

## Silk Processing Properties And Applications

This book contains selected papers which were presented at the 3rd International Halal Conference (INHAC 2016), organized by the Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA (UiTM) Shah Alam, Malaysia. It addresses halal-related issues that are applicable to various industries and explores a variety of contemporary and emerging issues. Highlighting findings from both scientific and social research studies, it enhances the discussion on the halal industry (both in Malaysia and at the international level), and serves as an invitation to engage in more advanced research on the global halal industry.

Colour and appearance perceptions are very complex psychological phenomena. Written by one of the foremost authorities in the field, Principles of Colour and Appearance Measurement is a major two-volume work addressing the key topics required to understand the issues and manage colour effectively. The book addresses how objects appear to viewers, how viewers perceive colour, and the major types of instrumentation used to measure colour. Chapters detail the characteristics of light sources and object colour and appearance attributes. They encompass the complexities of human visual perception, including the various causes and types of colour blindness, and other unusual visual phenomena. The book also covers colour measurement instruments and methods, as well as fluorescence and whiteness. Principles of Colour Appearance and Measurement is a comprehensive resource for designers, colour technologists, colour quality inspectors, product developers, and anyone who uses colour in their work. Addresses the key topics required to understand the issues of colour measure and management Examines how viewers perceive colour and how objects appear to them Reviews the major types of instrumentation used to measure colour

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 characteristics, tensile failure of textiles fibres and factors that affect tensile properties Discusses microstructures and each type of fibre from manufacture to finished product

This volume contains select papers presented during the Functional Textiles and Clothing Conference 2018. The book covers the recent scientific developments, cutting edge technologies, innovations, trends, challenges and opportunities in the field of functional and smart textiles and clothing. The contents of this volume will be of interest to researchers, professional engineers, entrepreneurs, and market stakeholders interested in functional textiles and clothing.

This textbook presents a thorough overview of chemical and process industries. It describes the standard technologies and the state of the industries and the manufacturing processes of specific chemical and allied products. It includes examples of industries in Ghana, highlighting the real-world applications of these technologies. The book introduces new developments in the processes in chemical industry, focuses on the technology and methodology of the processes and the chemistry underlying them. It offers guidance on operating of processing units. Furthermore, it includes sections on safety and environmental pollution control in industry. With a pedagogical and comprehensive approach, utilizing illustrations and tables, this book provides students in chemical engineering and industrial chemistry with a concise and up-to-date overview of this diverse subject. .

Advances in Filament Yarn Spinning of Textiles and Polymers reviews the different types of spinning techniques for synthetic polymer-based fibers, and issues such as their effect on fiber properties, including melt, dry, wet, and gel spinning. Synthetic polymer-based fibers are used in a great variety of consumer and industrial textile applications ranging from clothing to home furnishings to surgical procedures. This book explores how a wide array of spinning techniques can be applied in the textile industry. Part one considers the fundamental structure and properties of fibers that determine their behavior during spinning. The book then discusses developments in technologies for manufacturing synthetic polymer films to produce different fibers with specialized properties. Part two focuses on spinning techniques, including the benefits and limitations of melt spinning and the use of gel spinning to produce high-strength and high-elastic fibers. These chapters focus specifically on developments in bi-component, bi-constituent, and electro-spinning, in particular the fabrication of nanocomposite fibers. The final chapters review integrated composite spinning of yarns and the principles of wet and dry spinning. This collection is an important reference for a wide range of industrial textile technologists, including spinners, fabric and garment manufacturers, and students of textile technology. It is also of great interest for polymer scientists. Reviews the different spinning techniques and issues such as their effect on fiber properties, including melt, dry, wet, and gel spinning Considers the fundamental structure and properties of fibers that determine their behavior during spinning Reviews integrated composite spinning of yarns and the principles of wet and dry spinning

Growing awareness of environmental issues has led to increasing demand for goods produced from natural products, including natural fibres. The two-volume Handbook of natural fibres is an indispensable tool in understanding the diverse properties and applications of these important materials. Volume 2: Processing and applications focuses on key processing techniques for the improvement and broader application of natural fibres. Part one reviews processing techniques for natural fibres. Silk production and the future of natural silk manufacture are discussed, as well as techniques to improve the flame retardancy of natural fibres and chemical treatments to improve natural fibre properties. Ultraviolet-blocking properties, enzymatic treatment, and electrokinetic properties are also discussed. Part two goes on to investigate applications of natural fibres, including automotive applications, geotextiles, paper and packaging, and natural fibre composites (NFCs) for the construction and automotive industries. The use of flax and hemp, textiles made from jute and coir, antimicrobial natural fibres, and biomimetic textile materials are also considered, before a final discussion of enhancing consumer demand for natural textile fibres. 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. Focuses on key processing techniques for the improvement and broader application of natural fibres Reviews processing techniques for natural fibres, including silk production and the future of natural silk manufacture Discusses ultraviolet-blocking properties, enzymatic treatment, and electrokinetic properties, among other topics

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

Despite the world's aging population, suitable clothing for the older community is a largely neglected area. This book considers the needs of the growing number of active older people and investigates how recent developments in textiles, fibres, finishes, design and integrated technology can be deployed to serve this group and improve quality of life. Part I provides an understanding of the active aging population by considering the group's experiences of and attitudes towards clothing and reviewing the barriers to their adoption of new wearable technologies. Part II focuses on the needs of the older population, including effective communication with designers and the age-related anatomical and physiological changes that designs should consider. Part III reviews design requirements and processes, and finally Part IV reviews the manufacture of suitable apparel, with chapters on suitable textile fibres, balancing technology and aesthetics and wearable electronics. Summarises the wealth of recent research on attitudes to clothing amongst the active ageing population Looks into how their aspirations can be investigated and appropriate apparel designed to meet their needs Examines design and manufacturing issues, including ways of accommodating physiological changes with age and the use of wearable electronics

With contributed papers from the 2011 Materials Science and Technology symposia, this is a useful one-stop resource for understanding the most important issues involved in the processing, properties, and applications of biomaterials science. Logically organized and carefully selected, the articles cover the themes of the symposia: Next Generation Biomaterials: and Surface Properties of Biomaterials. An essential reference for government labs as well as academics in mechanical and chemical engineering, materials and or ceramics, and chemistry.

Sustainability is an issue that increasingly concerns all those involved in the apparel industry, including textile manufacturers, apparel designers, retailers and consumers. This important book covers recent advances and novel technologies in the key areas of production, processing and recycling of apparel. Part One addresses sustainable finishing and dyeing processes for textiles. The first two chapters concentrate on the environmental impact of fabric finishing, including water consumption, emissions and waste management. Further chapters focus on plasma and enzymatic treatments for sustainable textile processing, and the potential for improving the sustainability of dyeing technologies. Part Two covers issues of design, retail and recycling, and includes discussions of public attitudes towards sustainability in fashion, methods of measuring apparel sustainability and social trends in the re-use of apparel. Reviews sustainable finishing and dyeing processes for textiles Addresses social attitudes towards and methods for measuring sustainability in the apparel industry and retail sectors Covers recycling of apparel

*Advances in Functional and Protective Textiles* explores the latest research in the use of textile materials for protective clothing. The book's international roster of researchers in industry and academia describe innovative applications in defense, medical, sports, fire protection, radiation protection, and more. This book is an invaluable resource for readers seeking to produce textiles with self-cleaning, antimicrobial, super-hydrophobic, UV-protective, insect repellent, flame retardant or anti-felting properties. Particular attention is given to textile fibers, including cotton, wool, viscose, and other synthetic fibers whose properties solve many problems. Sustainable approaches to the processing of textiles for protective properties are also addressed, as are hazards. Introduces the advanced testing and modeling methods that are necessary for the production of protective textiles Describes the properties of the latest advanced chemicals and materials used to make protective textiles and clothing Covers every step in the development of protective clothing, from the engineering of novel materials, to advanced fabrication methodologies and applications

The Handbook of Composites From Renewable Materials comprises a set of 8 individual volumes that brings an interdisciplinary perspective to accomplish a more detailed understanding of the interplay between the synthesis, structure, characterization, processing, applications and performance of these advanced materials. The handbook covers a multitude of natural polymers/ reinforcement/ fillers and biodegradable materials. Together, the 8 volumes total at least 5000 pages and offers a unique publication. This 2nd volume of the Handbook is solely focused on the Design and Manufacturing of renewable materials. Some of the important topics include but not limited to: design and manufacturing of high performance green composites; manufacturing of high performance biomass-based polyesters by rheological approach; components design of fibrous composite materials; design and manufacturing of bio-based sandwich structures; design and manufacture of biodegradable products from renewable resources; manufacturing and characterization of quicklime filled metal alloy composites for single row deep groove ball bearing; manufacturing of composites from chicken feathers and poly (vinyl

chloride); production of porous carbons from resorcinol-formaldehyde gels: applications; composites using agricultural wastes; manufacturing of rice wastes-based natural fiber polymer composites from thermosetting vs. thermoplastic matrices; thermoplastic polymeric composites; natural fiber reinforced PLA composites; rigid closed-cell PUR foams containing polyols derived from renewable resources; preparation and application of the composite from alginate; recent developments in biocomposites of bombyx mori silk fibroin; design and manufacturing of natural fiber/ synthetic fiber reinforced polymer hybrid composites; natural fibre composite strengthening solution for structural beam component for enhanced flexural strength; high pressure resin transfer molding of epoxy resins from renewable sources; cork based structural composites; the use of wheat straw as an agricultural waste in composites for semi-structural applications and design/ manufacturing of sustainable composites.

**Silk: Processing, Properties and Applications, Second Edition**, examines all aspects of silk technology, including its manufacture, processing, properties, structure-property relationships, dyeing, printing and finishing, and applications. This new edition is updated and expanded to include the very latest developments in silk production. Detailed chapters discuss silk reeling and silk fabric manufacture, the structural aspects of silk, its mechanical and thermal properties, and silk dyeing. Further chapters focus on the latest developments in terms of processing and applications, covering emerging topics, such as spider silks, non-mulberry silks, the printing and finishing of silk fabrics, and by-products of the silk industry. This book will be a highly valuable source of information for textile technologists, engineers and manufacturers, fiber scientists, researchers and academics in natural fibers or textile technology. Offers in-depth coverage of silk production, properties and structure-property relationships Provides an authoritative reference on sericulture, silk fabric processing and applications of silk Expanded to include non-mulberry silks, printing and finishing of silk fabrics, and by-products of sericulture

With the rapid expansion of ink jet printing, textile printing and allied industries need to understand the principles underpinning this technology and how it is currently being successfully implemented into textile products. Considering the evolution of new print processes, technological development often involves a balance of research across different disciplines. Translating across the divide between scientific research and real-world engagement with this technology, this comprehensive publication covers the basic principles of ink jet printing and how it can be applied to textiles and textile products. Each step of the ink jet printing process is covered, including textiles as a substrate, colour management, pre-treatments, print heads, inks and fixing processes. This book also considers the range of textile printing processes using ink jet technology, and discusses their subsequent impact on the textile designer, manufacturer, wholesaler, retailer and the environment. Covers the foundations and development of ink jet textile printing technology Discusses the steps of ink jet printing from colour management to fixing processes Analyses how ink jet printing has affected the textile industry

**Smart Textiles and Their Applications** outlines the fundamental principles of applied smart textiles, also reporting on recent trends and research developments. Scientific issues and proposed solutions are presented in a rigorous and constructive way that fully presents the various results, prototypes, and case-studies obtained from academic and industrial laboratories worldwide. After an introduction to smart textiles and their applications from the editor, Part One reviews smart textiles for medical purposes, including their use in health monitoring, treatment delivery, and assistive technologies. Part Two covers smart textiles for transportation and energy, with chapters covering smart textiles for the monitoring of structures and processes, as well as smart textiles for energy generation. The final section considers smart textiles for protection, security, and communication, and includes chapters covering electrochromic textile displays, textile antennas, and smart materials for personal protective equipment. Scientific issues and proposed solutions are presented in a rigorous and constructive way regarding various results, prototypes, and case-studies obtained from academic and industrial laboratories worldwide Useful for researchers and postgraduate students, and also for existing companies and start-ups that are developing products involving smart textiles Authored and edited by an international team who are experts in the field ensure comprehensive coverage and global relevance

With increased environmental awareness and rising costs, manufacturers are investing in real time monitoring and control of dyeing to increase its efficiency and quality. This book reviews ways of automating the dyeing process as well as ways of understanding key processes in dyeing, including dye transport in fluid systems. This understanding is then used to create models to simulate the dyeing process which can then be used to develop appropriate measurement and control systems. Control of variables such as temperature, pH, conductivity and dye concentration can then be used to ensure a more consistent and cost-effective dyeing process. Reviews the dyeing process and dye house automation, and the factors that affect dyeing quality and common difficulties in the process. Explains the principles underlying the dyeing process and provides a thorough understanding of the mathematical models that can be used to approximate it. Discusses techniques for monitoring dyebaths and controlling the dyeing process.

Composite materials, often shortened to composites, are engineered or naturally occurring materials made from two or more constituent materials with significantly different physical or chemical properties which remain separate and distinct at the macroscopic or microscopic scale within the finished structure. The aim of this book is to provide comprehensive reference and text on composite materials and structures. This book will cover aspects of design, production, manufacturing, exploitation and maintenance of composite materials. The scope of the book covers scientific, technological and practical concepts concerning research, development and realization of composites.

Natural fibres are becoming increasingly popular for use in industrial applications, providing sustainable solutions to support technical innovation. These versatile, natural based materials have applications in a wide range of industries, from textiles and consumer products to the automotive and construction industries. **Industrial Applications of Natural Fibres** examines the different steps of processing, from natural generation, fibre separation and fibre processing, to the manufacturing of the final product. Each step is linked to fibre properties and characterization, highlighting how different fibres influence the product properties through a discussion of their chemical and structural qualities. Considering

the value-added chain from natural generation to final product, with emphasis on quality management, this book reviews the current research and technical applications of natural fibres. Topics covered include: Introduction to the Chemistry and Biology of Natural Fibres Economic Aspects of Natural Fibres Vegetable Fibres Animal Fibres Testing and Quality Management Applications: Current and Potential Industrial Application of Natural Fibres will be a valuable resource for scientists in industry and academia interested in the development of natural based materials and products. It is particularly relevant for those working in chemical engineering, sustainable chemistry, agricultural sciences, biology and materials sciences.

Silk is increasingly being used as a biomaterial for tissue engineering applications, as well as sutures, due to its unique mechanical and chemical properties. *Silk Biomaterials for Tissue Engineering and Regenerative Medicine* discusses the properties of silk that make it useful for medical purposes and its applications in this area. Part one introduces silk biomaterials, discussing their fundamentals and how they are processed, and considering different types of silk biomaterials. Part two focuses on the properties and behavior of silk biomaterials and the implications of this for their applications in biomedicine. These chapters focus on topics including biodegradation, bio-response to silk sericin, and capillary growth behavior in porous silk films. Finally, part three discusses the applications of silk biomaterials for tissue engineering, regenerative medicine, and biomedicine, with chapters on the use of silk biomaterials for vertebral, dental, dermal, and cardiac tissue engineering. *Silk Biomaterials for Tissue Engineering and Regenerative Medicine* is an important resource for materials and tissue engineering scientists, R&D departments in industry and academia, and academics with an interest in the fields of biomaterials and tissue engineering. Discusses the properties and applications of silk for medical purposes Considers pharmaceutical and cosmeceutical applications

*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

*Garment Manufacturing Technology* provides an insiders' look at this multifaceted process, systematically going from design and production to finishing and quality control. As technological improvements are transforming all aspects of garment manufacturing allowing manufacturers to meet the growing demand for greater productivity and flexibility, the text discusses necessary information on product development, production planning, and material selection. Subsequent chapters covers garment design, including computer-aided design (CAD), advances in spreading, cutting and sewing, and new technologies, including alternative joining techniques and seamless garment construction. Garment finishing, quality control, and care-labelling are also presented and explored. Provides an insiders look at garment manufacturing from design and production to finishing and quality control Discusses necessary information on product development, production planning, and material selection Includes discussions of computer-aided design (CAD), advances in spreading, cutting and sewing, and new technologies, including alternative joining techniques and seamless garment construction Explores garment finishing, quality control, and care labelling

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.

This book is a snapshot of the current state of the art of research and development on the properties and characteristics of silk and their use in medicine and industry. The field encompasses backyard silk production from ancient time to industrial methods in the modern era and includes an example of efforts to maintain silk production on Madagascar. Once revered as worth its weight in gold, silk has captured the imagination from its mythical origins onwards. The latest methods in molecular biology have opened new descriptions of the underlying properties of silk. Advances in technological innovation have created silk production by microbes as the latest breakthrough in the saga of silk research and development. The application of silk to biomaterials is now very active on the basis of excellent properties of silks including recombinant silks for biomaterials and the accumulated structural information.

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

international team of expert contributors, the two volumes of the Handbook of natural fibres are essential texts for professionals and academics in textile science and technology. Provides an essential guide to a wide range of natural fibres and highlights key techniques for their improvement Reviews key types and fundamental properties of natural textile fibres, addressing the production, identification and testing of a range of cotton, bast, silk and wool fibres Explores the improvement of natural fibre properties and production through breeding and cultivation, beginning with a discussion of fibrous flax and cotton

Advances in 3D Textiles presents the most recent advances in the production of three-dimensional fibrous structures and how their use has resulted in the creation of novel fabrics and applications. The text covers a wide range of fabric types, including their structures, properties, and uses in the textiles industry. Beginning with the various types of woven three-dimensional fabrics, the text then examines 3-D knitted, braided, and non-woven textiles, and the main applications and uses of three-dimensional textiles. Presents the most recent advances in the production of three-dimensional fibrous structures and how their use has resulted in the creation of novel fabrics and applications Examines many types of 3-D textiles, including knitted, braided, and non-woven textiles, and the main uses of three-dimensional textiles Covers their structures, properties, and uses within the textiles industry

Explore this authoritative guide to transforming the silk industry written by two emerging leaders in the industry Sustainable Uses of Byproducts from Silk Processing delivers a detailed treatment of the properties and potential applications of silk sources, by-products, and waste. The book describes the composition, structure, processability, and potential applications of all of the different kinds of silk by-products. Highly relevant to those working in mulberry cultivation, silkworm rearing, and silk processing, the distinguished authors offer information on how to transform silk by-products into new materials, energy, fuel, fibers, composites, food, cosmetics, and feed. Using a valorisation approach to the silk protein sericin and its by-products and taking an application-oriented view of materials sources and wastes in the silk industry. Implementation of these techniques promises to further industries as diverse as cancer treatment, pharmaceuticals, nutraceuticals, and environmental cleanup. Readers will also benefit from the inclusion of: A thorough introduction to sericin, including its structure and properties, how to process it, and its various applications An exploration of mulberry leaves, stems, and fruits, including their composition and properties, processing, and non-feed applications Discussions of the various uses of silkworm pupae, including food and feed, pupae oil properties and applications, biodiesel, byproducts of biodiesel, and the extraction of chitin and proteins from the pupae shell An examination of the applications of silkworm litter Perfect for protein chemists, biotechnologists, cosmetics industry professionals, and materials scientists, Sustainable Uses of Byproducts from Silk Processing will also earn a place in the libraries of polymer and cosmetic chemists who seek a one-stop reference for current and emerging sustainability practices in the silk industry.

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

The remarkable properties of silk fibres have gained them a prominent place in the field of technical textiles. Advances in Silk Science and Technology explores recent developments in silk processing, properties and applications. Techniques for manufacturing spider silk are also discussed and the current and future applications of this fibre are reviewed. Part One focuses on the properties and processing of silk from both silkworms and spiders. It addresses recent advances in our understanding of the properties of silk and offers systematic coverage of the processing of silk from spinning through to finishing, as well as an analysis of quality testing for silk fibres, yarns and fabrics. Part Two then addresses important applications of silk from silkworms and spiders, and includes chapters on the use of silk in polymer matrix composites and in different kinds of biomaterial. The book concludes with a chapter on developments in the use of silk waste. Reviews the properties of silk from both silkworms and spiders Offers systematic coverage of the processing of silk from spinning through to finishing Cover a range of applications, including on the use of silk in polymer matrix composites and in different kinds of biomaterial Advanced Processing, Properties, and Applications of Starch and Other Bio-based Polymers presents the latest cutting-edge research into the processing and applications of bio-based polymers, for novel industrial applications across areas including biomedical and electronics. The book is divided into three sections, covering processing and manufacture, properties, and applications. Throughout the book, key aspects of sustainability are considered, including improved utilization of available natural resources, sustainable design possibilities, cleaner production processes, and waste management. Focuses on starch-based polymers, examining the latest advances in processing and applications with this valuable category of biopolymer Highlights industrial sustainability considerations at all steps of the process, including when sourcing materials, designing and producing products, and dealing with waste Supports the processing and development of starch and other bio-based polymers with enhanced functionality for advanced applications

This book is a general introduction to the use of the silkworm and its products for the textile industry and in the human body for the purposes of aiding healing and correcting deformities. In addition, this book provides a familiarity with the uses of silk materials in textile and biological applications and also the rational basis for these applications. It

covers subjects such as silkworm silk fiber composites, silk materials in medicine and cellular immunological responses to silk materials.

Given its importance for consumer satisfaction and thus brand success, apparel fit is a major challenge for retailers and brands across the industry. Consequently there have been major developments in sizing research and how it can be used in apparel design. This book reviews how these developments are affecting clothing design for different groups of consumers. Part one identifies various aspects of body shape, size, volume and the psychological aspects of designing apparel. This section covers topics such as body shape and its influence on apparel size and consumer choices, sizing systems, body shape and weight distribution (with a discussion of the Body Volume Index (BVI) versus the Body Mass Index (BMI)), and the psychological and sociological factors influencing consumers' choice of apparel. Part two outlines the challenges in understanding the sizing and shape requirements and choices of particular customer groups. This section discusses apparel designed for infants and children, older consumers, overweight and obese consumers, plus size Black and Latino women, apparel design for Asian and Caucasian ethnic groups, sizing requirements for male apparel, maternity apparel, intimate apparel for varying body shapes, and the challenges of designing headwear to fit the size and shape of Western and Asian populations. Designing apparel for consumers provides an invaluable reference for apparel designers, manufacturers, and R&D managers in the textile industry, as well as postgraduate students and academic researchers in textiles. Reviews developments affecting clothing design for different groups of consumers Identifies various aspects of body shape, size, volume and the psychological aspects of designing apparel Outlines the challenges in understanding sizing and shape requirements and choices of particular customer groups

Silk: Materials, Processes, and Applications addresses the latest research on the structure and properties of silk fibers, properties of silk-based materials, and cutting edge-related industrial practices. It pays particular attention to mulberry silk, but unconventional silks such as spider silk and marine silk fibers are also covered. Although silk is one of the oldest known fibers, new research continues to shed light on its properties, leading it to be applied in new contexts particularly in the medical field, and new non-textile areas. In addition to structural and mechanical qualities, this book also includes a great deal of new research on the chemical modifications of silk fibers, and other processing methods. With a focus on practical methodologies, this is the most readable and readily applicable book on silk so far, making it a perfect guide for readers with a range of backgrounds. Addresses the fundamental differences between mulberry, spider, and wild silks Describes silk fiber and non-fiber forms, including hydrogels and films In-depth coverage of silk-processing methods provides the perfect starting point for biotechnologists interested in the use of silk for non-textile applications

Many thanks to the authors for high quality chapters and to the referees for helping improve the manuscripts. The book is interdisciplinary, it covers fields from organic chemistry to mathematics, and raises different aspects of oligomerization. It is a great source of information as every chapter introduces general knowledge and deep details. Mixing communities is to instigate novel ideas and hopefully help looking at oligomerization with new eyes.

Composite nonwoven materials are versatile materials with a variety of applications, including hygiene, medicine and filtration. This important book provides a technical resource for professionals and academics in the field. It explores these materials in terms of fiber types used, manufacturing processes, structure, and physical properties. The first part of the book focuses on the use of natural and synthetic fibers in composite nonwovens, discusses their structure in terms of fiber packing and alignment, and their physical properties. Further chapters deal with the practical applications of composite nonwoven materials. Hygiene applications, such as diapers, female sanitary products, incontinence pads, and wipes are covered, as well as composite nonwoven-based medical products and filters. Composite Nonwoven Materials is an ideal reference for R&D managers in the textile industry and academic researchers in textile science.

Systematic and comprehensive information on composite nonwovens Critical review of progress in research and development on composite nonwovens Comment on future research direction and ideas for product development

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.

Edited by a leading expert in the field with contributions from experienced researchers in fibers and textiles, this handbook reviews the current state of fibrous materials and provides a broad overview of their use in research and development. Volume One focuses on the classes of fibers, their production and characterization, while the second volume concentrates on their applications, including emerging ones in the areas of energy, environmental science and healthcare. Unparalleled knowledge of high relevance to academia and industry.

High performance textiles represent one of the most dynamic sectors of the international textile and clothing industry. With contributions from leading experts in the field, this book provides an important overview of key developments in the field. Chapters cover the use of high performance textiles in such areas as protective clothing, heat and fire protection, medicine, civil engineering and the energy sector. Reviews various approaches to modelling the geometry, structure and mechanical and physical properties of advanced textile materials Evaluates novel surface treatments involving plasma and laser technologies for a range of high performance textiles Focuses on textiles for specific purposes, with chapters devoted to textiles for heat and fire protection, wound care, industrial filtration, geotextiles, civil engineering and sustainable energy applications

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