Stab Resistance Of Shear Thickening Fluid Stf Kevlar

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.

This book is a result of contributions of experts from international scientific community working in different aspects of nanocomposite science and applications and reports on the state of the art research and development findings on nanocomposites through original and innovative research studies. Through its 19 chapters the reader will have access to works related to the theory, and characterization of various types of nanocomposites such as composites of cellulose and metal nanoparticles, polymer/clay, polymer/Carbon and polymer-graphene nanocomposites and several other exciting topics while it introduces the various applications of nanocomposites in water treatment, supercapacitors, green energy generation, anticorrosive and antistatic applications, hard coatings, antiballistic and electroconductive scaffolds. Besides, it reviews multifunctional nanocomposites, photonics of dielectric nanostructures and electron scattering in nanocomposite materials.

This special volume brings together the latest advances in, and applications of, Manufacturing Engineering and Automation. It comprises 598 peer-reviewed papers selected from over 1000 papers submitted by universities and industrial concerns all over the world. Volume is indexed by Thomson Reuters CPCI-S (WoS).

High-Performance Apparel: Materials, Development, and Applications covers the materials and techniques used in creating high-performance apparel, the technical aspects of developing high-performance garments, and an array of applications for high-performance clothing and wearable technology. Part One covers fabric construction for high-performance garments, from fiber types and spinning methods, to weaving, knitting, finishing, and joining techniques. Development of high-performance apparel is covered in Part Two, with particular emphasis on design and product development for function and wearer comfort. Part Three covers a range of applications and wearable technology

that make use of high-performance apparel, including chapters on sportswear, protective clothing, and medical, military, and intelligent textiles. The book provides an excellent resource for all those engaged in garment development and production, and for academics engaged in research into apparel technology and textile science. Offers a range of perspectives on high-performance apparel from an international team of authors with diverse expertise Provides systematic and comprehensive coverage of the topic from fabric construction, through apparel design and development, to the range of current and potential applications Presents an excellent resource for all those engaged in garment development and production, and for academics engaged in research

Protective Armor Engineering Design

Proceedings of Fourth International Conference on Inventive Material Science Applications

Proceedings of the Third International Conference on Heterogeneous Material Mechanics : May 22-26, 2011, Shanghai, China

Nanocomposites

Engineering of High-Performance Textiles

Advances in Experimental and Computational Rheology

This book comprises the proceedings of the Virtual Seminar on Applied Mechanics 2021 organized by the Indian Society for Applied Mechanics. The contents of this volume focus on solid mechanics, fluid mechanics, biomechanics/biomedical engineering, materials science and design engineering. The authors are experienced practitioners and the chapters encompass up-to-date research in the field of applied mechanics. This book will appeal to researchers and scholars across the broad spectrum of engineering involving the application of mechanics in civil, mechanical, aerospace, automobile, bio-medical, material science, and more.

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

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.

This volume contains select papers presented during the Functional Textiles and Clothing Conference 2020 held at Indian Institute of Technology Delhi. The volume covers recent developments, challenges and opportunities in the field of functional and protective clothing; functional printing and finishing; sustainable production and supply chain; and testing and characterisation. This volume will be of interest to researchers, professional engineers, entrepreneurs, and market stakeholders interested in functional textiles and clothing.

Ceramic Armor and Armor Systems

High-Performance Apparel

Proceedings of Virtual Seminar on Applied Mechanics (VSAM 2021)

Theory and Applications

The Science of Armour Materials

Nanomaterials-Based Coatings

This book presents select proceedings of the International Conference on Future Learning Aspects of Mechanical Engineering (FLAME 2020). The book focuses on latest research in mechanical engineering design and covers topics such as computational mechanics, finite element modeling, computer aided engineering and analysis, fracture mechanics, and vibration. The book brings together different aspects of engineering design and the contents will be useful for researchers and professionals working in this field.

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

Advanced Fibrous Composite Materials for Ballistic Protection provides the latest information on ballistic protection, a topic that remains an important issue in modern times due to ever increasing threats coming from regional conflicts, terrorism, and anti-social behavior. The basic requirements for ballistic protection equipment are first and foremost, the prevention of a projectile from perforating, the reduction of blunt trauma to the human body caused by ballistic impact, the necessity that they are thermal and provide moisture comfort, and that they are lightweight and flexible to guarantee wearer ' s mobility. The main aim of this book is to present some of the most recent developments in the design and engineering of woven fabrics and their use as layering materials to form composite structures for ballistic personal protection. Chapter topics include High Performance Ballistic Fibres, Ultra-High Molecular Weight Polyethylene (UHMWPE), Ballistic Damage of Hybrid Composite Materials, Analysis of Ballistic Fabrics and Layered Composite Materials, and Multi-Scale Modeling of Polymeric Composite Materials for Ballistic Protection. Contributions from leading experts in the field Cutting edge developments on the engineering of ballistic materials Comprehensive analysis of the development and uses of advanced fibrous composite materials

Advances in Nanocomposites - Synthesis, Characterization and Industrial Applications was conceived as a comprehensive reference volume on various aspects of functional nanocomposites for engineering technologies. The term functional nanocomposites signifies a wide area of polymer/material science and engineering, involving the design, synthesis and study of nanocomposites of increasing structural sophistication and complexity useful for a wide range of chemical, physicochemical and biological/biomedical processes. "Emerging technologies" are also broadly understood to include new technological developments, beginning at the forefront of conventional industrial practices and extending into anticipated and speculative industries of the future. The scope of the present book on nanocomposites and applications extends far beyond emerging technologies. This book presents 40 chapters organized in four parts systematically providing a wealth of new ideas in design, synthesis and study of sophisticated nanocomposite structures.

Advances in Heterogeneous Material Mechanics 2011

Manufacturing Engineering and Automation I

Shear Thickening Fluid

Natural Fibres: Advances in Science and Technology Towards Industrial Applications

Enhancement of Spike and Stab Resistance of Flexible Armor Using Nanoparticles and a Cross-linking Fixative

Functional and Technical Textiles

The Science of Armour Materials comprehensively covers the range of armor materials from steels and light alloys, through glasses and ceramics, to fibers, textiles, and protective apparel. The book also discusses aspects of analytical and numerical modeling, as well as laboratory-based high-strain rate testing and ballistic testing methodologies. Each chapter is written from an international perspective, including reviews of the current global literature, and incorporates case studies that focus upon real life applications, research outcomes, and lessons learned. The threat spectrum is restricted to small arms ammunition, high velocity fragments, and stab and spike attacks, as well as blast loadings. Features input from an editor who is an expert in his field: Dr. Ian Crouch, the author of over 80 publications in his field, with three patents to his name Provides systematic and comprehensive coverage of armor materials, modeling, and testing Offers a cross-disciplinary approach that brings together expertise in materials science and defense engineering Discusses aspects of analytical and numerical modeling, as well as laboratory-based high-strain rate testing and ballistic testing methodologies

This book presents a global view of the development and applications of technical textiles with the description of materials, structures, properties, characterizations, functions and relevant production technologies, case studies, challenges, and opportunities. Technical textile is a

transformative research area, dealing with the creation and studies of new generations of textiles that hoist many new scientific and technological challenges that have never been encountered before. The book emphasizes more on the principles of textile science and technology to provide solutions to several engineering problems. All chapter topics are exclusive and selectively chosen and designed, and they are extensively explored by different authors having specific knowledge in each area.

This book summarizes recent advances in the fabrication methods, properties, and applications of various ceramic-filled polymer matrix composites. Surface-modification methods and chemical functionalization of the ceramic fillers are explored in detail, and the outstanding thermal and mechanical properties of polymer – ceramic composites, the modeling of some of their thermal and mechanical parameters, and their major potential applications are discussed along with detailed examples. Aimed at researchers, industry professionals, and advanced students working in materials science and engineering, this work offering a review of a vast number of references in the polymer – ceramic field, this work helps readers easily advance their research and understanding of the field.

This book will interest researchers, scientists, engineers and graduate students in many disciplines, who make use of mathematical modeling and computer simulation. Although it represents only a small sample of the research activity on numerical simulations, the book will certainly serve as a valuable tool for researchers interested in getting involved in this multidisciplinary field. It will be useful to encourage further experimental and theoretical researches in the above mentioned areas of numerical simulation.

Advances in Functional and Protective Textiles

Protective Textiles from Natural Resources

Advances in Engineering Design

Improving Comfort, Performance and Protection

Advances in Nanocomposites

Advanced Fibrous Composite Materials for Ballistic Protection

Smart textiles are the textiles that are sensitive to any environmental conditions and can respond accordingly. Using passive and active coatings to generate high sensitivity to textiles is among the most recent research trends by engineers around the World. This has resulted in expansion in the application of smart textiles in various industrial fields including medicals, electronics and protective clothing. The aim of this special issue is to introduce the most state-of-the-art research and review articles by distinguished researchers in the field of smart coatings on textiles. The guest editor hopes that content will be useful for researchers, students and companies for continuation of research and development with the concept of smart textiles.

Textile manufacturing is an important subject in textile programs and processing industries. The introduction of manmade and synthetic fibers, such as polyester, nylon, acrylic, cellulose, and Kevlar, among others, has greatly expanded the variety of textile products available today. In addition, new fiber development has brought about new machines for producing

yarns, fabrics, and garments. Textile Manufacturing Processes is a collection of academic and research work in the field of textile manufacturing. Written by experts, chapters cover topics such as yarn manufacturing, fabric manufacturing, and garment and technical textiles. This book is useful for students, industry workers, and anyone interested in learning the fundamentals of textile manufacturing.

Smart and Functional Textiles is an application-oriented book covering a wide range of areas from multifunctional nanofinished textiles, coated and laminated textiles, wearable e-textiles, textile-based sensors and actuators, thermoregulating textiles, to smart medical textiles and stimuli-responsive textiles. It also includes chapters on 3D printed smart textiles, automotive smart textiles, smart textiles in military and defense, as well as functional textiles used in care and diagnosis of Covid-19.

Shear Thickening Fluid: Theory and Applications provides a complete reference on shear thickening fluid (STF) and STF applications for engineers, researchers, and scientists. STF rheology is discussed in terms of several factors, including suspension medium, particle size, particle shape, and environmental conditions. Single-phase STF is discussed, and the novel concept of multi-phase STF is examined by considering various fillers in this smart fluid. Prominent applications of STF are categorized as multi-functional systems, adaptive damping devices, surface finishing operations, and protective structures, and the applications are described by discussing the smart behavior of STF.

Recent Advances in Applied Mechanics

Materials and Manufacturing

Functional Textiles and Clothing 2020

Smart Textiles and Their Applications

Smart Coatings on Fibers and Textiles

Emergent Properties and Applications

This book is a printed edition of the Special Issue Advances in Experimental and Computational Rheology that was published in Fluids

Engineering of High-Performance Textiles discusses the fiber-to-fabric engineering of various textile products. Each chapter focuses on practical guidelines and approaches for common issues in textile research and development. The book discusses high-performance fibers and yarns before presenting the engineering fabrics and architectures needed for particular properties required of high-performance textiles. Properties covered include moisture absorption, pilling resistant knitwear, fire retardant fabrics,

camouflage fabrics, insect repellent fabrics, filtration, and many more. Coordinated by two highly distinguished editors, this book is a practical resource for all those engaged in textile research, development and production, for both traditional and new-generation textile products, and for academics involved in research into textile science and technology. Offers a range of perspectives on high-performance textiles from an international team of authors with diverse expertise in academic research, textile development and manufacture Provides systematic and comprehensive coverage of the topic from fabric construction, through product development, to the range of current and potential applications that exploit high-performance textile technology Led by two high-profile editors with many years' experience in engineering high-performance textiles

Academic researchers who are working on the development of composite materials for ballistic protection need a deeper understanding on the theory of material behavior during ballistic impact. Those working in industry also need to select proper composite constituents, to achieve their desired characteristics to make functional products. Composite Solutions for Ballistics covers the different aspects of ballistic protection, its different levels and the materials and structures used for this purpose. The emphasis in the book is on the application and use of composite materials for ballistic protection. The chapters provide detailed information on the various types of impact events and the complexity of materials to respond to those events. The characteristics of ballistic composites and modelling and simulation results will enable the reader to better understand impact mechanisms according to the theory of dynamic material behavior. A complete description of testing conditions is also given that includes sensors and high-speed devices to monitor ballistic events. The book includes detailed approaches and schemes that can be implemented in academic research into solutions for ballistic protection in both theoretical and experimental fields, to find solutions for existing and next generation threats. The book will be an essential reference resource for materials scientists and engineers, and academic and industrial researchers working in composite materials and textiles for ballistic protection, as well as postgraduate

students on materials science, textiles and mechanical engineering courses. Discusses the fundamentals of impact response mechanisms and related solutions covering advantages and disadvantages for both existing and next generation applications Includes various methods for evaluation of ballistic constituents according to economic and environmental criteria, types of green ballistics are considered to enhance sustainable production of applications as well as hybrid composites from natural wastes Discusses selection methodologies for ballistic applications and detailed information on the use of textiles for reinforcement fabrication

This book, with its internationally peer-reviewed papers, covers the subject areas of Textile Science and Technology, Textile Dyeing and Finishing, Textile Machinery and Equipment, Apparel Design and Merchandising and New Trends in the Textile Industry. It will be of interest to anyone working in these subject areas.

Polymer and Ceramic Composite Materials

From Science to Market

Military Textiles

Numerical Simulations

Advanced Textile Engineering Materials

Examples and Applications in Computational Fluid Dynamics

This volume includes the latest achievements in the area of ceramic armor systems including ceramic armor design and modeling, ceramic armor materials and composites development and manufacturing, physical properties and structures of armor ceramics, fracture mechanisms of armor ceramics and composites, and ballistic testing and performance of ceramic armor systems. Proceedings of the symposium held at the 105th Annual Meeting of The American Ceramic Society, April 27-30, 2003, in Nashville, Tennessee; Ceramic Transactions, Volume 151.

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 repellant, 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

There is increasing interest in the area of protective vests, either for protection against bullets or protection from the most realistic threats within domestic frontline operations: edged weapon, knives, and medical needles. This volume addresses that need. This new book provides an in-depth survey of the state-of-the-art research and practical techniques in the area of protected fabrics, especially stab-resistant and bulletproof fabrics. The book covers: • The history of protective armor: the long history of the art of protective armor manufacturing. • Materials used for body armor: the design and materials used for soft armor to increase its perforation-resistance utilizing high-performance fibers. • Anti-stab and anti-bullet armor design: the different design parameters required for the design of flexible armor in order to stop high-velocity projectiles. • The comfort of the body armor design: the flexibility, thermal resistivity, and evaporative moisture resistivity through the fabric. • Methods of testing the flexible body armors: testing the components of flexible body armor, according to the level of the protection required, such as NIJ Standards, HOSDB Body Armour Standards for UK Police, and the German SK1 Standard, among others. Written by an expert in textile composite material engineering, this volume fills an important gap in the area of protective fabric against stabbing or bullets and provides invaluable practical knowledge for body armor design.

The first edition of Handbook of Technical Textiles has been an essential purchase for professionals and researchers in this area since its publication in 2000. With revised and updated coverage, including several new chapters, this

revised two volume second edition reviews recent developments and new technologies across the field of technical textiles. Volume 2 – Technical Textile Applications offers an indispensable guide to established and developing areas in the use of technical textiles. The areas covered include textiles for personal protection and welfare, such as those designed for ballistic protection, personal thermal and fire protection, and medical applications; textiles for industrial, transport and engineering applications, including composite reinforcement and filtration; and the growing area of smart textiles. Comprehensive handbook for all aspects of technical textiles Provides updated, detailed coverage of processes, fabric structure, and applications Ideal resource for those interested in high-performance textiles, textile processes, textile processing, and textile applications Many of the original, recognized experts from the first edition update their respective chapters

Smart and Functional Textiles

Synthesis, Characterization and Industrial Applications

ICIMA 2021

Advances in Healthcare and Protective Textiles

Functional Finishes for Textiles

Advances in Textile Engineering

Volume is indexed by Thomson Reuters CPCI-S (WoS). This collection of 301 peer-reviewed papers reflects a meeting of academic research and industry applications, the sharing of R&D experience and the discussion of innovative achievements in the field of materials and manufacturing. It will not only furnish readers with a broad overview of the latest advances, but also provide a valuable summary and reference work for researchers in this field.

Advances in Healthcare and Protective Textiles addresses technologies that have had a major impact in industry for decades, but which are currently attracting unprecedented attention due to their applications in the fight against the Coronavirus epidemic. Recent advances in textile technology have opened new possibilities for textile researchers and scientists in antiviral textiles, flame-retardant textiles, antimicrobial textiles, insect repellent textiles, breathable medical textiles, aroma-protective textiles, high tech-textiles, smart textiles, nano textiles, and more. This book provides systematic and comprehensive coverage of cutting-edge research and developments on material design, methodologies,

characterizations, processes, properties and applications of medical healthcare and protective textiles. In addition, sections pay special attention to advanced fabrication methodologies and materials used in apparel engineering. Provides a thorough review of recent advances in personal protective equipment (PPE) design and manufacture in response to the requirements of the fight against Coronavirus Gives advice on improving sustainability through the use of reusable and recyclable medical textiles Explores innovative materials like biopolymers and their applications in medical textiles
Functional finishes for textiles reviews the most important fabric finishes in the textile industry. It discusses finishes designed to improve the comfort and other properties of fabrics, as well as finishes which protect the fabric or the wearer. Each chapter reviews the role of a finish, the mechanisms and chemistry behind the finish, types of finish and their methods of application, application to particular textiles, testing and future trends. Describes finishes to improve comfort, performance, and protection of fabric or the wearer Examines the mechanisms and chemistry behind different types of finishes and their methods of application, testing and future trends Considers environmental issues concerning functional finishes
Technical d104iles are high performance speciality materials. Applications are found in inflatable structures, tents, as reinforcement in composites for construction, as body armour and vehicle protection, in filters, as a base for flexible printed circuits, hose, conveyor belts and tyres. Polymer Enhancement of Technical d104iles examines the potential for these materials. The review is accompanied by around 400 abstracts from papers and books in the Rapra Polymer Library database.
Textiles for Advanced Applications
Polymer Enhancement of Technical Textiles
(With CD-ROM)
Textile Manufacturing Processes
Composite Solutions for Ballistics
Select Proceedings of FLAME 2020
The volume is a collection of best selected research papers presented at the 4th International Conference on Inventive Material Science Applications (ICIMA 2021) organized by PPG Institute of Technology, Coimbatore, India during 14 – 15 May 2021. The book includes original research by material science researchers towards developing a compact and efficient functional elements and structures for micro, nano and optoelectronic applications. The book covers important topics like nanomaterials and devices, optoelectronics, sustainable electronic materials, nanocomposites and nanostructures, hybrid electronic materials, medical electronics, computational material science, wearable electronic devices and models, and optical/nano-sensors.

Advanced Textile Engineering Materials is written to educate readers about the use of advanced materials in various textile applications. In the first part, the book addresses recent advances in chemical finishing, and also highlights environmental issues in textile sectors. In the second part, the book provides a compilation of innovative fabrication strategies frequently adopted for the mechanical finishing of textiles. The key topics are • Smart textiles • Functional modifications • Protective textiles • Conductive textiles • Coated/laminated textiles • Antimicrobial textiles • Environmental aspects in textiles • Textile materials in composites • 3-D woven preforms for composite reinforcement • Evolution of soft body armor

A novel approach has been introduced in making flexible armor composites. Armor composites are usually made by reinforcing Kevlar fabric into the mixture of a polymer and nanoscale particles. The current procedure deviates from the traditional shear thickening fluid (STF) route and instead uses silane (amino-propyl-trimethoxy silane) as the base polymer. In addition, a cross-linking fixative such as Glutaraldehyde (Gluta) is added to the polymer to create bridges between distant pairs of amine groups present in Kevlar and silated nanoparticles. Water, silane, nanoparticles and Gluta are mixed using a homogenizer and an ultra-sonochemical technique. Subsequently, the admixture is impregnated with Kevlar - bypassing the heating and evaporating processes involved with STF. The resulting composites have shown remarkable improvement in spike resistance; at least one order higher than that of STF/Kevlar composites. The source of improvement has been traced to the formation of secondary amine C-N stretch due to the presence of Gluta.

Presented in an accessible and introductory manner, this is the first book devoted to the comprehensive study of colloidal suspensions.

Handbook of Technical Textiles

Fundamentals and Applications

Technical Textile Applications

New Trends and Developments

Colloidal Suspension Rheology

Materials, Development, and Applications

Nanomaterials-Based Coatings: Fundamentals and Applications presents the fundamental concepts and applications of nanomaterial-based coatings in anticorrosion, antiwear, antibacterial, antifungal, self-cleaning, superhydrophobic, super hard, super heat resistance, solar reflective, photocatalytic and radar absorbing coatings. It is an important resource for those seeking to understand the underlying phenomenal and fundamental mechanisms through which nanoparticles interact with polymeric and metallic matrices to create stronger coatings. As nanomaterials-enforced coatings are smarter, stronger and more durable, the information listed in this book will helps readers understand their usage and further applications. Highlights the latest methods in design, preparation and characterization techniques for nanomaterials-

based coatings Discusses emerging applications of nanomaterials-based coatings, including substrates protection, sustainable energy, and in the environment and healthcare Assesses the major challenges in making nanomaterials-based coatings more reliable and cost-effective

Textiles for military uniforms face a complex set of challenges. They must provide protection, durability and comfort in a wide range of hostile environments. Military textiles reviews the range of recent research on how military clothing can best meet soldiers' needs. The first part of the book reviews general requirements of military textiles, including damage resistance, comfort, sweat management, cold-weather conditions and the integration of high-tech materials into uniforms. Part II concentrates on the protective role of military textiles, covering such areas as high-performance ballistic fibres, textiles for chemical and biological protection, camouflage materials and military fabrics for flame protection. The book also reviews the use of non-woven fabrics and new coatings for military applications. With its distinguished editor and international team of contributors, Military textiles is a valuable reference for those researching and manufacturing military textiles, as well as those interested in the wider area of textiles for protection. Reviews the range of recent research on how military clothing can best meet soldier's needs Examines damage resistance, sweat management and comfort Discusses the protective role of military textiles

Transformational Science and Technology for the Current and Future Force