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# 1 Emulsion Formation Stability And Rheology Wiley Vch

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Emulsion Science

Modern Aspects of Emulsion Science

Enzymatic Stabilization and Formation of Food Nano- and Microstructures

Nanoemulsions

Science and Technology Behind Nanoemulsions

Emulsions and Emulsion Stability

Encyclopedic Handbook of Emulsion Technology

An Introduction to Food Grade Nanoemulsions

Ultrasonic Production of Nano-emulsions for Bioactive Delivery in Drug and Food Applications

Emulsion-based Systems for Delivery of Food Active Compounds

Emulsions

Particle-Stabilized Emulsions and Colloids

Handbook of Advanced Magnetic Materials

Polymeric Surfactants

Emulsions: Structure, Stability and Interactions

Petroleum Engineering Handbook

Food Emulsifiers and Their Applications

Emulsions and Emulsion Stability

Encyclopedia of Colloid and Interface Science

Sustainable Separation Engineering

Foams: Physics, Chemistry and Structure

Nanoemulsions

Handbook of Oil Spill Science and Technology

Emulsion Formation and Stability

Encyclopedia of Emulsion Technology

Natural Surfactants

Emulsions, Foams, and Suspensions  
Emulsion Science and Technology  
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Nanodispersions  
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## **ANDREW CLARE**

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**Emulsion Science** Springer Nature  
A discussion of fundamental characteristics, theories and applications for liquid-liquid colloidal dispersions. It profiles experimental and traditional measurement techniques in a variety of emulsified systems, including rheology, nuclear magnetic resonance, dielectric spectroscopy, microcalorimetry, video

enhanced microscopy, and conductivity.

### **Modern Aspects of Emulsion Science**

Walter de Gruyter GmbH & Co KG  
Emulsions and Emulsion Stability, Second Edition provides comprehensive coverage of both theoretical and practical aspects of emulsions. The book presents fundamental concepts and processes in emulsified systems and explains how to predict emulsion stability and determine droplet sizes in a variety of emulsion systems. The authors discuss spontaneous emulsification and the formation of "nanoemulsions," electrocoalescence, and

variables that contribute to the inversion in emulsion systems. Several chapters emphasize applications such as emulsification encountered in oil spills, asphalt, chemical flooding, acid crude oils, and large-scale industrial wastewater treatment. The survey of experimental characterization methods highlights the importance of thin liquid films in colloidal systems and assesses different NMR applications, ultrasound characterization, video microscopy, and other on-line instrumentation. Features, Defines fundamental concepts such as

flocculation, coalescence, stability, precipitation, deposition, and droplet size distribution, Covers experimental characterization, technical systems, separation technology, and a variety of models for the separation performance, Discusses how highly concentrated emulsions can be used as templates for solid, macroporous foams, Offers essential background to the isolation, separation, and characterization of individual acids occurring in crude oils, Explains the use of video microscopy as a technique to monitor on-line the droplet size distribution in product lines from the separator and online instrumentation, Deals with using conductivity measurements as an alternative to online instrumentation, Completely revised and expanded, this second edition of *Emulsions and Emulsion Stability* offers a well-rounded collection of knowledge that is applicable to all academic and industrial scientists and researchers in the fields of surfactant and emulsion science. Book jacket.

*Enzymatic Stabilization and Formation of Food Nano- and Microstructures* John Wiley & Sons

"Volume 4 of the *Encyclopedia of Emulsion Technology* completes this unique and compact 4-volume work by extending the discussion of basic theory and applications featured in Volumes 1-3. More importantly, this volume presents the latest developments on new applications in emulsion technology--introducing scientists and engineers to the most recent concepts. "

*Nanoemulsions* CRC Press

Emulsions occur either as end products or during the processing of products in a huge range of areas including the food, agrochemical, pharmaceuticals, paints and oil industries. As end products, emulsions allow to avoid organic solvent in processing hydrophobic coatings. Emulsion technology is a suitable approach to vehicle viscous phases. It is also a remarkable mean of targeting actives or capturing specific species. The range of applications of emulsions progresses and their manufacturing becomes more and more sophisticated. Besides this broad domain of technological interest, emulsions are raising a variety of fundamental questions at the frontier between physics and chemistry. Indeed, as

a class of soft colloidal materials, emulsions science is linked to various aspects of these disciplines: phase transitions, surface forces and wetting, metastability and hydrodynamic instabilities, mechanical properties and flow. The aim of this book is to review the main important concepts governing emulsion science. In Chapter 2, repulsive interactions between liquid films are discussed as well as adhesive interaction related to wetting. In Chapter 3, consequences of weak and strong attractions are presented, related to the well accepted liquid solid transition analogy. In Chapter 4, the basics of both bulk compressibility and shear elasticity are presented, the role of disorder being the most important aspect of the elastic behavior of these soft systems. In Chapter 5 the central question of the emulsion lifetime related to metastability is discussed.

*Science and Technology Behind Nanoemulsions* John Wiley & Sons

*Emulsions* provides a general introduction, the industrial role of emulsifiers and addresses different problems such as creaming/sedimentation, flocculation,

Ostwald ripening, coalescence and phase inversion. Thermodynamics, adsorption and interaction forces between emulsion droplets are thoroughly explained. Supplemented by many figures and tables, it helps to characterize and select the right emulsifier for various industrial applications.

*Emulsions and Emulsion Stability* Springer

This volume extends the discussions of basic theory and applications featured in volumes 1-3 of this series. It includes details on emulsion stability and emulsification; an examination on the effect of added polymers on emulsion rheology; findings on the role of repulsive forces in aqueous solubility, micelle stability, micro-emulsion formation, and phase separation; and a model for microemulsions.

*Encyclopedic Handbook of Emulsion Technology* Springer

This book covers new micro-/nanoemulsion systems in technology that has developed our knowledge of emulsion stability. The emulsion system is a major phenomenon in well-qualified products and has extensive usages in cosmetic industry, food industry, oil recovery, and

mineral processes. In this book, readers will find recent studies, applications, and new technological developments on fundamental properties of emulsion systems.

*An Introduction to Food Grade*

*Nanoemulsions* BoD – Books on Demand

General introduction - Definition of nanodispersions (nanosuspensions, nanoemulsions, swollen micelles or microemulsions, liposomes and vesicles) and their size range. General description of their colloid stability. Main advantages of nanodispersions and their industrial applications. Preparation of nanosuspensions by top-up process - Nucleation and growth and control of particle size distribution. Factors determining the formation of narrow particle size distribution. Role of surfactants and polymers. Preparation of nano-polymer colloids (lattices) by emulsion and dispersion polymerization. Factors affects the stability of nanosuspensions. Preparation of nanosuspensions by bottom down process - Dispersion of preformed particles in liquids and the need of a wetting agent. Break-up of aggregates and agglomerates

by application of high speed stirrers. Reduction of particle size by application of intense energy (microfluidization or bead milling). Maintenance of the colloid stability of the resulting particles. Reduction of Ostwald ripening. Industrial applications of nanosuspensions - Application in pharmacy to enhance bioavailability, Application in sunscreens for UV protection. Application in paints and coatings. Preparation of nanoemulsions by the use of high pressure homogenisers - Principles of emulsion formation and the role of the emulsifier. Selection of emulsifiers. Methods of emulsification and prevention of coalescence during emulsification. Origin of colloid stability of nanoemulsions. Prevention of Ostwald ripening Low energy methods for nanoemulsion preparation - The phase inversion composition method and the role of mixing the surfactant with oil and water. The phase inversion temperature method for preparation of nanoemulsions. Preparation of nanoemulsions by dilution of microemulsions. Practical examples of nanoemulsions and their industrial application - Nanoemulsions based on non-ionic surfactants and the role of the

hydrophilic-lipophilic balance. Effect of oil solubility on the stability of nanoemulsions. Nanoemulsions based on polymeric surfactants. Applications in pharmacy and cosmetics. Swollen micelles or microemulsions. Definition of microemulsions and their size range. Thermodynamic definition of microemulsions. Theories of microemulsion formation and stability. Characterisation of microemulsions using scattering, conductivity and NMR techniques. Formulation of microemulsions and their industrial applications - Distinction between microemulsions and macroemulsions. Formulation of oil/water and water/oil microemulsions. Selection of emulsifiers for microemulsions. Application of microemulsions in tertiary oil recovery. Liposomes and vesicles - Formation of multilamellar lipid layers (liposomes) by dispersion of lipids in water. Formation of unilamellar vesicles by sonication of the liposomes. Factors responsible for stabilisation of liposomes and vesicles. Use of block copolymers to enhance the stability of vesicles. Applications of liposomes and vesicles in pharmacy and cosmetics.

#### Ultrasonic Production of Nano-emulsions for Bioactive Delivery in Drug and Food Applications

BoD - Books on Demand  
This book presents the proceedings of the 4th International Conference on Integrated Petroleum Engineering and Geosciences 2016 (ICIPEG 2016), held under the banner of World Engineering, Science & Technology Congress (ESTCON 2016) at Kuala Lumpur Convention Centre from August 15 to 17, 2016. It presents peer-reviewed research articles on exploration, while also exploring a new area: shale research. In this time of low oil prices, it highlights findings to maintain the exchange of knowledge between researchers, serving as a vital bridge-builder between engineers, geoscientists, academics, and industry.

#### Emulsion-based Systems for Delivery of Food Active Compounds

CRC Press  
This SpringerBrief provides an overview of ultrasonic emulsification and an update on recent advances in developing stable emulsions for the creation of novel drugs and functional foods, with a focus on bioactive delivery in these products. Emulsification is the process of combining two or more immiscible liquids to form a

semi-stable mixture. These two liquids generally consist of an organic (oil) phase and an aqueous (water) phase that is stabilized by the addition of an emulsifier. Most common emulsions are of the oil-in-water (O/W) type, but can also be of water-in-oil (W/O) or even multiple emulsion types (i.e. double emulsions) in the form of water-in-oil-in-water (W/O/W) or oil-in-water-in-oil (O/W/O) phases. The formation of an emulsion requires input of energy to distribute the dispersed phase in the continuous phase in small-sized droplets that are able to resist instability. There is great interest in the use of ultrasound to produce emulsions, as it is able to do so relatively efficiently and effectively compared to existing techniques such as rotor stator, high-pressure homogenization and microfluidization. The interaction of ultrasound with the hydrocolloids and biopolymers that are often used to stabilize emulsions can offer advantages such as improved stability or greater control of formed droplet size distributions.

*Emulsions* John Wiley & Sons

There has been much scientific interest in

the behaviour of colloidal particles at liquid interfaces. From a research aspect they provide model systems for fundamental studies of condensed matter physics. From a commercial aspect they provide applications for making new materials in the cosmetics, food and paint industries. In many cases of colloidal particles at interfaces, the mechanism of particle interactions is still unknown. *Particle-Stabilized Emulsions and Colloids* looks at recent studies on the behaviour of particles at liquid interfaces. The book first introduces the basic concepts and principles of colloidal particles at liquid-liquid interfaces including the interactions and conformations. The book then discusses the latest advances in emulsions and bicontinuous emulsions stabilized by both solid and soft particles and finally the book covers applications in food science and oil extraction. With contributions from leading experts in these fields, this book will provide a background to academic researchers, engineers, and graduate students in chemistry, physics and materials science. The commercial aspects will also be of interest to those working in the cosmetics, food and oil industry.

Particle-Stabilized Emulsions and Colloids  
Springer

The importance of emulsification techniques, their use in the production of nanoparticles for biomedical applications as well as application of rheological techniques for studying the interaction between the emulsion droplets is gathered in this reference work. Written by some of the top scientists within their respective fields, this book covers such topics as emulsions, nano-emulsions, nano-dispersions and novel techniques for their investigation. It also considers the fundamental approach in areas such as controlled release, drug delivery and various applications of nanotechnology. *Handbook of Advanced Magnetic Materials*  
CRC Press

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.

**Polymeric Surfactants** Elsevier

A comprehensive text that offers a review of the delivery of food active compounds through emulsion-based systems. *Emulsion-based Systems for Delivery of Food Active Compounds* is a comprehensive recourse that reviews the principles of emulsion-based systems formation, examines their characterization and explores their effective application as carriers for delivery of food active ingredients. The text also includes information on emulsion-based systems in regards to digestibility and health and safety challenges for use in food systems. Each chapter reviews specific emulsion-based systems (Pickering, multiple, multilayered, solid lipid nanoparticles, nanostructured lipid carriers and more) and explains their application for delivery

of food active compounds used in food systems. In addition, the authors – noted experts in the field – review the biological fate, bioavailability and the health and safety challenges of using emulsion-based systems as carriers for delivery of food active compounds in food systems. This important resource: Offers a comprehensive text that includes detailed coverage of emulsion-based systems for the delivery of food active compounds. Presents the most recent development in emulsion-based systems that are among the most widely-used delivery systems developed to control the release of food active compounds. Includes a guide for industrial applications for example food and drug delivery is a key concern for the food and pharmaceutical industries. *Emulsion-based Systems for Delivery of Food Active Compounds* is designed for food scientists as well as those working in the food, nutraceutical and pharmaceutical and beverage industries. The text offers a comprehensive review of the essential elements of emulsion-based systems for delivery of food active compounds.

**Emulsions: Structure, Stability and**

**Interactions** Walter de Gruyter GmbH & Co KG

*Polymeric Surfactants* covers the structure and stability origins of these highly useful surfactants. Adsorption and solution properties in emulsions are discussed based on their underlying thermodynamics and kinetics. Research scientists and Ph.D. students investigating chemistry, chemical engineering and colloidal science will benefit from this text on polymeric surfactants and their value in preparation and stabilization of disperse systems.

**Petroleum Engineering Handbook**

Springer Science & Business Media

It is now well recognised that the texture of foods is an important factor when consumers select particular foods. Food hydrocolloids have been widely used for controlling in various food products their viscoelasticity, emulsification, gelation, dispersion, thickening and many other functions. An international journal, *FOOD HYDROCOLLOIDS*, launched in 1986 has published a number of stimulating papers, and established an active forum for promoting the interaction between academics and industrialists and for combining basic scientific research with

industrial development. Although there have been various research groups in many food processing areas in Japan, such as fish paste (kamaboko, surimi), soybean curd (tofu), agar jelly dessert, kuzu starch jelly, kimizu (Japanese style mayonnaise), their activities have been conducted in isolation of one another. The interaction between the various research groups operating in the various sectors has been weak. Symposia on food hydrocolloids have been organised on several occasions in Japan since 1985. Professor Glyn O. Phillips, the Chief Executive Editor of FOOD HYDROCOLLOIDS, suggested to us that we should organise an international conference on food hydrocolloids. We discussed it on many occasions, and eventually decided to organise such a meeting, and extended the scope to include recent development in proteinaceous hydrocolloids, and their nutritional aspects, in addition to polysaccharides and emulsions.

### **Food Emulsifiers and Their**

### **Applications** John Wiley & Sons

This book provides authentic and comprehensive information on the concepts, methods, functional details and

applications of nano-emulsions. Following an introduction to the applications of nanotechnology in the development of foods, it elaborates on food-grade nano-emulsion and their significance, discusses various techniques and methods for producing food-grade nano-emulsion, and reviews the main ingredient and component of food-grade nano-emulsions. Further, the book includes a critical review of the engineering aspect of fabricating food-grade nano-emulsions and describe recently developed vitamin encapsulated nano-systems. In closing, it discuss the challenges and opportunities of characterizing nano-emulsified systems, the market risks and opportunities of nano-emulsified foods, and packaging techniques and safety issues – including risk identification and risk management – for nano-foods. The book offers a unique guide for scientists and researchers working in this field. It will also help researchers, policymakers, industry personnel, journalists and the general public to understand food nanotechnology in great detail.

### **Emulsions and Emulsion Stability**

Royal Society of Chemistry

This book focuses on the use of natural surfactants in enhanced oil recovery, providing an overview of surfactants, their types, and different physical-chemical properties used to analyse the efficiency of surfactants. Natural surfactants discuss the history of the surfactants, their classification, and the use of surfactants in petroleum industry. Special attention has been paid to natural surfactants and their advantages over synthetic surfactants, including analysing their properties such as emulsification, interfacial tension, and wettability and how these can be used in EOR. This book offers an overview for researchers and graduate students in the fields of petroleum and chemical engineering, as well as oil and gas industry professionals.

[Encyclopedia of Colloid and Interface Science](#) Springer Science & Business Media

Provides a scientific basis for the cleanup and for the assessment of oil spills Enables Non-scientific officers to understand the science they use on a daily basis Multi-disciplinary approach covering fields as diverse as biology, microbiology, chemistry, physics, oceanography and



toxicology Covers the science of oil spills from risk analysis to cleanup and through the effects on the environment Includes case studies examining and analyzing spills, such as Tasman Spirit oil spill on the Karachi Coast, and provides lessons to prevent these in the future

**Sustainable Separation Engineering**

Springer Science & Business Media

Emulsions occur either as end products or during the processing of products in a huge range of areas including the food, agrochemical, pharmaceutical, paint and

oil industries. Despite over one hundred years of research in the subject, however, a quantitative understanding of emulsions has been lacking. Modern Aspects of Emulsion Science presents a comprehensive description of both the scientific principles in the field and the very latest advances in research in this important area of surface and colloid science. Topics covered include emulsion formation, type, stability (creaming, flocculation, ripening, coalescence), monodisperse and gel emulsions, and applications. Emphasis has been placed on

relating the chemistry of the surfactant or protein adsorbed at the oil-water interface to the principles of the physics involved in the bulk emulsion property. The book has been written by a collection of the world's leading experts in the field, and covers both experimental and theoretical approaches. Modern Aspects of Emulsion Science fills a real gap in the market, being the only book of its kind in print. As such it will prove essential reading for graduates and researchers in this subject, in both academia and industry.