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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 indispensible 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

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

Trends in Manufacturing and Engineering Management - S. Vijayan 2020-08-19

This book comprises select papers presented at the International Conference on Mechanical Engineering Design (ICMechD) 2019. The volume focuses on the different design aspects involved in manufacturing, composite materials processing as well as in engineering management. A wide range of topics such as control and automation, mechatronics, robotics, composite and nanomaterial design, and welding design are covered here. The book also discusses current research in engineering management on topics like products, services and system design, optimization in design, manufacturing planning and control, and sustainable product design. Given the range of the contents, this book will prove useful to students, researchers and practitioners.

Sustainable Fibres for Fashion and Textile Manufacturing - Rajkishore Nayak 2022-10-23

Sustainable Fibres for Fashion and Textile Manufacturing presents the latest technical information about innovative natural and synthetic materials, helping the reader to understand sustainable fibres and raw materials for fashion and textile manufacturing. With a particular focus on apparel manufacturing, different applications of sustainable fibres are explored along with manufacturing techniques and details of the material properties. New research investigating nontraditional sources of textile fibres such as lotus, orange, milk, seaweed, corn, and mushroom are all presented, providing a uniquely comprehensive resource. Drawing on work by contributors from a variety of fields and roles in industry and academia, this book shares solutions and new perspectives on this interdisciplinary topic more widely in the hope of leading to research breakthroughs. Shares a wealth of valuable data and results from research into sustainable cellulosic, lingo-cellulosic and protein fibres Includes full technical descriptions of newly explored sustainable fibres, including chemical structures and structural properties Presents a strong focus on improving sustainability of the industry through practical measures spanning disciplinary boundaries to address this complex issue

Natural Fibre Composites - Alma Hodzic 2014-02-13

The use of natural fibres as reinforcements in composites has grown in importance in recent years. Natural Fibre Composites summarises the wealth of significant recent research in this area. Chapters in part one introduce and explore the structure, properties, processing, and applications of natural fibre reinforcements, including those made from wood and cellulosic fibres. Part two describes and illustrates the processing of natural fibre composites. Chapters discuss ethical practices in the processing of green composites, manufacturing methods and compression and injection molding techniques for natural fibre composites, and thermoset matrix natural fibre-reinforced composites.

Part three highlights and interprets the testing and properties of natural fibre composites including, non-destructive and high strain rate testing. The performance of natural fibre composites is examined under dynamic loading, the response of natural fibre composites to impact damage is appraised, and the response of natural fibre composites in a marine environment is assessed. Natural Fibre Composites is a technical guide for professionals requiring an understanding of natural fibre composite materials. It offers reviews, applications and evaluations of the subject for researchers and engineers. Introduces and explores the structure, properties, processing, and applications of natural fibre reinforcements, including those made from wood and cellulosic fibres Highlights and interprets the testing and properties of natural fibre composites, including non-destructive and high strain rate testing Examines performance of natural fibre composites under dynamic loading, the response of natural fibre composites to impact damage, and the response of natural fibre composites in a marine environment

Handbook of Tensile Properties of Textile and Technical Fibres - A. R. Bunsell 2009-10-19

Fibres usually experience tensile loads whether they are used for apparel or technical structures. Their form, which is long and fine, makes them some of the strongest materials available as well as very flexible. This book provides a concise and authoritative overview of tensile behaviour of a wide range of both natural and synthetic fibres used both in textiles and high performance materials. After preliminary chapters that introduce the reader to tensile properties, failure and testing of fibres, the book is split into two parts. Part one examines tensile properties and failure of natural fibres, such as cotton, hemp, wool and silk. Part two discusses the tensile properties and failure of synthetic fibres ranging from polyamide, polyester and polyethylene fibres to carbon fibres. Many chapters also provide a general background to the fibre, including the manufacture, microstructure, factors that affect tensile properties as well as methods to improve tensile failure. With its distinguished editor and array of international contributors, Handbook of tensile properties of textile and technical fibres is an important reference for fibre scientists, textile technologists and engineers, as well as those in academia. Provides an overview of tensile behaviour of a wide range of both natural and synthetic fibres Examines tensile characterisitics, tensile failure of textiles fibres and factors that affect tensile properties Discusses mircostructures and each type of fibre from manufacture to finished product

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

Textile Design - Michael Hann 2020-10-20

This book includes fundamentals of textile processing technology with explanation of craft techniques, various stages of processing fibres and yarns with useful, readily understandable, line drawings. Fibrous types, dyes, yarns and cloths have been explained and material is supported by glossary and explanation of processing stages from fibre to finished cloth. Further, the considerations of relevance to the development and preparation of a design collection are outlined and discussed. Various testing procedures, including fibre, yarn and cloth identification methods, and important innovations in textile products and processing are identified and explained as well. Focused mainly on the needs of students specializing in textile or fashion design, at first year undergraduate university level, this book: Covers all stages from fibre to finished cloth. Discusses various stages of processing fibres and yarns. Explains fibrous types, dyes, yarns and cloths supported by relevant glossary. Presents explanations of both tactile and aesthetic aspects of textiles used in clothing.

Additives for Plastics Handbook - J. Murphy 2001-11-22

Both technically and economically, additives form a large and increasingly significant part of the polymer industry, both plastics and elastomers. Since the first edition of this book was published, there have been wide-ranging developments, covering chemistry and formulation of new and more efficient additive systems and the safer use of additives, both by processors in the factory and, in the wider field, as they affect the general public. This new edition follows the successful formula of its predecessor, it provides a comprehensive view of all types of additives, concentrating mainly on their technical aspects (chemistry/formulation, structure, function, main applications) with notes on the commercial background of each. The field has been expanded to include any substance that is added to a polymer to improve its use, so including reinforcing materials (such as glass fibre), carbon black and titanium dioxide. This is a book which has been planned for ease of use and the information is presented in a way which is appropriate to the users' needs.

Manufacturing Engineering - Vishal S. Sharma 2020-06-02

This volume comprises select peer-reviewed contributions from the International Conference on Production and Industrial Engineering (CPIE) 2019. The contents focus on latest research in production and manufacturing engineering including case studies with analytical models and latest numerical approaches. The topics covered include micro, nano, and non-conventional machining, additive manufacturing, casting and forming, joining processes, vibrations and acoustics, materials and processing, product design and development, industrial automation, CAD/CAM and robotics, and sustainability in manufacturing. The book can be useful for students, researchers, and professionals working in manufacturing and production engineering, and other allied fields.

Properties and Performance of Natural-Fibre Composites - Kim Pickering 2008-06-23

Concern about global warming has led to renewed interest in the more sustainable use of natural fibres in composite materials. This important book reviews the wealth of recent research into improving the mechanical properties of natural-fibre thermoplastic composites so that they can be more widely used. The first part of the book provides an overview of the main types of natural fibres used in composites, how they are processed and, in particular, the way the fibre-matrix interface can be engineered to improve performance. Part two discusses the increasing use of natural-fibre composites in such areas as automotive and structural engineering, packaging and the energy sector. The final part of the book discusses ways of assessing the mechanical performance of natural-fibre composites. With its distinguished editor and team of contributors, Properties and performance of natural-fibre composites is a valuable reference for all those using these important materials in such areas as automotive and structural engineering. Provides an overview of the types of natural fibres used in composites Discusses fibre-matrix interface and how it can be engineered to improve performance Examines the increasing use of natural-fibre composites in automotive and structural engineering and the packaging and energy sector

Colour Chemistry - Robert Christie 2015-11-09
This revised and up-dated second edition provides a current insight into how the fundamental principles of the chemistry of colour are applied in dyes and pigments. The text has been expanded and re-written throughout, while largely maintaining the structure of the first edition. In particular, the chapter on functional dyes has been substantially re-written to embrace the significant developments in chemistry and technology that this area has experienced in the last decade. As industry and society have become increasingly sensitive towards environmental issues, the chapter describing how the colour industry has been responding is expanded to reflect this growing importance. A new chapter is introduced on colour in cosmetics, with particular emphasis on hair dyes, reflecting the growing international, industrial significance of this topic. This chapter is co-written with Dr Olivier Morel. Colour Chemistry will be of interest to academics and industrialists who are specialists in colour science or who have involvement with the diverse range of coloured materials, for example traditional application in textiles, paints, printing inks, plastics and cosmetics, and functional applications in electronics and biology. Broad and balanced in its coverage, this book provides an introduction to the chemistry of colour that is ideal for students, graduates and those in industry and academia seeking an introduction to the topic.
Composites Engineering Handbook - P.K. Mallick 1997-03-19
Offers information on the fundamental principles, processes, methods and procedures related to fibre-reinforced composites. The book presents a comparative view, and provides design properties of polymeric, metal, ceramic and cement matrix composites. It also gives current test methods, joining techniques and design methodologies.
Handbook of Filter Media - Derek B. Purchas 2002-10-28
An Introduction to Filter Media -- Textiles -- Filter Papers and Filter Sheets -- Media for air and gas filters -- Screens and Meshes -- Porous Sheets and Tubes (excluding Membranes) -- Membranes -- Cartridges and Special Fabrications -- Loose Powders, granules and fibres -- Testing filter media.
Green Composites - Caroline Baillie 2004-09-01
There is an increasing movement of scientists and engineers who are dedicated to minimising the environmental impact of polymer composite production. Life cycle assessment is of paramount importance at every stage of a product’s life, from initial synthesis through to final disposal and a sustainable society needs environmentally safe materials and processing methods. With an internationally recognised team of contributors, Green Composites examines fibre reinforced polymer composite production and explains how environmental footprints can be diminished at every stage of the life cycle. The introductory chapters look at why we should consider green composites, their design and life cycle assessment. The properties of natural fibre sources such as cellulose and wood are then discussed. Chapter 6 examines recyclable synthetic fibre-thermoplastic composites as an alternative solution and polymers derived from natural sources are covered in Chapter 7. The factors that influence the properties of these natural composites and natural fibre thermoplastic composites are detailed in Chapters 8 and 9. The final four chapters consider clean processing, applications, recycling, degradation and reprocessing. Green composites is an essential guide for agricultural crop producers, government agricultural departments, automotive companies, composite producers and material scientists all dedicated to the promotion and practice of eco-friendly materials and production methods. Reviews fibre reinforced polymer composite production Explains how environmental footprints can be diminished at every stage of the life-cycle
Handbook of Natural Fibres - Ryszard M. Kozlowski 2020-01-25
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

Handbook of Natural Fibres - Ryszard M. Kozlowski 2020-01-28

The Handbook of Natural Fibres, Second Edition, Volume One: Types, Properties and Factors Affecting Breeding and Cultivation covers every aspect of natural fibers, their breeding, cultivation, processing and applications. This volume features fundamental discussions of each fiber, covering different stages of breeding and cultivation. 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 natural fibers are covered in this book, including cotton, jute, kenaf, flax, hemp, sisal, ramie, curaua, pineapple, bamboo, coir, sheep wool, and more. Provides detailed instructions for how to carry out the latest scientific methods for identifying natural fibers Explains properties of natural fibers that will be of interest to readers in growth fields like biocomposites and nanofibers Includes a rare overview of emerging natural fibers and their uses, along with sources of further information

Natural Fiber Composites - R.D.S.G. Campilho 2015-11-05

Safely Design, Test, and Construct Products Made of Natural Fiber Composites Natural fibers and their composites carry distinct advantages over industrial fibers. Some advantages—including renewability and availability of raw materials, and lower energy consumption—could help safeguard environmental resources and eventually replace synthetic composites and conventional materials. Natural Fiber Composites explores the growing use of natural fibers in composites and covers material properties, treatment and processing, modeling, applications, design, and other vital information on this subject. Improve the Strength of Manufactured Composites, and Determine the Best Processing Technique Incorporating independent pieces written by a team of international contributors, this book enables readers to analyze and design structural components using state-of-the-art information and methods. It provides an overview of natural fiber composites, details the superior specific mechanical properties of these materials, and presents development techniques and design case studies that can improve performance and enhance the process. Natural Fiber Composites evaluates the value of natural fibers in composite materials, and offers introductory knowledge on natural fiber composites backed by internationally recognized experts in the field.

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 indispensible 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 improvementReviews key types and fundamental properties of natural textile fibres, addressing the production, identification and testing of a range of cotton, bast, silk and wool fibresExplores the improvement of natural fibre properties and production through breeding and cultivation, beginning with a discussion of fibrous flax and cotton

Handbook of Textile Fibre Structure - Stephen Eichhorn 2009-10-26

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

Handbook of Sustainable Luxury Textiles and Fashion - Miguel Angel Gardetti 2015-08-10

The first volume of this handbook explores different aspects of sustainable luxury textiles and fashion, broadly based on the following topics: Sustainability and business management, Value chain management, Use of materials and Sustainable production processes.

Protective Textiles from Natural Resources - Md. Ibrahim H. Mondal 2022-06-23

Protective Textiles from Natural Resources provides systematic coverage of the fundamentals, production methods, processing techniques, characterization techniques, properties and applications of natural textile products for protective purposes. The subject of this book is an important kind of technical textile designed to protect the wearer from injuries, illness and death. They offer enhanced protection against phenomena including heat, cold, flame, chemical, biological, nuclear agents, radiation, disaster and even ballistics. As no single type of clothing can be adequate for all kinds of protection, extensive research is carried out to develop protective clothing for specialized civilian and military applications. The latest research on the use of natural fibres in PPE is also covered, which could make a significant contribution to the fight against the spread of COVID-19. This comprehensive guide explores a wide variety of themes from material processing and design to finished products, through protection against specific hazards to specific applications, including all significant new developments on natural materials for protective textiles. Explains the latest technologies related to fibre extraction from natural sources, chemical treatments, weave constructions, fabric finishes and coatings. Includes the latest research on natural fibers in personal protective equipment (PPE) to protect wearers from bacterial and viral contamination. Explains the state of the art in testing methods and standards for protective clothing.

Natural Fibers, Plastics and Composites - Frederick T. Wallenberger 2011-06-28

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.

Antimicrobial Textiles from Natural Resources - 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. 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

Handbook of Fibre Rope Technology - H A McKenna 2004-04-22

The field of fibre rope technology has witnessed incredible change and technological advance over the last few decades. At the forefront of this change has been the development of synthetic fibres and modern types of rope construction. This handbook updates the history and structural mechanics of fibre rope technology and describes the types and properties of modern rope-making materials and constructions. Following an introduction to fibre ropes, the Handbook of fibre rope technology takes a comprehensive look at rope-making materials, rope structures, properties and mechanics and covers rope production, focusing on laid strand, braided, low-twist and parallel yarn ropes. Terminations are also introduced and the many uses of rope are illustrated. The key issues surrounding the inspection and retirement of rope are identified and rope testing is thoroughly examined. The final two chapters review rope markets, distribution and liability and provide case studies from the many environments in which fibre rope is used. The Handbook of fibre rope technology is an essential reference for everyone assisting in the design, selection, use, inspection and testing of fibre rope. A comprehensive look at rope-making materials and structures, properties and mechanics Covers rope production including laid strand, braided, low-twist and parallel yarn ropes and rope terminations Rope testing is examined in depth, as well as the key issues surrounding rope retirement

Physico-chemical Aspects of Textile Coloration - Stephen M. Burkinshaw 2016-02-08

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

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

Wool Fiber Reinforced Polymer Composites - Sabu Thomas 2022-08-16

Wool Fiber Reinforced Polymer Composites is an in-depth and practical exploration of wool-based composites, covering everything from the morphology of wool fiber to the industrial applications of wool composites. Wool has emerged in the top position for this role because of its unique characteristics. While fine wool is too costly for many such applications, coarse wool of greater than 35 microns fiber length is globally under-utilized. This pioneering book describes every form of wool composite, woven, nonwoven, felt and fiber, including different fabrication methods. In unique detail, the international team of expert contributors describe the morphology, structure and properties of wool, methods for the chemical modification of wool, different forms of wool-polymer composites, and many exciting emerging applications. Provides technical details on a wide range of applications of wool-fiber polymer composites, including in construction and medicine Draws on an interdisciplinary panel of experts from fields such as textiles, polymer science and chemistry to create a guide for readers of all backgrounds Describes wool characterization techniques in detail

Handbook of Fiber Chemistry, Third Edition - Menachem Lewin 2006-11-15

The Handbook of Fiber Chemistry, Third Edition provides complete coverage of scientific and technological principles for all major natural and synthetic fibers. Incorporating new scientific techniques, instruments, characterization, and processing methods, the book features important technological advances from the past decade, particularly in fiber production and novel applications. It contains the latest data and insight into the chemistry and structural properties made possible by these advances. Authored by leading experts in the field of fiber science, most chapters in this third edition of a bestseller are either new or extensively updated. Chapters on synthetic fibers detail their formation from monomers, while those on natural fibers cover extraction and purification methods. Each chapter encompasses definitions, morphology, and fine structure; properties, testing, processing methods, and equipment; and the conversion into marketable products. Taking into account the recent expansion and diversification of markets for various fibers, this book also offers a solid foundation in the principles used for developing new fibers, including biologically and electronically active fibers. The Handbook of Fiber Chemistry, Third Edition offers a better understanding of the structure–property relationships of fibers and fiber-related phenomena. It is an ideal volume for scientists, technologists, and engineers working to develop novel and innovative products and technologies using natural and synthetic fibers.

Sustainability in the Textile and Apparel Industries - Subramanian Senthilkannan Muthu 2020-03-16

This book is part of a five-volume set that explores sustainability in textile industry practices globally. Case studies are provided that cover the theoretical and practical implications of sustainable textile issues, including environmental footprints of textile manufacturing, consumer behavior, eco-design in clothing and apparels, supply chain sustainability, the chemistry of textile manufacturing, waste management and textile economics. The set will be of interest to researchers, engineers, industrialists, R&D managers and students working in textile chemistry, economics, materials science, and sustainable consumption and production. This volume comprehensively covers the various sustainable natural materials used in textiles that originate from raw materials sourcing. The book discusses agricultural production systems and standards for the development of sustainable textile fibers, the effects of chemical surface modification methods on the properties of textile fibers, and how antibacterial and antifungal textiles can be manufactured using natural resources.

Lignocellulosic Fibers and Wood Handbook - Mohamed Naceur Belgacem 2016-04-05

This book will focus on lignocellulosic fibres as a raw material for several

applications. It will start with wood chemistry and morphology. Then, some fibre isolation processes will be given, before moving to composites, panel and paper manufacturing, characterization and aging.

Fibres, Films, Plastics and Rubbers - W.J. Roff 2013-10-22

Fibres, Films, Plastics and Rubbers: A Handbook of Common Polymers focuses on polymeric materials. The book first discusses a list of sections on individual polymers. Topics include olefin and vinyl-type, carbohydrate-type, synthetic condensation-type, organo-silicon, and inorganic polymers, as well as proteins. The text also looks at list of sections on specific properties and related information. The book then discusses polyethylenes, polypropylene, and polytetrafluoroethylene. The text also examines polystyrene. Concerns include the structure, chemistry, physics, fabrication, serviceability, and utilization of these materials. The text also focuses on indene and coumarone/indene resins; polyvinyl acetate and alcohol; polyvinyl formal, acetal, and butyral; and polyacrylates and polymethacrylates. The book then examines the structure, chemistry, physics, fabrication, serviceability, and utilization of polyvinyl chloride, polyvinylidene chloride, cellulose, and cellulose acetate. The book also discusses the structure, chemistry, physics, fabrication, serviceability, and utilization of cellulose nitrate, cellulose ethers, starch, and regenerated proteins. Same type of evaluation is also done to polyamides, epoxy resins, polyformaldehyde, natural rubber, and nitrile rubbers. The text is a valuable source of information for readers interested in polymeric materials.

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

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

Textiles and Fashion - Rose Sinclair 2014-11-08

This major textbook is designed for students studying textiles and fashion at higher and undergraduate level, as well as those needing a comprehensive and authoritative overview of textile materials and processes. The first part of the book reviews the main types of natural and synthetic fibres and their properties. Part two provides a systematic review of the key processes involved first in converting fibres into yarns and then transforming yarns into fabrics. Part three discusses the range of range of finishing techniques for fabrics. The final part of the book looks specifically at the transformation of fabric into apparel, from design and manufacture to marketing. With contributions from leading experts in their fields, this major book provides the definitive one-volume guide to textile manufacture. Provides comprehensive coverage of the types and properties of textile fibres to yarn and fabric manufacture, fabric finishing, apparel production and fashion Focused on the needs of college and undergraduate students studying textiles or fashion courses Each chapter ends with a summary to emphasise key points, a comprehensive self-review section, and project ideas are also provided

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 nanofibres 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

Pattern Cutting for Clothing Using CAD - M Stott 2012-10-30

The invention of computer aided design (CAD) has revolutionised pattern cutting for clothing. Lectra’s Modaris pattern cutting software is a key tool in pattern production. Using a practical approach and clear examples throughout, Pattern cutting for clothing using CAD is an essential guide for all users of Lectra Modaris. Beginning with an overview of the role of patterns in clothing manufacture, the key documents and tools of the trade are discussed before the keyboard, mouse and screen layout in Lectra Modaris are introduced. Title blocks and all aspects of digitising a clothing pattern are examined in clear, concise steps, followed by a thorough guide to the Lectra Modaris toolbox and the upper and lower toolbar menus. Creating size ranges and the importance of measurements and size charts are discussed, before the book concludes with an indispensable ‘How do I?’ guide to the Lectra Modaris functions and menus, indexed by required action. Drawing on a wealth of practical experience, Pattern cutting for clothing using CAD is

an indispensable, practical and user-friendly guide to making the most of Lectra's Modaris software for both students and professionals in textiles and fashion. Provides an overview of the role of patterns in clothing manufacture, the key documents and tools of the trade Introduces the keyboard, mouse and screen layout in Lectra Modaris Concisely outlines title blocks and all aspects of digitising a clothing pattern, before providing a guide to the Lectra Modaris toolbox and upper and lower toolbar menus

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

Encyclopedia of Polymer Applications, 3 Volume Set - Munmaya Mishra 2018-12-17

Undoubtedly the applications of polymers are rapidly evolving. Technology is continually changing and quickly advancing as polymers are needed to solve a variety of day-to-day challenges leading to improvements in quality of life. The Encyclopedia of Polymer Applications presents state-of-the-art research and development on the applications of polymers. This groundbreaking work provides important overviews to help stimulate further advancements in all areas of polymers. This comprehensive multi-volume reference includes articles contributed from a diverse and global team of renowned researchers. It offers a broad-based perspective on a multitude of topics in a variety of applications, as well as detailed research information, figures, tables, illustrations, and references. The encyclopedia provides introductions, classifications, properties, selection, types, technologies, shelf-life, recycling, testing and applications for each of the entries where applicable. It features critical content for both novices and experts including, engineers, scientists (polymer scientists, materials scientists, biomedical engineers, macromolecular chemists), researchers, and students, as well as interested readers in academia, industry, and research institutions.

Medical Textiles from Natural Resources - Md. Ibrahim H. Mondal 2022-06-23

Medical Textiles from Natural Resources provides systematic and comprehensive coverage of the fundamentals, production methods, processing techniques, characterization techniques, properties and applications of medical textile materials from natural resources. Medical textiles offer a variety of technical and functional properties valued in medical and healthcare sectors, often relating to hygiene. As medical textile products remain in close contact with the human body, the fibre must have characteristics such as biological compatibility, biological degradability, permeability and nontoxicity. Only materials from natural renewable sources have such characteristics. This book provides the latest information on a wide range of medical applications, from single suture and wound dressings, to implants and tissue scaffolds. It also offers a systematic review of the manufacture, properties and applications of technical textiles for medical use. Explains the latest technologies related to fibre extraction from natural sources, chemical treatments, weave constructions, fabric finishes and coatings. Describes innovative applications of nanomaterials in the treatment of textile fabric

and the utilization of carbohydrate polymers in the preparation of nanoparticles deposited in nonwoven fabrics. Helps product designers to find appropriate materials from natural resources with the characteristics of biodegradability, renewability, biocompatibility and nontoxicity.