

Advances In Contact Angle Wettability And Adhesion Volume Two Adhesion And Adhesives Fundamental And Applied Aspects

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Advances in Contact Angle, Wettability and Adhesion K. L. Mittal 2019-11-05 This is the fourth volume in the series "Advances in Contact Angle, Wettability and Adhesion" initiated to consolidate information and provide commentary on certain recent research aspects dealing with this important topic. Its predecessor Volumes 1, 2 and 3 were published in 2013, 2015 and 2018 respectively. This new book comprising 14 research and review articles is divided into four parts: Part 1: Contact Angle and Wettability Aspects; Part 2: Surface Free Energy and Surface Tension Determination; Part 3: Applied Aspects. The topics covered include: Contact Angle Determination of Talc Powders from Heat of Immersion Surface Wetting at Macro and Nanoscale Wettability of Wood Surfaces with Waterborne Acrylic Lacquer Stains Modulated by DBD Plasma Treatment in Air at Atmospheric Pressure Wettability of Ultrafiltration Membranes Determination of the Surface Free Energy of Solid Surfaces: Can the Best Model be Found Surface Free Energy Characterization of Talc Powders Determination of the Surface Free Energy of Skin and the Factors Affecting it by the Contact Angle Method Determination of Surface Tension Components of Aqueous Solutions using Fomblin HC/25 R Perfluoropolyether Liquid Film as a Solid Substrate Enhancing the Wettability of Polybenzimidazole (PBI) to Improve Fuel Cell Performance Evaluation of Sebum Resistance for Long-Wear Face Make-Up Products Using Contact Angle Measurements Contact Angle Hysteresis of Pressure-Sensitive Adhesives due to Adhesion Tension Relaxation The Potential of Surface Nano-Engineering and Superhydrophobic Surfaces in Drag Reduction Laser Surface Engineering of Polymeric Materials for Enhanced Mesenchymal Stem Cell Adhesion and Growth Sisal-Green Resin Interfaces in Green Composites.

Green Adhesives Inamuddin 2020-04-22 *Green Adhesives: Preparation, Properties and Applications* deals with the fabrication methods, characterization, and applications of green adhesives. It also includes the collective properties of waterborne, bio, and wound-healing green adhesives. Exclusive attention is devoted to discussing the applications of green adhesives in biomedical coatings, food, and industrial applications.

Adhesion Science and Engineering 2002-11-14 *The Mechanics of Adhesion* shows that adhesion science and technology is inherently an interdisciplinary field, requiring fundamental understanding of mechanics, surfaces, and materials. This volume comprises 19 chapters. Starting with a background and introduction to stress transfer principles; fracture mechanics and singularities; and an energy approach to debonding, the volume continues with analysis of structural lap and butt joint configurations. It then continues with discussions of test methods for strength and constitutive properties; fracture; peel; coatings, the case of adhesion to a single substrate; elastomeric adhesives such as sealants. The role of mechanics in determining the locus of failure in bonded joints is discussed, followed by a chapter on rheology relevant to adhesives and sealants. Pressure sensitive adhesive performance; the principles of tack and tack measurements; and contact mechanics relevant to wetting and surface energy measurements are then covered. The volume concludes with sections on fibermatrix bonding and reinforcement; durability considerations for adhesive bonds; ultrasonic non-destructive evaluation of adhesive bonds; and design of adhesive bonds from a strength perspective. This book will be of interest to practitioners in the fields of engineering and to those with an interest in adhesion science.

Textile Finishing K. L. Mittal 2017-08-22 Textiles have been historically and traditionally used to make clothes, but even in ancient times there were technical textiles for making sails, tents, etc. Today, technical textiles are used in various industries for a host of purposes and applications. Recently, there have been exciting developments on various fronts in the textile field to impart novel and innovative functionalities to textiles, e.g., easy-to-clean or dirt-repellent, flame retardancy, anti-bacterial, and fog-harvesting properties, to name a few. Also, textiles for electronics based on graphene, CNTs and other nanomaterials, conductive textiles, textiles for sensor function, textile-fixed catalysts, textiles for batteries and energy storage, textiles as substrates for tissue engineering, and textiles for O/W separation have appeared in the literature. All this has been possible through adopting novel ways for finishing textiles, e.g., by appropriate surface modification techniques, and utilizing biomimetic concepts borrowed from nature. This unique book entitled "Textile Finishing: Recent Developments and Future Trends" is divided into four parts: Part 1: Recent Developments/Current Challenges in Textile Finishing; Part 2: Surface Modification Techniques for Textiles; Part 3: Innovative Functionalities of Textiles; Part 4: Fiber-Reinforced Composites. The topics covered include: Antimicrobial textile finishes; flame retardant textile finishing; "self-cleaning" or easy-to-clean textiles; metallization of textiles; atmospheric pressure plasma, and uv-based photochemical surface modification of textiles; tunable wettability of textiles; 3D textile structures for fog harvesting; textile-fixed catalysts; medical textiles as substrates for tissue engineering; and fiber-reinforced "green" or "greener" biocomposites and the relevance of fiber/matrix adhesion.

Advances in Contact Angle, Wettability and Adhesion K. L. Mittal 2015-09-22 This book is the second volume in the series "Contact Angle, Wettability and Adhesion." The premier volume was published in 2013. Even a cursory glance at the literature show that in recent years the interest in understanding and controlling wetting behavior has grown exponentially. Currently, there is tremendous research activity in rendering surfaces superhydrophobic, superhydrophilic, superoleophobic, superoleophilic, omniphobic and omniphilic because of their applications in many technologically important fields. Also the durability or robustness of materials with such "super" characteristics is extremely significant, as well as the utilization of "green" (biobased) materials to obtain such surfaces. This book containing 19 articles reflects more recent developments in certain areas covered in its predecessor volume as well as it includes some topics which were not covered before. Concomitantly, this book provides a medium to keep abreast of the latest research activity and developments in the arena of contact angle, wettability and adhesion. The topics discussed include: Understanding of wetting hysteresis; fabrication of superhydrophobic materials; plasma treatment to achieve superhydrophilic surfaces; highly liquid repellent textiles; modification of paper surfaces to control liquid wetting and adhesion; Cheerios effect and its control; engineering materials with superwettability; laser ablation to create micro/nano-patterned surfaces; liquid repellent amorphous carbon nanoparticle networks; mechanical durability of liquid repellent surfaces; wetting of solid walls and spontaneous capillary flow; relationship between roughness and oleophilicity; superhydrophobic and superoleophobic green materials; computational analysis of wetting on hydrophobic surfaces: application to self-cleaning mechanisms; bubble adhesion to superhydrophilic surfaces; surface free energy of superhydrophobic materials; and role of surface free energy in pharmaceutical tablet tensile strength.

Structural Adhesive Joints K. L. Mittal 2020-09-01 Most structures are comprised of a number of individual parts or components which have to be connected to form a system with integral load transmission path. The structural adhesive bonding represents one of the most enabling technologies to fabricate most complex structural configurations involving advanced materials (e.g. composites) for load-bearing applications. Quite recently there has been a lot of activity in harnessing nanotechnology (use of nanomaterials) in ameliorating the existing or devising better performing structural adhesives. The 10 chapters by subject matter experts look at the following issues:

Surface preparation for structural adhesive joints (SAJ) Use of nanoparticles in enhancing performance of SAJ Optimization of SAJ Durability aspects of SAJ Debonding of SAJ Fracture mechanics of SAJ Failure analysis of SAJ Damage behavior in functionally graded SAJ Impact, shock and vibration characteristics of composites for SAJ Delamination arrest methods in SAJ

Advances in Chemistry Series 1964

Interfacial Phenomena Clarence A. Miller 2007-10-08 Since the publication of the first edition of *Interfacial Phenomena*, the interest in interfaces and surfactants has multiplied, along with their applications. Experimental and theoretical advances have provided scientists with greater insight into the structure, properties, and behavior of surfactant and colloid systems. Emphasizing equilibrium phenomena, flow, transport, and stability, *Interfacial Phenomena: Equilibrium and Dynamic Effects, Second Edition* presents a concise and current summary of the fundamental principles governing interfacial interactions. This new edition features updated and expanded topics in every chapter. It highlights key experimental techniques that have expanded the scope of our understanding, such as in mass transfer, microstructure determination in colloidal dispersions, and surfactant–polymer interactions. *Interfacial Phenomena, Second Edition* reflects the progress scientists have made in understanding the surface chemistry and interfacial dynamics of colloid and surfactant systems. The book also illustrates the growing applicability of these systems in a variety of fields including pharmaceuticals, cosmetics, detergents, paints, agricultural chemicals, and foods.

Membrane-Distillation in Desalination Farid Benyahia 2019-05-30 *Membrane-Distillation in Desalination* is an attempt to provide the latest knowledge, state of the art and demystify outstanding issues that delay the deployment of the technology on a large scale. It includes new updates and comprehensive coverage of the fundamentals of membrane distillation technology and explains the energy advantage of membrane distillation for desalination when compared to traditional techniques such as thermal or reverse osmosis. The book includes the latest pilot test results from around the world on membrane distillation desalination.

Adhesion in Microelectronics K. L. Mittal 2014-08-25 This comprehensive book will provide both fundamental and applied aspects of adhesion pertaining to microelectronics in a single and easily accessible source. Among the topics to be covered include; Various theories or mechanisms of adhesion Surface (physical or chemical) characterization of materials as it pertains to adhesion Surface cleaning as it pertains to adhesion Ways to improve adhesion Unraveling of interfacial interactions using an array of pertinent techniques Characterization of interfaces / interphases Polymer-polymer adhesion Metal-polymer adhesion (metallized polymers) Polymer adhesion to various substrates Adhesion of thin films Adhesion of underfills Adhesion of molding compounds Adhesion of different dielectric materials Delamination and reliability issues in packaged devices Interface mechanics and crack propagation Adhesion measurement of thin films and coatings

Fluorinated Surfactants and Repellents, Second Edition, Erik Kissa 2001-02-09 A discussion of the synthesis, problems, theories and applications of fluorinated surfactants, this second edition is updated with four new chapters on repellency and protection against soiling and staining and over 2900 references, equations, and drawings (800 more than the previous edition). It lists alphabetically and explores numerous applications of fluorinated surfactants. Called "...a most useful introduction to these fascinating materials" by the *Journal of Dispersion Science and Technology* and "...a coherent and stimulating handbook...the most useful book in the fluorinated surfactants field to date. Recommended." by the *Journal of the Chemical Society, Faraday Transactions* - this book is a source of factual data, methods of manufacture, and chemical structures for the surfactant scientist and user.

Advanced Materials Forum VI Ana Maria Pires Pinto 2012-11-12 Selected, peer reviewed papers from the Proceedings of the VI International Materials Symposium Materiais 2011 – XV Encontro da Sociedade Portuguesa de Materiais (SPM) Universidade do Minho, April 18-20, 2011, Guimarães, Portugal

Fundamentals of Adhesion L.H. Lee 2013-06-29

Recent Advances in Adhesion Science and Technology in Honor of Dr. Kash Mittal Wojciech (Voytek) Gutowski 2013-12-31 The surface of an object is the first thing we see or touch. Nearly every article or object we encounter at home, in industry, land transportation, aerospace, or the medical field in some way uses an adhesive, a sealant, or a decorative coating. Adhesion science provides the technology and the know-how behind these applications. *Recent Advances in Adhesion Science and Technology in Honor of Dr. Kash Mittal* is dedicated to Dr. Mittal's outstanding contributions to the global adhesion community and his achievements in disseminating the science of adhesion. This Festschrift volume contains selected papers from the Special Symposium on Recent Advances in Adhesion Science and Technology held in honor of Dr. Mittal to commemorate the publication of his 100th edited book. Written by world-renowned researchers, the papers have been updated for inclusion in this volume. They offer insight into recent developments and the significant ramifications to adhesion science and adhesive technology. Nineteen articles are divided into five sections: Interfaces, Wettability, and Adhesion; Surface Modification of Polymers; Adhesion Aspects of Bio-Based Materials and Bioadhesion; Adhesives and Their Testing; and Nanomaterials and Nanocomposites. Reflecting the multidisciplinary nature of adhesion science, the topics covered include metal–polymer interfaces and ways to improve adhesion, lateral force at liquid–solid interface, particle adhesion in pharmaceutical sciences, wood joints formed without use of adhesives, reinforced polymer composites using different fillers, "green" composites, medium density fiber board surfaces for powder coating, adhesion aspects in dentistry, E. coli interactions in porous media, analysis of adhesive behavior in bonded assemblies, soy proteins as wood adhesives, carbon nanotube-based interphase sensors, and reaction of multiwalled carbon nanotubes with gaseous atoms.

Wetting of Real Surfaces Edward Yu. Bormashenko 2018-11-05 The revealing of the phenomenon of superhydrophobicity (the "lotus-effect") has stimulated an interest in wetting of real (rough and chemically heterogeneous) surfaces. In spite of the fact that wetting has been exposed to intensive research for more than 200 years, there still is a broad field open for theoretical and experimental research, including recently revealed superhydrophobic, superoleophobic and superhydrophilic surfaces, so-called liquid marbles, wetting transitions, etc. This book integrates all these aspects within a general framework of wetting of real surfaces, where physical and chemical heterogeneity is essential. Wetting of rough/heterogeneous surfaces is discussed through the use of the variational approach developed recently by the author. It allows natural and elegant grounding of main equations describing wetting of solid surfaces, i.e. Young, Wenzel and Cassie-Baxter equations. The problems of superhydrophobicity, wetting transitions and contact angle hysteresis are discussed in much detail, in view of novel models and new experimental data. The second edition surveys the last achievements in the field of wetting of real surfaces, including new chapters devoted to the wetting of lubricated and gradient surfaces and reactive wetting, which have seen the rapid progress in the last decade. Additional reading, surveying the progress across the entire field of wetting of real surfaces, is suggested to the reader. Contents What is surface tension?

Wetting of ideal surfaces Contact angle hysteresis Dynamics of wetting Wetting of rough and chemically heterogeneous surfaces: the Wenzel and Cassie Models Superhydrophobicity, superhydrophilicity, and the rose petal effect Wetting transitions on rough surfaces Electrowetting and wetting in the presence of external fields Nonstick droplets Wetting of lubricated surfaces

Developments in Surface Contamination and Cleaning, Volume 12 Rajiv Kohli 2019-06-08 *Developments in Surface Contamination and Cleaning: Methods for Assessment and Verification of Cleanliness of Surfaces and Characterization of Surface Contaminants, Volume Twelve*, the latest release in the *Developments in Surface Contamination and Cleaning* series, provides best practices on determining surface cleanliness. Chapters include an introduction to the nature and size of particles, a discussion of cleanliness levels, detailed coverage of measurement methods, characterization methods and analytical methods for evaluating surfaces, and an overview of analysis methods for various contaminants. As a whole, the series creates a unique and comprehensive knowledge base for those in research and development in a variety of industries. Manufacturing, quality control and procurement specification professionals in the aerospace, automotive, biomedical, defense, energy, manufacturing, microelectronics, optics and xerography industries will find this book to be very helpful. In addition, researchers in an academic setting will also find these volumes excellent source books. Includes an extensive listing, with a description of available methods for the assessment of surface cleanliness Provides a single source of information on methods for verification of surface cleanliness Serves as a guide to the selection, assessment and verification of methods for specific applications

Progress in Adhesion Adhesives, Volume 5 K. L. Mittal 2020-07-28 With the ever-increasing amount of research being published, it is a Herculean task to be fully conversant with the latest research developments in any field, and the arena of adhesion and adhesives is no exception. Thus, topical review articles provide an alternate and very efficient way to stay abreast of the state-of-the-art in many subjects representing the field of adhesion science and adhesives. Based on the success of the preceding volumes in this series "Progress in Adhesion and Adhesives", the present volume comprises 13 review articles published in Volume 7 (2019) of *Reviews of Adhesion and Adhesives*. The subjects of these review articles fall into the following areas: Adhesively bonded joints Adhesives (including bioadhesives) and their applications Nanocomposite polymer adhesives Polymer

surface modification Wettability and surface free energy Adhesion of bacteria The topics covered include: Adhesion behavior of plasma treated steel and its alloys; debonding on demand of adhesively bonded joints; bioadhesive polymers; adhesives in the footwear industry; nanocomposite polymer adhesives; ion beam treatment of polymer surfaces to enhance adhesion; natural to artificial non-wettable surfaces and applications; plasma oxidation of polyolefins; wettability and surface free energy characterization of textiles; bioadhesive nanoformulations; laser-assisted tailoring of surface wettability; functionally graded adhesively bonded joints; adhesion of colloids and bacteria to porous media.

Polymer Surfaces and Interfaces K. L. Mittal 1997-04 Polymeric materials are used for a legion of applications in a wide array of technological areas, and their proper surface/interface characteristics are of cardinal importance for their applications. Therefore, the need to characterize polymer surfaces/interfaces and their suitable modification to impart desired characteristics is quite patent. This book chronicles the proceedings of the Symposium on Polymer Surfaces and Interfaces: Characterization, Modification and Application held as a part of the Society of Plastics Engineers Annual Technical Conference, Boston, May 7--11, 1995. The articles in this book address many aspects of polymer surfaces and interfaces. Topics covered include: various ways (chemical, photochemical, laser, flame, corona) to modify polymer surfaces; modification of contact lens surfaces; various ways to analyze/characterize polymer surfaces; metal/polymer interfaces; metal/polyimide adhesion; metal/self-assembled organic monolayer interfaces; polymer alignment layers for liquid crystals; alignment of liquid crystal surfaces; polyimide alignment layers; molecular re-orientation of polymer surfaces; plasma polymerized organic coatings; epoxy/fiber interphase; epoxy underfill materials for packaging integrated circuits; transport in polymers; polymer miscibility; and cell adhesion.

Interdisciplinary Approach to the Lubrication of Concentrated Contacts P. M.. Ku 1969

Advances in Contact Angle, Wettability and Adhesion K. L. Mittal 2015-09-18 This book is the second volume in the series "Contact Angle, Wettability and Adhesion." The premier volume was published in 2013. Even a cursory glance at the literature show that in recent years the interest in understanding and controlling wetting behavior has grown exponentially. Currently, there is tremendous research activity in rendering surfaces superhydrophobic, superhydrophilic, superoleophobic, superoleophilic, omniphobic and omniphilic because of their applications in many technologically important fields. Also the durability or robustness of materials with such "super" characteristics is extremely significant, as well as the utilization of "green" (biobased) materials to obtain such surfaces. This book containing 19 articles reflects more recent developments in certain areas covered in its predecessor volume as well as it includes some topics which were not covered before. Concomitantly, this book provides a medium to keep abreast of the latest research activity and developments in the arena of contact angle, wettability and adhesion. The topics discussed include: Understanding of wetting hysteresis; fabrication of superhydrophobic materials; plasma treatment to achieve superhydrophilic surfaces; highly liquid repellent textiles; modification of paper surfaces to control liquid wetting and adhesion; Cheerios effect and its control; engineering materials with superwettability; laser ablation to create micro/nano-patterned surfaces; liquid repellent amorphous carbon nanoparticle networks; mechanical durability of liquid repellent surfaces; wetting of solid walls and spontaneous capillary flow; relationship between roughness and oleophilicity; superhydrophobic and superoleophobic green materials; computational analysis of wetting on hydrophobic surfaces: application to self-cleaning mechanisms; bubble adhesion to superhydrophilic surfaces; surface free energy of superhydrophobic materials; and role of surface free energy in pharmaceutical tablet tensile strength.

Surfactant Science and Technology Laurence S. Romsted 2014-05-05 Surfactant research explores the forces responsible for surfactant assembly and the critical industrial, medical, and personal applications, including viscosity control, microelectronics, drug stabilization, drug delivery, cosmetics, enhanced oil recovery, and foods. Surfactant Science and Technology: Retrospects and Prospects, "a Festschrift in honor of Dr. Kash Mittal," provides a broad perspective with chapters contributed by leaders in the fields of surfactant-based physical, organic, and materials chemistries. Many of the authors participated in a special symposium in Melbourne, Australia, honoring Kash Mittal's 100th edited book at the 18th Surfactants in Solution (SIS) meeting. Each chapter provides an overview of a specific research area, with discussions on past, present, and future directions. The book is divided into six parts. Part I reviews the evolution of theoretical models for surfactant self-assembly, and introduces a model for interpreting ion-specific effects on aggregate properties. Part II focuses on interactions of surfactant solutions with solid supports; uses contact angles to understand hydrophobic/hydrophilic changes in a lipid layer; uses surface tension to understand molecular arrangements at interfaces; reviews spreading phenomena; discusses pattern formation on solid surfaces; and applies tensiometry to probe flavor components of espresso. Part III discusses novel DNA-based materials, multifunctional poly(amino acid)s-based graft polymers for drug delivery, and polymeric surfactants for stabilizing suspensions and emulsions. Part IV introduces farm-based biosurfactants from natural products and "greener" biosurfactants from bacteria. Part V explores lyotropic liquid crystals and their applications in triggered drug release; microemulsion properties and controlled drug release; the role of hydrotopes in formulations and in enhancing solubilization in liquid crystals; the potential of ionic liquids to generate tunable and selective reaction media; and provides an overview of stimuli-responsive surfactants. Focusing on emulsions, Part VI reviews the design of emulsion properties for various commercial applications, the role of surfactants in the oil and gas industries, and surfactant mechanisms for soil removal via microemulsions and emulsification.

Advances in Contact Angle, Wettability and Adhesion K. L. Mittal 2013-08-16 The topic of wettability is extremely important from both fundamental and applied aspects. The applications of wettability range from self-cleaning windows to micro- and nanofluidics. This book represents the cumulative wisdom of a contingent of world-class (researchers engaged in the domain of wettability. In the last few years there has been tremendous interest in the "Lotus Leaf Effect" and in understanding its mechanism and how to replicate this effect for myriad applications. The topics of superhydrophobicity, omniphobicity and superhydrophilicity are of much contemporary interest and these are covered in depth in this book.

Sammlung Pierre-Gilles de Gennes 2003 A selection of papers by Pierre-Gilles de Gennes - 1991 Nobel Prize winner in Physics - which have had a long-lasting impact on our understanding of condensed matter. Ideas on polymers, liquid crystals and interfaces are described. The author has added some afterthoughts to the main papers.

Surface and Interfacial Tension Stanley Hartland 2004-03-11 This edited volume offers complete coverage of the latest theoretical, experimental, and computer-based data as summarized by leading international researchers. It promotes full understanding of the physical phenomena and mechanisms at work in surface and interfacial tensions and gradients, their direct impact on interface shape and movement, and their significance to numerous applications. Assessing methods for the accurate measurement of surface tension, interfacial tension, and contact angles, Surface and Interfacial Tension presents modern simulations of complex interfacial motions, such as bubble motion in liquids, and authoritatively illuminates bubble nucleation and detachment.

Simple Views on Condensed Matter Pierre-Gilles de Gennes 1998-06-30 This volume contains a selection of important papers by P-G de Gennes (1991 Nobel Prize Winner in Physics) which have had a long-lasting impact on our understanding of condensed matter (solid state physics, liquid crystals, polymers, interfaces, wetting and adhesion). A typical example is the original article on "reptation" of polymer chains. The author has added some "afterthoughts" to the main papers (explaining their successes or weaknesses), and some current views on each special problem. Complex systems (polymers or granular matters, etc) are explained without heavy calculations — using simple scaling laws as the main tool. Contents:Part I:Solid StatePart II:Liquid CrystalsPart III:PolymersPart IV:InterfacesPart V:Wetting and AdhesionPart VI:ChiralityPart VII:Granular Matter Readership: Physicists, chemists, hydrodynamicists and materials scientists. keywords: "This book surely satisfies the requirements of those interested in this field of Physics. On the whole I think that this book can give, especially to a young reader, a certain feeling about the enthusiasm and novelty of condensed matter research during the last three decades." Il Nuovo Saggiatore, 2002 Reviews of the First Edition: "This book collects a series of articles in which problems which had always been thought quite intractable are shown to be solved by simple, but clear thinking. Although the phrase "simple views" is justified by the clarity of de Gennes exposition, the problems had been unresolved for decades and it is a tribute to de Gennes' intuitive skill that he has been able to solve so many problems which are not only deep basic science, but also central in modern technology." Sam Edwards Univ. Cambridge, UK, 1992 "For amateurs and connoisseurs — interested in physics, chemistry or biology — Pierre-Gilles de Gennes has opened his gentry-style 'cabinet de curiosités'. Miscellaneous products of his inventive industry, including the famous and the unfamous, are brought together in this self-selected collection, accompanied with recent hindsightful remarks of the Nobel laureate." Gérard Toulouse Ecole Normale Supérieure, France, 1992 "This volume of collected works of Pierre-Gilles de Gennes will be a valuable and stimulating source for many years to come for younger readers and for beginners in the subfields of condensed matter covered in this volume, as well as a

useful and compact reference book for all workers in the field.” Helmut R Brand *Advanced Materials*, 1993

Interdisciplinary Approach to the Lubrication of Concentrated Contacts Pei Moo Ku 1971 Lubrication, wear, and design aspects of rolling contact bearings.

Encyclopedia of Surface and Colloid Science - Arthur T. Hubbard 2002-07-18 This comprehensive reference collects fundamental theories and recent research from a wide range of fields including biology, biochemistry, physics, applied mathematics, and computer, materials, surface, and colloid science-providing key references, tools, and analytical techniques for practical applications in industrial, agricultural, and forensic processes, as well as in the production of natural and synthetic compounds such as foods, minerals, paints, proteins, pharmaceuticals, polymers, and soaps.

Simple Views on Condensed Matter Pierre-Gilles de Gennes 2003-04-16 This volume is a selection of invaluable papers by P-G de Gennes — 1991 Nobel Prize winner in Physics — which have had a long-lasting impact on our understanding of condensed matter. Important ideas on polymers, liquid crystals and interfaces are described. The author has added some afterthoughts to the main papers (explaining their successes or weaknesses), and some current views on each special problem. The text is simple and easy to read. Contents:Part I: Solid StatePart II: Liquid CrystalsPart III: PolymersPart IV: InterfacesPart V: Wetting and AdhesionPart VI: Chirality Readership: Physicists, chemists, hydrodynamicists and materials scientists. Keywords:Polymers;Liquid Crystals;Interfaces;Chirality;WettingReviews:Review of the first edition: “This book collects a series of articles in which problems which had always been thought quite intractable are shown to be solved by simple, but clear thinking. Although the phrase 'simple views' is justified by the clarity of de Gennes' exposition, the problems had been unresolved for decades and it is a tribute to de Gennes' intuitive skill that he has been able to solve so many problems which are not only deep basic science, but also central in modern technology.”Sam Edwards Univ.

Cambridge, UK, 1992 Reviews of the First Edition: “For amateurs and connoisseurs — interested in physics, chemistry or biology — Pierre-Gilles de Gennes has opened his gentry-style cabinet de curiosités. Miscellaneous products of his inventive industry, including the famous and the unfamous, are brought together in this self-selected collection, accompanied with recent hindsightful remarks of the Nobel laureate.”Gérard Toulouse Ecole Normale Supérieure, France “This volume of collected works of Pierre-Gilles de Gennes will be a valuable and stimulating source for many years to come for younger readers and for beginners in the subfields of condensed matter covered in this volume, as well as a useful and compact reference book for all workers in the field.”Helmut R Brand *Advanced Materials*

“This book surely satisfies the requirements of those interested in this field of physics. On the whole I think that this book can give, especially to a young reader, a certain feeling about the enthusiasm and novelty of condensed matter research during the last three decades.”Il Nuovo Saggiatore *Advances in Dental Implantology using Nanomaterials and Allied Technology Applications* Ramesh S. Chaughule 2020-10-31 As the name suggests this book discusses how nanotechnology has influenced the provision of implant treatment from surgery to prosthetic reconstruction and post treatment biological complications. This book is a sequel to the earlier book “Dental Applications of Nanotechnology” published by Springer. It aims to present both the nanotechnology and allied research along with the clinical concepts of almost every different aspect of implantology in one volume. These two fraternities promote the translation of the research ideas and product development into fruitful practicalities. The first section covers nanobiomaterials in implant applications, in bone regeneration, prosthetic rehabilitation, to control biofilm and peri-implantitis, bone grafting and tissue engineering. The second section explores applications of such new technologies in the field of implantology that gives this book a unique feature by bringing science and technology into clinical application. It covers implant stability, peri-implantitis, lasers, CAD/CAM technology, impressions, 3D printing, reconstruction with bone grafts and zygomatic implants. Comprehensive coverage includes both simple and complicated clinical cases, with practical guidance on how to apply the latest research, diagnostic tools, treatment planning, implant designs, materials, and techniques to provide superior patient outcomes. The book is well written and structured making it easy for experienced clinicians and those new to dental implantology as well as students, researchers, scientists and faculties of dental universities

Bioadhesives in Drug Delivery K. L. Mittal 2020-05-26 This important and unique book comprises 12 chapters divided into three parts examining the fundamental aspects, bioadhesive formulations, and drug delivery applications. Understanding the phenomenon of bioadhesion i.e. its theories or mechanism(s) are of critical importance in developing optimum bioadhesive polymers (used in bioadhesives). Such bioadhesive polymers are the key for exhibiting the process of bioadhesion, controlled/sustained release of drugs, and drug targeting. The use of bioadhesives restricts the delivery system to the site of interest and thus offers a useful and efficient technique for targeting a drug to the desired location for a prolonged duration. This book addresses the various relevant aspects of bioadhesives in drug delivery in an easily accessible and unified manner. The book containing 12 chapters written by eminent researchers from many parts of the globe is divided into three parts: Part 1: Fundamental Aspects; Part 2: Bioadhesive Formulations; Part 3: Drug Delivery Applications. The topics covered include: Theories and mechanisms of bioadhesion; bioadhesive polymers for drug delivery applications; methods for characterization of bioadhesiveness of drug delivery systems; bioadhesive films and drug delivery applications; bioadhesive nanoparticles; bioadhesive hydrogels and applications; ocular bioadhesive drug delivery systems; buccal bioadhesive drug delivery systems; gastrointestinal bioadhesive drug delivery systems; nasal bioadhesive drug delivery systems; vaginal drug delivery systems; pulmonary bioadhesive drug delivery systems.

Bio-Inspired Surfaces and Applications Eddie Y K Ng 2016-06-21 Through millions of years' natural selection, sharkskin has developed into a kind of drag-reducing surface. This book shows how to investigate, model, fabricate and apply sharkskin's unique surface properties, creating a flexible platform for surface and materials engineers and scientists to readily adopt or adapt for their own bio-inspired materials. Rather than inundate the reader with too many examples of materials inspired by nature, sharkskin has been chosen as the center-piece to illustrate accurate 3D digital modeling of surfaces, complete numerical simulation of micro flow field, different fabrication methods, and application to natural gas pipelining. This is a must-read for any researcher or engineer involved in bio-inspired surfaces and materials studies. Contents:Self-Cleaning and Superhydrophobic Surfaces (G G Li, Y T Zhao, L Zhang, B D Liu, Y Luo, B Y Li, E Y K Ng)Treatments and Constructing Digital Model of Biological Shark Skin/Shark (G G Li, Y T Zhao, L Zhang, Y Luo, E Y K Ng)Different Approaches to Manufacture Low Viscous Resistance Drag with Biomimetic Textures (J Wang, Y T Zhao, L Zhang, Y Luo, E Y K Ng)Different Characteristic Analysis of Drag-Reducing Surface with Biological Morphology (J Wang, Y T Zhao, L Zhang, Y Luo, E Y K Ng)Application of Biomimetic Shark Skin Surface in Natural Gas Pipelining (J Wang, Y T Zhao, L Zhang, Y Luo, E Y K Ng)Biomimetic Surfaces for Enhanced Dropwise Condensation Heat Transfer: Mimic Nature and Transcend Nature (Youmin Hou, Zuankai Wang, Shuhuai Yao)Large-Scale Fabrication of Biomimetic Drag-Reduction Surface via Bio-Replication of Shark Skin (Huawei Chen, Deyuan Zhang, Xin Zhang, Da Che)Study of Flow over Dimpled Cylinder for Drag Reduction (Tan S P, Koh J H and Ng Y K Eddie)Fluid Flow in Biomimetics Simulated Vessel Having a Grooved Surface: An Investigation of the Effect of Riblets in Drag Reduction (Guangming Hu)3-D Modelling of Biological Systems for Biomimetics (Shujun Zhang, Donghui Chen, Kevin Hapeshi and Xu Zhang)Superhydrophobic Surfaces with Hierarchical Structures Inspired by Nature Leaves (Yuying Yan and Nan Gao)Bio-Inspired Macro-Morphologic Surface Modifications to Reduce Soil–Tool Adhesion (Peeyush Soni and Vilas M Salokhe)Application of Bio-Inspired Surfaces in Reducing Adhesion to the Surfaces of Soil-Engaging Components of Agricultural and Earth-Moving Machinery (Rashid Qaisrani and Li Jianqiao)Application of Bionic Technologies for Soil-Engaging Tillage Components in Northeast China (Ji-yu Sun, Zhi-jun Zhang, Jin Tong, and Hong-lei Jia) Readership: Materials and Surface Engineers, bioengineers specialising in surfaces and materials, Oil and Gas pipeline engineers.

Advances in Contact Angle, Wettability and Adhesion K. L. Mittal 2018-02-26 This is the third Volume in the series “Advances in Contact Angle, Wettability and Adhesion” initiated to consolidate information and provide commentary on certain recent research aspects dealing with this important topic. Its predecessor Volumes 1 and 2 were published in 2013 and 2015, respectively. This new book comprising 15 research and review articles is divided into four parts: Part 1: Contact Angle Measurement and Analysis; Part 2: Wettability Behavior; Part 3: Hydrophobic/Superhydrophobic Surfaces; Part 4: Wettability, Surface Free Energy and Adhesion. The topics covered include: O Procedure to measure and analyse contact angles/drop shape behaviors. O Contact angle measurement considering spreading, evaporation and reactive substrate. O Measurement of contact angle of a liquid on a substrate of the same liquid. O Evolution of the axisymmetric droplet shape parameters. O Interfacial modulus of a solid surface. O Functionalization of textiles using UV-based techniques for surface modification—patterned wetting behavior. O Wettability behavior of oleophilic and oleophobic nanorough surfaces. O Wettability behavior of nanofluids. O Dielectrowetting for digital microfluidics. O Hydrophobicity and superhydrophobicity in fouling prevention. O Superhydrophobic/superhydrophilic hybrid surface. O Laser material processing for enhancing stem cell growth. O Wettability correlation for bioadhesion to different materials. O Determination of the surface free energy of solid surfaces: statistical consideration. O Determination of apparent surface free energy using hysteresis approach.

Contact Angle, Wettability and Adhesion Frederick Mayhew Fowkes 1964

Advances in Contact Angle, Wettability and Adhesion K. L. Mittal 2018-03-13 This is the third Volume in the series “Advances in Contact Angle, Wettability and Adhesion” initiated to consolidate information and provide

commentary on certain recent research aspects dealing with this important topic. Its predecessor Volumes 1 and 2 were published in 2013 and 2015, respectively. This new book comprising 15 research and review articles is divided into four parts: Part 1: Contact Angle Measurement and Analysis; Part 2: Wettability Behavior; Part 3: Hydrophobic/Superhydrophobic Surfaces; Part 4: Wettability, Surface Free Energy and Adhesion. The topics covered include: O Procedure to measure and analyse contact angles/drop shape behaviors. O Contact angle measurement considering spreading, evaporation and reactive substrate. O Measurement of contact angle of a liquid on a substrate of the same liquid. O Evolution of the axisymmetric droplet shape parameters. O Interfacial modulus of a solid surface. O Functionalization of textiles using UV-based techniques for surface modification—patterned wetting behavior. O Wettability behavior of oleophilic and oleophobic nanorough surfaces. O Wettability behavior of nanofluids. O Dielectrowetting for digital microfluidics. O Hydrophobicity and superhydrophobicity in fouling prevention. O Superhydrophobic/superhydrophilic hybrid surface. O Laser material processing for enhancing stem cell growth. O Wettability correlation for bioadhesion to different materials. O Determination of the surface free energy of solid surfaces: statistical consideration. O Determination of apparent surface free energy using hysteresis approach.

Surface Wetting Kock-Yee Law 2015-11-18 This book describes wetting fundamentals and reviews the standard protocol for contact angle measurements. The authors include a brief overview of applications of contact angle measurements in surface science and engineering. They also discuss recent advances and research trends in wetting fundamentals and include measurement techniques and data interpretation of contact angles.

Advances in Contact Angle, Wettability and Adhesion, Volume One K. L. Mittal 2013-07-22 The topic of wettability is extremely important from both fundamental and applied aspects. The applications of wettability range from self-cleaning windows to micro- and nanofluidics. This book represents the cumulative wisdom of a contingent of world-class (researchers engaged in the domain of wettability. In the last few years there has been tremendous interest in the "Lotus Leaf Effect" and in understanding its mechanism and how to replicate this effect for myriad applications. The topics of superhydrophobicity, omniphobicity and superhydrophilicity are of much contemporary interest and these are covered in depth in this book.

Contact Angle, Wettability, and Adhesion Kendall Award Symposium (1963, Los Angeles, Calif.) 1964

Physical Properties of Polymers Handbook James E. Mark 2007-03-21 This book offers concise information on the properties of polymeric materials, particularly those most relevant to physical chemistry and chemical physics. Extensive updates and revisions to each chapter include eleven new chapters on novel polymeric structures, reinforcing phases in polymers, and experiments on single polymer chains. The study of complex materials is highly interdisciplinary, and new findings are scattered among a large selection of scientific and engineering journals. This book brings together data from experts in the different disciplines contributing to the rapidly growing area of polymers and complex materials.

Interface / Interphase in Polymer Nanocomposites Anil N. Netravali 2016-11-29 Significant research has been done in polymeric nanocomposites and progress has been made in understanding nanofiller-polymer interface and interphase and their relation to nanocomposite properties. However, the information is scattered in many different publication media. This is the first book that consolidates the current knowledge on understanding, characterization and tailoring interfacial interactions between nanofillers and polymers by bringing together leading researchers and experts in this field to present their cutting edge research. Eleven chapters authored by senior subject specialists cover topics including: Thermodynamic mechanisms governing nanofiller dispersion, engineering of interphase with nanofillers Role of interphase in governing the mechanical, electrical, thermal and other functional properties of nanocomposites, characterization and modelling of the interphase Effects of crystallization on the interface, chemical and physical techniques for surface modification of nanocellulose reinforcements Electro-micromechanical and nanoindentation techniques for interface evaluation, molecular dynamics (MD) simulations to quantify filler-matrix adhesion and nanocomposite mechanical properties.

Adhesives for Wood and Lignocellulosic Materials R. N. Kumar 2019-07-17 The book is a comprehensive treatment of the subject covering a wide range of subjects uniquely available in a single source for the first time. A material science approach has been adopted in dealing with wood adhesion and adhesives. The approach of the authors was to bring out hierarchical cellular and porous characteristics of wood with polymeric cell wall structure, along with the associated non-cell wall extractives, which greatly influence the interaction of wood substrate with polymeric adhesives in a very unique manner not existent in the case of other adherends.

Environmental aspects, in particular formaldehyde emission from adhesive bonded wood products, has been included. A significant feature of the book is the inclusion of polymeric matrix materials for wood polymer composites.