

## Handbook Of Medical Textiles Woodhead Publishing Series In Textiles

Encyclopedia of Renewable and Sustainable Materials provides a comprehensive overview, covering research and development on all aspects of renewable, recyclable and sustainable materials. The use of renewable and sustainable materials in building construction, the automotive sector, energy, textiles and others can create markets for agricultural products and additional revenue streams for farmers, as well as significantly reduce carbon dioxide (CO<sub>2</sub>) emissions, manufacturing energy requirements, manufacturing costs and waste. This book provides researchers, students and professionals in materials science and engineering with tactics and information as they face increasingly complex challenges around the development, selection and use of construction and manufacturing materials. Covers a broad range of topics not available elsewhere in one resource Arranged thematically for ease of navigation Discusses key features on processing, use, application and the environmental benefits of renewable and sustainable materials Contains a special focus on sustainability that will lead to the reduction of carbon emissions and enhance protection of the natural environment with regard to sustainable materials

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.

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 CO<sub>2</sub> 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 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.

Waterproof and Water Repellent Textiles and Clothing provides systematic coverage of the key types of finishes and high performance materials, from conventional wax and silicone, through controversial, but widely used fluoropolymers and advanced techniques, such as atmospheric plasma deposition and sol-gel technology. The book is an essential resource for all those engaged in garment development, production and finishing, and for academics engaged in research into apparel technology and textile science. Rapid innovation in this field is driving new performance demands in many areas, including the sporting and military sectors. However, another innovation driver is the regulatory framework in the USA, Europe and globally, addressing both health concerns (e.g. with PFOS / PFOA) and environmental impacts (e.g. C8 fluorocarbon finishes). Both of these aspects are fully covered, along with the replacement materials / technologies currently available and under development. In addition, oleophobic and multifunctional coatings are discussed, as are aspects of performance, testing and applications in sportswear, protective clothing, and footwear. Introduces innovative materials and technologies, exploring their current and potential use across different sectors Provides expert guidance on the health and environmental aspects of key waterproof materials and coatings and their associated regulations Demystifies testing processes and design principles

Woven Textiles: Principles, Technologies and Applications, Second Edition, is an essential guide to woven textiles. This new edition is updated and expanded to include major

new application areas, as well as the latest developments and innovations in terms of fibers, yarns, fabrics, machinery and technology. Sections cover fibers and yarns used for weaving, key preparatory techniques, the fundamentals of weaving technology, the characteristics of woven structures, the use of computer assisted design (CAD) systems, techniques for modelling the structure of woven fabrics, methods for the manufacture of 3D woven structures, and the application of woven textiles in a range of technologies. With its distinguished editor and international team of expert contributors, this second edition will be an indispensable guide for all designers, engineers and technicians involved in the design, manufacture and use of woven textiles, as well as for academics and researchers in the field of textiles. Provides extensive coverage of woven textiles, including their preparation, manufacture, woven structures and characteristics Presents the latest technical applications of woven textiles, such as transportation, geotextiles, medical applications, sports and leisure, filtration, and composite structures Enables the reader to understand the latest technological advances in the area of woven textiles

Growing awareness of environmental issues has led to increasing demand for goods produced from natural products, including natural fibres. The two-volume Handbook of natural fibres is an indispensable tool in understanding the diverse properties and applications of these important materials. Volume 1: Types, properties and factors affecting breeding and cultivation is an essential guide to a wide range of natural fibres, and highlights key techniques for their improvement. Part one reviews key types and fundamental properties of natural textile fibres. The production, identification and testing of a range of cotton, bast, silk and wool fibres are discussed, alongside bioengineered natural textile fibres. Part two goes on to explore the improvement of natural fibre properties and production through breeding and cultivation, beginning with a discussion of fibrous flax and cotton. Improved natural fibre production through the prevention of fungal growth is explored, along with the use of genetic engineering and biotechnology to enhance desirable characteristics. Finally, the wider impact of natural textile production is discussed, using wild silk enterprise programs as an example. With its distinguished editor and international team of expert contributors, the two volumes of the Handbook of natural fibres are essential texts for professionals and academics in textile science and technology. Provides an essential guide to a wide range of natural fibres and highlights key techniques for their improvement Reviews key types and fundamental properties of natural textile fibres, addressing the production, identification and testing of a range of cotton, bast, silk and wool fibres Explores the improvement of natural fibre properties and production through breeding and cultivation, beginning with a discussion of fibrous flax and cotton

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. Explores the different types of medical textiles currently available as well as specific information on more specialised areas and applications Chapters cover topics such as reusable textiles, textiles for implants and interaction of textiles with the skin Is a standard reference for designers and manufacturers of medical textile products, as well as for biomaterials scientists and medical professionals

ICSSCET 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.

High-Performance Apparel: Materials, Development, and Applications covers the materials and techniques used in creating high-performance apparel, the technical aspects of developing high-performance garments, and an array of applications for high-performance clothing and wearable technology. Part One covers fabric construction for high-performance garments, from fiber types and spinning methods, to weaving, knitting, finishing, and joining techniques. Development of high-performance apparel is covered in Part Two, with particular emphasis on design and product development for function and wearer comfort. Part Three covers a range of applications and wearable technology that make use of high-performance apparel, including chapters on sportswear, protective clothing, and medical, military, and intelligent textiles. The book provides an excellent resource for all those engaged in garment development and production, and for academics engaged in research into apparel technology and textile science. Offers a range of perspectives on high-performance apparel from an international team of authors with diverse expertise Provides systematic and comprehensive coverage of the topic from fabric construction, through apparel design and development, to the range of current and potential applications Presents an excellent resource for all those engaged in garment development and production, and for academics engaged in research

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

Coating and lamination offer methods of improving and modifying the physical properties and appearance of fabrics and also the development of entirely new products by combining the benefits of fabrics, polymers and films. This detailed book covers all aspects of coating and lamination within the textile industry including – compound ingredients, how to set and adhere to strictly controlled processing conditions, the accurate control of production variables, the safe handling of toxic materials and the ongoing research into future products which will facilitate recycling and disposal. This book is particularly useful in the insight it gives about the challenges and opportunities that these new treatments offer and is essential reading for technologists, chemists and production engineers working in this exciting field. Authoritative review of the latest developments in coating and lamination processes for textiles Focuses on the importance of setting and adhering to processing conditions Written by the author of the well-known Textiles in automotive engineering

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.

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 1 deals with the principles of dyeing and techniques used in the dyeing process, and looks at the different types of dyes currently available. Part one begins with a general introduction to dyeing, which is followed by chapters that examine various aspects of the dyeing process, from the pre-treatment of textiles to the machinery employed. Chapters in part two then review the main types of dyes used today, including disperse dyes, acid dyes, fluorescent dyes, and many others for a diverse range of applications. 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. Examines dyeing and its application in a number of different industrial sectors Deals with the principles of dyeing and techniques used in the dyeing process, as well as types of dyes currently available Chapters review various dye types right through to modelling and predicting dye properties and the chemistry of dyeing

Medical textiles is one of the major growth areas within technical textiles and the use of textile materials for medical and healthcare products ranges from simple gauze or bandage materials to scaffolds for tissue culturing and a large variety of prostheses for permanent body implants. Recent advances include: The development of polylactic acid and polyglycolic acid fibres as structures for cell growth Temporary bioresorbable textile supports for growing human organic tissue The development of smart fibres – based on naturally-occurring polymers and also on non-animal-based protein fibres and structures – for the treatment of wounds and ulcers These are a few examples of the wide range of textile-based non-implantable and implantable products used in medicine and surgery and covered in this cutting-edge collection of the latest research in this fascinating area.

Medical Devices and Regulations: Standards and Practices will shed light on the importance of regulations and standards among all stakeholders, bioengineering designers, biomaterial scientists and researchers to enable development of future medical devices. Based on the authors' practical experience, this book provides a concise, practical guide on key issues and processes in developing new medical devices to meet international regulatory requirements and standards. Provides readers with a global perspective on medical device regulations Concise and comprehensive information on how to design medical devices to ensure they meet regulations and standards Includes a useful case study demonstrating the design and approval process

Medical Textile Materials provides the latest information on technical textiles and how they have found a wide range of medical applications, from wound dressings and sutures, to implants and tissue scaffolds. This book offers a systematic review of the manufacture, properties, and applications of these technical textiles. After a brief introduction to the human body, the book gives an overview of medical textile products and the processes used to manufacture them. Subsequent chapters cover superabsorbent textiles, functional wound dressings, bandages, sutures, implants, and other important medical textile technologies. Biocompatibility testing and regulatory control are then addressed, and the book finishes with a review of research and development strategy for medical textile products. Provides systematic and comprehensive coverage of the manufacture, properties, and applications of medical textile materials Covers recent developments in medical textiles, including antimicrobial dressings, drug-releasing materials, and superabsorbent textiles Written by a highly knowledgeable author with extensive experience in industry and academia

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

Smart coatings can produce coatings that offer above and beyond the normal functions of a coating, these range from improving the performance of fabrics, producing new forms of materials to providing decoration. This book reviews a variety of topics about textile coatings and laminates and aims to provide a stimulus for developing new and improved textile products. The first part of the book introduces the fundamentals of textile coatings and laminates, addressing general areas such as coating and laminating processes and techniques, as well as base fabrics and

their interaction in coated fabrics. Part two discusses different types of smart and intelligent coatings and laminates for textiles. Topics include microencapsulation technology, conductive coatings, breathable coatings and phase change materials and their application in textiles. With its highly distinguished editor and array of international contributors, Smart textile coatings and laminates is a valuable reference book for chemists, textile technologists, fibre scientists, textile engineers and all those wishing to improve and understand the developments in textile coating and laminating technology. It will also be suitable for researchers in industry or academia. Reviews a number of issues surrounding textile coatings and laminates Discusses the fundamentals of textile coatings and laminates addressing processes and techniques Examines types of smart and intelligent coatings and laminates for textiles, including microencapsulation technology, conductive and breathable coatings

Textiles and Their Use in Microbial Protection: Focus on COVID-19 and Other Viruses provides readers with vital information about disinfection mechanisms used in textile applications in the fight against dangerous microbes and viruses. KEY FEATURES: Introduces the basics of textile materials used for medical applications Features key information on virology, characterization, indication, and passivation of COVID-19 Describes UV, photocatalysis, photooxidation, application of TiO<sub>2</sub>, copper-based viral inhibition, and activated carbon Discusses antiviral finishes for the protection against SARS-CoV-2, particle penetration in dense cotton fabrics under swollen state, and the impact of moisture on face masks and their designs Aimed at textile and materials engineers as well as readers in medical fields, this text offers a comprehensive view of fundamentals and solutions in the use of textiles for microbial protection.

The textile industry is increasingly based on ongoing innovation and development of higher performance products, and the field of functional textiles is no exception. This book explores the development of textiles with a wide range of functions, with the aim of improving the performance of the product in terms of the protection and health benefits that it can offer. The book is split into two parts. Part one focuses on functional textiles for improved performance and protection, with chapters reviewing antistatic, flame retardant and infrared functional textiles, among many others. Chapters in part two examine the uses of functional textiles in a medical context, including superhydrophobic materials, antibacterial textiles and insect-repellent materials. With its distinguished editors and contributions from some of the world's leading authorities, Functional textiles for improved performance, protection and health is invaluable for textile scientists, technologists and engineers as well as those designing and manufacturing textiles. It is also a suitable reference for the academic sector. Examines the use of functional textiles in a medical context, including superhydrophobic materials, antibacterial textiles and insect-repellent materials Topics range from textile chemicals and their interaction with skin to novel pesticide protective clothing Considers anti-ultraviolet protection of clothing and flame retardant textiles

Biomaterials, Medical Devices, and Combination Products is a single-volume guide for those responsible for-or concerned with-developing and ensuring patient safety in the use and manufacture of medical devices. The book provides a clear presentation of the global regulatory requirements and challenges in evaluating the biocompatibility and clinical

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 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

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.

Nonwovens have been one of the fastest growing and most exciting sectors of the textiles market. Such fabrics have a broad spectrum of end uses, ranging from medical products to interior textiles. This book focuses on the variety of technical nonwoven applications available. Opening chapters in part one briefly discuss the fundamental principles of nonwoven fabrics, topics such as the formation of nonwovens and the influence of fibre and fabric properties on nonwoven performance are covered. Part two provides valuable examples of how nonwoven materials can be used in a variety of textile products for apparel, filtration and personal hygiene. With a collection of international contributors, this book is an important reference for professionals involved in the production, technology and use of nonwoven materials, extending from industries such as the medical textile industry to the apparel sector. It will also be suitable for researchers in academia with an interest in nonwoven fabrics. Focuses on the variety of technical nonwoven applications available and provides a comprehensive overview of current developments and likely future trends Reviews the formulation of various types of nonwovens

and examines the influence of fibre and fabric properties on nonwoven performance Provides a broad overview of nonwoven applications in a variety of different areas from apparel to automotive interiors

The textile industry is focused in its search for alternative green fibres with the aim of providing high-quality products which are fully recyclable and biodegradable. Natural textile materials from renewable sources play an increasingly important role in the industry due to their unique properties and functionality over synthetic fibres, as well as their sustainability. Antimicrobial Textiles from Natural Resources is an in-depth guide to the latest methods and applications of natural antimicrobial materials. A broad range of applications are addressed, from common to specialized applications, including many in the biomedical sector. This world-class collection of contributors write from a range of disciplinary backgrounds, providing important insights from textile science and technology, materials science, chemical engineering, and biomedical engineering. Advice and proposed solutions are presented in a rigorous and practical way, drawing on results and case studies obtained from academic and industrial laboratories worldwide. Examines how natural fibres can be used in the place of less renewable or sustainable choices, thus helping designers improve the sustainability of their products Provides unique coverage of the biofunctionality of biopolymers in textiles Explains how antimicrobial properties can reduce odour, extend the life of textiles, and provide numerous medical benefits

Nonwovens are a unique class of textile material formed from fibres that are bonded together through various means to form a coherent structure. Given their rapid industrial development and diverse markets, understanding and developing nonwovens is becoming increasingly important. With its distinguished editor and array of international contributors, the Handbook of nonwovens, offers a comprehensive review of the latest advances in this area and how they can be applied to particular products. Initial chapters review the development of the industry and the different classes of nonwoven material. The book then discusses methods of manufacture such as dry-laid, wet-laid and polymer-laid web formation. Other techniques analysed include mechanical, thermal and chemical bonding as well as chemical and mechanical finishing systems. The book concludes by assessing the characterisation, testing and modelling of nonwoven materials. Handbook of nonwovens is a valuable reference for those involved in the manufacturing and use of nonwoven products in such areas as; transport, medicine, hygiene and various branches of engineering. Provides a comprehensive review of the latest advances in this important area Written by leading experts in the field Discusses different methods of manufacture, bonding and finishing

Advanced Textiles for Wound Care, Second Edition, provides a detailed review of how textiles are incorporated into wound care applications, also explaining the importance and suitability of using textiles on different wound types. It is an interdisciplinary book which directly links textile technology with advances in wound care. The book discusses new developments and techniques related to antimicrobial dressings, the use of biopolymers in infection control management, advanced dressings for managing cavity and cancerous wounds, and the application of nanofibers and novel textile structures in scaffolds, among other new areas. This updated edition also reflects recent changes in regulatory affairs. The book is essential reading for 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, enabling materials scientists and engineers in both academia, and at medical device companies, to stay abreast of new technology. Provides a comprehensive introduction to wound care, from the different types of wound and wound healing mechanisms, to the importance of testing in relation to wound care Analyzes 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

Advances in Technical Nonwovens presents the latest information on the nonwovens industry, a dynamic and fast-growing industry with recent technological innovations that are leading to the development of novel end-use applications. The book reviews key developments in technical nonwoven manufacturing, specialist materials, and applications, with Part One covering important developments in materials and manufacturing technologies, including chapters devoted to fibers for technical nonwovens, the use of green recycled and biopolymer materials, and the application of nanofibres. The testing of nonwoven properties and the specialist area of composite nonwovens are also reviewed, with Part Two offering a detailed and wide-ranging overview of the many applications of technical nonwovens that includes chapters on automotive textiles, filtration, energy applications, geo- and agrotextiles, construction, furnishing, packaging and medical and hygiene products. Provides systematic coverage of trends, developments, and new technology in the field of technical nonwovens Focuses on the needs of the nonwovens industry with a clear emphasis on applied technology Contains contributions from an international team of authors edited by an expert in the field Offers a detailed and wide-ranging overview of the many applications of technical nonwovens that includes chapters on automotive textiles, filtration, energy applications, geo- and agrotextiles, and more

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 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.

This book examines the physical testing of textiles in the form of fibre, yarn and fabric, the emphasis throughout being on standard and reproducible tests. After an introductory explanation of sampling and measurement, the author explores the effects of moisture on textiles, then goes on to discuss fibre dimension, yarn tests for linear density, twist, evenness and hairiness, tensile strength, and dimensional stability and serviceability. Also covered are aspects of comfort and fabric handle, colour fastness and quality assurance. The book's comprehensive coverage of the physical properties of textiles makes it an essential reference for managers in the textiles industry concerned with quality assurance, garment and fabric technologists, and students of textile science and engineering.

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.

Antibiotic Materials in Healthcare provides significant information on antibiotic related issues, accurate solutions, and recent investigative information for health-related applications. In addition, the book addresses the design and development of antibiotics with advanced (physical, chemical and biological) properties, an analysis of materials, in vivo and in vitro applications, and their biomedical applications for healthcare. Provides information on all aspects of antibiotic related issues Offers a balanced synthesis of basic and clinical science for each individual case, presenting clinical courses and detailed microbiological information for each infection Describes the prevalence and incidence of global issues and current therapeutic approaches

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 role of the textile finisher has become increasingly demanding, and now requires a careful balance between the compatibility of different finishing products and treatments and the application processes used to provide textiles with desirable properties. In one comprehensive book, Chemical finishing of textiles details the fundamentals of final chemical finishing, covering the range of effects that result from the interplay between chemical structures and finishing products. After an introductory chapter covering the importance of chemical finishing, the following chapters focus on particular finishing techniques, from softening, easy-care and permanent press, non-slip and soil-release, to flame-retardant, antistatic and antimicrobial. Within each chapter, sections include an introduction, mechanisms, chemistries, applications, evaluations and troubleshooting. The book concludes with a chapter on the future trends in chemical finishing. Chemical finishing of textiles is an essential reference for all academic and industrial textile chemists and for those studying textile education programmes. Discusses the advantages and disadvantages of every important type of chemical finish Combines technical understanding and practical experience concisely Essential tool to assist in the demanding challenge of chemical finishing for textiles

The Handbook of Natural Fibres: Volume Two, Processing and Applications, Second Edition provides detailed coverage of the latest processing techniques and industrial applications of a wide range of natural fibers. Natural fibrous resources, both lignocellulosic and protein ones, are renewable, biodegradable, and nontoxic, making them an important source of sustainable textile solutions. A broad range of sources of natural fibers are covered in the book, including flax, hemp, bast, jute, coir, linen, cotton and silk. This wealth of expert information provides a uniquely detailed reference for the processing, characterization, selection and application of natural fibers. Connects natural fibers to a wide range of industries, including construction, automotive, packaging and medical Helps readers appraise natural fibers on the basis of their mechanical, electrokinetic, antimicrobial or flame retardant qualities Provides a rare glimpse of emerging manufacturing methods for silk

Medical textiles and biomaterials are a significant and increasingly important part of the technical textiles industry. They cover a huge range of applications - from diapers and surgical gowns to substrates for electronic sensing of vital life signs, external use as wound care, and more. This book addresses these applications and others in a collection of papers edited by world renown experts. Chapters cover all aspects of design and production of healthcare and hygiene products, infection control and barrier material, pressure garments and bandaging, implantable devices for biodegradable post-operative support systems, replacement of body parts through tissue engineering, smart technologies, and more.

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

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