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The Modelling of Microstructure and its Potential for Studying Transport Properties and Durability Microstructural Principles of Food Processing and Engineering Food Microstructure and Its Relationship with Quality and Stability Microstructure of Dairy Products Studies of Food Microstructure Second Workshop on Improvements to Photometry Influence of Phosphorus Upon the Microstructure and Hardness of Low-carbon, Open-hearth Steels Concrete Repair, Rehabilitation and Retrofitting Advanced Concretes and Their Structural Applications Multi-Scale Modeling of Structural Concrete Microstructure and Properties of High-Temperature Superconductors Effects of High Temperature Argon Heat Treatment on Tensile Strength and Microstructure of BN/SiC Coated SiC Fiber Preforms Intermittent and Nonstationary Drying Technologies Proceedings of the Tenth International Conference on Composite Materials: Microstructure, degradation, and design Advances in Unsaturated Soils Nanotechnology in Construction Integrated Design and Environmental Issues in Concrete Technology Effect of Heat on Concrete The Role of Microstructure in Topical Drug Product Development Issues in Structural and Materials Engineering: 2012 Edition Unsaturated Soils: Research & Applications Microstructure of Smectite Clays and Engineering Performance Constitution and Microstructure of Porcelain Advances in Fracture and Damage Mechanics III Handbook of Tropical Residual Soils Engineering Microstructure and Properties of Materials Concrete: Microstructure, Properties, and Materials Nondestructive Evaluation and Flaw Criticality for Composite Materials Ultra-High Performance Concrete and High Performance Construction Materials Advances in Materials and Pavement Prediction IUTAM Symposium on Physicochemical and Electromechanical, Interactions in Porous Media Volatile Retention Kinetics and Microstructure of Microwave Freeze-dried Model Foods Modelling of Concrete Performance Microstructure and Properties of Materials Materials Engineering and Environmental Science Understanding and Controlling the Microstructure of Complex Foods Microstructure of Fine-Grained Sediments Extrusion-Cooking Techniques Food Structure and Moisture Transfer Microstructure of Cement-Based Systems: Volume 370

The Modelling of Microstructure and its Potential for Studying Transport Properties and Durability 2013-04-17 from july 10th through july 13th 1994 an informal workshop co organized by rilem committees 116 pcd and 123 mme was held at saint remy ies chevreuse france and attended by 38 delegates from 16 countries twenty nine papers were presented converging the general subjects of modelling micro structures and predicting durability of concrete and other cement based materials a short summary follows g m idom s paper entitled modelling research for concrete engineering serves as an introduction to the workshop presenting an overview of modelling research with the conelusion that the broad practica1 objective is to produce high quality concrete this means that many characteristics ranging from rheology to alkali silica reaction must be modelled in other words the system must be understood idom s paper sets the stage for papers in two general areas 1 models and 2 transport properties after this abrief survey of the develop ment of microstructurally based models is presented a elose relationship between computer power and speed is suggested the first group of papers on models covers the subjects of scale and resolution most models define and predict characteristics of the pore system which range in scale from nanometer to millimeter various types ofnetworks are proposed in these papers a good microstructural model must describe the pores and other phases at ascale appropriate to the properties that the model predicts also a good model should be based on fundamental knowledge in the case of cement based materials the important properties may depend on the microstructure especially the porosity at several scales

Microstructural Principles of Food Processing and Engineering 1999-09-30 an aspen food engineering series book this new edition provides a comprehensive reference on food microstructure emphasizing its interdisciplinary nature rooted in the scientific principles of food materials science and physical chemistry the book details the techniques available to study food microstructure examines the microstructure of basic food components and its relation to quality and explores how microstructure is affected by specific unit operations in food process engineering descriptions of a number of food related applications provide a better understanding of the complexities of the microstructural approach to food processing color plates

Food Microstructure and Its Relationship with Quality and Stability 2017-12-20 food microstructure and its relationship with quality and stability is a comprehensive overview of the effects that the properties of the underlying structures of food have on its perceived quality to the consumer the book s first section consists of chapters outlining the fundamentals of food microstructure food composition molecular mobility of various food constituents and their relationships with food quality and stability the role of various processing technologies in the production of specific microstructures for enhanced quality and stability is outlined the second part of the book consists of various chapters devoted to microstructures constituents and their relationship with quality functionality and stability of selected foods for example food hydrocolloids frozen seafood dried foods extruded products and dietary fibers this information is of paramount importance for both academic researchers in the areas of food quality preservation and stability as well as for food developers and processors

brings together leading experts from around the world to provide the latest information on a topic essential to the quality of food products includes dedicated chapters covering the microstructure of specific products and its relationship to quality and stability making this book ideal for those working in industry provides a single reference source for a topic of great importance to a number of fields within both academic and industrial food sciences food quality stability processing and engineering

Microstructure of Dairy Products 2018-10-22 provides the most recent developments in microscopy techniques and types of analysis used to study the microstructure of dairy products this comprehensive and timely text focuses on the microstructure analyses of dairy products as well as on detailed microstructural aspects of them featuring contributions from a global team of experts it offers great insight into the understanding of different phenomena that relate to the functional and biochemical changes during processing and subsequent storage structured into two parts microstructure of dairy products begins with an overview of microscopy techniques and software used for microstructural analyses it discusses in detail different types of the following techniques such as light microscopy including bright field polarized and confocal scanning laser microscopy and electron microscopy mainly scanning and transmission electron microscopy the description of these techniques also includes the staining procedures and sample preparation methods developed emerging microscopy techniques are also covered reflecting the latest advances in this field part 2 of the book focuses on the microstructure of various dairy foods dividing each into sections related to the microstructure of milk cheeses yogurts powders and fat products ice cream and frozen dairy desserts dairy powders and selected traditional indian dairy products in addition there is a review of the localization of microorganism within the microstructure of various dairy products the last chapter discusses the challenges and future trends of the microstructure of dairy products presents complete coverage of the latest developments in dairy product microscopy techniques details the use of microscopy techniques in structural analysis an essential purchase for companies researchers and other professionals in the dairy sector microstructure of dairy products is an excellent resource for food scientists technologists and chemists and physicists rheologists and microscopists who deal in dairy products

Studies of Food Microstructure 1981 the first international conference on concrete repair rehabilitation and retrofitting iccrrr 2005 was held in cape town south africa in november 2005 the conference was a collaborative venture by researchers from the south african research programme in concrete materials based at the universities of cape town and the witwatersrand and the construction materials section at leipzig university in germany the conference focused on appropriate repairing maintaining rehabilitating and if necessary retrofitting existing infrastructure with a view to extending its life and maximising its economic return

Second Workshop on Improvements to Photometry 1988 increases in computer power have now enabled engineers to combine materials science with

structural mechanics in the design and the assessment of concrete structures the techniques developed have become especially useful for the performance assessment of such structures under coupled mechanistic and environmental actions this allows effective management of infrastructure over a much longer life cycle thus satisfying the requirements for durability and sustainability this ground breaking new book draws on the fields of materials and structural mechanics in an integrated way to address the questions of management and maintenance it proposes a realistic way of simulating both constituent materials and structural responses under external loading and under ambient conditions where the research literature discusses component or element technology related to performance assessment this book uniquely covers the subject at the level of the whole system including soil foundation showing engineers how to model changes in concrete structures over time and how to use this for decision making in infrastructure maintenance and asset management

Influence of Phosphorus Upon the Microstructure and Hardness of Low-carbon, Open-hearth Steels 1923 this book provides a comprehensive presentation of all types of htsc and includes a broad overview on htsc computer simulations and modeling especial attention is devoted to the bi sr ca cu o and y ba cu o families that today are the most perspective for applications the book includes a great number of illustrations and references the monograph is addressed to students post graduate students and specialists taking part in the development preparation and researching of new materials

Concrete Repair, Rehabilitation and Retrofitting 2006-01-01 preforms of bn sic coated hi nicalon and sylramic sic fibers were heat treated under 0 1 mpa argon pressure between 1000 deg to 1800 deg c for 1 and 100h the effects of high temperature exposure on physical dimensions weight room temperature tensile strength and microstructure of preforms have been studied both preforms showed shrinkage and weight loss and microstructural changes beyond 1000 deg c after 100 hr exposure the hi nicalon preforms showed strength degradation beyond 1200 deg c the mechanisms of the strength degradation appear to be grain growth of the sic fibers and crystallization of the bn coating after 100 hr the sylramic preforms heat treated to 1000 deg c retained their as produced strength while some of those heat treated between 1000 deg and 1800 deg c showed strength degradation and others did not at 1800 deg c the ultimate tensile strength decreased with increasing time of exposure reasons for strength degradation of sylramic preforms are being investigated

Advanced Concretes and Their Structural Applications 2022-09-23 the first comprehensive book on intermittent drying intermittent and nonstationary drying technologies principles and applications demonstrates the benefits of this process and covers key issues including technologies effect of operating parameters mathematical modelling energy efficiency and product quality it discusses such topics as periodic drying conventional and intermittent food drying processes and food quality relationship among intermittency of drying microstructural changes and food quality microwave assisted pulsed fluidized and spouted bed drying and cellular level water distribution aimed at food engineers chemical product engineers pharmaceutical engineers and technologists

plant design engineers and researchers and students in these areas this useful reference helps readers

Multi-Scale Modeling of Structural Concrete 2008-11-28 new theories and testing techniques related with unsaturated soil mechanics have proven to be valuable tools to study a broad spectrum of geo materials which includes rocks rock fills frozen soils and domiciliary solid wastes these new theories and testing techniques have permitted the analysis of several traditional problems from a new perspective e g swelling or collapsible soils and compacted soils or pavements materials and they have also shown their efficiency to study new energy related problems like co2 sequestration and nuclear waste disposal advances in unsaturated soils is a collection of papers from the 1st pan american conference on unsaturated soils organized in cartagena de indias colombia in february 2013 the volume includes 76 research papers coming for all over the world as well as 7 keynotes papers by well known international researchers the contributions present a variety of topics including advances in testing techniques unsaturated soil behavior constitutive modeling and microstructure numerical modeling geotechnical problems advances in unsaturated soils is expected to become a useful reference to academics and professionals involved in unsaturated soil mechanics

Microstructure and Properties of High-Temperature Superconductors 2007-09-06 the importance of nanotechnology related research and development has become recognised worldwide substantial public and private investment is now being ploughed into research and development in a number of industrial sectors where nanotechnology has become established and has led to new commercial products the construction industry having major economic significance with nano scale research and development which is only emerging offers a wide scope for exploitation of nanotechnology with international contributions from experts in the field nanotechnology in construction amalgamates previously fragmented research and emerging trends it reflects the inherent multi disciplinary nature of nano scale research in construction and contributions cover a wide spectrum from highly scientific investigations to futuristic applications the book is organised into four broad sections the first reviews and analyses the prospects of exploitation of nanotechnology in construction the second discusses novel tools and their capabilities the final two sections show existing significant products where nanotechnology has been already been exploited or where product development is under way nanotechnology in construction will appeal to researchers already working in this field as well as those wishing to enter it it will also inform governmental and other funding agencies of the most promising future directions and their related timescales practical applications are considered and explanations of the underlying basics are given raising awareness and understanding of what nanotechnology can offer to construction professionals in general

Effects of High Temperature Argon Heat Treatment on Tensile Strength and Microstructure of BN/SiC Coated SiC Fiber Preforms 1999 the two themes of integration of structural and durability design and integration of concrete technologies in relation to global environmental issues are drawn together in this

book it presents the views of distinguished international researchers and engineers on these key topics as the 21st century approaches derived from a workshop on rational design of concrete structures held in hakodate japan in august 1995 the book provides a focus for debate about the ways in which concrete technologies around the world must respond to the necessity of ensuring that concrete construction achieves higher levels of durability and about the growing imperative to meet higher environmental standards in concrete production and use

Intermittent and Nonstationary Drying Technologies 2017-09-18 effect of heat on concrete presents an authoritative review of the properties and behaviour of concrete at high temperatures from ambient up to melting the author provides a thorough assessment of the materials aspects of concrete behaviour under four main themes microstructure properties moisture migration applications this book condenses a mass of data and published information in order to be readily accessible for researchers and for engineers responsible for the design and construction of concrete structures where the temperature regime may lead to significant differences in performance from that at ambient temperatures

Proceedings of the Tenth International Conference on Composite Materials: Microstructure, degradation, and design 1995 following the semi solid microstructure workshop sponsored by basf and hosted by the rutgers center for dermal research a pharmaceutical product development working group was formed the group known as the q3 working group selected the following five areas of focus particle globule size and distribution viscosity rheology spreadability in vitro testing state of api state of excipients a committee was appointed for each of these five areas the committees were tasked to review the literature identify best practices list experimental details required for an independent lab to duplicate the test and propose scientific studies that may meaningfully advance this specific area of focus each committee has a chair or co chairs that are the lead author s of the chapter the q3 working group members serve as the critical reviewers of each chapter making suggestions that improve the quality of the document and that make each of the five chapters uniform in scope and content pharmaceutical development scientists that formulate topical products creams lotions gels suspensions foams etc and all the allied raw material suppliers packaging suppliers contract laboratories including cros cmos and regulators need access to this book overall the topic of semisolid microstructure is of equal importance to the generic pharmaceutical companies filing abbreviated new drug applications or andas and pharmaceutical companies filing new drug applications ndas in addition to products applied to the skin hair and nails the role of microstructure in topical drug product development crosses over and is essential reading to developers of oral suspensions ophthalmic ointments and gels otic suspension vaginal semisolids and retention enemas

Advances in Unsaturated Soils 2013-02-01 issues in structural and materials engineering 2012 edition is a scholarlyeditions ebook that delivers timely authoritative and comprehensive information about mechanical engineering the editors have built issues in structural and materials engineering 2012 edition

on the vast information databases of scholarlynews you can expect the information about mechanical engineering in this ebook to be deeper than what you can access anywhere else as well as consistently reliable authoritative informed and relevant the content of issues in structural and materials engineering 2012 edition has been produced by the world s leading scientists engineers analysts research institutions and companies all of the content is from peer reviewed sources and all of it is written assembled and edited by the editors at scholarlyeditions and available exclusively from us you now have a source you can cite with authority confidence and credibility more information is available at scholarlyeditions com

Nanotechnology in Construction 2007-10-31 unsaturated soils research and applications contains 247 papers presented at 6th international conference on unsaturated soils unsat2014 sydney australia 2 4 july 2014 the two volumes provide an overview of recent experimental and theoretical advances in a wide variety of topics related to unsaturated soil mechanics unsaturated soil behavior experimentation modelling case histories geotechnical engineering problems multidisciplinary and new areas unsaturated soils research and applications presents a wealth of information and is of interest to researchers and practising engineers in soil mechanics and geotechnical engineering these proceedings are dedicated to professor geoffrey e blight 1934 2013 who passed in november 2013

Integrated Design and Environmental Issues in Concrete Technology 2010-02-25 certain wastes such as nuclear wastes are so hazardous that their disposal creates a major challenge requiring considerable technical skill and understanding their effective isolation in the ground depends on the properties of the surrounding clays this authoritative book explains the detailed function of clay based engineered barriers gives a number of examples of the design and construction of successful sites and sets out conceptual and theoretical models for the prediction of their performance it begins by providing a scientific grounding in the relevant aspects of clay science and successively moves onto the practicalities while retaining the scientific slant it will be useful for students and invaluable for research institutes specialists in environmental protection agencies and consultants in the field of disposal of hazardous waste

Effect of Heat on Concrete 2011-06-01 this book presents the proceedings of the 3rd international conference on fracture and damage mechanics fdm of the 2 4 september 2003 at the liborianum in paderborn germany the proceedings cover a wide range of topics in fracture and damage mechanics and bring together researchers and engineers from academia and industry from europe asia and central and north america volume is indexed by thomson reuters cpci s wos the papers are divided into four broad categories experimental techniques and measurements computational methods stress and failure analysis and processes and mechanisms some emphasis is placed on three dimensional and mixed mode problems such as 3d fracture criteria for the prediction of fatigue crack growth in solids under arbitrary loading conditions

The Role of Microstructure in Topical Drug Product Development 2019-08-07 residual soils are found in many parts of the world like other soils they are used

extensively in construction either to build upon or as construction material they are formed when the rate of rock weathering is more rapid than transportation of the weathered particles by e g water gravity and wind which results in a large share of the soils formed remaining in place the soils typically retain many of the characteristics of the parent rock in a tropical region residual soil layers can be very thick sometimes extending to hundreds of meters before reaching un weathered rock unlike the more familiar transported sediment soil the engineering properties and behaviour of tropical residual soils may vary widely from place to place depending upon the rock of origin and the local climate during their formation and hence are more difficult to predict and model mathematically despite their abundance and significance our knowledge and understanding of these soils is not as extensive as that of transported sediment soil written by residual soil specialists from various parts of the world this unique handbook presents data knowledge and expertise on the subject it provides insight into the engineering behaviour of tropical residual soils which will be applicable to small or extensive construction works worldwide on such soils this book covers almost all aspects of residual soils from genesis classification formation sampling and testing to behaviour of weakly bonded and unsaturated soil volume change and shear strength it features chapters on applications in slopes and foundation as well as dedicated parts on residual soils in india hong kong and southeast asia a large number of graphs tables maps and references throughout the text provide further detail and insight this volume is intended as a reference guide for practitioners researchers and advanced students in civil construction and geological engineering unique in its coverage of the subject it may serve as a standard that benefits every engineer involved in geological foundation and construction work in tropical residual soils

Issues in Structural and Materials Engineering: 2012 Edition 2013-01-10 this is the second volume of an advanced textbook on microstructure and properties of materials the first volume is on aluminum alloys nickel based superalloys metal matrix composites polymer matrix composites ceramics matrix composites inorganic glasses superconducting materials and magnetic materials it covers titanium alloys titanium aluminides iron aluminides iron and steels iron based bulk amorphous alloys and nanocrystalline materials there are many elementary materials science textbooks but one can find very few advanced texts suitable for graduate school courses the contributors to this volume are experts in the subject and hence together with the first volume it is a good text for graduate microstructure courses it is a rich source of design ideas and applications and will provide a good understanding of how microstructure affects the properties of materials chapter 1 on titanium alloys covers production thermomechanical processing microstructure mechanical properties and applications chapter 2 on titanium aluminides discusses phase stability bulk and defect properties deformation mechanisms of single phase materials and polysynthetically twinned crystals and interfacial structures and energies between phases of different compositions chapter 3 on iron aluminides reviews the physical and mechanical metallurgy of fe3al and feal the two important structural intermetallics chapter 4 on iron and steels presents methodology microstructure at various levels strength ductility and strengthening toughness and toughening environmental cracking and design against fracture for many

different kinds of steels chapter 5 on bulk amorphous alloys covers the critical cooling rate and the effect of composition on glass formation and the accompanying mechanical and magnetic properties of the glasses chapter 6 on nanocrystalline materials describes the preparation from vapor liquid and solid states microstructure including grain boundaries and their junctions stability with respect to grain growth particulate consolidation while maintaining the nanoscale microstructure physical chemical mechanical electric magnetic and optical properties and applications in cutting tools superplasticity coatings transformers magnetic recordings catalysis and hydrogen storage

Unsaturated Soils: Research & Applications 2014-06-05 the most comprehensive and current guide to the properties behavior and technology of concrete this thoroughly updated edition contains new information on recently built construction projects worldwide shrinkage reducing admixtures self consolidating concrete pervious concrete internal curing and other cutting edge innovations modeling of ice formation and alkali aggregate reaction in concrete environmental impact of concrete each chapter begins with a preview of the contents and ends with a self test and a guide for further reading more than 300 drawings and photographs illustrate the topics discussed in this definitive text on concrete comprehensive coverage includes microstructure of concrete strength dimensional stability durability hydraulic cements aggregates admixtures proportioning concrete mixtures concrete at early age nondestructive methods progress in concrete technology advances in concrete mechanics global warming and concrete in the future

Microstructure of Smectite Clays and Engineering Performance 2014-04-21 with hipermat 5 on march 11 13 2020 the 5th international symposium on ultra high performance concrete and high performance construction materials documents the actual state of development of application in the fields of material science and development composite concrete materials strength and deformation behaviour of uhpc durability and sustainability of uhpc design and construction with uhpc structural modelling and optimisation lightweight concrete structures high precision manufacturing for pre fabrication nanotechnology for construction materials innovative applications smart construction materials this volume contains the short versions two pages of all contributions that have been accepted for publication at hipermat 5

Constitution and Microstructure of Porcelain 1916 advances in materials and pavement performance prediction contains the papers presented at the international conference on advances in materials and pavement performance prediction am3p doha qatar 16 18 april 2018 there has been an increasing emphasis internationally in the design and construction of sustainable pavement systems advances in materials and pavement prediction reflects this development highlighting various approaches to predict pavement performance the contributions discuss links and interactions between material characterization methods empirical predictions mechanistic modeling and statistically sound calibration and validation methods there is also emphasis on comparisons between modeling results and observed performance the topics of the book include but are not limited to experimental laboratory material

characterization field measurements and in situ material characterization constitutive modeling and simulation innovative pavement materials and interface systems non destructive measurement techniques surface characterization tire surface interaction pavement noise pavement rehabilitation case studies advances in materials and pavement performance prediction will be of interest to academics and engineers involved in pavement engineering

Advances in Fracture and Damage Mechanics III 2003-10-15 in the last decades new experimental and numerical techniques have taken many advanced features of porous media mechanics down to practical engineering applications this happened in areas that sometimes were not even suspected to be open to engineering ideas at all the challenge that often faces engineers in the field of geomechanics biomechanics rheology and materials science is the translation of ideas existing in one field to solutions in the other the purpose of the iutam symposium from which this proceedings volume has been compiled was to dive deep into the mechanics of those porous media that involve mechanics and chemistry mechanics and electromagnetism mechanics and thermal fluctuations of mechanics and biology the different sections have purposely not been formed according to field interest but on the basis of the physics involved

Handbook of Tropical Residual Soils Engineering 2012-05-24 proposing a simplified but intergrated scenario of concrete life cycle simulation method this book examines and explains the vast amount of experimental observations related to hardening concrete using a common set of physical laws

Microstructure and Properties of Materials 2000-10-09 this is an advanced text on the microstructure and properties of materials the first volume of a possible 3 volume set while there are many elementary texts in materials science there are very few advanced texts chapter 1 on aluminum alloys presents microstructural optimization and critical considerations in design applications chapter 2 on nickel base superalloys reviews the compositional microstructural and processing advances in increasing their maximum use temperature chapter 3 on metal matrix composites discusses the strengthening mechanisms of metals dispersed with short fibers or particles chapter 4 on polymer matrix composites contains the details of the microsturcture property relationships of high performance fibers polymer matrix material and the advanced composites made therewith chapter 5 on ceramics matrix composites describes the fibers and matrix materials used the processing techniques involved and the mechanical properties under different loading conditions chapter 6 on inorganic glasses describes the influence of second phases both glassy and cyrstalline on their properties chapter 7 on superconducting materials shows the importance of twins grain boundaries dislocations and stacking faults chapter 8 on magnetic materials introduces the domain structure and its effects on the soft and hard magnetic properties contents microstructure and properties of aluminium alloys c p blakenship jr et al nickel base superalloys n s stoloff metal matrix composites r j arsenault polymer matrix composites j k kim y w mai ceramic matrix composites p g karandikar et al microstructure of inorganic glasses r h doremus microstructure and properties of superconducting materials c s pande magnetic materials c d graham jr readership postgraduate students and

researchers in materials science keywords microstructure phase diagram strengthening aluminum alloy hardening precipitation fracture toughness fatigue strength crack growth aluminum age hardening strengthening mechanisms fracture behavior non heat treatable aluminum alloys structure property relationships fatigue corrosion resistance ceramic composite cracking fiber glass glass ceramic interface matrix processing modulus strength

Concrete: Microstructure, Properties, and Materials 2013-09-24 this book consists of one hundred and nine selected papers presented at the 2015 international conference on materials engineering and environmental science mees2015 which was successfully held in wuhan china during september 25 27 2015 all papers selected for this proceedings were subjected to a rigorous peer review process by at least two independent peers the papers were selected based on innovation organization and quality of presentation the mees2015 covered a wide spectrum of research topics ranging from fundamental studies technical innovations to industrial applications in chemical material and chemical processing technology composite materials alloy materials and metal materials characteristics of materials building material and construction technology ecology and environment technology for environmental protection economy and environment mechanical and control engineering and manufacturing technology the mees2015 brought together more than one hundred researchers from china south korea taiwan japan malaysia and saudi arabia and provided them with a forum to share exchange and discuss new scientific development and future directions of materials engineering and environmental science contents chemical materials and chemical processing technologycomposite materialsalloy materials and metal materialscharacteristics of materialsbuilding materials and construction technologyecology and environmenttechnology for environmental protectioneconomy and environmentmechanical and control engineeringmanufacturing technology readership researchers professionals and graduate students interested in materials engineering and environmental science

Nondestructive Evaluation and Flaw Criticality for Composite Materials 1979 it is widely accepted that the creation of novel foods or improvement of existing foods largely depends on a strong understanding and awareness of the intricate interrelationship between the nanoscopic microscopic and macroscopic features of foods and their bulk physiochemical properties sensory attributes and healthfulness with its distinguished editor and array of international contributors understanding and controlling the microstructure of complex foods provides a review of current understanding of significant aspects of food structure and methods for its control part one focuses on the fundamental structural elements present in foods such as polysaccharides proteins and fats and the forces which hold them together part two discusses novel analytical techniques which can provide information on the morphology and behaviour of food materials chapters cover atomic force microscopy image analysis scattering techniques and computer analysis chapters in part three examine how the principles of structural design can be employed to improve performance and functionality of foods the final part of the book discusses how knowledge of structural and physicochemical properties can be implemented to improve properties of specific foods such as ice cream spreads protein based drinks

chocolate and bread dough understanding and controlling the microstructure of complex foods is an essential reference for industry professionals and scientists concerned with improving the performance of existing food products and inventing novel food products reviews the current understanding of significant aspects of food structure and methods for its control focuses on the fundamental structural elements present in foods such as proteins and fats and the forces that hold them together discusses novel analytical techniques that provide information on the morphology and behaviour of food materials

Ultra-High Performance Concrete and High Performance Construction Materials 2020-01-01 knowledge of basic clay microstructure is fundamental to an understanding of the physical chemical and mechanical properties of fine grained sediments and rocks this compilation of fifty nine peer reviewed papers examines clay microstructure in detail with comprehensive sections focusing on microstructure signatures environmental processes modeling measurement techniques and future research recommendations many of these topics are discussed in light of geological and engineering applications such as hazardous waste disposal construction techniques and drilling programs the field of clay microstructure is developing rapidly the concepts observations and principles presented in this book will help stimulate new thought and be a spring board for exciting new research

Advances in Materials and Pavement Prediction 2018-07-16 offering an engineering perspective and the latest information on the application of this rapidly expanding technique this practical book covers the technology engineering materials and products as well as economic and ecological aspects in addition to the theory it also utilizes case studies that can easily be put into industrial practice each step of the process is discussed in terms of sustainability and all data complies with the eu and fta environmental regulations invaluable reading for food chemists and technologists process engineers chemists in industry agricultural scientists and chemical engineers from the contents engineering aspects of extrusion raw materials in the production of extrudates production of breakfast cereals snack pellets baby food and more extrusion technique in confectionery pet food and aquafeed extrusion cooking in waste management and paper pulp processing thermoplastic starch expanders process automation scale up of extrusion cooking in single screw extruders

IUTAM Symposium on Physicochemical and Electromechanical, Interactions in Porous Media 2006-01-28 it s well known that the structural characteristics of food materials influence their mass transfer especially their water transfer properties during such processes as drying hydration and storage in porous cereal based products for example effective water diffusivity is highly affected by the volume fraction and distribution of both solid and gas phases while in dense food materials such as fat based or other edible coatings it depends on factors that affect the tightness of the molecular structure e g free volume cohesive energy density crystallinity this brief will review the impact of food structure on moisture transfer a multi scale analysis of food structure will include a look at molecular structure e g free volume crystallinity nanostructure microstructure e g porous food and macrostructure e g bilayer structure for each structural analysis a focus on the mathematical modelling of the relationship between structural properties and moisture transfer properties will be performed

Volatile Retention Kinetics and Microstructure of Microwave Freeze-dried Model Foods 1993 the mrs symposium proceeding series is an internationally recognised reference suitable for researchers and practitioners

Modelling of Concrete Performance 1999-04-29

Microstructure and Properties of Materials 1996-08-22

Materials Engineering and Environmental Science 2016-03-30

Understanding and Controlling the Microstructure of Complex Foods 2007-08-30

Microstructure of Fine-Grained Sediments 2012-12-06

Extrusion-Cooking Techniques 2011-01-11

Food Structure and Moisture Transfer 2013-02-11

Microstructure of Cement-Based Systems: Volume 370 1995-04-11

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