Engineering Textiles Integrating The Design And Man

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LEWIS CHASE

Wool Fiber Reinforced Polymer Composites Elsevier
Sustainable Technologies for Textile Wastewater Treatments takes on this complex and environmentally crucial issue by providing comprehensive coverage on new technologies and practices. Sections provide technical detail and instruction on cutting-edge technologies, including innovative industrial uses of nanotechnology and waste biomass. In addition, case studies are provided on different textile wastewater treatment plants, hence showing their full practical context. Specific areas of discussion include zero liquid discharge, nanomaterials, adsorption, and advanced oxidization processes (AOP). Appropriate case studies from textile wastewater treatment plants are included to help illustrate key points. Other sections cover the cost of these methods, before highlighting effective low-cost options. This book will be of use to researchers with an interest in textile sustainability or wastewater treatment, although sustainability managers or lifecycle assessment professionals in the textiles and fashion sector will find the book very impactful to their work. Provides detailed, technical information on wastewater remediation methods, including zero liquid discharge, nanomaterials, adsorption and advanced oxidization processes (AOP) Includes case studies from textile wastewater treatment plants Outlines the cost of these methods and highlights effective, low-cost options
Engineering Textiles Woodhead Publishing
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

Process Control in Textile Manufacturing Woodhead Publishing

The second edition of Handbook of Technical Textiles, Volume 1: Technical Textile Processes provides readers with a comprehensive understanding of the latest advancements in technical textiles. With revised and updated coverage, including several new chapters, this volume reviews recent developments and technologies in the field, beginning with an overview of the technical textiles industry that includes coverage of technical fibers and yarns, weaving, spinning, knitting, and nonwoven production. Subsequent sections include discussions on finishing, coating, and the coloration of technical textiles. Provides a comprehensive handbook for all aspects of technical textiles Presents updated, detailed coverage of processes, fabric structure, and applications An ideal resource for those interested in high-performance textiles, textile processes, textile processing, and textile applications Contains contributions from many of the original, recognized experts from the first edition who update their respective chapters

Surface Modification of Textiles Woodhead Publishing

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

Mechatronic Design in Textile Engineering Elsevier

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

High Performance Technical Textiles Elsevier

Advances in Healthcare and Protective Textiles addresses technologies that have had a major impact in industry for decades, but which are currently attracting unprecedented attention due to their applications in the fight against the Coronavirus epidemic. Recent advances in textile technology have opened new possibilities for textile researchers and scientists in antiviral textiles, flame-retardant textiles, antimicrobial textiles, insect repellent textiles, breathable medical textiles, aroma-protective textiles, high tech-textiles, smart textiles, nano textiles, and more. This book provides systematic and comprehensive coverage of cutting-edge research and developments on material design, methodologies, characterizations, processes, properties and applications of medical healthcare and protective textiles. In addition, sections pay special attention to advanced fabrication methodologies and materials used in apparel engineering. Provides a thorough review of recent advances in personal protective equipment (PPE) design and manufacture in response to the requirements of the fight against Coronavirus Gives advice on improving sustainability through the use of reusable and recyclable medical textiles Explores innovative materials like biopolymers and their applications in medical textiles

High Performance Textiles and Their Applications CRC Press

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

Sustainable Technologies for Textile Wastewater Treatments Springer

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

Advances in Modeling and Simulation in Textile Engineering Elsevier

Advances in Modeling and Simulation in Textile Engineering: New Concepts, Methods, and Applications explains the advanced principles and techniques that can be used to solve textile engineering problems using numerical modeling and simulation. The book draws on innovative research and industry practice to explain methods for the modeling of all of these processes, helping readers apply computational power to more areas of textile engineering. Experimental results are presented and linked closely to processes and methods of implementation. Diverse concepts such as heat transfer, fluid dynamics, three-

dimensional motion, and multi-phase flow are addressed. Finally, tools, theoretical principles, and numerical models are extensively covered. Textile engineering involves complex processes which are not easily expressed numerically or simulated, such as fiber motion simulation, yarn to fiber formation, melt spinning technology, optimization of yarn production, textile machinery design and optimization, and modeling of textile/fabric reinforcements. Provides new approaches and techniques to simulate a wide range of textile processes from geometry to manufacturing Includes coverage of detailed mathematical methods for textiles, including neural networks, genetic algorithms, and the finite element method Addresses modeling techniques for many different phenomena, including heat transfer, fluid dynamics and multi-phase flow

Advances in 3D Textiles Elsevier

Functional and Technical Textiles covers recent advances in technology, properties and performance of high-tech yarns and structures and their applications in different sectors of the smart and technical textile fields. Applications, including many that go beyond apparel, where high tech and functional structural fabrics are used as reinforcements for composites, medical implants and geotextiles are covered. The book also describes the latest technologies for producing versatile products for these diversified applications. Finally, the book makes a survey of the latest research in technical textiles and its various structures, properties and applications in composites, medical textiles, geotextiles, industrial textiles, and more. Draws on the latest industry innovations for the production of new smart and technical textile functionality Explains best practice for testing and for the quality control of technical textiles Provides definitions of key terminologies used in the field and explains the differences between smart and technical textiles

Natural Dyes for Sustainable Textiles CRC Press

The era of mass manufacturing of clothing and other textile products is coming to an end; what is emerging is a post-industrial production system that is able to achieve the goal of mass-customised, low volume production, where the conventional borders between product design, production and user are beginning to merge. To continue developing knowledge on how to design better products and services, we need to design better clothing manufacturing processes grounded in science, technology, and management to help the clothing industry to compete more effectively. Design of clothing manufacturing processes reviews key issues in the design of more rapid, integrated and flexible clothing manufacturing processes. The eight chapters of the book provide a detailed coverage of the design of clothing manufacturing processes using a systematic approach to planning, scheduling and control. The book starts with an overview of standardised clothing classification systems and terminologies for individual clothing types. Chapter 2 explores the development of standardised sizing systems. Chapter 3 reviews the key issues in the development of a garment collection. Chapters 4 to 7 discuss particular aspects of clothing production, ranging from planning and organization to monitoring and control. Finally, chapter 8 provides an overview of

common quality requirements for clothing textile materials. Design of clothing manufacturing processes is intended for R&D managers, researchers, technologists and designers throughout the clothing industry, as well as academic researchers in the field of clothing design, engineering and other aspects of clothing production. Considers in detail the design of sizing and classification systems Discusses the planning required in all aspects of clothing production from design and pattern making to manufacture Overviews the management of clothing production and material quality requirements

Simulation in Textile Technology Elsevier

Natural Dyes for Sustainable Textiles describes how manufacturing processes that are safer, more energy efficient, and more sustainable can be achieved through the use of natural dyes.There are three main elements of sustainability, they are: economic, social, and environmental, and natural dyes can make a positive contribution to all three. A number of the textile industry’s largest producers have adopted natural dyes as part of their bid to make their products more sustainable, in response to consumer demand as well as their own consciousness of environmental issues. This unique book draws on the latest research to provide practical technical advice on safer and greener processing of fabric, minimizing the use of hazardous chemical dyes. Details of preparation methods at stages including wet processing, dyeing, and effluent management are provided with specific information on how the methods improve efficiency, as well as other advantages and limitations of each technology. Provides case studies of how to switch from synthetic to natural dyes, and what benefits resulted in real life Describes a practical chemical management system, which involves natural dyes Examines use of high-tech methods such as plasma and electron beam in textile surface modification

Ink Jet Textile Printing Bloomsbury Publishing

Engineered Polymeric Fibrous Materials explains cutting edge techniques for the engineering of fibrous materials from physical, mechanical, and chemical points of view. Both conventional and nanofibers are described in this uniquely comprehensive book, for a wide range of applications including biomedical, automotive, aerospace, agriculture, energy, and environmental. This book refers to recent advances made in both academia and industry, in topics such as fiber-reinforced composites, fibrous thermal insulators, drug delivery and tissue engineering, and smart textiles and energy, and explains how fibrous structures are engineered to offer new solutions to important problems. The first two chapters provide basic introductory information to allow a wider range of readers to engage with the book. Addresses hot emerging topics including smart materials, wearable energy harvesters, and solar fuel production Includes valuable technical advice that is useful to industries including aerospace, biomedical, and energy Covers the full lifecycle of the material, from processing and treatment through to end usage

Principles of Colour and Appearance Measurement Woodhead Publishing

Textile Calculation: Fibre to Finished Garment provides detailed explanations of standard numerical calculations used at different stages of garment production, including spinning, weaving, processing, garmenting and testing. At

every stage, from fiber production to garment manufacturing, textile production involves the selection of fibers or filaments, yarns, machines and process parameters. The calculations involved in this work relate to requirements of machines in the process line, estimations of process parameters, process characteristics, and machine efficiency, all of which must be objective and backed by sound theory. Drawing on extensive industry experience, this book gathers these numerical problems from across the supply chain to provide best practice and appropriate solutions. With its comprehensive coverage of all parts of the textile production cycle, this book is essential reading for those preparing to enter the textile industry, as well as an invaluable reference for professionals and researchers. Provides a complete overview of the manufacturing process of yarns and garments, as well as introductory material on the building elements of garments Includes detailed descriptions of industry testing methods for yarns, fibers and garments Explains calculation methodologies from across the textile production process

Engineering Textiles Elsevier

Textile Technology and Design addresses the critical role of the interior at the intersection of design and technology, with a range of interdisciplinary arguments by a wide range of contributors: from design practitioners to researchers and scholars to aerospace engineers. Chapters examine the way in which textiles and technology – while seemingly distinct – continually inform each other through their persistent overlapping of interests, and eventually coalesce in the practice of interior design. Covering all kinds of interiors from domestic (prefabricated kitchens and 3D wallpaper) to extreme (underwater habitats and space stations), it features a variety of critical aspects including pattern and ornament, domestic technologies, craft and the imperfect, gender issues, sound and smart textiles. This book is essential reading for students of textile technology, textile design and interior design.

Specialist Yarn and Fabric Structures Woodhead Publishing

The surface of textiles offers an important platform for functional modifications in order to meet special requirements for a variety of applications. The surface modification of textiles may be achieved by various techniques ranging from traditional solution treatment to biological approaches. This book reviews fundamental issues relating to textile surfaces and their characterisation and explores the exciting opportunities for surface modification of a range of different textiles. Introductory chapters review some important surface modification techniques employed for improved functional behaviour of textiles and the various surface characterisation methods available. Further chapters examine the different types of surface modification suitable for textiles, ranging from the use of plasma treatments and physical vapour deposition to the use of nanoparticles. Concluding chapters discuss surface modification strategies for various applications of textiles. Surface modification of textiles is a valuable resource for chemists, surface scientists, textile technologists, fibre scientists, textile engineers and textile students. Reviews fundamental issues relating to textiles surfaces and their characterisation Examines various types of surface modification suitable for textiles, including plasma treatments

and nanoparticles Discusses surface modification strategies for textile applications such as expansion into technical textile applications

Functional and Technical Textiles Elsevier

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

Engineered Polymeric Fibrous Materials Elsevier

Fibres to Smart Textiles: Advances in Manufacturing, Technologies, and Applications offers comprehensive coverage of the fundamentals and advances in the textile and clothing manufacturing sectors. It describes the basics of fibres, yarns, and fabrics and their end use in the latest developments and applications in the field and addresses environmental impacts from textile processes and how to minimize them. This book serves as a single comprehensive source discussing textile fibres, yarn formation, filament formation techniques, woven fabric formation, knitting technologies, nonwoven manufacturing technologies, braiding technologies, and dyeing, printing, and finishing processes. Testing of textile materials, environmental impacts of textile processes and use of CAD and CAM in designing textile products are also included. The book also discusses applications including textile composites and biocomposites, technical textiles, smart textiles, and nanotextiles. With chapters authored by textile experts, this practical book offers guidance to professionals in textile and clothing manufacturing and shows how to avoid potential pitfalls in product development.

Engineering Textiles Woodhead Publishing

Antimicrobial textiles have attracted a great deal of interest in recent years due to their potential for reducing the transmission of infection in medical and

healthcare environments. Antimicrobial properties can also improve the performance and lifespan of consumer products, and so these fabrics are increasingly finding applications in the wider textile and apparel industry. This book provides systematic coverage of the technologies and materials required for developing these important textiles. In Part One, chapters address key issues and technologies in the creation of antimicrobial textile products. Topics covered include testing and regulation, microencapsulation, sol-gel coating and plasma technologies, nanotechnology and life cycle assessment. Part Two then reviews key antimicrobial agents, such as N-halamines, plant based compounds and photo-active chemicals. Finally, the chapters of Part Three offer detailed reviews of antimicrobial textiles for particular important applications, including medical devices, protective clothing and products with improved durability and longevity. Reviews key issues and technologies in the creation of antimicrobial textile products Offered a detailed overview of by antimicrobial agents and a wide range of important applications Produced by an experienced editor and a distinguished and international team of contributors

Electronics in Textiles and Clothing

Elsevier

Automation is the use of various control systems for operating equipment such as machinery and processes. In line, this book deals with comprehensive analysis of the trends and technologies in automation and control systems used in textile engineering. The control systems descript in all chapters is to dissect the important components of an integrated control system in spinning, weaving, knitting, chemical processing and garment industries, and then to determine if and how the components are converging to provide manageable and reliable systems throughout the chain from fiber to the ultimate customer. Key Features: • Describes the design features of machinery for operating various textile machineries in product manufacturing • Covers the fundamentals of the instrumentation and control engineering used in textile machineries • Illustrates sensors and basic elements for textile automation • Highlights the need of robotics in textile engineering • Reviews the overall idea and scope of research in designing textile machineries