Fibre Science And Technology

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Fibre Science And Technology ***2022-06-27***

DIAZ DEVAN

High-Performance and Specialty Fibers Elsevier Advanced research into wool science and technology is leading to a better understanding of the properties of wool. Wool is increasingly being seen as a high performance fibre, with new modifications and applications. Advances in wool technology presents a comprehensive account of these developments and innovations. Part one includes advances that

have occurred in the production and processing of wool. Topics range from the progress in wool spinning, weaving and colouration, to environmental supply chain management and to the role of genetic engineering in improved wool production. Part two reviews new wool products and applications. Chapters include the production of brighter and whiter wool, high performance wool blends and wool for apparel. With its two distinguished editors and array of international contributors, this book is a valuable reference for producers, manufacturers, retailers and all those wishing to improve and understand developments in wool technology. It will also be suitable for researchers in industry or academia. Presents a comprehensive account of recent developments and innovation surrounding the high performance fibre Examines advances in wool production and processing from wool spinning to genetic engineering in improved production Considers environmental supply chain management Advances in Wool Technology Springer Based on over 25 years of research at the University of Manchester Institute of Science & Technology, this book contains more than 1,500 scanning electron micrographs and other pictures, offering a unique collection of documentary information. The explanatory text presents fiber and polymer scientists an explanation of fracture mechanisms and outlines

way to maximize textile life span, enabling textile technologists and design engineers to manufacture improved textile products, and helping forensic scientists to identify cause of failure.

Fibre Science and Technology Elsevier Fibre Structure is a 19-chapter text that emerged from lectures presented at the Manchester College of Science and Technology. The interest of fiber studies lies to some extent in the important part textile materials play in general living and in industrial products and operations. The first chapters deal with the chemistry of fiber-forming polymers, followed by considerable chapters on the controversial subject of the fine structure of fibers. The remaining chapters describe the special features of all the important fibers, including glass and asbestos. Textile scientists, researchers, and manufacturers will find this book invaluable.

Advanced Dietary Fibre Technology Springer Nature Sustainable Fibres and Textiles provides a whole-lifecycle approach to the subject of sustainable textiles, from fiber production, through manufacturing and low-energy care and recycling. The scientific, industrial, regulatory and social aspects of this lifecycle are explored by an expert author team who bring global perspectives to this important subject. The first part of the book provides detailed coverage of the

sustainable production of textiles, with chapters devoted to each of the main fiber types, including new biosynthetic fibers, such as textiles produced from Polylactic Acid (PLA). The second part examines sustainable production methods, focusing on low carbon production technologies and sustainable, low-pollution methods of processing and dyeing fabrics. The final sections explore the benefits of textiles designed to enable low-energy fabric care via both finishes used to treat the fabric and better care labelling. Re-use and recycling options are also covered, as are ethical aspects, such as fair trade fabrics. Presents an integrated understanding of sustainability through the whole supply-chain – from agriculture, through manufacturing and fabric care, to recycling Teachers users how to make optimal choices of fiber and manufacturing technologies to achieve the sustainable production of high-quality apparel and other textile products Provides a wider understanding of emerging regulatory frameworks that will shape the future of sustainable textiles

Fibre Science and Technology in the Development of New Countries Elsevier Science and Engineering of Short Fibre Reinforced Polymer Composites, Second Edition, provides the latest information on the ‘short fiber reinforced composites' (SFRP) that have found extensive applications in automobiles, business

machines, durable consumer items, sporting goods and electrical industries due to their low cost, easy processing and superior mechanical properties over parent polymers. This updated edition presents new developments in this field of research and includes new chapters on electrical conductivity, structural monitoring, functional properties, self-healing, finite element method techniques, multi-scale SFRCs, and both modern computational and process engineering methods. Reviews the mechanical properties and functions of short fiber reinforced polymer composites (SFRP) Examines recent developments in the fundamental mechanisms of SFRP's Assesses major factors affecting mechanical performance, such as stress transfer and strength Includes new chapters on electrical conductivity, structural monitoring, functional properties, self-healing, finite element method techniques, multi-scale SFRCs, modern computational methods, and process engineering methods

Handbook of Fibrous Materials, 2 Volumes

Woodhead Publishing

Fiber Technology for Fiber-Reinforced Composites provides a detailed introduction to fiber reinforced composites, explaining the mechanics of fiber reinforced composites, along with information on the various fiber types, including manufacturing of fibers (starting from monomers and precursors), fiber spinning

techniques, testing of fibers, and surface modification of fibers. As material technologies develop, composite materials are becoming more and more important in transportation, construction, electronics, sporting goods, the defense industry, and other areas of research. Many engineers working in industry and academics at universities are trying to manufacture composite materials using a limited number of fiber types with almost no information on fiber technology, fiber morphology, fiber properties, and fiber sizing agents. This book fills that gap in knowledge. Unique in that it focuses on a broad range of different fiber types used in composites manufacturing Contains contributions from leading experts working in both industry and academia Provides comprehensive coverage on both natural and nanofibers

Fibre Science and Technology Springer

Consumers are increasingly seeking foods that are rich in dietary fibre and wholegrains, but are often unwilling to compromise on sensory quality. Fibre-rich and wholegrain food reviews key research and best industry practice in the development of fibre-enriched and wholegrain products that efficiently meet customer requirements. Part one introduces the key issues surrounding the analysis, definition, regulation and health claims associated with dietary fibre and wholegrain foods. The links between wholegrain foods and health, the

range of fibre dietary ingredients and a comparison of their technical functionality are discussed, as are consumption and consumer challenges of wholegrain foods. Part two goes on to explore dietary fibre sources, including wheat and non-wheat cereal dietary fibre ingredients, vegetable, fruit and potato fibres. Improving the quality of fibre-rich and wholegrain foods, including such cereal products as wholegrain bread, muffins, pasta and noodles, is the focus of part three. Fibre in extruded products is also investigated before part four reviews quality improvement of fibre-enriched dairy products, meat products, seafood, beverages and snack foods. Companion animal nutrition as affected by dietary fibre inclusion is discussed, before the book concludes with a consideration of soluble and insoluble fibre in infant nutrition. With its distinguished editors and international team of expert contributors, Fibre-rich and wholegrain foods provides a comprehensive guide to the field for researchers working in both the food industry and academia, as well as all those involved in the development, production and use of fibre-enriched and wholegrain foods. Reviews key research and best industry practice in the development of fibre-enriched and wholegrain products Considers analysis, definition, regulation and health claims associated with dietary fibre and wholegrain foods Explores

sources of dietary fibre including: wheat and non-wheat cereal, vegetable, fruit and potato fibres

Fiber Technology for Fiber-Reinforced Composites Woodhead Publishing

Connects fiber chemistry and structure to properties that can be designed and engineered Micro- and nanoscale, synthetic and natural polymer and non-polymer fibers explained with applications to industrial, electronic, biomedical and energy Information pertinent for fiber, textile, composite, polymer and materials specialists This volume provides the basic chemical and mathematical theory needed to understand and modify the connections among the structure, formation and properties of many different types of manmade and natural fibers. At a fundamental level it explains how polymeric and non-polymeric fibers are organized, how such fibers are formed, both synthetically and biologically, and how primary and secondary properties, from basic flow to thermal and electrical qualities, are derived from molecular and submolecular organization, thus establishing the quantitative and predictive relationships needed for fiber engineering. The book goes on to show how fiber chemistry and modes of processing for dozens of materials such as silks, ceramics, glass and carbon can be used to control functional optical, conductive, thermal and other properties. Its

discussion ranges over microscale and nanoscale fibers (nanofibers), covering methods such as spinning and electrospinning, as well as biological fiber generation through self-assembly. Technologies in this text apply to the analysis and design of fibers for industrial, electronic, optical, medical and energy storage applications.

Science and Engineering of Short Fibre-Reinforced Polymer Composites

John Wiley & Sons

A survey of work on the fatigue behavior of composites dealing with the problems met with by materials scientists and designers in aerospace, automotive, marine, and structural engineering. Including a historical review, standards, micromechanical aspects, life-prediction methods for constant stress and variable stress, and fatigue in practical situations.

Textiles and Fashion

Woodhead Publishing

Dietary fibre technology is a sophisticated component of the food industry. This highly practical book presents the state-of-the-art and explains how the background science translates into commercial reality. An international team of experts has been assembled to offer both a global perspective and the nuts and bolts information relevant to those working in the commercial world. Coverage includes specific dietary fibre components (with overviews of chemistry, analysis and

regulatory aspects of all key dietary fibres); measurement of dietary fibre and dietary fibre components (in-vitro and in-vivo); general aspects (eg chemical and physical nature; rheology and functionality; nutrition and health; and technological) and current hot topics. Ideal as an up-to-date overview of the field for food technologists; nutritionists and quality assurance and production managers.

Handbook of Fiber Science and Technology Volume 2

DEStech Publications, Inc Fibre Science and Technology is one of six titles in a coherent and definitive series of volumes dedicated to advanced composite materials research, development and usage in the former Soviet Union. Much of the information presented has been classified until recently. Thus each volume provides a unique insight into hitherto unknown research and development data. This volume deals with the basic components of a composite material, namely the reinforcement and the encasing matrix material. Beginning with a specification of a range of reinforcing fibres (glass, carbon, organic, inorganic, ceramic), the book then considers in detail the development of such fibres and the significant range of properties achieved. An extensive test methodology used to evaluate the physical and mechanical properties of each type of fibre matrix combination is presented, and the production

method employed for each constituent part is described. This book will be of interest to anyone involved in research or development in composite materials science and technology, both in industry and universities.

Handbook of Tensile Properties of Textile and Technical Fibres

Woodhead Publishing

This book highlights recent developments in fiberglass research and technology development, including high-performance fiberglass chemistry; in-depth glass network structure information derived from the-state-of-the-art spectroscopic measurements, molecular dynamics simulations, and their correlations with properties; fiber surface chemistry in relation to sizing chemistry - a critical part of composite performance; fiber process stability; fundamental understanding of the batch-to-melt conversion processes and melt flow simulations; and environmental concerns such as energy efficiency and emission of volatile species, which are key to environmentally-friendly product manufacturing. The book aims to guide fiberglass researchers and manufacturers towards better awareness and, perhaps, provides potential options for global ecosystem management. More than 500 current references are included, which will enable researchers from fiber glass industry and research institution access to the most recent progress in fiberglass science and technology.

Advances scientific understanding of fiberglass-forming processes, rising in popularity as a building material throughout the world; Describes the current advances in the structure and formation of fiber glass, beginning with chemistry, a wide range of characterizations, and processes, through to applications; Contains information on environmental aspects of fiberglass production, addressing energy consumption and emission.

Fibre Structure Elsevier Manufactured Fibre Technology provides an accessible and comprehensive treatment of the chemical, physical and mechanical processes involved in the production of all important commodity manufactured fibres and most of the industrial fibres. The emphasis is on the fundamental principles and industrial aspects of production. Latest developments in manufactured fibres in terms of manufacturing processes, characteristics and their applications are also covered. Manufactured Fibre Technology is designed around twenty chapters with a balance of basic principles and production of specific fibre types. Newer and industrially relevant areas such as high speed spinning, production of speciality fibres (including microfibres), computer simulation of spinning, high performance fibres, spun-bonding and melt-blowing, and re-use of fibre waste are included. The structure, property

and application areas of each fibre type are also discussed, thus providing a broad understanding of the subject. In addition, various aspects related to the testing and characterisation of fibres and polymers are reviewed. This book is an invaluable resource to students, lecturers, industrial technologists and researchers in this subject area.

Handbook of Natural Fibres Springer Science & Business Media

This text provides comprehensive coverage of fibers used in food formulations, starting with the understanding of their basic chemical structure and how they are present and organized in the cell wall structure, their physicochemical and functional properties, their impact on the digestive process and their role and preventive action against various chronic diseases including colon cancer. The book focuses on traditional and new fiber rich sources, incorporating an integrated approach in terms of the technological and engineering processes used to obtain and incorporate them in traditional foods, plus their characterization, extraction and modification. The study of processing conditions including the chemical, physical and enzymatic processes of fiber extraction and modification are also covered, including traditional and emerging processing technologies, plus the application of fibers in the development of new products and processes. Science and

Technology of Fibers in Food Systems integrates knowledge of fibers from their basic structural and property aspects and the applications of these ingredients to extraction process analysis, modification and feasibility for use at the industry level. The chapters incorporate the physiological aspects related to the consumption of fiber for prevention of serious diseases.

Fibre Science And Technology Elsevier

This book collects selected high quality articles submitted to the 2nd International Conference on Natural Fibers (ICNF2015). A wide range of topics is covered related to various aspects of natural fibres such as agriculture, extraction and processing, surface modification and functionalization, advanced structures, nano fibres, composites and nanocomposites, design and product development, applications, market potential, and environmental impact. Divided into separate sections on these various topics, the book presents the latest high quality research work addressing different approaches and techniques to improve processing, performance, functionalities and cost-effectiveness of natural fibre and natural based products, in order to promote their applications in various advanced technical sectors. This book is a useful source of information for materials scientists, teachers and students from various disciplines as well as for

R& D staff in industries using natural fibre based materials.

Fibre-Rich and Wholegrain Foods Woodhead Publishing

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

Fibre Science and Technology CRC Press Despite the increased variety of manufactured fibres available to the textile industry, demand for cotton remains high because of its suitability on the basis of price, quality and comfort across a wide range of textile products. Cotton producing nations are also embracing sustainable production practices to meet growing consumer demand for sustainable resource production. This important book provides a comprehensive analysis of the key scientific and technological advances that ensure the quality of cotton is maintained from the field to fabric. The first part of the book discusses the fundamental chemical and physical structure of cotton and its various properties. Advice is offered on measuring and ensuring the quality of cotton fibre. Building on these basics, Part two analyses various means for producing cotton such as genetic modification and organic production. Chapters focus on spinning, knitting and weaving technologies as well as techniques in dyeing. The final section of the book concludes with chapters concerned with practical aspects within the industry such as health and safety issues and recycling

methods for used cotton. Written by an array of international experts within the field, Cotton: science and technology is an essential reference for all those concerned with the manufacture and quality control of cotton. Summarises key scientific and technological issues in ensuring cotton quality Discusses the fundamental chemical and physical structure of cotton Individual chapters focus on spinning, knitting and weaving technologies **Fibre Science and Technology** Woodhead Publishing

This book reviews the key technologies and characteristics of the modern man-made specialty fibers mainly developed in Japan. Since the production of many low-cost man-made fibers shifted to China and other Asian countries, Japanese companies have focused on production of high-quality, high-performance super fibers as well as highly functionalized fibers so-called 'Shin-gosen'. ZylonTM and DyneemaTM manufactured by Toyobo, TechnoraTM produced by Teijin, and VectranTM developed by Kuraray are those examples of super fibers. Carbon fibers ToraycaTM from Toray have occupied the most advanced high-performance application area. Various types of polyester fibers having design-shaped cross-sections and special fiber morphologies and those showing specific physico-chemical properties have also been developed to acquire a high-value textile market of the world. This book describes

how these high-tech fibers have been developed and what aspects are the most important in each fiber based on its structure-property relationship. Famous specialists both in industry and academia are responsible for the contents, explaining the design concepts and the special technologies for the production of these special fibers. For university teachers and students, this volume is an excellent textbook that elucidates the basic concepts of modern fibers. At the same time, researchers, both in academia and industry, will find a comprehensive overview of recent man-made fibers. This publication, presenting the most easily understandable general survey of specialty man-made fibers to date, is dedicated to the 70th-anniversary of the Society of Fiber Science and Technology, Japan.

A Text Book of Fibre Science and Technology Elsevier Focussing On The Fundamentals Of Natural And Manmade Fibres, This Book Systematically Explains Fibre Extraction/Production, Structure, Properties And Uses.Recent Developments Like Different Aliphatic And Aromatic Polyamides, Ploymides, Novoloids, Polycarbonates, Carbon, High Performance Polyethylenes, Etc. Have Also Been Explained In A Simplified Manner. Diverse Applications Of Fibres Have Been Included To Illustrate Their Use And Utility.This Book Will Serve As A Basic Text For Both Diploma

And Degree Students Of All Textile Disciplines. It Would Also Serve As A Useful Reference For Researchers And Professionals Engaged In This Area.

Handbook of Fiber Chemistry Elsevier

This text provides up-to-date coverage of both recently developed and potentially available fibers, emphasizing new applications. Highlighting preparation, properties, practical industrial uses and future research directions for high technology, this volume examines optical fibres, aramid and polyimide fibres for heat resistant applications, ceramic fibres, fibres with thermal adaptability and electrically conducting polymers for fibres.