

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

YEAH, REVIEWING A BOOK **ADVANCES IN CONTACT ANGLE WETTABILITY AND ADHESION VOLUME TWO ADHESION AND ADHESIVES FUNDAMENTAL AND APPLIED ASPECTS** COULD AMASS YOUR NEAR ASSOCIATES LISTINGS. THIS IS JUST ONE OF THE SOLUTIONS FOR YOU TO BE SUCCESSFUL. AS UNDERSTOOD, SUCCESS DOES NOT RECOMMEND THAT YOU HAVE ASTOUNDING POINTS.

COMPREHENDING AS CAPABLY AS CONTRACT EVEN MORE THAN ADDITIONAL WILL OFFER EACH SUCCESS. NEXT-DOOR TO, THE MESSAGE AS WITH EASE AS PERSPICACITY OF THIS **ADVANCES IN CONTACT ANGLE WETTABILITY AND ADHESION VOLUME TWO ADHESION AND ADHESIVES FUNDAMENTAL AND APPLIED ASPECTS** CAN BE TAKEN AS CAPABLY AS PICKED TO ACT.

**SUPERHYDROPHOBIC SURFACES** ALAIN CARR<sup>2</sup> 2009-04-24  
SUPERHYDROPHOBIC SURFACES (WATER CONTACT ANGLES HIGHER THAN  $150^{\circ}$ ) CAN ONLY BE ACHIEVED BY A COMBINATION OF HYDROPHOBICITY (LOW SURFACE ENERGY MATERIALS) WITH APPROPRIATE SURFACE TEXTURE. IN NATURE ONE CAN FIND AN ARRAY OF IMPRESSIVE AND ELEGANT

EXAMPLES OF SUPERHYDROPHOBIC SURFACES. FOR EXAMPLE, ON A LOTUS LEAF RAIN DROPS BOUNCE OFF AFTER IMPACT, THEN ENTIRELY ROLL OFF THE LOTUS LEAF AND DRAG ALONG ANY DIRT PARTICLES, WITHOUT LEAVING RESIDUES. THE ARTIFICIAL DESIGN OF SUPERHYDROPHOBIC AND SELF-CLEANING SURFACES HAS BECOME AN EXTREMELY ACTIVE AREA OF FUNDAMENTAL AND APPLIED RESEARCH. THIS BOOK PRESENTS

BOTH FUNDAMENTAL AND APPLIED ASPECTS OF SUPERHYDROPHOBIC SURFACES. IT DESCRIBES ALSO DIFFERENT STRATEGIES FOR MAKING SUPERHYDROPHOBIC SURFACES FROM A LARGE DIVERSITY OF MATERIALS (POLYMERS, METALS AND OTHER INORGANIC MATERIALS, COMPOSITES) AND PROCESSES (LITHOGRAPHIC TECHNIQUES, ELECTROCHEMICAL PROCESSES, SELF-ASSEMBLY PROCESSES, COLLOIDAL PARTICLES, SOL-GEL PROCESSES, NANOFILAMENTS, OR SIMPLE SCRAPING). A BOUNTIFUL OF INFORMATION IS COVERED IN THIS BOOK WHICH REPRESENTS CUMULATIVE WISDOM OF MANY WORLD-RENOWNED RESEARCHERS IN THE FASCINATING AND BURGEONING AREA OF SUPERHYDROPHOBIC SURFACES.

*MICROSCALE SURFACE TENSION AND ITS APPLICATIONS*

PIERRE LAMBERT 2019-10-21 BUILDING ON ADVANCES IN MINIATURIZATION AND SOFT MATTER, SURFACE TENSION EFFECTS ARE A MAJOR KEY TO THE DEVELOPMENT OF SOFT/FLUIDIC MICROROBOTICS. BENEFITING FROM SCALING LAWS, SURFACE TENSION AND CAPILLARY EFFECTS CAN ENABLE SENSING, ACTUATION, ADHESION, CONFINEMENT, COMPLIANCE, AND OTHER STRUCTURAL AND FUNCTIONAL PROPERTIES NECESSARY IN MICRO- AND NANOSYSTEMS. VARIOUS APPLICATIONS ARE UNDER DEVELOPMENT: MICROFLUIDIC AND LAB-ON-CHIP DEVICES, SOFT GRIPPING AND MANIPULATION OF PARTICLES, COLLOIDAL AND INTERFACIAL ASSEMBLIES, FLUIDIC/DROPLET MECHATRONICS. THE CAPILLARY ACTION IS UBIQUITOUS IN DROPS, BUBBLES AND

MENISCI, OPENING A BROAD SPECTRUM OF TECHNOLOGICAL SOLUTIONS AND SCIENTIFIC INVESTIGATIONS. IDENTIFIED GRAND CHALLENGES TO THE ESTABLISHMENT OF FLUIDIC MICROROBOTICS INCLUDE MASTERING THE DYNAMICS OF CAPILLARY EFFECTS, CONTROLLING THE HYSTERESIS ARISING FROM WETTING AND EVAPORATION, IMPROVING THE DISPENSING AND HANDLING OF TINY DROPLETS, AND DEVELOPING A MECHATRONIC APPROACH FOR THE CONTROL AND PROGRAMMING OF SURFACE TENSION EFFECTS. IN THIS SPECIAL ISSUE OF MICROMACHINES, WE INVITE CONTRIBUTIONS COVERING ALL ASPECTS OF MICROSCALE ENGINEERING RELYING ON SURFACE TENSION. PARTICULARLY, WE WELCOME CONTRIBUTIONS ON FUNDAMENTALS OR APPLICATIONS RELATED TO: DROP-BOTICS: FLUIDIC OR SURFACE TENSION-BASED MICRO/NANOROBOTICS: CAPILLARY MANIPULATION, GRIPPING, AND ACTUATION, SENSING, FOLDING, PROPULSION AND BIO-INSPIRED SOLUTIONS; CONTROL OF SURFACE TENSION EFFECTS: SURFACE TENSION GRADIENTS, ACTIVE SURFACTANTS, THERMOCAPILLARITY, ELECTROWETTING, ELASTOCAPILLARITY; HANDLING OF DROPLETS, BUBBLES AND LIQUID BRIDGES: DISPENSING, CONFINEMENT, DISPLACEMENT, STRETCHING, RUPTURE, EVAPORATION; CAPILLARY FORCES: MODELLING, MEASUREMENT, SIMULATION; INTERFACIAL ENGINEERING: SMART LIQUIDS, SURFACE TREATMENTS; INTERFACIAL FLUIDIC AND CAPILLARY ASSEMBLY OF COLLOIDS AND DEVICES; BIOLOGICAL APPLICATIONS OF SURFACE

TENSION, INCLUDING LAB-ON-CHIP AND ORGAN-ON-CHIP SYSTEMS.

**CONTACT ANGLE, WETTABILITY AND ADHESION** KASH L. MITTAL 2008-08-31 THIS VOLUME CHRONICLES THE PROCEEDINGS OF THE 5TH INTERNATIONAL SYMPOSIUM ON CONTACT ANGLE, WETTABILITY AND ADHESION, TORONTO, CANADA, JUNE 2006. WETTABILITY IS OF PIVOTAL IMPORTANCE IN MANY AND VARIED ARENAS, RANGING FROM MUNDANE TO MICRO-AND NANOFUIDICS TO LITHOGRAPHY TO BIOMEDICAL. IT SHOULD BE UNDERScoreD THAT IN THE LAST YEARS THERE HAS BEEN BURGEONING INTEREST IN REPLICATING THE SO-CALLED "LOTUS LEAF EFFECT" TO CREATE SUPERHYDROPHOBIC SURFACES. THIS VOLUME CONTAINS A TOTAL OF 19 PAPERS COVERING MANY FACETS OF CONTACT ANGLE, WETTABILITY, AND ADHESION. ALL MANUSCRIPTS WERE RIGOROUSLY PEER-REVIEWED AND REVISED AND EDITED BEFORE INCLUSION IN THIS BOOK. CONCOMITANTLY, THIS VOLUME REPRESENTS AN ARCHIVAL PUBLICATION OF THE HIGHEST STANDARD. THIS BOOK (5TH VOLUME IN THE SERIES) IS DIVIDED INTO THREE PARTS: PART 1 - CONTACT ANGLE MEASUREMENTS AND SOLID SURFACE FREE ENERGY; PART 2 - RELEVANCE OF WETTING IN CLEANING AND ADHESION; AND PART 3 - SUPERHYDROPHOBIC SURFACES. THE TOPICS COVERED INCLUDE FUNDAMENTAL ASPECTS OF CONTACT ANGLE AND ITS MEASUREMENT, SOLIDIFICATION CONTACT ANGLES OF MICRO-DROPLETS, MICROSCOPIC WETTABILITY OF

WOOD CALL WALLS, DYNAMIC VAPOR-LIQUID INTERFACIAL TENSION, SURFACE FREE ENERGY OF POLYMERIC MATERIALS, SURFACE CLEANLINESS EVALUATION FROM WETTABILITY MEASUREMENTS, WETTABILITY PARAMETERS AFFECTING SURFACE CLEANABILITY OF STAINLESS STEEL AND TEXTILES, WETTING AND ADHESION IN FIBROUS MATERIALS, WETTABILITY AND ADHESION OF COATINGS, ADHESION OF HYDROPHOBIZING AGENTS, MODULATION OF SURFACE PROPERTIES OF POLYMERS, GRAFT EFFICIENCY AND ADHESION, RELEVANCE OF INTERFACIAL FREE ENERGY IN CELL ADHESION, VARIOUS APPROACHES TO CREATE SUPERHYDROPHOBIC SURFACES, AND ADSORPTION OF SURFACTANTS ON HYDROPHOBIC AND SUPERHYDROPHOBIC SURFACES.

ICE ADHESION K. L. MITTAL 2020-11-24 THE BOOK CONTAINING 18 CHAPTERS IS DIVIDED INTO THREE PARTS: PART 1: FUNDAMENTALS OF ICE FORMATION AND ICE CHARACTERISTICS; PART 2: ICE ADHESION AND ITS MEASUREMENT; AND PART 3: METHODS TO MITIGATE ICE ADHESION. THE TOPICS COVERED INCLUDE: FACTORS INFLUENCING THE FORMATION, ADHESION AND FRICTION OF ICE; ICE NUCLEATION ON SOLID SURFACES; PHYSICS OF ICE NUCLEATION AND GROWTH ON A SURFACE; CONDENSATION FROSTING; DEFROSTING PROPERTIES OF STRUCTURED SURFACES; RELATIONSHIP BETWEEN SURFACE FREE ENERGY AND ICE ADHESION TO SURFACES; METROLOGY OF ICE ADHESION; TEST METHODS FOR QUANTIFYING ICE ADHESION STRENGTH TO

SURFACES; INTERLABORATORY STUDIES OF ICE ADHESION STRENGTH; MECHANISMS OF SURFACE ICING AND DEICING TECHNOLOGIES; ANTI-ICING USING MICROSTRUCTURED SURFACES; DURABILITY ASSESSMENT OF ICEPHOBIC COATINGS; BIO-INSPIRED ICEPHOBIC COATINGS; CHALLENGES IN RATIONAL FABRICATION OF ICEPHOBIC SURFACES; PROTECTION FROM ICE ACCRETION ON AIRCRAFT; AND NUMERICAL MODELING AND ITS APPLICATION TO INFLIGHT ICING.

### **21ST CENTURY SURFACE SCIENCE** PHUONG PHAM

2020-11-26 SURFACE SCIENCES ELUCIDATE THE PHYSICAL AND CHEMICAL ASPECTS OF THE SURFACES AND INTERFACES OF MATERIALS. OF GREAT INTEREST IN THIS FIELD ARE NANOMATERIALS, WHICH HAVE RECENTLY EXPERIENCED BREAKTHROUGHS IN SYNTHESIS AND APPLICATION. AS SUCH, THIS BOOK PRESENTS SOME RECENT REPRESENTATIVE ACHIEVEMENTS IN THE FIELD OF SURFACE SCIENCE, INCLUDING SYNTHESIS TECHNIQUES, SURFACE MODIFICATIONS, NANOPARTICLE-BASED SMART COATINGS, WETTABILITY OF DIFFERENT SURFACES, PHYSICS/CHEMISTRY CHARACTERIZATIONS, AND GROWTH KINETICS OF THIN FILMS. IN ADDITION, THE BOOK ILLUSTRATES SOME OF THE IMPORTANT APPLICATIONS RELATED TO SILICON, CVD GRAPHENE, GRAPHENE OXIDE, TRANSITION METAL DICHALCOGENIDES, CARBON NANOTUBES, CARBON NANOPARTICLES, TRANSPARENT CONDUCTING OXIDE, AND METAL OXIDES.

**WETTING AND WETTABILITY** MAHMOOD ALIOFKHAZRAEI  
2015-12-16 ON THE LIQUID 'S SURFACE, THE MOLECULES HAVE FEWER NEIGHBORS IN COMPARISON WITH THE BULK VOLUME. AS A RESULT, THE ENERGY INTERACTION SHOWS ITSELF IN THE SURFACE TENSION. TRADITIONALLY, THE SURFACE TENSION CAN BE ASSUMED AS A FORCE IN THE UNIT OF THE LENGTH WHICH CAN BE COUNTED BY THE UNIT OF NEWTON ON SQUARED METER, OR ENERGY ON THE UNITS OF THE SURFACE. THE SURFACE TENSION, IMPLIES THE INTERFACE BETWEEN LIQUID AND VAPOR, WHICH IS AN EXAMPLE OF THE SURFACE TENSIONS. THE EQUILIBRIUM BETWEEN THESE SURFACE TENSIONS, DECIDES THAT A DROPLET ON A SOLID SURFACE, WOULD HAVE A DROPLET FORM OR WILL CHANGE TO LAYER FORM. THIS BOOK COLLECTS NEW DEVELOPMENTS IN WETTING AND WETTABILITY SCIENCE.

### **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: ○ PROCEDURE TO MEASURE AND ANALYSE CONTACT ANGLES/DROP SHAPE BEHAVIORS. ○ CONTACT ANGLE MEASUREMENT CONSIDERING SPREADING, EVAPORATION AND REACTIVE SUBSTRATE. ○ MEASUREMENT OF CONTACT ANGLE OF A LIQUID ON A SUBSTRATE OF THE SAME LIQUID. ○ EVOLUTION OF THE AXISYMMETRIC DROPLET SHAPE PARAMETERS. ○ INTERFACIAL MODULUS OF A SOLID SURFACE. ○ FUNCTIONALIZATION OF TEXTILES USING UV-BASED TECHNIQUES FOR SURFACE MODIFICATION—PATTERNED WETTING BEHAVIOR. ○ WETTABILITY BEHAVIOR OF OLEOPHILIC AND OLEOPHOBIC NANOROUGH SURFACES. ○ WETTABILITY BEHAVIOR OF NANOFUIDS. ○ DIELECTROWETTING FOR DIGITAL MICROFLUIDICS. ○ HYDROPHOBICITY AND SUPERHYDROPHOBICITY IN FOULING PREVENTION. ○ SUPERHYDROPHOBIC/SUPERHYDROPHILIC HYBRID SURFACE. ○ LASER MATERIAL PROCESSING FOR ENHANCING STEM CELL GROWTH. ○ WETTABILITY CORRELATION FOR BIOADHESION TO DIFFERENT MATERIALS. ○ DETERMINATION OF THE SURFACE FREE ENERGY OF SOLID SURFACES: STATISTICAL CONSIDERATION. ○ DETERMINATION OF APPARENT SURFACE FREE ENERGY USING HYSTERESIS APPROACH.

ADVANCES IN CONTACT ANGLE, WETTABILITY AND ADHESION, VOLUME TWO K. L. MITTAL 2015-10-05 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.

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.

**CONTACT ANGLE, WETTABILITY AND ADHESION** KASH L. MITTAL 2006-06-01 THIS VOLUME CHRONICLES THE PROCEEDINGS OF THE 4TH INTERNATIONAL SYMPOSIUM ON

CONTACT ANGLE, WETTABILITY AND ADHESION HELD IN PHILADELPHIA, PA, JUNE 2004. THE WORLD OF WETTABILITY IS VERY WIDE AND IT PLAYS A CRUCIAL ROLE IN MANY AND VARIED TECHNOLOGICAL AREAS RANGING FROM MICROFLUIDICS TO BIOMEDICAL TO AGRICULTURE TO WELDING. THIS VOLUME CONTAINS A TOTAL OF 31 PAPERS COVERING MANY RAMIFICATIONS OF CONTACT ANGLE, WETTABILITY AND ADHESION. ALL MANUSCRIPTS WERE RIGOROUSLY PEER-REVIEWED AND REVISED, AND PROPERLY EDITED BEFORE INCLUSION IN THIS BOOK. THE TOPICS COVERED INCLUDE: FUNDAMENTAL ASPECTS OF CONTACT LINE REGION; EVAPORATIVE BEHAVIOR OF SESSILE DROPS; VARIOUS FACTORS INFLUENCING CONTACT ANGLE MEASUREMENTS; DIFFERENT KINDS OF CONTACT ANGLES; VARIOUS WAYS TO MEASURE CONTACT ANGLES; CONTACT ANGLE HYSTERESIS; CONTACT ANGLE MEASUREMENTS ON VARIOUS MATERIALS (SMOOTH, ROUGH, POROUS, HETEROGENEOUS); EFFECT OF ELECTRIC FIELD ON CONTACT ANGLE (ELECTROWETTING); WETTING AND SPREADING ON HETEROGENEOUS SURFACES; FACTORS INFLUENCING WETTING/SPREADING PHENOMENA; DETERMINATION OF SOLID SURFACE FREE ENERGY VIA CONTACT ANGLE MEASUREMENTS; APPLICATION OF AFM IN DETERMINING SOLID SURFACE TENSION AT THE NANO-SCALE; ULTRALYOPHOBIC SURFACES; SURFACE MODIFICATION AND WETTABILITY; MULTIPHASE FLOW DYNAMICS IN POROUS MEDIA; THIN FILM COATINGS FOR TEXTILE MATERIALS; BIO-

FOULING RESISTANT COATINGS; RELATIONSHIPS BETWEEN WETTING AND ADHESION; AND RELEVANCE/IMPORTANCE OF WETTING AND SURFACE ENERGETICS IN TECHNOLOGICAL APPLICATIONS, INCLUDING CLEANING OF FLOORING MATERIALS, KINETICS OF OIL REMOVAL FROM COATING MATERIALS, CELL ADHESION, AND MOLD COMPOUND- METAL ADHESION IN SEMICONDUCTOR PACKAGING.

### **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.

### **CONTACT ANGLE, WETTABILITY AND ADHESION** KASH L.

MITTAL 2009-09-30 THE TOPIC OF WETTABILITY (MEASURED IN TERMS OF CONTACT ANGLE) IS OF TREMENDOUS

INTEREST FROM BOTH FUNDAMENTAL AND APPLIED POINTS OF VIEW, WETTABILITY PLAYS AN ESSENTIAL ROLE IN MANY INDUSTRIAL PROCESSES, SO AN UNDERSTANDING OF FACTORS DICTATING WETTABILITY AND HOW TO MODULATE IT IS OF PARAMOUNT IMPORTANCE. IN THE LAST YEARS THERE HAS BEEN AN EXPLOSIVE INTEREST IN SUPERHYDROPHOBIC SURFACES (I.E., SURFACES WITH WATER CONTACT ANGLE OF  $150^\circ$  OR HIGHER) BECAUSE OF THEIR RELEVANCE/IMPORTANCE IN MANY AREAS RANGING FROM SELF-CLEANING WINDOWS TO NANOFLUIDICS. ALSO RECENTLY THERE HAS BEEN HEIGHTENED ACTIVITY IN THE FIELD OF ELECTROWETTING. CONTACT ANGLE, WETTABILITY AND ADHESION, VOLUME 6 IS DIVIDED INTO FOUR PARTS: PART 1: FUNDAMENTAL ASPECTS; PART 2: WETTABILITY CONTROL/MODIFICATION; PART 3: SUPERHYDROPHOBIC SURFACES; AND PART 4: SURFACE FREE ENERGY AND RELEVANCE OF WETTABILITY IN ADHESION. THE TOPICS COVERED INCLUDE: A GUIDE TO THE EQUILIBRIUM CONTACT ANGLES MAZE: FUNDAMENTAL ASPECTS OF WETTING OF ROUGH AND CHEMICALLY HETEROGENEOUS SURFACES: WORK OF ADHESION FOR ROCK-OIL-BRINE SYSTEMS; IS THE WORLD BASIC?; WETTABILITY CONTROL/MODIFICATION USING VARIOUS APPROACHES; SUPERHYDROPHOBIC SURFACES AND WAYS TO IMPART SUPERHYDROPHOBICITY; ADSORPTION ON SUPERHYDROPHOBIC SURFACES; SOLID SURFACE ENERGY DETERMINATION; SURFACE MODIFICATION OF DIFFERENT MATERIALS; RELEVANCE OF WETTABILITY AND ADHESION

ASPECTS IN A VARIETY OF REINFORCED COMPOSITES. IN ESSENCE, THIS VOLUME REFLECTS THE CUMULATIVE WISDOM OF MANY ACTIVE AND RENOWNED RESEARCHERS AND PROVIDES A COMMENTARY ON CONTEMPORARY RESEARCH IN THE FASCINATING WORLD OF CONTACT ANGLES AND WETTABILITY. THIS VOLUME AND ITS PREDECESSORS (5 VOLUMES), CONTAINING BOUNTIFUL INFORMATION, WILL BE OF MUCH VALUE TO ANYONE INTERESTED/INVOLVED IN CONTROLLING WETTING PHENOMENA AND THEIR APPLICATIONS. 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.

**POLYMER INTERFACE AND ADHESION** WU 2017-11-22  
POLY MER INTERFACE AND ADHESION PROVIDES THE CRITICAL

BASIS FOR FURTHER ADVANCEMENT IN THIS FIELD. COMBINING THE PRINCIPLES OF INTERFACIAL SCIENCE, RHEOLOGY, STRESS ANALYSIS, AND FRACTURE MECHANICS, THE BOOK TEACHES A NEW APPROACH TO THE ANALYSIS OF LONG STANDING PROBLEMS SUCH AS: HOW IS THE INTERFACE FORMED; WHAT ARE ITS PHYSICAL AND MECHANICAL PROPERTIES; AND HOW DOES THE INTERFACE MODIFY THE STRESS FIELD AND FRACTURE STRENGTH OF THE MATERIAL. THE BOOK OFFERS MANY OUTSTANDING FEATURES, INCLUDING EXTENSIVE LISTINGS OF PERTINENT REFERENCES, EXHAUSTIVE TABULATIONS OF THE INTERFACIAL PROPERTIES OF POLYMERS, CRITICAL REVIEWS OF THE MANY CONFLICTING THEORIES, AND COMPLETE DISCUSSIONS OF COUPLING AGENTS, ADHESION PROMOTION, AND SURFACE MODIFICATIONS. EMPHASIS IS PLACED ON PHYSICAL CONCEPTS AND MECHANISMS, USING CLEAR, UNDERSTANDABLE MATHEMATICS. POLYMER INTERFACE AND ADHESION PROMOTES A MORE THOROUGH UNDERSTANDING OF THE PHYSICAL, MECHANICAL, AND ADHESIVE PROPERTIES OF MULTIPHASE, POLYMER SYSTEMS. POLYMER SCIENTISTS AND ENGINEERS, SURFACE CHEMISTS, MATERIALS SCIENTISTS, RHEOLOGISTS, AS WELL AS CHEMICAL AND MECHANICAL ENGINEERS INTERESTED IN THE RESEARCH, DEVELOPMENT OR INDUSTRIAL APPLICATIONS OF POLYMERS, PLASTICS, FIBERS, COATINGS, ADHESIVES, AND COMPOSITES NEED THIS IMPORTANT NEW SOURCE BOOK.

*SURFACES AND INTERFACES OF BIOMIMETIC*

*SUPERHYDROPHOBIC MATERIALS* ZHIGUANG GUO  
2018-01-04 A COMPREHENSIVE AND SYSTEMATIC TREATMENT THAT FOCUSES ON SURFACES AND INTERFACES PHENOMENA INHABITED IN BIOMIMETIC SUPERHYDROPHOBIC MATERIALS, OFFERING NEW FUNDAMENTALS AND NOVEL INSIGHTS. AS SUCH, THIS NEW BOOK COVERS THE NATURAL SURFACES, FUNDAMENTALS, FABRICATION METHODS AND EXCITING APPLICATIONS OF SUPERHYDROPHOBIC MATERIALS, WITH PARTICULAR ATTENTION PAID TO THE SMART SURFACES THAT CAN SHOW SWITCHABLE AND REVERSIBLE WATER WETTABILITY UNDER EXTERNAL STIMULI, SUCH AS pH, TEMPERATURE, LIGHT, SOLVENTS, AND ELECTRIC FIELDS. IT ALSO INCLUDES RECENT THEORETICAL ADVANCES OF SUPERHYDROPHOBIC SURFACES WITH REGARD TO THE WETTING PROCESS, AND SOME PROMISING BREAKTHROUGHS TO PROMOTE THIS THEORY. AS A RESULT, MATERIALS SCIENTISTS, PHYSICISTS, PHYSICAL CHEMISTS, CHEMICAL ENGINEERS, AND BIOCHEMISTS WILL BENEFIT GREATLY FROM A DEEPER UNDERSTANDING OF THIS TOPIC.

**THE PHYSICS OF MICRODROPLETS** JEAN BERTHIER  
2012-04-30 THE PHYSICS OF MICRODROPLETS GIVES THE READER THE THEORETICAL AND NUMERICAL TOOLS TO UNDERSTAND, EXPLAIN, CALCULATE, AND PREDICT THE OFTEN NONINTUITIVE OBSERVED BEHAVIOR OF DROPLETS IN MICROSYSTEMS. MICRODROPS AND INTERFACES ARE NOW A COMMON FEATURE IN MOST FLUIDIC MICROSYSTEMS, FROM

BIOLOGY, TO BIOTECHNOLOGY, MATERIALS SCIENCE, 3D-MICROELECTRONICS, OPTOFLUIDICS, AND MECHATRONICS. ON THE OTHER HAND, THE BEHAVIOR OF DROPLETS AND INTERFACES IN TODAY'S MICROSYSTEMS IS COMPLICATED AND INVOLVES COMPLEX 3D GEOMETRICAL CONSIDERATIONS. FROM A NUMERICAL STANDPOINT, THE TREATMENT OF INTERFACES SEPARATING DIFFERENT IMMISCIBLE PHASES IS DIFFICULT. AFTER A CHAPTER DEDICATED TO THE GENERAL THEORY OF WETTING, THIS PRACTICAL BOOK SUCCESSIVELY DETAILS: THE THEORY OF 3D LIQUID INTERFACES THE FORMULAS FOR VOLUME AND SURFACE OF SESSILE AND PANCAKE DROPLETS THE BEHAVIOR OF SESSILE DROPLETS THE BEHAVIOR OF DROPLETS BETWEEN TAPERED PLATES AND IN WEDGES THE BEHAVIOR OF DROPLETS IN MICROCHANNELS THE EFFECT OF CAPILLARITY WITH THE ANALYSIS OF CAPILLARY RISE THE ONSET OF SPONTANEOUS CAPILLARY FLOW IN OPEN MICROFLUIDIC SYSTEMS THE INTERACTION BETWEEN DROPLETS, LIKE ENGULFMENT THE THEORY AND APPLICATION OF ELECTROWETTING THE STATE OF THE ART FOR THE APPROACH OF 3D-MICROELECTRONICS USING CAPILLARY ALIGNMENT

#### *CARBON CAPTURE, UTILIZATION AND SEQUESTRATION*

RAMESH K. AGARWAL 2018-09-12 THIS BOOK IS DIVIDED IN TWO SECTIONS. SEVERAL CHAPTERS IN THE FIRST SECTION PROVIDE A STATE-OF-THE-ART REVIEW OF VARIOUS CARBON SINKS FOR CO<sub>2</sub> SEQUESTRATION SUCH AS SOIL AND OCEANS. OTHER CHAPTERS DISCUSS THE CARBON SEQUESTRATION

ACHIEVED BY STORAGE IN KEROGEN NANOPORES, CO<sub>2</sub> MISCIBLE FLOODING AND GENERATION OF ENERGY EFFICIENT SOLVENTS FOR POSTCOMBUSTION CO<sub>2</sub> CAPTURE. THE CHAPTERS IN THE SECOND SECTION FOCUS ON MONITORING AND TRACKING OF CO<sub>2</sub> MIGRATION IN VARIOUS TYPES OF STORAGE SITES, AS WELL AS IMPORTANT PHYSICAL PARAMETERS RELEVANT TO SEQUESTRATION. BOTH RESEARCHERS AND STUDENTS SHOULD FIND THE MATERIAL USEFUL IN THEIR WORK.

#### **SURFACE SCIENCE AND ADHESION IN COSMETICS** K. L. MITTAL

2021-04-06 ACTIVITY IN THE ARENA OF SURFACE CHEMISTRY AND ADHESION ASPECTS IN COSMETICS IS SUBSTANTIAL, BUT THE INFORMATION IS SCATTERED IN MANY DIVERSE PUBLICATIONS MEDIA AND NO BOOK EXISTS WHICH DISCUSSES SURFACE CHEMISTRY AND ADHESION IN COSMETICS IN UNIFIED MANNER. THIS BOOK CONTAINING 15 CHAPTERS WRITTEN BY EMINENT RESEARCHERS FROM ACADEMIA AND INDUSTRY IS DIVIDED INTO THREE PARTS: PART 1: GENERAL TOPICS; PART 2: SURFACE CHEMISTRY ASPECTS; AND PART 3: WETTING AND ADHESION ASPECTS. THE TOPICS COVERED INCLUDE: LIP BIOPHYSICAL PROPERTIES AND CHARACTERIZATION; USE OF ADVANCED SILICONE MATERIALS IN LONG-LASTING COSMETICS; NON-AQUEOUS DISPERSIONS OF ACRYLATE COPOLYMERS IN LIPSTICKS; COSMETIC OILS IN LIPSTICK STRUCTURE; CHEMICAL STRUCTURE OF THE HAIR SURFACE, SURFACE FORCES AND INTERACTIONS; AFM FOR

HAIR SURFACE CHARACTERIZATION; APPLICATION OF AFM IN CHARACTERIZING HAIR, SKIN AND COSMETIC DEPOSITION; SIMS AS A SURFACE ANALYSIS METHOD FOR HAIR, SKIN AND COSMETICS; SURFACE TENSIOMETRY APPROACH TO CHARACTERIZE COSMETIC PRODUCTS; SPREADING OF HAIRSPRAYS ON HAIR; COLOR TRANSFER FROM LONG-WEAR FACE FOUNDATION PRODUCTS; INTERACTION OF POLYELECTROLYTES AND SURFACTANTS ON HAIR SURFACES; COSMETIC ADHESION TO FACIAL SKIN; AND ADHESION ASPECTS IN SEMI-PERMANENT MASCARA; LIPSTICK ADHESION MEASUREMENT.

DROPLET WETTING AND EVAPORATION DAVID BRUTIN 2015-05-11 DROPLET WETTING AND EVAPORATION PROVIDES ENGINEERS, STUDENTS, AND RESEARCHERS WITH THE FIRST COMPREHENSIVE GUIDE TO THE THEORY AND APPLICATIONS OF DROPLET WETTING AND EVAPORATION. BEGINNING WITH A RELEVANT THEORETICAL BACKGROUND, THE BOOK MOVES ON TO CONSIDER SPECIFIC ASPECTS, INCLUDING HEAT TRANSFER, FLOW INSTABILITIES, AND THE DRYING OF COMPLEX FLUID DROPLETS. EACH CHAPTER COVERS THE PRINCIPLES OF THE SUBJECT, ADDRESSING CORRESPONDING PRACTICAL ISSUES AND PROBLEMS. THE TEXT IS IDEAL FOR A BROAD RANGE OF DOMAINS, FROM AEROSPACE AND MATERIALS, TO BIOMEDICAL APPLICATIONS, COMPREHENSIVELY RELAYING THE CHALLENGES AND APPROACHES FROM THE DIFFERENT COMMUNITIES LEADING THE WAY IN DROPLET

RESEARCH AND DEVELOPMENT. PROVIDES A BROAD, CROSS-SUBJECT COVERAGE OF THEORY AND APPLICATION THAT IS IDEAL FOR ENGINEERS, STUDENTS AND RESEARCHERS WHO NEED TO FOLLOW ALL MAJOR DEVELOPMENTS IN THIS INTERDISCIPLINARY FIELD INCLUDES COMPREHENSIVE DISCUSSIONS OF HEAT TRANSFER, FLOW INSTABILITIES, AND THE DRYING OF COMPLEX FLUID DROPLETS BEGINS WITH AN ACCESSIBLE SUMMARY OF FUNDAMENTAL THEORY BEFORE MOVING ON TO SPECIFIC AREAS SUCH AS HEAT TRANSFER, FLOW INSTABILITIES, AND THE DRYING OF COMPLEX FLUID DROPLETS

MAKING TIME RICHARD WHIPP 2002-07-04 TIME IS AN ESSENTIAL FEATURE OF SOCIAL AND ORGANIZATIONAL LIFE AND PART OF THE DEEP STRUCTURE OF BUSINESS ACTIVITY. PLANS, PERFORMANCE, PRODUCTIVITY, AND PAY ARE ALL LINKED TO AND OFTEN MEASURED BY TIME. YET TIME IS OFTEN TAKEN FOR GRANTED IN DAILY LIFE AND THE BUSINESS WORLD. THE AIM OF THIS BOOK IS TO BRING TIME INTO SHARPER FOCUS AND IN PARTICULAR TO LOOK AT THE WAY TIME IS CONSTRUCTED, MADE, MANAGED, AND USED IN ORGANIZATIONS. THE BOOK BOTH PROVIDES AN OVERVIEW OF SOME OF THE KEY CONCEPTS IN TIME — TIME'S ARROW, TIME'S CYCLE, CLOCK TIME, ETC. — AND IT EXPLORES HOW PARTICULAR FEATURES OF THE MODERN WORLD — GLOBAL TIME, FUTURES, ETC. — EXTEND AND CHANGE THE TEMPORAL DIMENSION OF ORGANIZATIONAL ACTIVITY. MAKING TIME

EMPHASIZES THE RICHNESS OF THE TEMPORAL RELATIONS WITHIN ORGANIZATIONS AND THE WEALTH OF COMPETING ATTEMPTS TO ORDER AND CONTROL TIME IN THE ACT OF MANAGING. IT DESCRIBES AND EXPLAINS THIS TEMPORAL COMPLEXITY AS IT OCCURS IN MANAGEMENT, GIVING FULL RECOGNITION TO THE WAY THAT PEOPLE CREATE THEIR OWN SENSE OF TIME ALONGSIDE THE OFFICIAL TEMPORAL APPARATUS OF THE CLOCK AND DIARY. THE CONTRIBUTORS USE A VARIETY OF MANAGEMENT PERSPECTIVES — STRATEGY, ORGANIZATION THEORY, DECISION MAKING, INDUSTRIAL RELATIONS, AND MARKETING — AND DELIBERATELY PLACE THE EXPERIENCE OF MORE TRADITIONAL INDUSTRIAL SETTINGS ALONGSIDE THOSE AT THE FOREFRONT OF THE 'NEW ECONOMY'. MAKING TIME SEEKS TO SPARK A DEBATE ACROSS THE FIELD OF MANAGEMENT THAT DOES JUSTICE TO THE RICHNESS OF THE TEMPORAL FEATURES OF CONTEMPORARY ORGANIZATIONS. THE BOOK WILL BE VITAL READING FOR THOSE WHO WANT TO UNDERSTAND THE COMPLEXITIES OF TIME IN ORGANIZATIONS AND THE MODERN WORLD, AND THE CHALLENGES IT PRESENTS FOR THE THEORETICAL AND PRACTICAL SPHERES OF MANAGEMENT.

**SURFACE SCIENCE TECHNIQUES** GIANANGELO BRACCO  
2013-01-11 THE BOOK DESCRIBES THE EXPERIMENTAL TECHNIQUES EMPLOYED TO STUDY SURFACES AND INTERFACES. THE EMPHASIS IS ON THE EXPERIMENTAL METHOD. THEREFORE ALL CHAPTERS START WITH AN INTRODUCTION OF THE

SCIENTIFIC PROBLEM, THE THEORY NECESSARY TO UNDERSTAND HOW THE TECHNIQUE WORKS AND HOW TO UNDERSTAND THE RESULTS. DESCRIPTIONS OF REAL EXPERIMENTAL SETUPS, EXPERIMENTAL RESULTS AT DIFFERENT SYSTEMS ARE GIVEN TO SHOW BOTH THE STRENGTH AND THE LIMITS OF THE TECHNIQUE. IN A FINAL PART THE NEW DEVELOPMENTS AND POSSIBLE EXTENSIONS OF THE TECHNIQUES ARE PRESENTED. THE INCLUDED TECHNIQUES PROVIDE MICROSCOPIC AS WELL AS MACROSCOPIC INFORMATION. THEY COVER MOST OF THE TECHNIQUES USED IN SURFACE SCIENCE.

*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.

NANOTECHNOLOGIES FOR SYNTHETIC SUPER NON-WETTING

SURFACES VINCENT SENEZ 2014-08-08 TEXTURING SURFACES AT MICRO- AND/OR NANO-SCALES MODIFIES THE INTERACTIONS OF LIQUIDS AND SOLIDS. THIS BOOK IS A SUMMARY OF THE STATE OF THE ART CONCERNING THE DEVELOPMENT AND USE OF MICRO/NANO-TECHNOLOGIES FOR THE DESIGN OF SYNTHETIC LIQUID REPELLENT SURFACES WITH A PARTICULAR FOCUS ON SUPER-OMNIPHOBIC MATERIALS. IT PROPOSES A COMPREHENSIVE UNDERSTANDING OF THE PHYSICAL MECHANISMS INVOLVED IN THE WETTING OF THESE SURFACES AND REVIEWS EMERGING APPLICATIONS IN VARIOUS FIELDS SUCH AS ENERGY HARVESTING AND BIOLOGY, AS WELL AS HIGHLIGHTING THE CURRENT LIMITATIONS AND CHALLENGES WHICH ARE YET TO BE OVERCOME.

ADHESIVE JOINTS K.L. MITTAL 2012-12-06 THIS VOLUME DOCUMENTS THE PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON ADHESIVE JOINTS: FORMATION, CHARACTERISTICS AND TESTING HELD UNDER THE AUSPICES OF THE DIVISION OF POLYMER MATERIALS: SCIENCE AND ENGINEERING OF THE AMERICAN CHEMICAL SOCIETY IN KANSAS CITY, MO, SEPTEMBER 12-17, 1982. THERE IS A MYRIAD OF APPLICATIONS (RANGING FROM AEROSPACE TO SURGERY) WHERE ADHESIVES ARE USED TO JOIN DIFFERENT MATERIALS, AND CONCOMITANTLY THE UNDERSTANDING OF THE BEHAVIOR OF ADHESIVE JOINTS BECOMES VERY IMPORTANT. THERE ARE MANY FACTORS WHICH CAN INFLUENCE THE BEHAVIOR OF ADHESIVE JOINTS, E.G., SUBSTRATE PREPARATION, IN

TERFACIAL ASPECTS, JOINT DESIGN, MODE OF STRESS, EXTERNAL ENVIRONMENT, ETC., AND IN ORDER TO UNDERSTAND THE JOINT BEHAVIOR IN A HOLISTIC MANNER, ONE MUST TAKE DUE COGNIZANCE OF ALL THESE GERMANE FACTORS. SO THIS SYMPOSIUM WAS PLANNED TO ADDRESS NOT ONLY HOW TO MAKE ACCEPTABLE BONDS BUT THEIR CHARACTERIZATION, DURABILITY AND TESTING WERE ALSO ACCORDED DUE CONSIDERATION.

*ADVANCES IN CONTACT ANGLE, WETTABILITY AND ADHESION* K. L. MITTAL 2019-10-16 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.  
**ADVANCES IN CHEMISTRY SERIES** 1964  
WETTING OF REAL SURFACES EDWARD YU. BORMASHENKO 2013-03-22 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.

**CONTACT ANGLE, WETTABILITY, AND ADHESION** KENDALL AWARD SYMPOSIUM (1963, LOS ANGELES, CALIF.) 1964

**CONTACT ANGLE, WETTABILITY AND ADHESION** KASH L. MITTAL 2014-07-30 THIS VOLUME DOCUMENTS THE PROCEEDINGS OF THE SECOND INTERNATIONAL SYMPOSIUM ON CONTACT ANGLE, WETTABILITY AND ADHESION HELD IN NEWARK, NJ, JUNE 21-23, 2000. SINCE THE FIRST

SYMPOSIUM, HELD IN 1992, THERE HAD BEEN TREMENDOUS RESEARCH ACTIVITY ON MANY RAMIFICATIONS OF WETTABILITY PHENOMENA. THIS VOLUME CONTAINS A TOTAL OF 33 PAPERS, WHICH WERE ALL PRO

**THERMODYNAMICS OF SURFACES AND INTERFACES** GERALD H. MEIER 2014-07-17 AN ACCESSIBLE YET RIGOROUS DISCUSSION, FEATURING CASE STUDIES AND STUDY PROBLEMS TO ILLUSTRATE AND REINFORCE KEY CONCEPTS.

**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.

**POLYMER ADHESION, FRICTION, AND LUBRICATION** HONGBO ZENG 2013-02-07 SPECIFICALLY DEDICATED TO POLYMER AND BIOPOLYMER SYSTEMS, POLYMER ADHESION, FRICTION, AND LUBRICATION GUIDES READERS TO THE SCRATCH, WEAR, AND LUBRICATION PROPERTIES OF POLYMERS AND THE ENGINEERING APPLICATIONS, FROM BIOMEDICAL RESEARCH TO AUTOMOTIVE ENGINEERING. AUTHOR HONGBO ZENG DETAILS DIFFERENT EXPERIMENTAL AND THEORETICAL METHODS USED TO PROBE STATIC AND DYNAMIC PROPERTIES OF POLYMER MATERIALS AND BIOMACROMOLECULAR SYSTEMS. TOPICS INCLUDE THE USE OF ATOMIC FORCE MICROSCOPY (AFM) TO ANALYZE NANOTRIBOLOGY, POLYMER THIN FILMS AND BRUSHES, NANOPARTICLES, RUBBER AND TIRE TECHNOLOGY, SYNOVIAL JOINT LUBRICATION, ADHESION IN PAPER PRODUCTS, BIOMEMS, AND ELECTORRHEOLOGICAL FLUIDS.

LIFE OF THOMAS YOUNG GEORGE PEACOCK 1855

**MODERN APPROACHES TO WETTABILITY** G.I. LOEB 2013-06-29 STRIKING A BALANCE BETWEEN APPLIED AND THEORETICAL RESEARCH, THIS WORK DETAILS MANY OF THE USES OF WETTABILITY AND INTERPRETS EXPERIMENTAL DATA FROM A VARIETY OF VIEWPOINTS, INCLUDING THE 'SEPARATION OF FORCES' AND THE 'EQUATION OF STATE APPROACHES.'

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 NANOFUIDICS. 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.

ADVANCES IN CONTACT ANGLE, WETTABILITY AND ADHESION K. L. MITTAL 2018-02-23 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: ○ PROCEDURE TO MEASURE AND ANALYSE CONTACT ANGLES/DROP SHAPE BEHAVIORS. ○ CONTACT ANGLE MEASUREMENT CONSIDERING SPREADING, EVAPORATION AND REACTIVE SUBSTRATE. ○ MEASUREMENT OF CONTACT ANGLE OF A LIQUID ON A SUBSTRATE OF THE SAME LIQUID. ○ EVOLUTION OF THE AXISYMMETRIC DROPLET SHAPE PARAMETERS. ○ INTERFACIAL MODULUS OF A SOLID SURFACE. ○ FUNCTIONALIZATION OF TEXTILES USING UV-BASED TECHNIQUES FOR SURFACE MODIFICATION—PATTERNED WETTING BEHAVIOR. ○ WETTABILITY BEHAVIOR OF OLEOPHILIC AND OLEOPHOBIC NANOROUGH SURFACES. ○ WETTABILITY BEHAVIOR OF NANOFUIDS. ○ DIELECTROWETTING FOR DIGITAL MICROFLUIDICS. ○ HYDROPHOBICITY AND SUPERHYDROPHOBICITY IN FOULING PREVENTION. ○ SUPERHYDROPHOBIC/SUPERHYDROPHILIC HYBRID SURFACE. ○ LASER MATERIAL PROCESSING FOR ENHANCING STEM CELL GROWTH. ○ WETTABILITY

CORRELATION FOR BIOADHESION TO DIFFERENT MATERIALS. ○ DETERMINATION OF THE SURFACE FREE ENERGY OF SOLID SURFACES: STATISTICAL CONSIDERATION. ○ DETERMINATION OF APPARENT SURFACE FREE ENERGY USING HYSTERESIS APPROACH.

*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.  
NON-WETTABLE SURFACES ROBIN RAS 2016-11-25  
NOTHING PROVIDED

**WETTABILITY AND INTERFACIAL PHENOMENA** RITA KHANNA  
2019-05-22 WETTABILITY AT THE SOLID/LIQUID  
INTERFACE, ITS DYNAMICS, TUNABILITY, THE INFLUENCE OF

OPERATING PARAMETERS, SURFACE AND INTERFACIAL  
PHENOMENA PLAY AN INCREASINGLY SIGNIFICANT ROLE IN A  
WIDE VARIETY OF APPLICATIONS, FOR EXAMPLE, MATERIAL  
PROCESSING, NANOTECHNOLOGY, OIL RECOVERY, OIL SPILLS,  
CHEMICAL LEACHING, WATER MANAGEMENT, AND DISEASE  
TRANSMISSION. ALTHOUGH A MATURE FIELD, IT IS  
EXPERIENCING DRAMATIC DEVELOPMENTS ON SEVERAL FRONTS  
WITH EMERGING APPLICATIONS IN NEW FIELDS. THIS BOOK  
PRESENTS A COLLECTION OF EIGHT CHAPTERS ON NANOSCALE  
WETTING PHENOMENA, OIL EXTRACTION FROM RESERVOIR  
ROCKS, THE ROLE OF COATINGS, PARTICLE MORPHOLOGY,  
SURFACE ROUGHNESS AND VISCOSITY IN METAL PROCESSING,  
~~AND PRACTICAL APPLICATIONS OF SUPERHYDROPHOBIC~~  
BEHAVIOUR IN CELL CULTURING, ISOLATION, ANTI-ICING, ANTI-  
REFLECTIVE AND ANTI-CORROSION COATINGS IN THE  
TRANSPORTATION AND OPTICAL DEVICES FIELDS.

PIERRE-GILLES DE  
GENNES 2013-03-20 THE STUDY OF CAPILLARITY IS IN THE  
MIDST OF A VERITABLE EXPLOSION. WHAT IS OFFERED HERE IS  
NOT A COMPREHENSIVE REVIEW OF THE LATEST RESEARCH BUT  
RATHER A COMPENDIUM OF PRINCIPLES DESIGNED FOR THE  
UNDERGRADUATE STUDENT AND FOR READERS INTERESTED IN  
THE PHYSICS UNDERLYING THESE PHENOMENA.