care applications, explaining the importance and suitability of using textiles on different wound types. Part one of the book provides an overview of the use of textiles in particular aspects of wound care, providing details of wound management

and the importance of laboratory testing in relation to wound care. Further chapters cover minor wounds, moist wound management and bioactive dressings to promote healing. Given their increasing importance, part two describes how advanced textiles, such as smart temperature controlled textiles and composites, can be used for wound care products. The final chapter gives an interesting insight into the use of fibrous scaffolds for tissue engineering. Advanced textiles for wound care is essential reading for any manufacturers, designers, scientists and producers of wound care materials. It is a valuable resource for professionals within the medical sector, as well as those in academia. Provides a comprehensive introduction to wound care from types of wound and wound healing mechanisms to the importance of testing in relation to wound care Analyses the application of textiles to wound healing covering minor wounds, burns, ulcers and other deep skin wounds Reviews the current use of smart textiles for wound care including drug delivery dressings and textile-based scaffolds for tissue engineering as well as future trends

This book reviews recent research and applications of chitin and chitosan, as natural alternatives of fossil fuel products, in green chemistry, energy, biotechnology, bioprinting, medicine, water treatment, agriculture and food science. Chitin and chitosan products are polysaccharides derived from food waste of crustaceans and fungi, and thus are cheap, abundant, sustainable, non-toxic, recyclable and biocompatible.

The production of textile materials comprises a very large and complex global industry

that utilises a diverse range of fibre types and creates a variety of textile products. As the great majority of such products are coloured, predominantly using aqueous dyeing processes, the coloration of textiles is a large-scale global business in which complex procedures are used to apply different types of dye to the various types of textile material. The development of such dyeing processes is the result of substantial research activity, undertaken over many decades, into the physico-chemical aspects of dye adsorption and the establishment of ‘dyeing theory’, which seeks to describe the mechanism by which dyes interact with textile fibres. Physico-Chemical Aspects of Textile Coloration provides a comprehensive treatment of the physical chemistry involved in the dyeing of the major types of natural, man-made and synthetic fibres with the principal types of dye. The book covers: fundamental aspects of the physical and chemical structure of both fibres and dyes, together with the structure and properties of water, in relation to dyeing; dyeing as an area of study as well as the terminology employed in dyeing technology and science; contemporary views of intermolecular forces and the nature of the interactions that can occur between dyes and fibres at a molecular level; fundamental principles involved in dyeing theory, as represented by the thermodynamics and kinetics of dye sorption; detailed accounts of the mechanism of dyeing that applies to cotton (and other cellulosic fibres), polyester, polyamide, wool, polyacrylonitrile and silk fibres; non-aqueous dyeing, as represented by the use of air, organic solvents and supercritical CO2 fluid as alternatives to water as application

medium. The up-to-date text is supported by a large number of tables, figures and illustrations as well as footnotes and widespread use of references to published work. The book is essential reading for students, teachers, researchers and professionals involved in textile coloration.

This volume is a scientific introduction to the study, engineering and applications of medical textiles. It moves systematically from the fundamentals of textile materials and their fabrication through biocompatibility and biodegradability to the applications of textiles in healthcare, ranging from hygiene to wound care, grafts and implantables. The book analyzes how the internal structures of various types of textiles, wovens, knits and nonwovens, are related to specific medical/biomedical end uses. While carefully explaining the basics, the book aims to show the connection between textile properties and the design and development of medical and healthcare textile products. This text is designed for advanced students and industry-based textile researchers, engineers, and product developers.

Integrating electronics into clothing is a major new concept, which opens up a whole array of multi-functional, wearable electro-textiles for sensing/monitoring body functions, delivering communication facilities, data transfer, individual environment control, and many other applications. With revolutionary advancements occurring at an unprecedented rate in many fields of science and electronics the possibilities offered by wearable technologies are tremendous and widespread. These advancements will

transform the world and will soon begin to permeate into commercial products. The first section of the book discusses the materials and devices used in the field, including electro-statically generated nanofibres, electroceramic fibres and composites and electroactive fabrics. It summarizes recent developments in electrically conductive fabric structures and puts together a few theoretical treatments of the electro-mechanical properties of various fabric structures. The next section reviews topics related to wearable photonics such as fibre optic sensors and integrated smart textile structures, the developments in various flexible photonic display technologies as well as looking at current communication apparel and optical fibre fabric displays. Next the book focuses on integrated structures and system architectures. Finally the issues facing a fashion designer working with wearables are explored. Wearable electronics and photonics covers many aspects of the cutting-edge research and development into this exciting field and provides a window through which only a small portion of the exciting emerging technology can be seen. With contributions from a panel of international experts in the field this is an essential guide for all electrical, textile and biomedical engineers as well as academics and fashion designers. Stay one step ahead of the industry on this hot topic Evaluates the major new concept of integrating electronics into clothing Explores future trends for fashion and specialist clothing