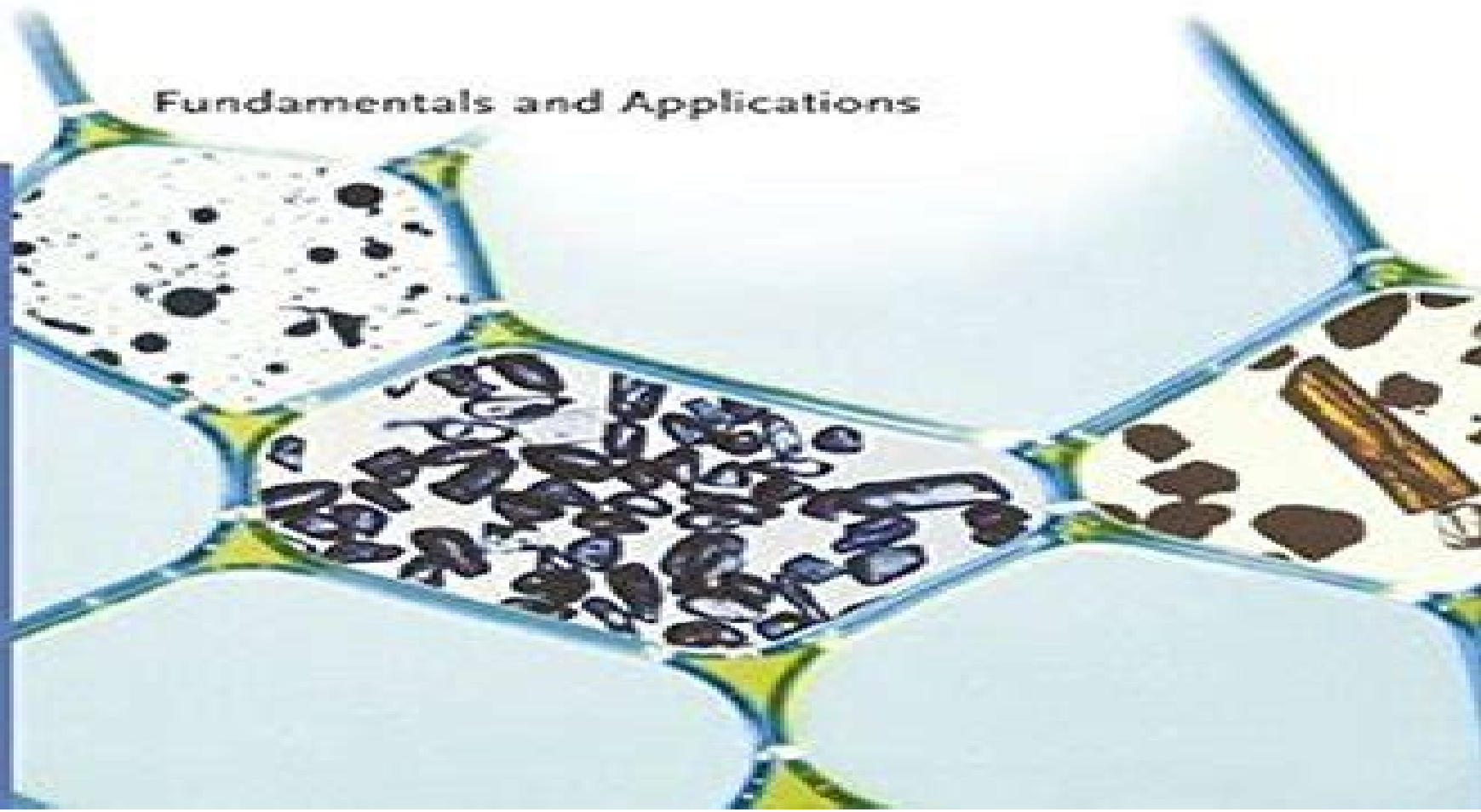


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Emulsions, Foams, and Suspensions

Fundamentals and Applications



Emulsions Foams And Suspensions Fundamentals And Applications

**Vijay Kumar Thakur, Elisabete
Frollini, Janet Scott**



Emulsions Foams And Suspensions Fundamentals And Applications:

Emulsions, Foams, and Suspensions Laurier L. Schramm, 2006-05-12 Until now colloid science books have either been theoretical or focused on specific types of dispersion or on specific applications. This then is the first book to provide an integrated introduction to the nature, formation and occurrence, stability, propagation and uses of the most common types of colloidal dispersion in the process related industries. The primary focus is on the applications of the principles, paying attention to practical processes and problems. This is done both as part of the treatment of the fundamentals where appropriate and also in the separate sections devoted to specific kinds of industries. Throughout the treatment is integrated with the principles of colloid and interface science common to each dispersion type presented for each major physical property class followed by separate treatments of features unique to emulsions, foams or suspensions. The first half of the book introduces the fundamental principles introducing readers to suspension formation and stability, characterization and flow properties emphasizing practical aspects throughout. The following chapters discuss a wide range of industrial applications and examples serving to emphasize the different methodologies that have been successfully applied. Overall the book shows how to approach making emulsions, foams and suspensions with different useful properties, how to propagate them and how to prevent their formation or destabilize them if necessary. The author assumes no prior knowledge of colloid chemistry and with its glossary of key terms, complete cross referencing and indexing, this is a must have for graduate and professional scientists and engineers who may encounter or use emulsions, foams or suspensions or combinations thereof whether in process design, industrial production or in related R D fields.

Emulsions, Foams, Suspensions, and Aerosols Laurier L. Schramm, 2014-08-12 This is the first book to provide an integrated introduction to the nature, formation and occurrence, stability, propagation and uses of the most common types of colloidal dispersion in the process related industries. The primary focus is on the applications of the principles, paying attention to practical processes and problems. This is done both as part of the treatment of the fundamentals where appropriate and also in the separate sections devoted to specific kinds of industries. Throughout the treatment is integrated with the principles of colloid and interface science common to each dispersion type presented for each major physical property class followed by separate treatments of features unique to emulsions, foams or suspensions. The first half of the book introduces the fundamental principles introducing readers to suspension formation and stability, characterization and flow properties emphasizing practical aspects throughout. The following chapters discuss a wide range of industrial applications and examples serving to emphasize the different methodologies that have been successfully applied. The author assumes no prior knowledge of colloid chemistry and with its glossary of key terms, complete cross referencing and indexing, this is a must have for graduate and professional scientists and engineers who may encounter or use emulsions, foams or suspensions or combinations thereof whether in process design, industrial production or in related R D fields.

Colloidal Particles at Liquid Interfaces Bernard P. Binks, Tommy S.

Horozov,2006-08-17 Small solid particles adsorbed at liquid interfaces arise in many industrial products and process such as anti foam formulations crude oil emulsions and flotation They act in many ways like traditional surfactant molecules but offer distinct advantages However the understanding of how these particles operate in such systems is minimal This book brings together the diverse topics actively being investigated with contributions from leading experts in the field After an introduction to the basic concepts and principles the book divides into two sections The first deals with particles at planar liquid interfaces with chapters of an experimental and theoretical nature The second concentrates on the behaviour of particles at curved liquid interfaces including particle stabilized foams and emulsions and new materials derived from such systems This collection will be of interest to academic researchers and graduate students in chemistry physics chemical engineering pharmacy food science and materials science

Characterization of Nanomaterials in Liquid Disperse Systems

R. R. Retamal Marín,2022-04-22 This book describes different aspects of characterization and detection of nanomaterials in liquid disperse systems such as suspensions emulsions and suspoemulsions Natural and technical particulate nanomaterials NMs are often present in formulations and products consisting of several disperse phases and complex dispersion media Specific interfacial properties of the particles their interactions with each other and with the dispersion medium have to be considered For example the interfacial properties determine whether the particles tend to be arranged in aqueous or lipid phases or at their phase boundaries The interfacial properties are significantly influenced by the adsorption of dissolved species i e they depend on the composition of the dispersion medium This poses great challenges for the characterization of these nanoparticle systems and requires adequate preparation methods The nanoparticle measurement techniques aim at a deep physico chemical understanding of the dispersity state of nanoparticle systems Since the dispersity state of nanoparticle systems in an application usually does not correspond to their original manufacturing process the formulation of new or improved product properties is of decisive importance The characterization of nanoparticles in complex formulations or matrices requires an adequate sample preparation based on an existing or yet to be developed Standard Operating Procedure SOP The structure of the SOPs includes the dispersion regulations which are of essential importance for comparing reproducible results of nanoparticle measurement with respect to comparability and transferability worldwide The aim is to separate and isolate relevant NMs with knowledge of the interrelationships

Kirk-Othmer Chemical Technology of Cosmetics Kirk-Othmer,2012-11-27 Educating professionals and students about the chemistry formulation technology and related regulatory aspects of cosmetics and perfume Cosmetics and perfume comprise a multibillion dollar global industry Kirk Othmer Chemical Technology of Cosmetics provides authoritative information on the substances and processes involved including key product groups ingredients formulation technology packaging and regulatory topics in twenty two articles This resource makes sense of a vast group of consumer products designed to improve the health cleanliness and physical appearance of the human exterior It identifies natural and synthetic ingredients and gives details on formulation of the

product so that the cosmetic is safe easy to use and performs as described Particular attention is paid to the technologies that have been developed to produce them including emulsification stick technology powder blending and aerosol technology Packaging is also addressed as it must be attractive to the consumer be environmentally friendly and keep the product safe as well Regulatory information reinforces the safety aspect Based on Wiley s renowned Kirk Othmer Encyclopedia of Chemical Technology this book presents new and carefully updated articles and features the same breadth and quality of coverage and clarity of presentation found in the original This comprehensive guide is a valuable resource for chemists R D professionals dermatologists patent attorneys regulatory agencies and other professionals in the field of personal care products It is also a must have reference for students who plan to enter the field

Food Oral Processing Jianshe Chen,Lina Engelen,2012-01-24 This volume provides an overview of the latest research findings on the physics physiology and psychology of food oral consumption as well as the experimental techniques available for food oral studies Coverage includes the main physical and physiological functionalities of the mouth the location and functionalities of various oral receptors the main sequences of eating and drinking and the concomitant food disintegration and destabilisation Chapters also explain oral processing and its relation to flavour release and texture perception and there is an introduction to the principles of food rheology as they relate to eating Food Oral Processing is directed at food scientists and technologists in industry and academia especially those involved in sensory science and new product development It will also be of interest to oral physiologists oral biologists and dentists The book will be a useful reference for undergraduate and postgraduate students of these disciplines

Surfactants for Enhanced Oil Recovery Applications Muhammad Sagir,Muhammad Mushtaq,M. Suleman Tahir,Muhammad Bilal Tahir,Abdul Ravoof Shaik,2020-01-29 This book provides a concise treatise on the use of surfactants in enhanced oil recovery EOR including information on key types of surfactants and their respective applications in the wider petroleum industry The authors discuss carbon dioxide EOR alkaline surfactant polymer flooding strategies and the use of surfactants as a means of reducing interfacial tension while also paying special attention to the challenges involved in using surfactants for enhanced oil recovery such as the difficult issue of surfactant adsorption on reservoir rock All chapters highlight and are based on the authors own laboratory scale case studies Given its content the book offers a valuable asset for graduate students of petroleum and chemical engineering as well as researchers in the field of chemical enhanced oil recovery It will also be of interest to professionals involved in enhanced industrial oil recovery

Exploitation of Unconventional Oil and Gas Resources Kenneth Imo-Imo Israel Eshiet,2019-07-10 The stimulation of unconventional hydrocarbon reservoirs is proven to improve their productivity to an extent that has rendered them economically viable Generally the stimulation design is a complex process dependent on intertwining factors such as the history of the formation rock and reservoir fluid type lithology and structural layout of the formation cost time etc A holistic grasp of these can be daunting especially for people without sufficient experience and or expertise in the exploitation of unconventional

hydrocarbon reserves This book presents the key facets integral to producing unconventional resources and how the different components if pieced together can be used to create an integrated stimulation design Areas covered are as follows stimulation methods fracturing fluids mixing and behavior of reservoir fluids assessment of reservoir performance integration of surface drilling data estimation of geomechanical properties and hydrocarbon saturation and health and safety

Exploitation of Unconventional Oil and Gas Resources Hydraulic Fracturing and Other Recovery and Assessment Techniques is an excellent introduction to the subject area of unconventional oil and gas reservoirs but it also complements existing information in the same discipline It is an essential text for higher education students and professionals in academia research and the industry

Innovative Food Processing Technologies Kai Knoerzer, Pablo Juliano, Geoffrey W Smithers, 2016-06-29

Innovative Food Processing Technologies Extraction Separation Component Modification and Process Intensification focuses on advances in new and novel non thermal processing technologies which allow food producers to modify and process food with minimal damage to the foodstuffs The book is highly focused on the application of new and novel technologies beginning with an introductory chapter and then detailing technologies which can be used to extract food components Further sections on the use of technologies to modify the structure of food and the separation of food components are also included with a final section focusing on process intensification and enhancement Provides information on a variety of food processing technologies Focuses on advances in new and novel non thermal processing technologies which allow food producers to modify and process food with minimal damage to the foodstuffs Presents a strong focus on the application of technologies in a variety of situations Created by editors who have a background in both the industry and academia

Production Chemicals for the Oil and Gas Industry, Second Edition Malcolm A. Kelland, 2014-03-13

Production chemistry issues result from changes in well stream fluids both liquid and gaseous during processing Since crude oil production is characterized by variable production rates and unpredictable changes to the nature of the produced fluids it is essential for production chemists to have a range of chemical additives available for rectifying issues that would not otherwise be fully resolved Modern production methods the need to upgrade crude oils of variable quality and environmental constraints demand chemical solutions Thus oilfield production chemicals are necessary to overcome or minimize the effects of the production chemistry problems

Production Chemicals for the Oil and Gas Industry Second Edition discusses a wide variety of production chemicals used by the oil and gas industry for down hole and topside applications both onshore and offshore Incorporating the large amount of research and applications since the first edition this new edition reviews all past and present classes of production chemicals providing numerous difficult to obtain references especially SPE papers and patents Unlike other texts that focus on how products perform in the field this book focuses on the specific structures of chemicals that are known to deliver the required or desired performance information that is very useful for research and development Each updated chapter begins by introducing a problem such as scale or corrosion for which there is a production chemical The author then

briefly discusses all chemical and nonchemical methods to treat the problem and provides in depth descriptions of the structural classes of relevant production chemicals He also mentions when available the environmental properties of chemicals and whether the chemical or technique has been successfully used in the field This edition includes two new chapters and nearly 50 percent more references **Liquid Marbles** Andrew T. Tyowua, 2018-10-08 Certain small solid particles are surface active at fluid interfaces and thus are able to stabilize materials previously considered impossible to stabilize in their absence Liquid marbles particle coated non sticking liquid droplets represent one of these materials Preparation of liquid marbles was described only about 15 years ago and they are now widely studied by many research groups and numerous applications of liquid marbles have been advanced The book is written for postgraduates and researchers working on the area who are training to become chemists soft matter physicists materials scientists and engineers **Advances in Food Rheology and Its Applications** Jasim Ahmed, Santanu Basu, 2022-09-13 *Advances in Food Rheology and Its Applications* Development in Food Rheology Second Edition presents the latest advances in the measurement and application of food rheology one of the most important tools for food companies when characterizing ingredients and final products and a predictor of product performance and consumer acceptance This second edition provides coverage of new rheological measurement techniques including ultrasonic measurements of rheological properties of food and NMR approach and precision in data handling including coverage of mathematical modeling of rheological properties As the range of food products has also broadened as a result of consumer demands and preference this second edition includes a series of new chapters on dairy and plant based foods The amalgamation between food texture and sensory attributes will also be addressed In addition coverage of the correlation between rheological behavior and modeling of the fluid in a human stomach and food digestion will be assessed A special focus has been given on rheology of gel systems including food hydrogels bigels and organogels Written for food scientists food technologists sensory scientists and others working in academia and industry *Advances in Food Rheology and Its Applications* Development in Food Rheology Second Edition will be a welcomed and updated reference Considers the impact of artificial intelligence and machine vision on rheological characterization and process control Presents ultrasonic measurements of rheological properties of food and NMR approach and precision in data handling Covers thermodynamic approach of rheology and interfacial rheology Explains various gel systems rheology including bogels and organogo gels **Green Chemical Processes** Mark Anthony Benvenuto, 2017-10-10 The greening of industry processes i e making them more sustainable is a popular and often lucrative trend which has seen increased attention in recent years *Green Chemical Processes* the 2nd volume of *Green Chemical Processing* covers the hot topic of sustainability in chemistry with a view to education as well as considering corporate and environmental interests e g in the context of energy production The diverse team of authors allows for a balance between these different but interconnected perspectives The American Chemical Society's 12 Principles of Green Chemistry are woven throughout this

text as well as the series to which this book belongs

Nano and Bio Heat Transfer and Fluid Flow Majid

Ghassemi, Azadeh Shahidian, 2017-03-15 Nano and Bio Heat Transfer and Fluid Flow focuses on the use of nanoparticles for bio application and bio fluidics from an engineering perspective. It introduces the mechanisms underlying thermal and fluid interaction of nanoparticles with biological systems. This book will help readers translate theory into real world applications such as drug delivery and lab on a chip. The content covers how transport at the nano scale differs from the macro scale also discussing what complications can arise in a biologic system at the nano scale. It is ideal for students and early career researchers, engineers conducting experimental work on relevant applications or those who develop computer models to investigate design these systems. Content coverage includes biofluid mechanics, transport phenomena, micro nano fluid flows and heat transfer. Discusses nanoparticle applications in drug delivery. Covers the engineering fundamentals of bio heat transfer and fluid flow. Explains how to simulate, analyze and evaluate the transportation of heat and mass problems in bio systems.

Biological Effects of Surfactants S.A. Ostroumov, 2005-12-15 Offering a new perspective on the hazards of pollution, Biological Effects of Surfactants examines the effects of anionic, non ionic, cationic surfactants and detergents on a wide range of organisms, populations, communities and ecosystems. The author establishes new quantitative characteristics of the effects and presents study results on newly discovered phenomena. While proposing and substantiating new priorities and approaches for testing, assessing and characterizing the biological activities and hazards of substances, the book illustrates how the data obtained can be used to develop effective environmental remediation and protection measures to improve water quality.

Handbook of Meat and Meat Processing, Second Edition Y. H. Hui, 2012-01-11 Retitled to reflect expansion of coverage from the first edition, Handbook of Meat and Meat Processing, Second Edition contains a complete update of materials and nearly twice the number of chapters. Divided into seven parts, the book covers the entire range of issues related to meat and meat processing from nutrients to techniques for preservation and extending shelf life. Topics discussed include: An overview of the meat processing industry; The basic science of meat with chapters on muscle biology, meat consumption and chemistry; Meat attributes and characteristics including color, flavor, quality assessment, analysis, texture and control of microbial contamination; The primary processing of meat including slaughter, carcass evaluation and kosher laws; Principles and applications in the secondary processing of meat including breeding, curing, fermenting, smoking and marinating; The manufacture of processed meat products such as sausage and ham; The safety of meat products and meat workers including sanitation issues and hazard analysis. Drawn from the combined efforts of nearly 100 experts from 16 countries, the book has been carefully vetted to ensure technical accuracy for each topic. This definitive guide to meat and meat products is a critical tool for all food industry professionals and regulatory personnel.

Nano- and Microtechnology from A - Z Laurier L. Schramm, 2014-08-07 This reference provides brief explanations for the most important terms that may be encountered in a study of the fundamental principles, experimental investigations and industrial applications of nano and microscience.

including colloid and interface science More than a dictionary the book also provides information on properties units equations techniques and pioneers in the field The comprehensive content covers both current and older terms complete cross references for the most important synonyms abbreviations and acronyms and numerous tables for the quick overview An authoritative reference vital for unhindered communication and knowledge transfer in this fast growing and broadly interdisciplinary field

Nano- and Microencapsulation for Foods Hae-Soo Kwak,2014-04-02 Today nano and microencapsulation are increasingly being utilized in the pharmaceutical textile agricultural and food industries Microencapsulation is a process in which tiny particles or droplets of a food are surrounded by a coating to give small capsules These capsules can be imagined as tiny uniform spheres in which the particles at the core are protected from outside elements by the protective coating For example vitamins can be encapsulated to protect them from the deterioration they would undergo if they were exposed to oxygen This book highlights the principles applications toxicity and regulation of nano and microencapsulated foods Section I describes the theories and concepts of nano and microencapsulation for foods adapted from pharmaceutical areas rationales and new strategies of encapsulation and protection and controlled release of food ingredients Section II looks closely at the nano and microencapsulation of food ingredients such as vitamins minerals phytochemical lipid probiotics and flavors This section provides a variety of references for functional food ingredients with various technologies of nano particles and microencapsulation This section will be helpful to food processors and will deal with food ingredients for making newly developed functional food products Section III covers the application of encapsulated ingredients to various foods such as milk and dairy products beverages bakery and confectionery products and related food packaging materials Section IV touches on other related issues in nano and microencapsulation such as bioavailability bioactivity potential toxicity and regulation

Cellulose Nanoparticles Vijay Kumar Thakur,Elisabete Frollini,Janet Scott,2021-07-01 Cellulose nanoparticles CNP are a class of bio based nanoscale materials which are of interest due to their unique structural features and properties such as biocompatibility biodegradability and renewability They are promising candidates for applications including in biomedicine pharmaceuticals electronics barrier films nanocomposites membranes and supercapacitors New resources extraction procedures and treatments are currently under development to satisfy increasing demands for cost effective and sustainable methods of manufacturing new types of cellulose nanoparticle based materials on an industrial scale Cellulose Nanoparticles Chemistry and Fundamentals covers the synthesis characterization and processing of cellulose nanomaterials It aims to address the recent progress in the production methodologies for cellulose nanoparticles covering principal cellulose resources and the main processes used for isolation Chapters cover the preparation and characterisation of cellulose nanocrystals and nanofibrils Together with Volume 2 these books form a useful reference work for graduate students and researchers in chemistry materials science nanoscience and green nanotechnology

Surfactants in Precision Cleaning Rajiv Kohli,Kashmiri L. Mittal,2021-10-21 Surfactants in Precision Cleaning

Removal of Contaminants at the Micro and Nanoscale is a single source of information on surfactants emulsions microemulsions and detergents for removal of surface contaminants at the micro and nanoscale The topics covered include cleaning mechanisms effect of surfactants types of stable dispersions emulsions microemulsions surfactants detergents etc cleaning technology and cleaning applications Users will find this volume an excellent resource on the use of stable dispersions in precision cleaning Single source of current information on surfactants emulsions microemulsions and detergents for precision cleaning applications Includes a list of extensive reference sources Discusses specific selection and properties of surfactants and their use in cleaning Provides a guide for cleaning applications in different industry sectors

Embracing the Melody of Term: An Mental Symphony within **Emulsions Foams And Suspensions Fundamentals And Applications**

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