

# Fundamentals of Interface and Colloid Science

VOLUME III:  
LIQUID-LIQUID INTERFACES

J Lyklema



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# Fundamentals Of Interface And Colloid Science Liquid Fluid Interfaces

**Dotchi Exerowa, Georgi Gochev, Dimo  
Platikanov, Libero Liggieri, Reinhard  
Miller**

## **Fundamentals Of Interface And Colloid Science Liquid Fluid Interfaces:**

**Fundamentals of Interface and Colloid Science** J. Lyklema, 2005-03-30 Volume V is the counterpart of Volume IV and treats hydrophilic colloids and related items Contains edited contributions on steric stabilization depletion polyelectrolytes proteins at interfaces association colloids microemulsions thin films foams and emulsions J Lyklema is coauthor of two chapters and general editor Other authors include G J Fleer F A M Leermakers M A Cohen Stuart W Norde J A G Buijs J C Eriksson T Sottmann R Strey D Platikanov D Ekserova V Bergeron and P Walstra This volume completes the prestigious series Fundamentals of Interface and Colloid Science Together with Volume IV this book provides a comprehensive introduction to colloid science Explains and elaborates phenomena starting from basic principles and progresses to more advanced topics

**Fundamentals of Interface and Colloid Science** J. Lyklema, 1991 **Fundamentals of Interface and Colloid Science: Liquid-fluid interfaces** J. Lyklema, 2000 Fundamentals of Interface and Colloid Science FICS is a standard reference work with an educational nature The emphasis is on the basic facts and phenomena which are systematically explained FICS aims to make interface and colloid science accessible to a wide audience Interface and colloid science is an important and fascinating field but one that is often overlooked and undervalued It has applications as diverse as agriculture mineral dressing oil recovery industrial chemistry medical science and biotechnology A deductive approach is followed with systems of growing complexity being treated as the book progresses Volume I Fundamentals 1st ed 1991 2nd ed 1993 reviews the physical chemistry required to understand current literature on interfacial and colloid science The volume starts from first principles and gradually increases the level Volume II Solid Liquid Interfaces 1995 treats the subject systematically for the first time including adsorption double layers and electronkinetics Volume III Interface Tension covers interfacial tensions monolayers and wetting Key Features Accessible to a wide audience without a detailed knowledge of physics and chemistry Complex mathematical derivations are kept to a minimum Treats interfacial and colloidal phenomena from first principles advanced command of physics and chemistry not required Takes the reader from elementary to expert level Acts as a reference and a textbook Contains extensive and detailed cumulative subject index

**Fundamentals of Interface and Colloid Science** J. Lyklema, 1995-10-17 Interface and colloid science is an important though often under valued branch of science It has applications and ramifications in domains as disparate as agriculture mineral dressing oil recovery chemical industry biotechnology medical science and many more Proper application of interface and colloid science requires factual knowledge and insight into the many basic laws of physics and chemistry upon which it is based Fundamentals of Interface and Colloid Science is the first book to cover this field in the depth necessary to be a valuable reference and an excellent textbook From the beginning to the end of the book systems of growing complexity are treated gradually The presentation is particularly suited to emphasize that interfaces are not autonomous phases As a rule interfacial properties can be varied only by changing the adjoining phases so that the properties of these bulk phases must be

understood first The text also recognizes common principles behind a variety of phenomena and helps the reader to understand them and to develop and improve processes The systematic treatment of the material in the book makes this clear and makes the text itself an important contribution to the field Systematic treatment of information An excellent addition to volume I Two chapters contributed by other experts in the field Uses a deductive approach to increase the order of complexity Written by a leading expert in the field Two chapters contributed by other outstanding scientists Uses a systematic and deductive approach First comprehensive review of the topic Fundamentals of Interface and Colloid Science J. Lyklema, Anne-Marie Cazabat, 1991-01-28 This volume sets out the physical chemical concepts behind interface and colloid science Fundamentals of Interface and Colloid Science: Solid-liquid interfaces J. Lyklema, 1991 *Fundamentals of Interface and Colloid Science*, 1991 **Fundamentals of Interface and Colloid Science** J. Lyklema, 2000

Fundamentals of Interface and Colloid Science: Fundamentals / with special contributions by J. Lyklema, 1991 This volume sets out the fundamental physical chemical concepts behind interface and colloid science Starting from elementary principles including those of classical thermodynamics and intermolecular interaction it gradually progresses to more advanced topics such as partition functions and stochastic processes Relevant mathematical techniques are explained in appendices All that is required of the reader is a basic knowledge of physical chemistry and research workers and graduates interested in colloid and interface science will welcome the wide ranging knowledge presented by the author and a team of experts The discussions of many applications make the book of particular interest to those involved in practical research Key Features Provides a general physical chemical background to interface and colloid science Explains and elaborates phenomena starting from basic principles and progresses to more advanced topics includes classical thermodynamics and the description of intermolecular interactions partition functions stochastic processes and dynamic light scattering Required mathematical techniques are described in appendices **Specific Ion Effects** Werner Kunz, 2010 Specific ion effects are important in numerous fields of science and technology This book summarizes the main ideas that came up over the years It presents the efforts of theoreticians and supports it by the experimental results stemming from various techniques

**Suspensions of Colloidal Particles and Aggregates** Frank Babick, 2016-04-04 This book addresses the properties of particles in colloidal suspensions It has a focus on particle aggregates and the dependency of their physical behaviour on morphological parameters For this purpose relevant theories and methodological tools are reviewed and applied to selected examples The book is divided into four main chapters The first of them introduces important measurement techniques for the determination of particle size and interfacial properties in colloidal suspensions A further chapter is devoted to the physico chemical properties of colloidal particles highlighting the interfacial phenomena and the corresponding interactions between particles The book's central chapter examines the structure property relations of colloidal aggregates This comprises concepts to quantify size and structure of aggregates models and numerical tools for calculating the light scattering and

hydrodynamic properties of aggregates and a discussion on van der Waals and double layer interactions between aggregates. It is illustrated how such knowledge may significantly enhance the characterisation of colloidal suspensions. The final part of the book refers to the information, ideas and concepts already presented in order to address technical aspects of the preparation of colloidal suspensions, in particular the performance of relevant dispersion techniques and the stability of colloidal suspensions.

**Surface Chemistry of Surfactants and Polymers** Bengt Kronberg, Krister Holmberg, Björn Lindman, 2014-12-31 This book gives the reader an introduction to the field of surfactants in solution as well as polymers in solution. Starting with an introduction to surfactants, the book then discusses their environmental and health aspects. Chapter 3 looks at fundamental forces in surface and colloid chemistry. Chapter 4 covers self-assembly and 5 phase diagrams. Chapter 6 reviews advanced self-assembly while chapter 7 looks at complex behaviour. Chapters 8 to 10 cover polymer adsorption at solid surfaces, polymers in solution and surface active polymers respectively. Chapters 11 and 12 discuss adsorption and surface and interfacial tension while Chapters 13-16 deal with mixed surfactant systems. Chapter 17-18 and 19 address microemulsions, colloidal stability and the rheology of polymer and surfactant solutions. Wetting and wetting agents, hydrophobization and hydrophobizing agents, solid dispersions, surfactant assemblies, foaming emulsions and emulsifiers and microemulsions for soil and oil removal complete the coverage in chapters 20-25.

**Coating Materials** Akarsh Verma, Sushanta K. Sethi, Shigenobu Ogata, 2023-07-12 This book comprehensively reviews assorted types of coatings, their applications and various strategies employed by several scientists and researchers to fabricate them. Exclusively the recent progress in computational strategies that are helpful to optimize the best suitable coating formulation before one goes for the real-time fabrication has been discussed in detail. And this book is also intended to shed light on the computational modeling techniques that are used in the characterization of various coating materials. It covers mechanisms, salient features, formulations, important aspects and case studies of coatings utilized for various applications. The latest research in this area as well as possible avenues of future research is also highlighted to encourage the researchers.

**Zeta Potential** Andrei S. Dukhin, Renliang Xu, 2025-05-23 Zeta Potential Fundamentals: Methods and Applications provides an up-to-date exploration of the principles and practice of zeta potential measurements. Tailored for an interdisciplinary audience, the book is invaluable for researchers, engineers and students in fields like materials science, chemistry and nanotechnology. It delves into the role of zeta potential in complex heterogeneous liquids such as dispersions and emulsions and its significance in biomedical and industrial applications. By offering comprehensive yet accessible coverage, this book aims to bridge the educational gap and enhance understanding of this essential electric double layer characteristic. In addition to covering fundamental principles, the book emphasizes modern measurement methods including electrophoresis, electroacoustics and streaming current. It highlights the switch towards using zeta potential in formulation and quality control, providing a thorough review of published research. This allows readers to find data relevant to their projects. The book is a crucial resource for those who

wish to navigate the complexities of zeta potential applications ensuring precise and reliable results in their work Explains the fundamentals of the zeta potential concept and provides formulae based on well verified and widely accepted theoretical models for interfacial double layer and electrokinetic phenomena Introduces common technologies for characterizing zeta potential including the most widely used contemporary measuring methods and interpretation procedures for converting raw measured data into zeta potential Provides useful examples of applications for a wide variety of R D and industrial fields

Physics and Chemistry of Interfaces Hans-Jürgen Butt,Karlheinz Graf,Michael Kappl,2023-02-07 Physics and Chemistry of Interfaces Comprehensive textbook on the interdisciplinary field of interface science fully updated with new content on wetting spectroscopy and coatings Physics and Chemistry of Interfaces provides a comprehensive introduction to the field of surface and interface science focusing on essential concepts rather than specific details and on intuitive understanding rather than convoluted math Numerous high end applications from surface technology biotechnology and microelectronics are included to illustrate and help readers easily comprehend basic concepts The new edition contains an increased number of problems with detailed worked solutions making it ideal as a self study resource In topic coverage the highly qualified authors take a balanced approach discussing advanced interface phenomena in detail while remaining comprehensible Chapter summaries with the most important equations facts and phenomena are included to aid the reader in information retention A few of the sample topics included in Physics and Chemistry of Interfaces are as follows Liquid surfaces covering microscopic picture of a liquid surface surface tension the equation of Young and Laplace and curved liquid surfaces Thermodynamics of interfaces covering surface excess internal energy and Helmholtz energy equilibrium conditions and interfacial excess energies Charged interfaces and the electric double layer covering planar surfaces the Grahame equation and limitations of the Poisson Boltzmann theory Surface forces covering Van der Waals forces between molecules macroscopic calculations the Derjaguin approximation and disjoining pressure Physics and Chemistry of Interfaces is a complete reference on the subject aimed at advanced students and their instructors in physics material science chemistry and engineering Researchers requiring background knowledge on surface and interface science will also benefit from the accessible yet in depth coverage of the text      **Handbook of Adhesive Technology** Antonio Pizzi,Kashmiri L.

Mittal,2017-12-15 This classic reference examines the mechanisms driving adhesion categories of adhesives techniques for bond formation and evaluation and major industrial applications Integrating recent innovation and improved instrumentation the work offers broad and comprehensive coverage This edition incorporates several new adhesive classes new application topics and recent developments with nanoadhesives and bio based adhesives Existing chapters are thoroughly updated revised or replaced and authored by top specialists in the field Abundant figures tables and equations appear throughout the work      **Foam Films and Foams** Dotchi Exerowa,Georgi Gochev,Dimo Platikanov,Libero Liggieri,Reinhard

Miller,2018-07-27 This book describes in detail the scientific philosophy of the formation and stabilization destabilization of

foams It presents all hierarchical steps of a foam starting from the properties of adsorption layers formed by foaming agents discussing the properties of foam films as the building blocks of a foam and then describing details of real foams including many fields of application The information presented in the book is useful to people working on the formulation of foams or attempting to avoid or destruct foams in unwanted situations *Advances in Multiphase Flow and Heat Transfer* Lixin Cheng,Dieter Mewes,2012-04-05 Multiphase flow and heat transfer have found a wide range of applications in several engineering and science fields such as mechanical engineering chemical and petrochemical engineering nuclear engineering energy engineering material engineering ocea Colloids and Interfaces in Life Sciences and Bionanotechnology Willem Norde,2011-06-06 Colloidal systems occur everywhere in soils seawater foodstuff pharmaceuticals paints blood biological cells and microorganisms *Colloids and Interfaces in Life Sciences and Bionanotechnology* Second Edition gives a concise treatment of physicochemical principles determining interrelated colloidal and interfacial phenomena New in the *Surface Chemistry of Flotation* Zhiyong Gao,Przemyslaw B. Kowalczyk,Jan Zawala,2020-12-11 This eBook is a collection of articles from a Frontiers Research Topic Frontiers Research Topics are very popular trademarks of the Frontiers Journals Series they are collections of at least ten articles all centered on a particular subject With their unique mix of varied contributions from Original Research to Review Articles Frontiers Research Topics unify the most influential researchers the latest key findings and historical advances in a hot research area Find out more on how to host your own Frontiers Research Topic or contribute to one as an author by contacting the Frontiers Editorial Office [frontiersin.org](mailto:frontiersin.org) about contact

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