

Handbook Of Textile Fibres Woodhead Publishing Series In Textiles

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Fibre Structure Siba Prasad Mishra 2016-07-06 Fibre Structure states that each and every fibre from their manufacturing (man-made fibres) or during development (natural fibres) creates and develops its own and specialized structure. It might be the chemical structure, crystalline structure, amorphous structure and/or morphology. This structure can be modified during processing. The structure equally influences the processing conditions as well as the properties of the fibre. With this background, the present book deals with different fibres and their structures. Different aspects of structure are dealt separately in a concise and compact manner. This will serve as a reference for researchers, technologists as well as professionals as a reference book to know about the structure of different fibres and their measurement.

Handbook of Natural Fibres Ryszard M Kozłowski 2012-10-19 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

Electronic Textiles Tilak Dias 2015-04-28 The integration of electronics into textiles and clothing has opened up an array of functions beyond those of conventional textiles. These novel materials are beginning to find applications in commercial products, in fields such as communication, healthcare, protection and wearable technology. *Electronic Textiles: Smart Fabrics and Wearable Technology* opens with an initiation to the area from the editor, Tilak Dias. Part One introduces conductive fibres, carbon nano-tubes and polymer yarns. Part Two discusses techniques for integrating textiles and electronics, including the design of textile-based sensors and actuators, and energy harvesting methods. Finally, Part Three covers a range of electronic textile applications, from wearable electronics to technical textiles featuring expert chapters on embroidered antennas for communication systems and wearable sensors for athletes. Comprehensive overview of conductive fibres, yarns and fabrics for electronic textiles Expert analysis of textile-based sensors design, integration of micro-electronics with yarns and photovoltaic energy harvesting for intelligent textiles Detailed coverage of applications in electronic textiles, including wearable sensors for athletes, embroidered antennas for communication and electronic textiles for military personnel

Soft Computing in Textile Engineering Abhijit Majumdar 2010-11-29 Soft computing refers to a collection of computational techniques which study, model and analyse complex phenomena. As many textile engineering problems are inherently complex in nature, soft computing techniques have often provided optimum solutions to these cases. Although soft computing has several facets, it mainly revolves around three techniques; artificial neural networks, fuzzy logic and genetic algorithms. The book is divided into five parts, covering the entire process of textile production, from fibre manufacture to garment engineering. These include soft computing techniques in yarn manufacture and modelling, fabric and garment manufacture, textile properties and applications and textile quality evaluation. Covers the entire process of textile production, from fibre manufacture to garment engineering including artificial neural networks, fuzzy logic and genetic algorithms Examines soft computing techniques in yarn manufacture and modelling, fabric and garment manufacture Specifically reviews soft computing in relation to textile properties and applications featuring garment modelling and sewing machines

Multidisciplinary Know-How for Smart-Textiles Developers Tünde Kirstein 2013-04-04 Smart-textiles developers draw on diverse fields of knowledge to produce unique materials with enhanced properties and vast potential. Several disciplines outside the traditional textile area are involved in the construction of these smart textiles, and each individual field has its own language, specific terms and approaches. *Multidisciplinary know-how for smart-textiles developers* provides a filtered knowledge of these areas of expertise, explaining key expressions and demonstrating their relevance to the smart-textiles field. Following an introduction to the new enabling technologies, commercialisation and market trends that make up the future of smart-textiles development, part one reviews materials employed in the production of smart textiles. Types and processing of electro-conductive and semiconducting materials, optical fibres for smart photonic textiles, conductive nanofibres and nanocoatings, polymer-based resistive sensors, and soft capacitance fibres for touch-sensitive smart textiles are all discussed. Part two then investigates such technologies as the embedding of electronic functions, the integration of thin-film electronics, and the development of organic and large-area electronic (OLAE) technologies for smart textiles. Joining technologies are also discussed, alongside kinetic, thermoelectric and solar energy harvesting technologies, and signal processing technologies for activity-aware smart textiles. Finally, product development and applications are the focus of part three, which investigates strategies for technology management, innovation and improved sustainability, before the book concludes by exploring medical, automotive and architectural applications of smart textiles. With its distinguished editor and international team of expert contributors, *Multidisciplinary know-how for smart-textiles developers* is a key tool for readers working in industries including design, fashion, textiles, through to electronics, computing and material science. It also provides a useful guide to the subject for academics working across a wide range of fields. Reviews materials used in the production of smart textiles Examines the technologies used in smart textiles, such as optical fibres and polymer based resistive sensors Investigates strategies for technology management, innovation and improved development

Advances in Military Textiles and Personal Equipment E Sparks 2012-07-13 The right clothing and equipment is of vital importance to the survival and effectiveness of military personnel. Advances in military textiles and personal equipment summarises key research on the design, manufacture and applications of military textiles. Beginning with an overview of design issues, part one explores anthropometric methods, psychological, colour and camouflage issues related to the successful design of military textiles. Materials and design issues in military helmets, footwear and hand wear are also reviewed. Part two goes on to consider applications of particular types of military clothing and equipment, including optimisation of body armour design, high performance ballistic protection using polymer nanocomposite technology as well as advances in materials and modelling of chemical, biological, radiological and nuclear protective clothing. Finally, Advances in military textiles and personal equipment looks specifically at designing load carriage and advanced hydration systems for military personnel. With its distinguished editor and international team of expert contributors, Advances in military textiles and personal equipment is an invaluable resource for all those working in the design, manufacture and production of military clothing and equipment, as well as for the defence industry itself. Summarises key research on the design, manufacture and applications of military textiles Begins with an overview of the issues related to the successful design of military textiles and reviews materials and design issues in military helmets, footwear and hand wear Sections consider applications of particular types of military clothing and equipment, including optimisation of body armour design, and discusses advances in materials and modelling of chemical, biological, radiological and nuclear protective clothing

Handbook of Technical Textiles A. Richard Horrocks 2000-10-31 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

Woven Terry Fabrics Jitendra Pratap Singh 2016-08-19 Woven Terry Fabrics: Manufacturing and Quality Management encompasses all aspects of terry fabric production, from raw material choice and weave design to technological developments, dyeing, and quality evaluation. Nothing feels more luxurious and comforting than wrapping myself or one of my children in a thick, soft, fluffy towel after bathing says Lindsey, a healthcare administrator and mother of two children in Boston. Consumers pay an average 15 USD for a bath towel. So, it has become a luxury item today. To meet the demand of growing population, the terry fabric industry has grown to a large extent. Lots of technological developments have taken place in this field. Provides an excellent overview of the best production methods, quality control systems, latest research, and process parameters Offers in-depth information on all aspects of production Covers comprehensively, for the first time, the whole process from raw material through to finished fabric Includes coverage of technological developments

Green Composites for Automotive Applications Georgios Koronis 2018-11-10 Green Composites for Automotive Applications presents cutting-edge, comprehensive reviews on the industrial applications of green composites. The book provides an elaborative assessment of both academic and industrial research on eco-design, durability issues, environmental performance, and future trends. Particular emphasis is placed on the processing and characterization of green composites, specific types of materials, such as thermoset and thermoplastic, nanocomposites, sandwich, and polymer biofoams. Additional sections cover lifecycle and risk analysis. As such, this book is an essential reference resource for R&D specialists working in materials science, automotive, chemical, and environmental engineering, as well as R&D managers in industry. Contains contributions from leading experts in the field Covers experimental, analytical and numerical analysis Deals with most important automotive aspects Provides a special section dedicated to lifecycle assessment

Handbook of Textile Fibres J Gordon Cook 1984-01-01 A comprehensive survey of the natural fibres animal, vegetable and mineral on which we depended for our textiles until comparatively recently.

Process Control in Textile Manufacturing Abhijit Majumdar 2012-11-27 Complex raw materials and manufacturing processes mean the textile industry is particularly dependent on good process control to produce high and consistent product quality. Monitoring and controlling process variables during the textile manufacturing process also minimises waste, costs and environmental impact. Process control in textile manufacturing provides an important overview of the fundamentals and applications of process control methods. Part one introduces key issues associated with process control and principles of control systems in textile manufacturing. Testing and statistical quality control are also discussed before part two goes on to consider control in fibre production and yarn manufacture. Chapters review process and quality control in natural and synthetic textile fibre cultivation, blowroom, carding, drawing and combing. Process control in ring and rotor spinning and maintenance of yarn spinning machines are also discussed. Finally part three explores process control in the manufacture of knitted, woven, nonwoven textiles and colouration and finishing, with a final discussion of process control in apparel manufacturing. With its distinguished editors and international team of expert contributors, Process control in textile manufacturing is an essential guide for textile engineers and manufacturers involved in the processing of textiles, as well as academic researchers in this field. Provides an important overview of the fundamentals and applications of process control methods Discusses key issues associated with process control and principles of control systems in textile manufacturing, before addressing testing and statistical quality control Explores process control in the manufacture of knitted, woven, nonwoven textiles and colouration and finishing, with a discussion on process control in apparel manufacturing

Handbook of Fire Resistant Textiles F. Selcen Kilinc 2013-05-15 Given its importance to consumer safety, fire resistant textiles are one of the fastest growing sectors in industrial textiles. Handbook of fire resistant textiles provides a comprehensive review of the considerable advances that have occurred in the field of fire resistant textiles in recent years. It draws together scientific and technical expertise from around the world to produce an important source of current knowledge on fire resistant textiles and their use for protection in hostile environments. Part one provides an overview of fire resistant textiles. Chapters discuss burning and combustion mechanisms of textile fibers, chemical modification of natural and synthetic fibers to improve flame retardancy, multi-component flame resistant coating techniques for textiles, care and maintenance of fire resistant textiles, along with the safety, health and environmental aspects of flame retardants. Part two covers different types of fire resistant fibers and fabrics, including flame retardant cotton, wool, ceramic fibers and blends, composites and nonwovens. Part three reviews standards, regulations, and characterization of fire resistant textiles. Part four includes case studies of major applications of fire resistant textiles. The Handbook of fire resistant textiles is an invaluable resource for a broad spectrum of professionals in the textiles and apparel industries, including textile and garment manufacturers, engineers, researchers, designers, developers and buyers. Provides a comprehensive review of the considerable advances that have occurred in the field of fire resistant textiles in recent years Discusses burning and combustion mechanisms of textile fibers and chemical modification of natural and synthetic fibers to improve flame retardancy Covers different types of fire resistant fibers and fabrics, including flame retardant cotton, wool, ceramic fibers and blends, composites and nonwovens

Handbook of Natural Fibres Ryszard M. Kozlowski 2012 As a consequence of the growing awareness of environmental issues, the use of natural fibres is increasing. This 2 volume collection offers the reader an increased understanding of the properties of a wide range of natural fibres, how to improve fibres as well as the types of products they can be applied to. Volume 1 opens

with a discussion of the main types of natural fibres and their properties. Part 2 covers aspects of how to improve natural fibres through breeding and cultivation. This book is an essential text for professionals and academics within the agricultural and horticultural fields, as well as those in the textile industry.

New Product Development in Textiles L Horne 2011-11-24 An increasingly important feature across the technical textile industry is to produce textiles faster and to have more effective new product development (NPD). New product development in textiles: Innovation and production not only provides a fascinating overview of how products are launched, but is also a source of practical guidance for developing textile products successfully. Part one provides a general overview of innovation and textile product development that introduces the reader to the principles of developing and defining new products. Part two goes on to discuss a collection of international studies from across the textile industry. Chapters describe actual new product development projects, identifying the problems that were faced and what can be learnt from these projects, such as customer co-creation and methods for reducing the risk in NPD. Topics range from technical textiles and apparel to the end uses of textiles used within the automotive and packaging industries. With its distinguished editor and international team of expert contributors New product development in textiles: Innovation and production is an essential guide for academics and textile development professionals worldwide, in sectors ranging from design, production and marketing through to management. Provides a fascinating overview of how products are launched A source of practical guidance for developing textile products successfully Covers topics from technical textiles and apparel to the end uses of textiles used within the automotive and packaging industries

Advances in Textile Biotechnology V Nierstrasz 2010-09-01 Biotechnology has impacted the textiles industry through the development of more efficient and environmentally friendly manufacturing processes, as well as enabling the design of improved textile materials. This book will provide a thorough overview of current and future focuses of biotechnology in the fibre and textile industry. Part one of the book opens with a review of technologies involved in textile biotechnology. Chapters explore the design and engineering of novel enzymes for textile applications and developments in processes and equipment for enzymatic textile treatments. Part two investigates the modification of particular fibres through the use of biotechnology. Key topics include the treatment of wool and silk fibres and the enzymatic treatment versus conventional processing of cotton. With expert contributions from leaders in their fields, *Advances in textile biotechnology* is a comprehensive guide for those in the textile and fibre industry, as well as experts in the biology, chemical and environmental engineering industries. Provides a thorough overview of current and future focuses of biotechnology in the fibre and textile industry Explores production of enzymes, searching for efficient production systems and also documents the advantages and limitations associated with the process Reviews the debate surrounding enzymatic treatment versus conventional processing of cotton along with engineering of plants for improved fibre qualities

Specialist Yarn and Fabric Structures R H Gong 2011-09-14 Specialist yarn, woven and fabric structures are key elements in the manufacturing process of many different types of textiles with a variety of applications. This book explores a number of different specialist structures, discussing the developments in technology and manufacturing processes that have taken place in recent years. With its distinguished editor and international team of contributors, *Specialist yarn, woven and fabric structures* is essential reading for all textile researchers, technicians, engineers and technologies, and will also be suitable for academic purposes. Looks at developments that have occurred in the manufacturing of specialist yarn, weave and fabric structures Discusses different types of specialist yarn structures, such as hybrid, fancy and compound yarns Offers insight into multicomponent fabric structures such as 3D nonwovens, flocked, knotted and jacquard woven fabrics

Functional Textiles for Improved Performance, Protection and Health N Pan 2011-06-21 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

Odour in Textiles G. Thilagavathi 2022-03-18 *Odour in Textiles: Generation and Control* presents the essential science and mechanisms behind the formation of odours in textiles. It discusses consumer perception of odour in clothing, the mechanism of odour formation in the skin, and the role of textile fibres and structures in odour formation. It also discusses odour controls and testing methods available for measurement of odours in textiles. Features: • Fills a gap in the literature as the first book to focus on textile and odour interaction • Discusses microbiological aspects of odour formation in simple terms • Details the role of textile fibres and structures on odour formation • Describes various testing methods, standards, and regulatory norms for odour analysis This book will appeal to a broad audience, including industry professionals in the textiles industry, hygiene and health care, the chemical and finishing industry, and odour measurement and testing. It will also interest advanced students and research scholars studying textile engineering, clothing science, and fashion design.

Electrospun Nanofibers Mehdi Afshari 2016-09-13 *Electrospun Nanofibers* covers advances in the electrospinning process including characterization, testing and modeling of electrospun nanofibers, and electrospinning for particular fiber types and applications. Electrospun Nanofibers offers systematic and comprehensive coverage for academic researchers, industry professionals, and postgraduate students working in the field of fiber science. Electrospinning is the most commercially successful process for the production of nanofibers and rising demand is driving research and development in this field. Rapid progress is being made both in terms of the electrospinning process and in the production of nanofibers with superior chemical and physical properties. Electrospinning is becoming more efficient and more specialized in order to produce particular fiber types such as bicomponent and composite fibers, patterned and 3D nanofibers, carbon nanofibers and nanotubes, and nanofibers derived from chitosan. Provides systematic and comprehensive coverage of the manufacture, properties, and applications of nanofibers Covers recent developments in nanofibers materials including electrospinning of bicomponent, chitosan, carbon, and conductive fibers Brings together expertise from academia and industry to provide comprehensive, up-to-date information on nanofiber research and development Offers systematic and comprehensive coverage for academic researchers, industry professionals, and postgraduate students working in the field of fiber science

Handbook of Materials Failure Analysis Abdel Salam Hamdy Makhlouf 2019-10-22 *Handbook of Materials Failure Analysis: With Case Studies from the Electronics Industries* examines the reasons materials fail in certain situations, including material defects and mechanical failure as a result of various causes. The book begins with a general overview of materials failure analysis and its importance. It then proceeds to discussions on the types of failure analysis, specific tools and techniques, and an analysis of materials failure from various causes. As failure can occur for several reasons, including materials defects-related failure, materials design-related failure, or corrosion-related failures, the topics covered in this comprehensive source

are an important tool for practitioners. Provides the most up-to-date and balanced coverage of failure analysis, combining foundational knowledge and current research on the latest developments and innovations in the field Offers an ideal accompaniment for those interested in materials forensic investigation, failure of materials, static failure analysis, dynamic failure analysis, and fatigue life prediction Presents compelling new case studies from key industries to demonstrate concepts

Medical and Healthcare Textiles Subhash C. Anand 2010-07-15 Medical textiles remain one of the most dynamic areas of research in textiles. Medical and healthcare textiles is the fourth in a series of conferences held at the University of Bolton. Like its predecessors, it has attracted papers from some of the leading international centres of expertise in the field.

Contributors cover a range of topics including emerging textile-based biomaterials, hygienic textiles, the use of textiles in infection control and as barrier materials, bandaging and pressure garments for managing chronic infections such as ulcers, the role of textiles in the management of burns and wounds, textile-based implantable devices such as tissue scaffolds and sutures, and intelligent textiles. Provides a comprehensive overview of medical textiles from the risk of infection control and barrier materials through to directives, regulations and standards shaping the medical device industry Explores developments in healthcare and hygiene products, including odor and pH control as well as protective and disposable fabrics Reviews development in the area of implantable materials featuring vascular grafts, knee implants and scaffolds

Biocomposites for High-Performance Applications Dipa Ray 2017-05-15 Biocomposites for High-Performance Applications: Current Barriers and Future Needs Towards Industrial Development focuses on future research directions that will make biocomposites a successful player in the field of high-strength structural applications. With contributions from eminent academic researchers and industrial experts who have first-hand experience on the advantages/disadvantages of biocomposites in their daily lives, the book examines the industrial development of biocomposite products, identifying the current barriers and their future industrial needs Topics covered include: recent research activities from academia in the biocomposite research field, valuable thoughts and insights from biocomposite manufacturing industries, the strength and weaknesses of biocomposite products, and the practical issues that need to be addressed to reach the next level. Highlights the practical issues involved in biocomposites research Contains contributions from eminent academic researchers and industrial experts Discusses recent research activities from academia in the biocomposite research field, along with valuable thoughts and insights from biocomposite manufacturing industries

Handbook of Medical Textiles V Bartels 2011-08-19 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

Technical Textile Yarns R Alagirusamy 2010-06-30 Technical yarns are produced for the manufacture of technical textiles. As the range of technical textiles is rapidly increasing, an understanding of the range of yarns available and their properties is important, in order to be able to meet the requirements of the intended end-use. Part one of the book begins by reviewing the advances in yarn production. Topics examine the advances in textile yarn spinning, modification of textile yarn structures, yarn hairiness and its reduction and coatings for technical textile yarns. The second group of chapters describes the range of technical yarns, such as electro-conductive textile yarns, novel yarns and plasma treated yarns for biomedical applications. Technical sewing threads and biodegradable textile yarns are also discussed. Technical textile yarns provides essential reading for yarn and fabric manufacturers, textile scientists, technicians, engineers and technologists, covering a wide range of areas within textile applications. This book will also be an important information source for academics and students. Provides a comprehensive overview of the variety of technical textile yarns available along with individual characteristics and production methods Documents advances in textile yarn spinning and texturing featuring compact, rotor and friction spinning Assesses different types of technical yarns including plasma-treated yarns for biomedical applications and hybrid yarns for thermoplastic composites

Smart Textile Coatings and Laminates William C Smith 2010-01-28 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

Activated Carbon Fiber and Textiles Jonathan Y Chen 2016-08-05 Activated Carbon Fiber and Textiles provides systematic coverage of the fundamentals, properties, and current and emerging applications of carbon fiber textiles in a single volume, providing industry professionals and academics working in the field with a broader understanding of these materials. Part I discusses carbon fiber principles and production, including precursors and pyrolysis, carbon fiber spinning, and carbonization and activation. Part II provides more detailed analysis of the key properties of carbon fiber textiles, including their thermal, acoustic, electrical, adsorption, and mechanical behaviors. The final section covers applications of carbon fiber such as filtration, energy protection, and energy and gas storage. Features input from an editor who is an expert in his field: Professor Jonathan Chen has a wealth of experience in the area of activated carbon fiber materials Provides systematic and comprehensive coverage of the key aspects of activated carbon fiber textiles, from their principles, processing, and properties to their industrial applications Offers up-to-date coverage of new technology for the fiber and textiles industries Covers applications such as filtration, energy protection, and energy and gas storage

Handbook of Natural Fibres Ryszard M. Kozlowski 2012 As a consequence of the growing awareness of environmental issues, the use of natural fibres is increasing. This 2 volume collection offers the reader an increased understanding of the properties

of a wide range of natural fibres, how to improve fibres as well as the types of products they can be applied to. Volume 2 includes processing techniques to improve natural fibres. Subsequent chapters provide examples of how natural fibres can be used in a variety of applications extending from the automotive sector through to the textile industry. This book is an essential text for professionals and academics within the agricultural and horticultural fields, as well as those in the textile industry.

Advances in Yarn Spinning Technology C A Lawrence 2010-09-27 This book provides an invaluable single source of information on the advances in yarn spinning technologies. Advanced spinning systems are described and comparisons are made of the properties of the yarns produced, and resultant finished products, with those from conventional systems. Part one provides an introduction to yarn fibre spinning and structure. Chapters discuss the principles of ring spinning and open-end spinning of yarns. Yarn structure and properties from different spinning techniques and yarn structural requirements for knitted and woven fabrics are also examined. Part two covers advances in particular yarn spinning technologies. Topics range from siro spinning to compact spinning technology and air-jet spinning. Final chapters explore how to minimise fibre damage which occur during spinning and the use of spin finishes for textiles. With its distinguished editor and array of international contributors, *Advances in yarn spinning technology* is an important text for spinners, yarn manufacturers and fabric producers, as well as researchers, technicians, engineers and technologists in this sector of the textile industry. Documents advances in spinning technologies and presents comparisons between systems Assesses particular textile spinning technologies with specific chapters focusing on siro, compact, rotor, friction and air-jet spinning Reviews measures to minimise fibre damage caused by spinning are investigated with specific relevance to rotor and friction spinning

Biotextiles as Medical Implants M W King 2013-10-31 Textiles play a vital role in the manufacture of various medical devices, including the replacement of diseased, injured or non-functioning organs within the body. *Biotextiles as medical implants* provides an invaluable single source of information on the main types of textile materials and products used for medical implants. The first part of the book focuses on polymers, fibers and textile technologies, and these chapters discuss the manufacture, sterilization, properties and types of biotextiles used for medical applications, including nanofibers, resorbable polymers and shaped biotextiles. The chapters in part two provide a comprehensive discussion of a range of different clinical applications of biotextiles, including surgical sutures, arterial prostheses, stent grafts, percutaneous heart valves and drug delivery systems. This book provides a concise review of the technologies, properties and types of biotextiles used as medical devices. In addition, it addresses the biological dimension of how to design devices for different clinical applications, providing an invaluable reference for biomedical engineers of medical textiles, quality control and risk assessment specialists, as well as managers of regulatory affairs. The subject matter will also be of interest to professionals within the healthcare system including surgeons, nurses, therapists, sourcing and purchasing agents, researchers and students in different disciplines. Provides an invaluable single source of information on the main types of textile materials and products used for medical implants Addresses the technologies used and discusses the manufacture, properties and types of biotextiles Examines applications of biotextiles as medical implants, including drug delivery systems and stent grafts and percutaneous heart valves

Handbook of Textile and Industrial Dyeing M Clark 2011-10-25 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

Structure and Properties of High-Performance Fibers Gajanan Bhat 2016-08-21 *Structure and Properties of High-Performance Fibers* explores the relationship between the structure and properties of a wide range of high-performance fibers. Part I covers high-performance inorganic fibers, including glasses and ceramics, plus carbon fibers of various types. In Part II, high-performance synthetic polymer fibers are discussed, while Part III reviews those natural fibers that can be used to create advanced textiles. The high-performance properties of these fibers are related to their chemistry and morphology, as well as the ways in which they are synthesized and spun. High-performance fibers form the basis of textile materials with applications in protection, medicine, and composite reinforcement. Fibers are selected for these technical applications due to their advanced physical, mechanical, and chemical properties. Offers up-to-date coverage of new and advanced materials for the fiber and textile industries Reviews structure-property relationships of high-performance inorganic, carbon, synthetic polymer, and natural fibers Includes contributions from an international team of authors edited by an expert in the field Reviews those natural fibers that can be used to create advanced textiles

Advances in Smart Medical Textiles Lieva van Langenhove 2015-12-02 *Advances in Smart Medical Textiles: Treatments and Health Monitoring* provides comprehensive coverage on smart textiles, the emerging and important materials that are finding applications in the fields of medicine and healthcare. The book explores the range of smart textiles available for use in medicine and the transfer of these innovative technologies into medical applications. Early chapters survey various smart fibers, fabrics, and finishes, while subsequent sections focus on the role of smart textiles in treating patients, from wound care to rehabilitation, and the use of textile-based sensors and wearable electronics for monitoring patient health. Provides a comprehensive review of the materials used in smart medical textiles Analyzes the application of these textiles in medical treatments and sensors for health monitoring Covers the range of international research in the field and keeps focus on the needs of the textile industry

Handbook of Natural Fibres: Types, Properties and Factors Affecting Breeding and Cultivation Ryszard M. Koz Owski 2017-11-13 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

Textile Design A Briggs-Goode 2011-04-15 Textile design is a complex field of practice which operates in a competitive, global industry. Designers need to take into account not only the design but also the manufacture, technological development and application of the final product. Textile design provides a broad overview of the fundamentals of and advances in textile design, as well as practical case studies of relevant industries. Part one covers the principles of fabric construction as applied to textile design, with chapters on fundamental principles, woven and knitted textile design. Part two discusses surface approaches to textile design, with chapters on such topics as surface design of textiles, printed and embroidered textile design, dyeing and finishing and the use of colour in textile design. Finally, part three focuses on the applications and advances in textile design, including chapters covering colour trend forecasting, sustainable textile design, fashion, interior and 2D to 3D design considerations and new developments in technical and future textiles. With its distinguished editors and international team of contributors, Textile design is an essential reference for design professionals in the textile and fashion industries, as well as those who specialise in interior textiles and academics with a research interest in the area. A broad overview of textile design covering fundamental topics such as principles of fibres and fabrics, knitted fabric design, through to the dyeing, finishing and printing aspects of textile design Explores the design aspects of technical textiles and future textiles An invaluable source of information on textile design and suitable for design professionals in the textile and fashion industries, as well as those in academia

Handbook of Textile Fibres J Gordon Cook 1984-01-15 This book offers a comprehensive survey of the man-made fibres, including rayons and other natural polymer fibres, and the true synthetic fibres which have made such rapid progress in modern times.

Active Coatings for Smart Textiles Jinlian Hu 2016-04-06 Active Coatings for Smart Textiles presents the latest information on active materials and their application to textiles in the form of coatings and finishes for the purpose of improving performance and creating active functional effects. This important book provides detailed coverage of smart coating types, processes, and applications. After an introduction to the topic, Part One introduces various types of smart and active coatings, including memory polymer coatings, durable and self-cleaning coatings, and breathable coatings. Technologies and related processes for the application of coatings to textiles is the focus of Part Two, with chapters devoted to microencapsulation technology, plasma surface treatments, and nanotechnology-based treatments. The book ends with a section on applications of smart textiles with responsive coatings, which are increasingly finding commercial niches in sportswear, protective clothing, medical textiles, and architecture. Introduces various types of smart and active coatings for textiles Covers technologies and application processes for the coating and finishing of textiles Reviews commercial applications of such coatings, including in sportswear, protective clothing, medical textiles and architecture

Handbook of Textile and Industrial Dyeing M Clark 2011-10-25 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

Fundamentals of Natural Fibres and Textiles Md. Ibrahim H. Mondal 2021-03-20 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. Fundamentals of Natural Fibres and Textiles covers all the fundamental and basic information about natural fibres and textiles. Many different fibres are covered from their origin, through processing, properties, and applications. The latest methods for characterisation and testing of natural fibres are all addressed with reference to cutting-edge industry trends. This uniquely comprehensive approach to the topic provides the ideal entry point to natural fibres for textile and clothing scientists, engineers, designers, researchers, students, and manufacturers of such products. Explains the characteristics of natural fibres to show how they compare to synthetic fibres for a range of purposes Provides an overview of the environmental impact of the processing of fibres and how this creates industrial waste Covers a wide range of natural fibres in detail, from traditional silk and wool to electrospun biopolymers Provides the latest updates on technologies for designing natural fibres and applying them to the development of new products

Functional Nanofibers and their Applications Q Wei 2012-05-24 Nanofibers are a flexible material with a huge range of potential applications in such areas as technical textiles. Functional nanofibers and their applications summarises key trends in the processing and applications of these exciting materials. Part one focuses on the types and processing of nanofibers. Beginning with an overview of the principles and techniques involved in their production, it goes on to review core-shell, aligned, porous and gradient nanofibers. The processing and application of composite functional nanofibers, carbon and polymer nanofiber reinforcements in polymer matrix composites, and inorganic functional nanofibers are then explored in detail, before part one concludes with a consideration of surface functionalization. A wide variety of functional nanofiber applications are then reviewed in part two. Following consideration of their use in filtration, drug delivery and tissue engineering applications, the role of functional nanofibers in lithium-ion batteries, sensor applications, protective clothing, food processing and water purification is explored. Discussion of their use in sound absorption, electromagnetic wave attenuation and biomedical and microelectronic applications follows, before a final discussion of future trends. With its distinguished editor and international team of expert contributors, Functional nanofibers and applications is a key text for all those working in the fields of technical textiles, as well as areas using nanofibers such as composites, biomaterials and microelectronics. Summarises key trends in the processing and applications of functional nanofibres in areas such as technical textiles Provides an overview of the principles and techniques involved in the production of nanofibres and reviews core-shell, aligned, porous and gradient nanofibers Considers the use of nanofibres in filtration, drug delivery and tissue engineering applications and the role of functional nanofibres in lithium-ion batteries, sensor applications, protective clothing, food processing and water purification

High Performance Textiles and Their Applications C. Lawrence 2014-08-21 High performance textiles represent one of the most dynamic sectors of the international textile and clothing industry. With contributions from leading experts in the field, this book provides an important overview of key developments in the field. Chapters cover the use of high performance textiles

in such areas as protective clothing, heat and fire protection, medicine, civil engineering and the energy sector. Reviews various approaches to modelling the geometry, structure and mechanical and physical properties of advanced textile materials Evaluates novel surface treatments involving plasma and laser technologies for a range of high performance textiles Focuses on textiles for specific purposes, with chapters devoted to textiles for heat and fire protection, wound care, industrial filtration, geotextiles, civil engineering and sustainable energy applications

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publishing-series-in-textiles*

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