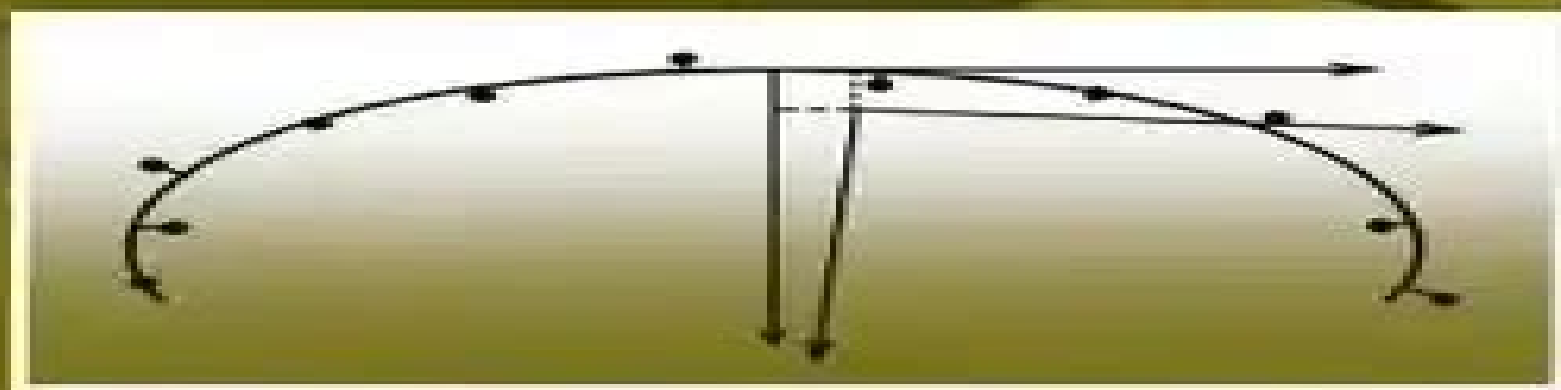


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Second Edition



Edited by
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aspects of surface science and its applications the book logically progresses so that knowledge of previous chapters enhances the understanding of subsequent material yet each chapter is freestanding so that experienced researchers can quickly refer to topics of particular interest **Applied Surface Thermodynamics** A.W. Neumann, Robert David, Yi Zuo, 2010-10-13

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Gun'ko, Vladimir V. Turov, 2013-04-08 Properties and applications of high surface area materials depend on interfacial phenomena including diffusion sorption dissolution solvation surface reactions catalysis and phase transitions Among the physicochemical methods that give useful information regarding these complex phenomena nuclear magnetic resonance NMR spectroscopy is the most universal yielding detailed structural data regarding molecules solids and interfaces Nuclear Magnetic Resonance Studies of Interfacial Phenomena summarizes NMR research results collected over the past three decades for a wide range of materials from nanomaterials and nanocomposites to biomaterials cells tissues and seeds This book describes the applications of important new NMR spectroscopic methods to a variety of useful materials and compares them with results from other techniques such as adsorption differential scanning calorimetry thermally stimulated depolarization current dielectric relaxation spectroscopy infrared spectroscopy optical microscopy and small angle and wide angle x ray scattering The text explores the application of NMR spectroscopy to examine interfacial phenomena in objects of increasing complexity beginning with unmodified and modified silica materials It then describes properties of various mixed oxides with comparisons to individual oxides and also describes carbon materials such as graphite and carbon nanotubes Chapters deal with carbon mineral hybrids and their mosaic surface structures and interfacial phenomena at the surface of natural and synthetic polymers They also explore a variety of biosystems which are much more complex including biomacromolecules proteins DNA and lipids cells and tissues and seeds and herbs The authors cover trends in interfacial phenomena investigations and the final chapter describes NMR and other methods used in the book This text presents a comprehensive description of a large array of hard and soft materials allowing the analysis of the structure property relationships and generalities on the interfacial behavior of materials and adsorbates Colloids in Drug Delivery Monzer Fanun, 2016-04-19 Colloidal drug delivery systems present a range of therapeutic benefits in the treatment of a number of challenging conditions allowing researchers to cross barriers that have previously prevented efficient treatment while

offering improved and more targeted absorption Summarizing recent research in the field Colloids in Drug Delivery assembles *Microemulsions* Monzer Fanun,2008-12-15 The effective use of microemulsions has increased dramatically during the past few decades as major industrial applications have expanded in a variety of fields Microemulsions Properties and Applications provides a complete and systematic assessment of all topics affecting microemulsion performance and discusses the fundamental characteristics t Sugar-Based Surfactants Cristóbal Carnero Ruiz,2008-12-09 Touted as the new darling of the chemical industry alkyl polyglycosides are gaining in popularity due to the fact that they are readily biodegradable low toxic and made from renewable resources Sugar Based Surfactants compiles the most recent and relevant aspects of sugar based surfactants including self association phase behavior and interf **Biomolecular Films** James F. Rusling,2003-02-26 This text examines films of biomolecules that can provide solid surfaces for catalyzing enzyme reactions serve in biosensors and as biorecognition elements mediate nanoparticle formation and provide a basis for fundamental studies and applications in biomedicine and biomedical devices *The Science of Defoaming* Peter R. Garrett,2013-07-09 In the 20 years since the publication of the author s multi contributor volume on defoaming a vast amount of new work has been published and many new insights have been revealed A cohesive single authored book The Science of Defoaming Theory Experiment and Applications provides comprehensive coverage of the topic It describes the mode of action of antifoams presenting the relevant theory and the supporting experimental evidence Beginning with an introductory chapter that discusses the intrinsic properties of foam the book then describes experimental methods for measuring foam properties important for studying antifoam action and techniques used in establishing the mode of action of antifoams Since most commercially effective antifoams are oil based a chapter is devoted to the entry and spreading behavior of oils and the role of thin film forces in determining that behavior The book reviews the mode of action of antifoams including theories of antifoam mechanisms and the role of bridging foam films by particles and oil drops It also addresses issues related to the effect of antifoam concentration on foam formation by air entrainment and the process of deactivation of mixed oil particle antifoams during dispersal and foam generation For applications where chemical antifoam use is unacceptable the text examines mechanical means of defoaming such as the use of rotary devices and ultrasound The final chapters consider the application of defoaming in radically different contexts including waterborne latex paints and varnishes machine washing of textiles gas oil separation in crude oil production and cardiopulmonary bypass surgery Focusing on the basic science of defoaming this book presents a balanced view which also addresses the challenges that may arise for these specific defoaming applications

Handbook of Detergents, Part B Uri Zoller,2004-08-30 The second installment of the multivolume Handbook of Detergents deals with the potential environmental impact of detergents as a result of their production formulation usage consumption and disposal This volume forms a comprehensive treatise on the multidimensional issues involved and emphasizes the alignment of scientific knowledge with the relevant contemporary data and methodologies in toxicology

ecotoxicology and environmental risk assessment With contributions from over 50 experts worldwide this volume discusses industry procedures involving surfactant and detergent treatments and explores global concerns centering on recent legislative and regulatory developments

Electromagnetic, Mechanical, and Transport Properties of Composite

Materials Rajinder Pal, 2014-08-27 In the design processing and applications of composite materials a thorough understanding of the physical properties is required It is important to be able to predict the variations of these properties with the kind shape and concentration of filler materials The currently available books on composite materials often emphasize mechanical properties and focus on classification applications and manufacturing This limited coverage neglects areas that are important to new and emerging applications For the first time in a single source this volume provides a systematic comprehensive and up to date exploration of the electromagnetic electrical dielectric and magnetic mechanical thermal and mass transport properties of composite materials The author begins with a brief discussion of the relevance of these properties for designing new materials to meet specific practical requirements The book is then organized into five parts examining The electromagnetic properties of composite materials subjected to time invariant electric and magnetic fields The dynamic electromagnetic properties of composite materials subjected to time varying electric and magnetic fields The mechanical elastic and viscoelastic properties of composites Heat transfer in composites and thermal properties thermal conductivity thermal diffusivity coefficient of thermal expansion and thermal emissivity Mass transfer in composite membranes and composite materials Throughout the book the analogy between various properties is emphasized Electromagnetic Mechanical and Transport Properties of Composite Materials provides both an introduction to the subject for newcomers and sufficient in depth coverage for those involved in research Scientists engineers and students from a broad range of fields will find this book a comprehensive source of information

Soil Colloids Fernando V. Molina, 2016-04-19

Within the field of soil science soil chemistry encompasses the different chemical processes that take place including mineral weathering humification of organic plant residues and ionic reactions involving natural and foreign metal ions that play significant roles in soil Chemical reactions occur both in the soil solution and at the soil part

Silicone Dispersions Yihan Liu, 2017-01-06

Silicone is an important class of materials used in applications that range from industrial assembly to everyday consumer products Silicones are often delivered and synthesized in dispersion forms the most common being liquid in liquid emulsion solid in liquid suspension air in liquid foam and solid in air powder This book compiles a carefully selected number of topics that are essential to the understanding creative design and production of silicone dispersions As such it provides the first unified description of silicone dispersions in the literature

Electrokinetic Particle Transport in

Micro-/Nanofluidics Shizhi Qian, Ye Ai, 2012-06-19 Numerous applications of micro nanofluidics are related to particle transport in micro nanoscale channels and electrokinetics has proved to be one of the most promising tools to manipulate particles in micro nanofluidics Therefore a comprehensive understanding of electrokinetic particle transport in micro

nanoscale channels is crucial to the development of micro nanofluidic devices Electrokinetic Particle Transport in Micro Nanofluidics Direct Numerical Simulation Analysis provides a fundamental understanding of electrokinetic particle transport in micro nanofluidics involving electrophoresis dielectrophoresis electroosmosis and induced charge electroosmosis The book emphasizes the direct numerical simulation of electrokinetic particle transport phenomena plus several supportive experimental studies Using the commercial finite element package COMSOL Multiphysics it guides researchers on how to predict the particle transport subjected to electric fields in micro nanoscale channels Researchers in the micro nanofluidics community who may have limited experience in writing their own codes for numerical simulations can extend the numerical models and codes presented in this book to their own research and guide the development of real micro nanofluidics devices Corresponding COMSOL script files are provided with the book and can be downloaded from the author s website

Luminous Chemical Vapor Deposition and Interface Engineering Hirotugu Yasuda, 2004-11-30 Providing in depth coverage of the technologies and various approaches Luminous Chemical Vapor Deposition and Interface Engineering showcases the development and utilization of LCVD procedures in industrial scale applications It offers a wide range of examples case studies and recommendations for clear understanding of this innovative science **Interfacial Phenomena**

In Chromatography Emile Pefferkorn, 1999-03-03 Interfacial Phenomena in Chromatography presents a combination of chromatographic theory numerical simulation and experimental data The text covers the interaction and size exclusion methods of separation identification and characterization of substances in solution It provides practical information and analysis on the most effective mechanisms of interfacial chromatography along with its expanding possibilities for biomedical industrial and environmental applications *Liquid Interfaces In Chemical, Biological And Pharmaceutical Applications*

Alexander G. Volkov, 2001-01-30 Provides a comprehensive treatment of surface chemistry and its applications to chemical engineering biology and medicine Focuses on the chemical and physical structure of oil water interfaces and membrane surfaces Details interfacial potentials ion solvation and electrostatic instabilities in double layers **Colloids in**

Biotechnology Monzer Fanun, 2010-09-17 Colloids show great potential in a wide variety of applications including drug delivery and medical imaging and the design and fabrication of colloid systems has attracted considerable interest in the research community Colloids in Biotechnology describes developments in the field of biotechnological applications in the past decade and bridges t **Surface Tension and Related Thermodynamic Quantities of Aqueous Electrolyte Solutions**

Norihiro Matubayasi, 2013-09-09 Surface tension provides a thermodynamic avenue for analyzing systems in equilibrium and formulating phenomenological explanations for the behavior of constituent molecules in the surface region While there are extensive experimental observations and established ideas regarding desorption of ions from the surfaces of aqueous salt solutions a more successful discussion of the theory has recently emerged which allows the quantitative calculation of the distribution of ions in the surface region Surface Tension and Related Thermodynamic Quantities of Aqueous Electrolyte

Solutions provides a detailed and systematic analysis of the properties of ions at the air water interface Unifying older and newer theories and measurements this book emphasizes the contributions of simple ions to surface tension behavior and the practical consequences It begins with a general discussion on Gibbs surface thermodynamics offering a guide to his theoretical insight and formulation of the boundary between fluids The text then discusses the thermodynamic formulae that are useful for practical experimental work in the analysis of fluid fluid interfaces Chapters cover surface tension of pure water at air water and air oil interfaces surface tension of solutions and the thermodynamic quantities associated with the adsorption and desorption of solutes and surface tension of simple salt solutions They also address adsorption of ions at the air water interface surface tension of solutions and the effect of temperature adsorption from mixed electrolyte solutions and thermodynamic properties of zwitterionic amino acids in the surface region Focusing on the thermodynamic properties of ions at air fluid interfaces this book gives scientists a quantitative rigorous and objectively experimental methodology they can employ in their research

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