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Functional Textiles for Improved Performance, Protection and Health High-Performance Fibres Power Plant Life Management and Performance Improvement Properties and Performance of Natural-Fibre Composites Performance of Bio-based Building Materials Sensory Panel Management Smart Buildings High Performance Textiles and Their Applications Long-term Performance and Durability of Masonry Structures Composite Reinforcements for Optimum Performance Biocompatibility and Performance of Medical Devices High Performance Silicon Imaging Structure and Properties of High-Performance Fibers The Performance of Photovoltaic (PV) Systems Engineering of High-Performance Textiles High Performance Technical Textiles Interface Engineering of Natural Fibre Composites for Maximum Performance Laser shock peening Performance and process simulation Functional Finishes for Textiles The Performance of Concentrated Solar Power (CSP) Systems Marine Composites Physical Properties of Textile Fibres Materials for Energy Efficiency and Thermal Comfort in Buildings High-Performance Organic Coatings Solid Oxide Fuel Cell Technology Alternative Fuels and Advanced Vehicle Technologies for Improved Environmental Performance High-Performance and Specialty Fibers Monitoring and Evaluation of Biomaterials and their Performance In Vivo Marine Concrete Structures Performance Testing of Textiles Industrial Gas Turbines Small and Micro Combined Heat and Power (CHP) Systems Polymer Matrix Composites and Technology Performance Testing of Textiles Lightweight Composite Structures in Transport Delivering Performance in Food Supply Chains Performance of Home Textiles Development of Ultra-High Performance Concrete against Blasts Biocomposites for High-Performance Applications Wind Energy Systems

Functional Textiles for Improved Performance, Protection and Health 2011-06-21 the textile industry is increasingly based on ongoing innovation and development of higher performance products and the field of functional textiles is no exception this book explores the development of textiles with a wide range of functions with the aim of improving the performance of the product in terms of the protection and health benefits that it can offer the book is split into two parts part one focuses on functional textiles for improved performance and protection with chapters reviewing antistatic flame retardant and infrared functional textiles among many others chapters in part two examine the uses of functional textiles in a medical context including superhydrophobic materials antibacterial textiles and insect repellent materials with its distinguished editors and contributions from some of the world s leading authorities functional textiles for improved performance protection and health is invaluable for textile scientists technologists and engineers as well as those designing and manufacturing textiles it is also a suitable reference for the academic sector examines the use of functional textiles in a medical context including superhydrophobic materials antibacterial textiles and insect repellent materials topics range from textile chemicals and their interaction with skin to novel pesticide protective clothing considers anti ultraviolet protection of clothing and flame retardant textiles

High-Performance Fibres 2001-10-26 this important new handbook provides comprehensive coverage of how high performance fibres are designed and manufactured and covers their capabilities and applications the high modulus high tenacity hm ht fibres fall naturally into three groups polymer fibres such as aramids and polyethylene fibres carbon fibres such as kevlar and inorganic fibres based on glass and ceramic fibres the books shows how high performance fibres are being increasingly used for a wide range of applications including goetextiles and geomembranes and for construction and civil engineering projects as well as in specialist fibres within composite materials where their ability to fulfil demanding roles makes them an effective choice for the engineer and materials scientist provides a comprehensive overview of how high performance fibres are designed and manufactured and covers their capabilities and applications explains how high performance fibres are being increasingly used for a wide range of applications including geotextiles and geomembranes and construction and civil engineering projects

Power Plant Life Management and Performance Improvement 2011-09-28 coal and gas based power plants currently supply the largest proportion of the world s power generation capacity and are required to operate to increasingly stringent environmental standards higher temperature combustion is therefore being adopted to improve plant efficiency and to maintain net power output given the energy penalty that integration of advanced emissions control systems cause however such operating regimes also serve to intensify degradation mechanisms within power plant systems potentially affecting their reliability and lifespan power plant life management and performance

improvement critically reviews the fundamental degradation mechanisms that affect conventional power plant systems and components as well as examining the operation and maintenance approaches and advanced plant rejuvenation and retrofit options that the industry are applying to ensure overall plant performance improvement and life management part one initially reviews plant operation issues including fuel flexibility condition monitoring and performance assessment parts two three and four focus on coal boiler plant gas turbine plant and steam boiler and turbine plant respectively reviewing environmental degradation mechanisms affecting plant components and their mitigation via advances in materials selection and life management approaches such as repair refurbishment and upgrade finally part five reviews issues relevant to the performance management and improvement of advanced heat exchangers and power plant welds with its distinguished editor and international team of contributors power plant life management and performance improvement is an essential reference for power plant operators industrial engineers and metallurgists and researchers interested in this important field provides an overview of the improvements to plant efficiency in coal and gas based power plants critically reviews the fundamental degradation mechanisms that affect conventional power plant systems and components noting mitigation routes alongside monitoring and assessment methods addresses plant operation issues including fuel flexibility condition monitoring and performance assessment

Properties and Performance of Natural-Fibre Composites 2008-06-23 concern about global warming has led to renewed interest in the more sustainable use of natural fibres in composite materials this important book reviews the wealth of recent research into improving the mechanical properties of natural fibre thermoplastic composites so that they can be more widely used the first part of the book provides an overview of the main types of natural fibres used in composites how they are processed and in particular the way the fibre matrix interface can be engineered to improve performance part two discusses the increasing use of natural fibre composites in such areas as automotive and structural engineering packaging and the energy sector the final part of the book discusses ways of assessing the mechanical performance of natural fibre composites with its distinguished editor and team of contributors properties and performance of natural fibre composites is a valuable reference for all those using these important materials in such areas as automotive and structural engineering provides an overview of the types of natural fibres used in composites discusses fibre matrix interface and how it can be engineered to improve performance examines the increasing use of natural fibre composites in automotive and structural engineering and the packaging and energy sector

Performance of Bio-based Building Materials 2017-07-07 performance of bio based building materials provides guidance on the use of bio based building materials bbbm

with respect to their performance the book focuses on bbbm currently present on the european market the state of the art is presented regarding material properties recommended uses performance expectancies testing methodology and related standards chapters cover both old and traditional bbbm since quite a few of them are experiencing a comeback on the market promising developments that could become commercial in the near future are presented as well the book will be a valuable reference resource for those working in the bio based materials research community architects and agencies dealing with sustainable construction and graduate students in civil engineering takes a unique approach to bio based materials and presents a broad overview of the topics on relevant areas necessary for application and promotion in construction contains a general description notable properties related to performance and applications presents standards that are structured according to performance types

Sensory Panel Management 2017-10-26 covering all aspects of sensory panel management this volume describes the different types of sensory panels for example panels for quality control descriptive analysis and discrimination tests discusses the issues involved with sensory testing and gives detailed information about sensory panel recruitment training and on going management sensory panel management gives both theoretical and practical information from deciding what type of panel to recruit and how to conduct panel training to creating the best sensory team and how to deal with any issues downloads of several of the documents included in the book are available from laurenrogers.com/sensory-panel-management.html the book is divided into three main sections the first section looks at the recruitment of sensory panels covering the process from both a scientific and a human resources angle the second section deals with the training of a sensory panel initial training as well as method and product specific training is covered example session plans for running panel sessions for quality control discrimination tests descriptive profiling temporal methods and consumer tests are included within the specific chapters refresher and advanced training such as training panelists to take part in gas chromatography olfactometry are also included the third section examines the performance of sensory panels chapters within this section explore performance measures and ways of preventing and dealing with difficult situations relating to panellists a final chapter looks at the future of sensory panels throughout the book there are short case study examples demonstrating the practical application of the methods being discussed sensory panel management is a key reference for academics technical and sensory staff in food companies lauren rogers is an independent sensory science consultant in the uk with more than twenty years of practical experience she has worked on a wide variety of projects including shelf life studies product and flavor optimization new flavor development and in depth brand analyses she is a member of the society of sensory

professionals the institute of food science and technology s sensory science group the sensometric society and is also a member of the astm sensory evaluation committee e18 discusses sensory panels for testing food and non food based products covers best practices for recruitment selection and training of panels provides examples of training plans for sensory panels encompasses experimental design and data analysis of panel results organized in modular format for practical uses

Smart Buildings 2016-05-27 smart buildings advanced materials and nanotechnology to improve energy efficiency and environmental performance presents a thorough analysis of the latest advancements in construction materials and building design that are applied to maximize building efficiency in both new and existing buildings after a brief introduction on the issues concerning the design process in the third millennium part one examines the differences between zero energy green and smart buildings with particular emphasis placed on the issue of smart buildings and smart housing mainly the envelope and how to make it more adaptive with the new possibilities offered by nanotechnology and smart materials part two focuses on the last generation of solutions for smart thermal insulation based on the results of extensive research into more innovative insulation materials chapters discuss achievements in nanotechnology bio ecological and phase change materials the technical characteristics performance level and methods of use for each are described in detail as are the achievements in the field of green walls and their use as a solution for upgrading the energy efficiency and environmental performance of existing buildings finally part three reviews current research on smart windows with the assumption that transparent surfaces represent the most critical element in the energy balance of the building chapters provide an extensive review on the technical features of transparent closures that are currently on the market or under development from so called dynamic glazing to bio adaptive and photovoltaic glazing the aesthetic potential and performance limits are also be discussed presents valuable definitions that are given to explain the characteristics requirements and differences between zero energy green and smart buildings contains particular focus on the next generation of construction materials and the most advanced products currently entering the market lists both the advantages and disadvantages to help the reader choose the most suitable solution takes into consideration both design and materials aspects promotes the existence of new advanced materials providing technical information to encourage further use and reduce costs compared to more traditional materials

High Performance Textiles and Their Applications 2014-08-21 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

Long-term Performance and Durability of Masonry Structures 2018-11-27 long term performance and durability of masonry structures degradation mechanisms health monitoring and service life design focuses on the long term performance of masonry and historical structures the book covers a wide range of related topics including degradation mechanisms in different masonry types structural health monitoring techniques and long term performance and service life design approaches each chapter reflects recent findings and the state of the art providing practical guidelines key topics covered include the theoretical background transport properties testing and modeling protective measures and standards and codes the book s focus is on individual construction materials the composite system and structural performance covers all issues related to durability including degradation mechanisms testing and design monitoring and service life design focuses on different masonry construction types presents a one stop reference for advanced postgraduate courses that focuses on the durability of masonry and historical constructions

Composite Reinforcements for Optimum Performance 2020-10-22 composite reinforcements for optimum performance second edition has been brought fully up to date with the latest developments in the field it reviews the materials properties and modelling techniques used in composite production and highlights their uses in optimizing performance part i covers materials for reinforcements in composites including chapters on fibers carbon nanotubes and ceramics as reinforcement materials in part ii different types of structures for reinforcements are discussed with chapters covering woven and braided reinforcements three dimensional fibre structures and two methods of modelling the geometry of textile reinforcements wisetex and texgen part iii focuses on the properties of composite reinforcements with chapters on topics such as in plane shear properties transverse compression bending and permeability properties finally part iv covers the characterization and modelling of reinforcements in composites with chapters focusing on microscopic and mesoscopic approaches x ray tomography analysis and modelling reinforcement forming processes with its distinguished editor and international team of contributors composite reinforcements for optimum performance second edition is an essential reference for designers and engineers working in the composite and composite reinforcement manufacturing industry as well as all those with an academic research interest in the subject discusses the characterization and modeling of reinforcements in composites focusing on such topics as microscopic and mesoscopic approaches x ray tomography analysis and

modeling reinforcement forming processes provides comprehensive coverage of the types and properties of reinforcement in composites along with their production and performance optimization includes sections on ncf non crimp fabrics natural fiber reinforcements tufting composite reinforcements sustainability multiscale modeling knitted reinforcements and more

Biocompatibility and Performance of Medical Devices 2019-11-21 biocompatibility and performance of medical devices second edition provides an understanding of the biocompatibility and performance tests for ensuring that biomaterials and medical devices are safe and will perform as expected in the biological environment sections cover key concepts and challenges faced in relation to biocompatibility in medical devices discuss the evaluation and characterization of biocompatibility in medical devices describe preclinical performance studies for bone dental and soft tissue implants and provide information on the regulation of medical devices in the european union japan and china the book concludes with a review of histopathology principles for biocompatibility and performance studies presents diverse insights from experts in government industry and academia delivers a comprehensive overview of testing and interpreting medical device performance expanded to include new information including sections on managing extractables accelerating and simplifying medical device development through screening and alternative biocompatibility methods and quality strategies which fasten device access to market

High Performance Silicon Imaging 2019-10-19 high performance silicon imaging fundamentals and applications of cmos and ccd sensors second edition covers the fundamentals of silicon image sensors addressing existing performance issues and current and emerging solutions silicon imaging is a fast growing area of the semiconductor industry its use in cell phone cameras is already well established with emerging applications including web security automotive and digital cinema cameras the book has been revised to reflect the latest state of the art developments in the field including 3d imaging advances in achieving lower signal noise and new applications for consumer markets the fundamentals section has also been expanded to include a chapter on the characterization and testing of cmos and ccd sensors that is crucial to the success of new applications this book is an excellent resource for both academics and engineers working in the optics photonics semiconductor and electronics industries covers the fundamentals of silicon based image sensors and technical advances focusing on performance issues looks at image sensors in applications such as mobile phones scientific imaging and tv broadcasting and in automotive consumer and biomedical applications addresses the theory behind 3d imaging and 3d sensor development including challenges and opportunities

Structure and Properties of High-Performance Fibers 2016-08-21 structure and properties of high performance fibers explores the relationship between the structure and properties of a wide range of high performance fibers part i covers high performance inorganic fibers including glasses and ceramics plus carbon fibers of various types in part ii high performance synthetic polymer fibers are discussed while part iii reviews those natural fibers that can be used to create advanced textiles the high performance properties of these fibers are related to their chemistry and morphology as well as the ways in which they are synthesized and spun high performance fibers form the basis of textile materials with applications in protection medicine and composite reinforcement fibers are selected for these technical applications due to their advanced physical mechanical and chemical properties offers up to date coverage of new and advanced materials for the fiber and textile industries reviews structure property relationships of high performance inorganic carbon synthetic polymer and natural fibers includes contributions from an international team of authors edited by an expert in the field reviews those natural fibers that can be used to create advanced textiles

The Performance of Photovoltaic (PV) Systems 2016-10-15 the performance of photovoltaic pv systems modelling measurement and assessment explores the system lifetime of a pv system and the energy output of the system over that lifetime the book concentrates on the prediction measurement and assessment of the performance of pv systems allowing the reader to obtain a thorough understanding of the performance issues and progress that has been made in optimizing system performance provides unique insights into the performance of photovoltaic systems includes comprehensive and systematic coverage of a fascinating area in energy written by an expert team of authors and a respected editor

Engineering of High-Performance Textiles 2017-09-07 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

High Performance Technical Textiles 2019-02-19 an authentic resource for the fundamentals applied techniques applications and recent advancements of all the main areas of technical textiles created to be a comprehensive reference high performance technical textiles includes the review of a wide range of technical textiles from household to space textiles the contributors noted experts in the field from all the continents offer in depth coverage on the fibre materials manufacturing processes and techniques applications current developments sustainability and future trends the contributors include discussions on synthetic versus natural fibres various textile manufacturing techniques textile composites and finishing approaches that are involved in the manufacturing of textiles for a specific high performance application whilst the book provides the basic knowledge required for an understanding of technical textiles it can serve as a springboard for inspiring new inventions in hi tech fibres and textiles this important book contains a unique approach that offers a comprehensive understanding of the manufacturing and applications of technical textiles includes a general overview to the fundamentals current techniques end use applications as well as the most recent advancements explores the current standards in the industry and the ongoing research in the field offers a comprehensive and single source reference on the topic written for academics researchers and professionals working in textile and related industries high performance technical textiles offers a systematic structured logical and updated source of information for understanding technical textiles

Interface Engineering of Natural Fibre Composites for Maximum Performance 2011-02-26 one of the major reasons for composite failure is a breakdown of the bond between the reinforcement fibres and the matrix when this happens the composite loses strength and fails by engineering the interface between the natural fibres and the matrix the properties of the composite can be manipulated to give maximum performance interface engineering of natural fibre composites for maximum performance looks at natural sustainable fibre composites and the growing trend towards their use as reinforcements in composites part one focuses on processing and surface treatments to engineer the interface in natural fibre composites and looks in detail at modifying cellulose fibre surfaces in the manufacture of natural fibre composites interface tuning through matrix modification and preparation of cellulose nanocomposites it also looks at the characterisation of fibre surface treatments by infrared and raman spectroscopy and the effects of processing and surface treatment on the interfacial adhesion and mechanical properties of natural fibre composites testing interfacial properties in natural fibre composites is the topic of part two which discusses the electrochemical characterisation of the interfacial properties of natural fibres

assesses the mechanical and thermochemical properties and moisture uptake behaviour of natural fibres and studies the fatigue and delamination of natural fibre composites before finishing with a look at raman spectroscopy and x ray scattering for assessing the interface in natural fibre composites with its distinguished editor and international team of contributors interface engineering of natural fibre composites for maximum performance is an invaluable resource to composite manufacturers and developers materials scientists and engineers and anyone involved in designing and formulating composites or in industries that use natural fibre composites examines characterisation of fibre surface treatments by infrared and raman spectroscopy and the effects of processing and surface treatment reviews testing interfacial properties in natural fibre composites including the electrochemical characterisation of the interfacial properties of natural fibres assesses the mechanical and thermochemical properties and moisture uptake behaviour of natural fibres and studies the fatigue and delamination of natural fibre composites

Laser shock peening Performance and process simulation 2006-01-24 laser shock peening lsp is a process for inducing compressive residual stresses using shock waves generated by laser pulses it is a relatively new surface treatment for metallic materials that can greatly improve their resistance to crack initiation and propagation brought on by cyclic loading and fatigue this book the first of its kind consolidates the scattered knowledge about lsp into one comprehensive volume it describes the mechanisms of lsp and its substantial role in improving fatigue performance in terms of modification of microstructure surface morphology hardness and strength in particular it describes numerical simulation techniques and procedures that can be adopted by engineers and research scientists to design evaluate and optimize lsp processes in practical applications

Functional Finishes for Textiles 2014-10-20 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

The Performance of Concentrated Solar Power (CSP) Systems 2017-05-15 the performance of concentrated solar power csp systems analysis measurement and assessment offers a unique overview of the information on the state of the art of analysis measurement and assessment of the performance of concentrated solar power

csp components and systems in a comprehensive compact and complete manner following an introductory chapter to csp systems and the fundamental principles of performance assessment individual chapters explore the component performance of mirrors and receivers further expert written chapters look at system performance assessment durability testing and solar resource forecasting for csp systems a final chapter gives an outlook on the actual methods and instruments for performance and durability assessment that are under development the performance of concentrated solar power csp systems analysis measurement and assessment is an essential reference text for research and development professionals and engineers working on concentrated solar power systems as well as for postgraduate students studying csp presents a unique single literature source for a complete overview of the performance assessment tools and methods currently used for concentrated solar power csp technology written by a team of experts in the field of csp provides information on the state of the art of modeling measurement and assessment of the performance of csp components and systems in a comprehensive compact and complete manner

Marine Composites 2018-08-20 marine composites design and performance presents up to date information and recent research findings on the application and use of advanced fibre reinforced composites in the marine environment following the success of their previously published title marine applications of advanced fibre reinforced composites which was published in 2015 this exemplary new book provides comprehensive information on materials selection characterization and performance there are also dedicated sections on sandwich structures manufacture advanced concepts naval architecture and design considerations and various applications the book will be an essential reference resource for designers materials engineers manufactures marine scientists mechanical engineers civil engineers coastal engineers boat manufacturers offshore platform and marine renewable design engineers presents a unique high level reference on composite materials and their application and use in marine structures provides comprehensive coverage on all aspects of marine composites including the latest advances in damage modelling and assessment of performance contains contributions from leading experts in the field from both industry and academia covers a broad range of naval offshore and marine structures

Physical Properties of Textile Fibres 2008-10-10 first published in 1962 and now in its fourth edition physical properties of textile fibres has become a classic providing the standard reference on key aspects of fibre performance the new edition has been substantially reorganised and revised to reflect new research after introductory chapters on fibre structure testing and sampling the book reviews key fibre properties their technical significance factors affecting these properties and measurement issues each chapter covers both natural and synthetic fibres including high performance fibres the book first reviews properties such as fineness length and density it then considers

thermal properties and reaction to moisture a further group of chapters then reviews tensile properties thermo mechanical responses fibre breakage and fatigue finally the book discusses dielectric properties electrical resistance and static optical properties and fibre friction written by one of the world s leading authorities the fourth edition of physical properties of textile fibres consolidates its reputation as a standard work both for those working in the textile industry and those teaching and studying textile science a standard reference on key aspects of fibre performance an essential read and reference for textile technologists fibre scientists textile engineers and those in academia provides substantial updated material on fibre structure and new test methods data and theories regarding properties of textile fibres

Materials for Energy Efficiency and Thermal Comfort in Buildings 2010-04-21 almost half of the total energy produced in the developed world is inefficiently used to heat cool ventilate and control humidity in buildings to meet the increasingly high thermal comfort levels demanded by occupants the utilisation of advanced materials and passive technologies in buildings would substantially reduce the energy demand and improve the environmental impact and carbon footprint of building stock worldwide materials for energy efficiency and thermal comfort in buildings critically reviews the advanced building materials applicable for improving the built environment part one reviews both fundamental building physics and occupant comfort in buildings from heat and mass transport hygrothermal behaviour and ventilation on to thermal comfort and health and safety requirements part two details the development of advanced materials and sustainable technologies for application in buildings beginning with a review of lifecycle assessment and environmental profiling of materials the section moves on to review thermal insulation materials materials for heat and moisture control and heat energy storage and passive cooling technologies part two concludes with coverage of modern methods of construction roofing design and technology and benchmarking of façades for optimised building thermal performance finally part three reviews the application of advanced materials design and technologies in a range of existing and new building types including domestic commercial and high performance buildings and buildings in hot and tropical climates this book is of particular use to mechanical electrical and hvac engineers architects and low energy building practitioners worldwide as well as to academics and researchers in the fields of building physics civil and building engineering and materials science explores improving energy efficiency and thermal comfort through material selection and sustainable technologies documents the development of advanced materials and sustainable technologies for applications in building design and construction examines fundamental building physics and occupant comfort in buildings featuring heat and mass transport hygrothermal behaviour and ventilation

High-Performance Organic Coatings 2008-07-09 paint coatings remain the most widely used way of protecting steel structures from corrosion this important book reviews

the range of organic paint coatings and how their performance can be enhanced to provide effective and lasting protection the book begins by reviewing key factors affecting the success of a coating including surface preparation methods of application selecting an appropriate paint and testing its effectiveness it also discusses why coatings fail including how they degrade and what can be done to prevent these problems part two describes the main types of coating and how their performance can be enhanced including epoxies polyester glass flake fluoropolymer polysiloxane and waterborne coatings the final part of the book looks at applications of high performance organic coatings in such areas as reinforced concrete pipelines marine and automotive engineering with its distinguished editor and international team of contributors high performance organic coatings is a valuable reference for all those concerned with preventing corrosion in steel and other metal structures reviews the factors affecting the success of a coating describes the main types of coating and how their performance can be enhanced including epoxies polyester and waterborne coatings examines applications in such areas as reinforced concrete pipelines and marine engineering

Solid Oxide Fuel Cell Technology 2009-07-30 high temperature solid oxide fuel cell sofc technology is a promising power generation option that features high electrical efficiency and low emissions of environmentally polluting gases such as co₂ no_x and so_x it is ideal for distributed stationary power generation applications where both high efficiency electricity and high quality heat are in strong demand for the past few decades sofc technology has attracted intense worldwide r d effort and along with polymer electrolyte membrane fuel cell pemfc technology has undergone extensive commercialization development this book presents a systematic and in depth narrative of the technology from the perspective of fundamentals providing comprehensive theoretical analysis and innovative characterization techniques for sofc technology the book initially deals with the basics and development of sofc technology from cell materials to fundamental thermodynamics electronic properties of solids and charged particle transport this coverage is extended with a thorough analysis of such operational features as current flow and energy balance and on to voltage losses and electrical efficiency furthermore the book also covers the important issues of fuel cell stability and durability with chapters on performance characterization fuel processing and electrode poisoning finally the book provides a comprehensive review for sofc materials and fabrication techniques a series of useful scientific appendices rounds off the book solid oxide fuel cell technology is a standard reference for all those researching this important field as well as those working in the power industry provides a comprehensive review of solid oxide fuel cells from history and design to chemistry and materials development presents analysis of operational features including current flow energy balance voltage losses and electrical efficiency explores fuel cell stability and durability with specific chapters examining performance characterization fuel

processing and electrode poisoning

Alternative Fuels and Advanced Vehicle Technologies for Improved Environmental Performance 2022-07-27 alternative fuels and advanced vehicle technologies for improved environmental performance towards zero carbon transportation second edition provides a comprehensive view of key developments in advanced fuels and vehicle technologies to improve the energy efficiency and environmental impact of the automotive sector sections consider the role of alternative fuels such as electricity alcohol and hydrogen fuel cells as well as advanced additives and oils in environmentally sustainable transport other topics explored include methods of revising engine and vehicle design to improve environmental performance and fuel economy and developments in electric and hybrid vehicle technologies this reference will provide professionals engineers and researchers of alternative fuels with an understanding of the latest clean technologies which will help them to advance the field those working in environmental and mechanical engineering will benefit from the detailed analysis of the technologies covered as will fuel suppliers and energy producers seeking to improve the efficiency sustainability and accessibility of their work provides a fully updated reference with significant technological advances and developments in the sector presents analyses on the latest advances in electronic systems for emissions control autonomous systems artificial intelligence and legislative requirements includes a strong focus on updated climate change predictions and consequences helping the reader work towards ambitious 2050 climate change goals for the automotive industry

High-Performance and Specialty Fibers 2016-08-16 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

Monitoring and Evaluation of Biomaterials and their Performance In Vivo 2016-11-11 monitoring and evaluation of biomaterials and their performance in vivo provides essential information for scientists and researchers who need to assess and evaluate performance monitor biological responses gauge efficacy and observe changes over time crucially it also enables the optimization of design for future biomaterials and implants this book presents readers with comprehensive coverage of the topic of in vivo monitoring of medical implants and biomaterials contains a specific focus on monitoring and evaluation of biomaterials in vivo multi faceted coverage of materials function and performance focuses on a range of implants and subsequent bodily reactions

Marine Concrete Structures 2016-09-13 marine concrete structures design durability and performance comprehensively examines structures located in under or in close proximity to the sea a major emphasis of the book is on the long term performance of marine concrete structures that not only represent major infrastructure investment and provision but are also required to operate with minimal maintenance chapters review the design specification construction and operation of marine concrete structures and examine their performance and durability in the marine environment a number of case studies of significant marine concrete structures from around the world are included which help to reinforce the principles outlined in earlier chapters and provide useful background to these types of structures the result is a thorough and up to date reference source that engineers researchers and postgraduate students in this field will find invaluable covers in detail the design specification construction and operation of marine concrete structures examines the properties and performance of concrete in the marine environment provides case studies on significant marine concrete structures and durability based design from around the world

Performance Testing of Textiles 2016 industrial gas turbines performance and operability explains important aspects of gas turbine performance such as performance deterioration service life and engine emissions traditionally gas turbine performance has been taught from a design perspective with insufficient attention paid to the operational issues of a specific site operators are not always sufficiently familiar with engine performance issues to resolve operational problems and optimise performance industrial gas turbines performance and operability discusses the key factors determining the performance of compressors turbines combustion and engine controls an

accompanying engine simulator cd illustrates gas turbine performance from the perspective of the operator building on the concepts discussed in the text the simulator is effectively a virtual engine and can be subjected to operating conditions that would be dangerous and damaging to an engine in real life conditions it also deals with issues of engine deterioration emissions and turbine life the combined use of text and simulators is designed to allow the reader to better understand and optimise gas turbine operation discusses the key factors in determining the performance of compressors turbines combustion and engine controls explains important aspects of gas and turbine performance such as service life and engine emissions accompanied by cd illustrating gas turbine performance building on the concepts discussed in the text

Industrial Gas Turbines 2007-10-31 small and micro combined heat and power chp systems are a form of cogeneration technology suitable for domestic and community buildings commercial establishments and industrial facilities as well as local heat networks one of the benefits of using cogeneration plant is a vastly improved energy efficiency in some cases achieving up to 80 90 systems efficiency whereas small scale electricity production is typically at well below 40 efficiency using the same amount of fuel this higher efficiency affords users greater energy security and increased long term sustainability of energy resources while lower overall emissions levels also contribute to an improved environmental performance small and micro combined heat and power chp systems provides a systematic and comprehensive review of the technological and practical developments of small and micro chp systems part one opens with reviews of small and micro chp systems and their techno economic and performance assessment as well as their integration into distributed energy systems and their increasing utilisation of biomass fuels part two focuses on the development of different types of chp technology including internal combustion and reciprocating engines gas turbines and microturbines stirling engines organic rankine cycle process and fuel cell systems heat activated cooling i e trigeneration technologies and energy storage systems of importance to the regional seasonal viability of this technology round out this section finally part three covers the range of applications of small and micro chp systems from residential buildings and district heating to commercial buildings and industrial applications as well as reviewing the market deployment of this important technology with its distinguished editor and international team of expert contributors small and micro combined heat and power chp systems is an essential reference work for anyone involved or interested in the design development installation and optimisation of small and micro chp systems reviews small and micro chp systems and their techno economic and performance assessment explores integration into distributed energy systems and their increasing utilisation of biomass fuels focuses on the development of different types of chp technology including internal combustion and reciprocating engines

Small and Micro Combined Heat and Power (CHP) Systems 2011-04-30 given such properties as low density and high strength polymer matrix composites have become a widely used material in the aerospace and other industries polymer matrix composites and technology provides a helpful overview of these materials their processing and performance after an introductory chapter part one reviews the main reinforcement and matrix materials used as well as the nature of the interface between them part two discusses forming and molding technologies for polymer matrix composites the final part of the book covers key aspects of performance including tensile compression shear and bending properties as well as impact fatigue and creep behaviour polymer matrix composites and technology provides both students and those in industry with a valuable introduction to and overview of this important class of materials provides a helpful overview of these materials their processing and performance incorporating naming and classification of composite materials reviews the main reinforcement and matrix materials used as well as the nature of the interface between them including damage mechanisms discusses forming and molding technologies for polymer matrix composites outlining various techniques and technologies

Polymer Matrix Composites and Technology 2011-07-14 performance testing of textiles methods technology and applications examines the developed and established methodology for testing performance textiles also summarizing the material properties for advanced applications this book emphasizes reproducible tests using commonly used experimental methods reported in scientific literature and internationally recognized testing standards to quantify textile material properties and performance after an introductory explanation of key fiber and textile properties and testing methods the book summarizes electronic testing theories technologies and instrumentation for performance textiles also covered are aspects of military textile medical textile sportswear smart composites and wearable textiles which as examples present the latest research and results related to performance textile testing and applications offers up to date coverage of new and advanced performance testing techniques for the fiber and textile industries explores key fiber and textile properties summarizes electronic testing theories technologies and instrumentation for performance textiles includes contributions from an international team of authors edited by an expert in the field

Performance Testing of Textiles 2016-06-17 lightweight composite structures in transport design manufacturing analysis and performance provides a detailed review of lightweight composite materials and structures and discusses their use in the transport industry specifically surface and air transport the book covers materials selection the properties and performance of materials and structures design solutions and manufacturing techniques a broad range of different material classes is reviewed with emphasis on advanced materials chapters in the first two parts of the book consider the lightweight philosophy and current developments in manufacturing techniques for

lightweight composite structures in the transport industry with subsequent chapters in parts three to five discussing structural optimization and analysis properties and performance of lightweight composite structures durability damage tolerance and structural integrity final chapters present case studies on lightweight composite design for transport structures comprehensively covers materials selection design solutions manufacturing techniques structural analysis and performance of lightweight composite structures in the transport industry includes commentary from leading industrial and academic experts in the field who present cutting edge research on advanced lightweight materials for the transport industry includes case studies on lightweight composite design for transport structures

Lightweight Composite Structures in Transport 2016-01-22 food and drink supply chains are complex continually changing systems involving many participants they present stakeholders across the food and drinks industries with considerable challenges delivering performance in food supply chains offers expert perspectives to help practitioners and academics to improve their supply chain operations the editors have identified six key challenges in managing food and drinks supply chains each section of the book focuses on one of these important issues the first chapters consider the fundamental role of relationship management in supply chains the next section discusses another significant issue aligning supply and demand part three considers five different approaches to effective and efficient process management while quality and safety management an issue food companies need to take very seriously is subject of the next section parts five and six review issues which are currently driving change in food supply chains the effective use of new technologies and the desire to deliver food sustainably and responsibly with expert contributions from leaders in their fields delivering performance in food supply chains will help practitioners and academics to understand different approaches in supply chain management explore alternative methods and develop more effective systems considers the fundamental role of relationship management in supply chains including an overview of performance measurement in the management of food supply chains discusses the alignment of supply and demand in food supply chains and reviews sales and operations planning and marketing strategies for competitive advantage in the food industry provides an overview of the effective use of new technologies and those that will be used in the future to deliver food sustainably and reliably

Delivering Performance in Food Supply Chains 2010-01-28 aimed at industry professionals domestic and international retailers factory owners buying institutions and students intended to start their career in home textile sector this book emphasises how to achieve the commercial success of desired end product through the knowledge of the key markets producing various home textiles scope of development through sustainable and eco friendly fibres various industry specific standards evaluation

systems and above all safety aspects and environmental regulations

Performance of Home Textiles 2018-06-30 development of ultra high performance concrete against blasts from materials to structures presents a detailed overview of uhpc development and its related applications in an era of rising terrorism around the world chapters present case studies on the novel development of the new generation of uhpc with nano additives field blast test results on reinforced concrete columns made with uhpc and uhpc filled double skin tubes columns are also presented and compiled as is the residual load carrying capacities of blast damaged structural members and the exceptional performance of novel uhpc materials that illustrate its potential in protective structural design as a notable representative ultra high performance concrete uhpc has now been widely investigated by government agencies and universities uhpc inherits many positive aspects of ultra high strength concrete uhsc and is equipped with improved ductility as a result of fiber addition these features make it an ideal construction material for bridge decks storage halls thin wall shell structures and other infrastructure because of its protective properties against seismic impact and blast loads focuses on the principles behind uhpc production properties design and detailing aspects presents a series of case studies and filed blast tests on columns and slabs focuses on applications and future developments

Development of Ultra-High Performance Concrete against Blasts 2018-03-19 biocomposites for high performance applications current barriers and future needs towards industrial development focuses on future research directions that will make biocomposites a successful player in the field of high strength structural applications with contributions from eminent academic researchers and industrial experts who have first hand experience on the advantages disadvantages of biocomposites in their daily lives the book examines the industrial development of biocomposite products identifying the current barriers and their future industrial needs topics covered include recent research activities from academia in the biocomposite research field valuable thoughts and insights from biocomposite manufacturing industries the strength and weaknesses of biocomposite products and the practical issues that need to be addressed to reach the next level highlights the practical issues involved in biocomposites research contains contributions from eminent academic researchers and industrial experts discusses recent research activities from academia in the biocomposite research field along with valuable thoughts and insights from biocomposite manufacturing industries

Biocomposites for High-Performance Applications 2017-05-15 large scale wind power generation is one of the fastest developing sources of renewable energy and already makes a substantial contribution to power grids in many countries worldwide with technology maturing the challenge is now to increase penetration and optimise the

design construction and performance of wind energy systems fundamental issues of safety and reliability are paramount in this drive to increase capacity and efficiency wind energy systems optimising design and construction for safe and reliable operation provides a comprehensive review of the latest developments in the design construction and operation of large scale wind energy systems including in offshore and other problematic environments part one provides detailed coverage of wind resource assessment and siting methods relevant to wind turbine and wind farm planning as well as aeroelastics aerodynamics and fatigue loading that affect the safety and reliability of wind energy systems this coverage is extended in part two where the design and development of individual components is considered in depth from wind turbine rotors to drive train and control systems and on to tower design and construction part three explores operation and maintenance issues such as reliability and maintainability strategies and condition monitoring systems before discussing performance assessment and optimisation routes for wind energy systems in low wind speed environments and cold climates part four reviews offshore wind energy systems development from the impact of environmental loads such as wind waves and ice to site specific construction and integrated wind farm planning and of course the critical issues and strategies for offshore operation and maintenance with its distinguished editors and international teams of contributors wind energy systems is a standard reference for wind power engineers technicians and manufacturers as well as researchers and academics involved in this expanding field reviews the latest developments in the design construction and operation of large scale wind energy systems offers detailed coverage of wind resource assessment and siting methods relevant to wind turbine and wind farm planning explores operation and maintenance issues such as reliability and maintainability strategies and condition monitoring systems

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