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Optical Coherence Tomography in Age-Related Macular Degeneration

One of the main challenges facing the chemical industry is the transition to sustainable operations. Industries are taking initiatives to reduce resource intensities or footprints, and by adopting safer materials and processes. Such efforts need to be supported by techniques that can quantify the broad economic and environmental implications of industrial operations, retrofit options and provide new design alternatives. This contemporary overview focuses on cradle-to-grave life cycle assessments of existing or conceptual processes for producing value-added fuels, chemicals, and/or materials from renewable agricultural residues, plant-derived starches and oils, lignocellulosic biomass, and plant-based industrial processing wastes. It presents the key concepts, systems, and technologies, with an emphasis on new feedstocks for the chemical industry. Each chapter uses common themes of specific raw materials, thus forming a natural progression throughout the book. The result is coverage from a wide range of perspectives, emphasizing not only the technical issues but also considering the market place and socio-economic aspects.

The Technological and Economic Future of Nuclear Power

Rapid or even dramatic progress has been made in the field of AMD over recent years, leading to a constant revision of basic concepts. A wide range of fundus imaging modalities are now available, and this book explains the respective value of each technique. The information provided by OCT is presented logically by comparison with plain films, autofluorescence, fluorescein angiography, or indocyanine green angiography. Meticulous biomicroscopic examination of macular

changes and the essential value of fluorescein angiography for the detection of anatomical alterations of the macula and for precise evaluation of lesions and their course by indocyanine green angiography have naturally led the author Gabriel Coscas to analyze the new data provided by OCT.

Genetic Algorithms in Search, Optimization, and Machine Learning

Fresh-cut Fruits and Vegetables: Science, Technology, and Market provides a comprehensive reference source for the emerging fresh-cut fruits and vegetables industry. It focuses on the unique biochemical, physiological, microbiological, and quality changes in fresh-cut processing and storage and on the distinct equipment design, packaging requirements, production economics, and marketing considerations for fresh-cut products. Based on the extensive research in this area during the past 10 years, this reference is the first to cover the complete spectrum of science, technology, and marketing issues related to this field, including production, processing, physiology, biochemistry, microbiology, safety, engineering, sensory, biotechnology, and economics. ABOUT THE EDITOR: Olusola Lamikanra, Ph.D., is a Research Chemist and Lead Scientist at the U.S. Department of Agriculture, Agricultural Research Service, Southern Regional Research Center, New Orleans, Louisiana. He received his B.S. degree from the University of Lagos, Nigeria, and his Ph.D. from the University of Leeds, England. He was Professor in the Division of Agricultural Sciences and Director of the Center for Viticultural Science and Small Farm Development at Florida A&M University, Tallahassee. Dr. Lamikanra is the author of more than 100 publications.

Keratoconus

Microbial degradation, Phytoremediation, Remediation, Explosive residues, Biotransformation, Mineralization, Degradative Enzymes, Degradation Pathways, Energetics, Soil contamination, Water contamination.

Bio-Inspired Computing and Applications

This book describes how generalised linear modelling procedures can be used in many different fields, without becoming entangled in problems of statistical inference. The author shows the unity of many of the commonly used models and provides readers with a taste of many different areas, such as survival models, time series, and spatial analysis, and of their unity. As such, this book will appeal to applied statisticians and to scientists having a basic grounding in modern statistics. With many exercises at the end of each chapter, it will equally constitute an excellent text for teaching applied statistics students and non- statistics majors. The reader is assumed to have knowledge of basic statistical principles, whether from a Bayesian, frequentist, or direct likelihood point of view, being familiar at least with the analysis of the simpler normal linear models, regression and ANOVA.

Biological Remediation of Explosive Residues

Developed and expanded from the work presented at the New Energetic Materials

and Propulsion Techniques for Space Exploration workshop in June 2014, this book contains new scientific results, up-to-date reviews, and inspiring perspectives in a number of areas related to the energetic aspects of chemical rocket propulsion. This collection covers the entire life of energetic materials from their conceptual formulation to practical manufacturing; it includes coverage of theoretical and experimental ballistics, performance properties, as well as laboratory-scale and full system-scale, handling, hazards, environment, ageing, and disposal. Chemical Rocket Propulsion is a unique work, where a selection of accomplished experts from the pioneering era of space propulsion and current technologists from the most advanced international laboratories discuss the future of chemical rocket propulsion for access to, and exploration of, space. It will be of interest to both postgraduate and final-year undergraduate students in aerospace engineering, and practicing aeronautical engineers and designers, especially those with an interest in propulsion, as well as researchers in energetic materials.

Encyclopedia of Information Science and Technology

Plasmonics is a rapidly developing field that combines fundamental research and applications ranging from areas such as physics to engineering, chemistry, biology, medicine, food sciences, and the environmental sciences. Plasmonics appeared in the 1950s with the discovery of surface plasmon polaritons. Plasmonics then went through a novel propulsion in the mid-1970s, when surface-enhanced Raman scattering was discovered. Nevertheless, it is in this last decade that a very significant explosion of plasmonics and its applications has occurred. Thus, this book provides a snapshot of the current advances in these various areas of plasmonics and its applications, such as engineering, sensing, surface-enhanced fluorescence, catalysis, and photovoltaic devices.

Plasmonics and its Applications

The three-volume set LNCS 6838, LNAI 6839, and LNBI 6840 constitutes the thoroughly refereed post-conference proceedings of the 7th International Conference on Intelligent Computing, ICIC 2011, held in Zhengzhou, China, in August 2011. This volume contains 93 revised full papers, from a total of 281 presentations at the conference - carefully reviewed and selected from 832 initial submissions. The papers address all issues in Advanced Intelligent Computing, especially Methodologies and Applications, including theories, methodologies, and applications in science and technology. They include a range of techniques such as artificial intelligence, pattern recognition, evolutionary computing, informatics theories and applications, computational neuroscience and bioscience, soft computing, human computer interface issues, etc.

The Evolution of the Immune System

A gentle introduction to genetic algorithms. Genetic algorithms revisited: mathematical foundations. Computer implementation of a genetic algorithm. Some applications of genetic algorithms. Advanced operators and techniques in genetic search. Introduction to genetics-based machine learning. Applications of genetics-based machine learning. A look back, a glance ahead. A review of combinatorics

and elementary probability. Pascal with random number generation for fortran, basic, and cobol programmers. A simple genetic algorithm (SGA) in pascal. A simple classifier system(SCS) in pascal. Partition coefficient transforms for problem-coding analysis.

Making Crystals by Design

This book is a printed edition of the Special Issue "Air Quality Monitoring and Forecasting" that was published in Atmosphere

Towards 5G

The term "first-principles calculations" is a synonym for the numerical determination of the electronic structure of atoms, molecules, clusters, or materials from 'first principles', i.e., without any approximations to the underlying quantum-mechanical equations. Although numerous approximate approaches have been developed for small molecular systems since the late 1920s, it was not until the advent of the density functional theory (DFT) in the 1960s that accurate "first-principles" calculations could be conducted for crystalline materials. The rapid development of this method over the past two decades allowed it to evolve from an explanatory to a truly predictive tool. Yet, challenges remain: complex chemical compositions, variable external conditions (such as pressure), defects, or properties that rely on collective excitations—all represent computational and/or methodological bottlenecks. This Special Issue comprises a collection of papers that use DFT to tackle some of these challenges and thus highlight what can (and cannot yet) be achieved using first-principles calculations of crystals.

Microbes and Microbial Technology

An excellent overview of the manifold aspects of modern crystal engineering. From design and preparation to spectroscopy and applications, this handbook both covers and evaluates all aspects of crystal engineering. Clearly structured, it provides an overview of the current status as seen from its various angles as well as a comparison of different techniques and applications. An essential source of high quality information for everyone working in this booming and interdisciplinary field: spectroscopists, physical and inorganic chemists as well as materials scientists working in nanotechnology and the pharmaceutical industry.

Learning to Understand Remote Sensing Images

Three years before the September 11 bombing of the World Trade Center—a Chinese military manual called Unrestricted Warfare touted such an attack—suggesting it would be difficult for the U.S. military to cope with. The events of September 11 were not a random act perpetrated by independent agents. The doctrine of total war outlined in Unrestricted Warfare clearly demonstrates that the People's Republic of China is preparing to confront the United States and our allies by conducting "asymmetrical" or multidimensional attack on almost every aspect of our social, economic and political life.

Computational Chemistry

This book is open access under a CC BY 4.0 license. This book provides a fresh, updated and science-based perspective on the current status and prospects of the diverse array of topics related to the potato, and was written by distinguished scientists with hands-on global experience in research aspects related to potato. The potato is the third most important global food crop in terms of consumption. Being the only vegetatively propagated species among the world's main five staple crops creates both issues and opportunities for the potato: on the one hand, this constrains the speed of its geographic expansion and its options for international commercialization and distribution when compared with commodity crops such as maize, wheat or rice. On the other, it provides an effective insulation against speculation and unforeseen spikes in commodity prices, since the potato does not represent a good traded on global markets. These two factors highlight the underappreciated and underrated role of the potato as a dependable nutrition security crop, one that can mitigate turmoil in world food supply and demand and political instability in some developing countries. Increasingly, the global role of the potato has expanded from a profitable crop in developing countries to a crop providing income and nutrition security in developing ones. This book will appeal to academics and students of crop sciences, but also policy makers and other stakeholders involved in the potato and its contribution to humankind's food security.

Renewable Raw Materials

As a degenerative disorder of the eye, keratoconus can cause substantial distortion of vision, with multiple images, streaking, and sensitivity to light all reported by patients. Keratoconus: Recent Advances in Diagnosis and Treatment updates ophthalmologists about the innovations that have occurred within the last decade, discussing the diagnostic imaging techniques that have been developed for keratoconus diagnosis, understanding of how examination techniques are related to the evolution of keratoconus, and how to indicate the different therapeutic tools that have been created for keratoconus over the last several years. Additionally, fundamentals for new diagnostic elements, based on the mathematical, physical and biomechanical data are analyzed in depth for a better understanding of the essential diagnostic steps for the clinician to guide patients towards the most adequate therapeutic tool in the case. Modern keratoplasty techniques, assisted by femtosecond lasers or other devices, are also covered and these techniques, along with the emerging conservative treatments, have added to more precise control of the evolution of the disease.

First-Principles Prediction of Structures and Properties in Crystals

In recent years, great attention has been paid to polyphenols due to their positive effects on health. One of the most widely-studied phenolic compounds is resveratrol. This molecule, which is naturally present in some foods, shows beneficial effects on various physiological and biochemical processes, thus representing a potential tool for the prevention or the treatment of diseases highly

prevalent in our society. Several of these beneficial effects have been observed in human beings, but others only in pre-clinical studies so far, and therefore, it is mandatory to continue with the scientific research in this field. Indeed, new knowledge concerning these issues could enable the development of novel functional foods or nutraceuticals, incorporating resveratrol, suitable for preventing or treating diseases such as cancer, cardiovascular diseases, obesity, dislipemia, insulin resistance and diabetes, liver diseases, etc.

Introduction to Thin Film Transistors

The Happiness Track

The Evolution of the Immune System: Conservation and Diversification is the first book of its kind that prompts a new perspective when describing and considering the evolution of the immune system. Its unique approach summarizes, updates, and provides new insights on the different immune receptors, soluble factors, and immune cell effectors. Helps the reader gain a modern idea of the evolution of the immune systems in pluricellular organisms Provides a complete overview of the most studied and hot topics in comparative and evolutionary immunology Reflects the organisation of the immune system (cell-based, humoral [innate], humoral [adaptive]) without introducing further and misleading levels of organization Brings concepts and ideas on the evolution of the immune system to a wide readership

Vaccines

Forensic Chemistry is a comprehensive overview of the subject aimed at those students who have a basic understanding of the underlying principles and are looking for a more detailed reference text. This book is aimed at advanced students who are studying forensic science or analytical chemistry, faculty and researchers, and practitioners such as crime laboratory bench scientists. The authors will assume that the reader will have an introductory knowledge of forensic science and forensic chemistry and will have had analytical, organic and instrumental chemistry. None of the major analytical chemical techniques will have separate treatments in the book, with the exception of forensic microscopy, which will have a chapter because many students in chemistry and forensic science do not get dedicated classes in this area. The book will have separate chapters on all of the major areas of forensic chemistry and, in addition, will have a chapter devoted to chemometrics, which is the statistical treatment of large amounts of data to discover groupings, similarities and differences among the data. Each chapter will be written by an acknowledged international expert in that area. Each author will be given detailed instructions as to the intended audience, as well as expected breadth and depth of coverage of the material in the hopes that this will minimize the problem of uneven coverage of topics and chapters that often occurs in edited books. Although each of the types of evidence covered in the book use methods of analysis that lie outside chemistry, these will be mentioned only for completeness in passing. The emphasis will be on the use of chemical tools in evidence analysis. This book is designed to be either a text book for an advanced forensic chemistry course, or a treatise in forensic chemistry for the scientist who

wants to learn the subject in some depth. It is not designed to be a survey of the current literature in the field or a reference manual.

The Potato Crop

In 1978, Fred Hoyle proposed that interstellar comets carrying several viruses landed on Earth as part of the panspermia hypotheses. With respect to life, the origin of homochirality on Earth has been the greatest mystery because life cannot exist without molecular asymmetry. Many scientists have proposed several possible hypotheses to answer this long-standing L-D question. Previously, Martin Gardner raised the question about mirror symmetry and broken mirror symmetry in terms of the homochirality question in his monographs (1964 and 1990). Possible scenarios for the L-D issue can be categorized into (i) Earth and exoterrestrial origins, (ii) by-chance and necessity mechanisms, and (iii) mirror-symmetrical and non-mirror-symmetrical forces as physical and chemical origins. These scenarios should involve further great amplification mechanisms, enabling a pure L- or D-world.

High Energy Density Materials

With the recent advances in remote sensing technologies for Earth observation, many different remote sensors are collecting data with distinctive properties. The obtained data are so large and complex that analyzing them manually becomes impractical or even impossible. Therefore, understanding remote sensing images effectively, in connection with physics, has been the primary concern of the remote sensing research community in recent years. For this purpose, machine learning is thought to be a promising technique because it can make the system learn to improve itself. With this distinctive characteristic, the algorithms will be more adaptive, automatic, and intelligent. This book introduces some of the most challenging issues of machine learning in the field of remote sensing, and the latest advanced technologies developed for different applications. It integrates with multi-source/multi-temporal/multi-scale data, and mainly focuses on learning to understand remote sensing images. Particularly, it presents many more effective techniques based on the popular concepts of deep learning and big data to reach new heights of data understanding. Through reporting recent advances in the machine learning approaches towards analyzing and understanding remote sensing images, this book can help readers become more familiar with knowledge frontier and foster an increased interest in this field.

Forensic Chemistry

This publication contains a number of papers which consider the public health role of vaccines in improving the health of the world's populations, and looks at the challenges of using immunisation to combat emerging and re-emerging diseases. Issues discussed include the innovative use of vaccines against diseases such as meningococcal infection in Africa, Haemophilus influenza type b, varicella, and hepatitis, efforts to develop a new generation of vaccines against cholera and typhoid, shigella and Helicobacter pylori, as well as developments in the quest for vaccines against tuberculosis, HIV/AIDS, dengue, malaria, and hookworm. It also

deals with the use of vaccines to fight bioterrorism attacks; regulatory and safety issues; financing issues, impact of health sector reform and the sustainability of immunisation programmes.

High Performance Computing Systems and Applications

This open access book discusses the eroding economics of nuclear power for electricity generation as well as technical, legal, and political acceptance issues. The use of nuclear power for electricity generation is still a heavily disputed issue. Aside from technical risks, safety issues, and the unsolved problem of nuclear waste disposal, the economic performance is currently a major barrier. In recent years, the costs have skyrocketed especially in the European countries and North America. At the same time, the costs of alternatives such as photovoltaics and wind power have significantly decreased. Contents History and Current Status of the World Nuclear Industry The Dramatic Decrease of the Economics of Nuclear Power Nuclear Policy in the EU The Legacy of Csernoby and Fukushima Nuclear Waste and Decommissioning of Nuclear Power Plants Alternatives: Heading Towards Sustainable Electricity Systems Target Groups Researchers and students in the fields of political, economic and technical sciences Energy (policy) experts, nuclear energy experts and practitioners, economists, engineers, consultants, civil society organizations The Editors Prof. Dr. Reinhard Haas is University Professor of energy economics at the Institute of Energy Systems and Electric Drives at Technische Universität Wien, Austria. PD Dr. Lutz Mez is Associate Professor at the Department for Political and Social Sciences of Freie Universität Berlin, Germany. PD Dr. Amela Ajanovic is a senior researcher and lecturer at the Institute of Energy Systems and Electrical Drives at Technische Universität Wien, Austria.--

Equine Viruses

This book constitutes the refereed proceedings of the Second International Conference on Data Mining and Big Data, DMBD 2017, held in Fukuoka, Japan, in July/August 2017. The 53 papers presented in this volume were carefully reviewed and selected from 96 submissions. They were organized in topical sections named: association analysis; clustering; prediction; classification; schedule and sequence analysis; big data; data analysis; data mining; text mining; deep learning; high performance computing; knowledge base and its framework; and fuzzy control.

On Their Own Terms

Since the middle of the nineteenth century, imperial reformers, early Republicans, Guomindang party cadres, and Chinese Communists have all prioritized science and technology. In this book, Elman gives a nuanced account of the ways in which native Chinese science evolved over four centuries, under the influence of both Jesuit and Protestant missionaries. In the end, he argues, the Chinese produced modern science on their own terms.

Benefits of Resveratrol Supplementation

This book is a printed edition of the Special Issue "Sustainable Agriculture–Beyond

Organic Farming" that was published in Sustainability

Chemical Rocket Propulsion

"This set of books represents a detailed compendium of authoritative, research-based entries that define the contemporary state of knowledge on technology"--Provided by publisher.

Fresh-Cut Fruits and Vegetables

This book focuses on successful application of microbial biotechnology in areas such as medicine, agriculture, environment and human health.

Intelligent Data Engineering and Automated Learning - IDEAL 2000. Data Mining, Financial Engineering, and Intelligent Agents

"Advances in Environmental Geotechnics" presents the latest developments in this interdisciplinary field. The topics covered include basic and advanced theories for modeling of geoenvironmental phenomena, testing and monitoring for geoenvironmental engineering, municipal solid wastes and landfill engineering, sludge and dredged soils, geotechnical reuse of industrial wastes, contaminated land and remediation technology, applications of geosynthetics in geoenvironmental engineering, geoenvironmental risk assessment, management and sustainability, ecological techniques and case histories. This proceedings includes papers authored by core members of ISSMGE TC5 (International Society of Soil Mechanics and Geotechnical Engineering---Environmental Geotechnics) and geoenvironmental researchers from more than 20 countries and regions. It is a valuable reference for geoenvironmental and geotechnical engineers as well as civil engineers. Yunmin Chen, Xiaowu Tang, and Liangtong Zhan are Professors at the Department of Civil Engineering of Zhejiang University, China.

Data Mining and Big Data

Introduction to Thin Film Transistors reviews the operation, application and technology of the main classes of thin film transistor (TFT) of current interest for large area electronics. The TFT materials covered include hydrogenated amorphous silicon (a-Si:H), poly-crystalline silicon (poly-Si), transparent amorphous oxide semiconductors (AOS), and organic semiconductors. The large scale manufacturing of a-Si:H TFTs forms the basis of the active matrix flat panel display industry. Poly-Si TFTs facilitate the integration of electronic circuits into portable active matrix liquid crystal displays, and are increasingly used in active matrix organic light emitting diode (AMOLED) displays for smart phones. The recently developed AOS TFTs are seen as an alternative option to poly-Si and a-Si:H for AMOLED TV and large AMLCD TV applications, respectively. The organic TFTs are regarded as a cost effective route into flexible electronics. As well as treating the highly divergent preparation and properties of these materials, the physics of the devices fabricated from them is also covered, with emphasis on performance features such as carrier mobility limitations, leakage currents and instability

mechanisms. The thin film transistors implemented with these materials are the conventional, insulated gate field effect transistors, and a further chapter describes a new thin film transistor structure: the source gated transistor, SGT. The driving force behind much of the development of TFTs has been their application to AMLCDs, and there is a chapter dealing with the operation of these displays, as well as of AMOLED and electrophoretic displays. A discussion of TFT and pixel layout issues is also included. For students and new-comers to the field, introductory chapters deal with basic semiconductor surface physics, and with classical MOSFET operation. These topics are handled analytically, so that the underlying device physics is clearly revealed. These treatments are then used as a reference point, from which the impact of additional band-gap states on TFT behaviour can be readily appreciated. This reference book, covering all the major TFT technologies, will be of interest to a wide range of scientists and engineers in the large area electronics industry. It will also be a broad introduction for research students and other scientists entering the field, as well as providing an accessible and comprehensive overview for undergraduate and postgraduate teaching programmes.

Alloy Steels

Applying Generalized Linear Models

Everyone wants happiness and success, yet the pursuit of both has never been more elusive. As work and personal demands rise, we try to keep up by juggling everything better, moving faster, and doing more. While we might succeed in the short term, this approach comes at a high cost in the long term: it hurts our well-being, our relationships, and—paradoxically—our productivity. In this life-changing book, Emma Seppälä explains that the reason we are burning ourselves out is that we fall for outdated theories of success. We are taught that getting ahead means doing everything that's thrown at us with razor-sharp focus and iron discipline, that success depends on our drive and talents, and that achievement cannot happen without stress. The Happiness Track demolishes these counterproductive theories. Drawing on the latest scientific research on happiness, resilience, willpower, compassion, positive stress, creativity, and mindfulness, Seppälä demonstrates that being happy is the most productive thing we can do to thrive—whether at work or at home. She shares practical strategies for applying these scientific findings to our daily lives. A fulfilling, successful, and anxiety-free life is within your reach. The Happiness Track will show you the way. Happiness Is the Fast Track to Success “Are you a hard-driving, multitasking, conscientiously striving professional? Then your ideas about success are probably all wrong—and you need The Happiness Track, Dr. Emma Seppälä’s investigation into the counter-intuitive factors that create career and life success. The best news of all? All these skills are well within your grasp.”—Daniel H. Pink, author of Drive and A Whole New Mind “Emma Seppälä convinces us that reconfiguring our brain for happiness can change the way our lives unfold and the way we approach success. A worthwhile read for anyone who wants to achieve a successful and fulfilling life.”—Amy Cuddy, professor at Harvard Business School and author of Presence “Backed by extensive research in psychology and neuroscience, The Happiness Track offers a wealth of insight on changing how we approach our work, our personal lives, and our

relationships. It's a carefully researched, engaging look at how to improve ourselves without losing our authenticity or our sanity."—Adam Grant, Wharton professor and New York Times bestselling author of Give and Take and Originals
"Through her research-backed strategies, Emma Seppälä teaches us not only how to thrive in our chosen profession, but how to stay true to ourselves—and enjoy every moment of the process."—Susan Cain, cofounder of Quiet Revolution and New York Times bestselling author of Quiet
"For decades we've been tied to theories of success that have burned us out and driven us into the ground—because we don't know of any alternatives. The Happiness Track provides us with a highly readable, science-backed solution to obtaining sustainable success, the sort of success we are all really striving for, that leaves us fulfilled, happy, and healthy."—Scott Barry Kaufman, Ph.D., scientific director at the Imagination Institute at the University of Pennsylvania

Digital Signal Processing

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Nano-Energetic Materials

Explores and brings together the existent body of knowledge on building performance analysis Building performance is an important yet surprisingly complex concept. This book presents a comprehensive and systematic overview of the subject. It provides a working definition of building performance, and an in-depth discussion of the role building performance plays throughout the building life cycle. The book also explores the perspectives of various stakeholders, the functions of buildings, performance requirements, performance quantification (both predicted and measured), criteria for success, and the challenges of using performance analysis in practice. Building Performance Analysis starts by introducing the subject of building performance: its key terms, definitions, history, and challenges. It then develops a theoretical foundation for the subject, explores the complexity of performance assessment, and the way that performance analysis impacts on actual buildings. In doing so, it attempts to answer the following questions: What is building performance? How can building performance be measured and analyzed? How does the analysis of building performance guide the

improvement of buildings? And what can the building domain learn from the way performance is handled in other disciplines? Assembles the current body of knowledge on building performance analysis in one unique resource Offers deep insights into the complexity of using building performance analysis throughout the entire building life cycle, including design, operation and management Contributes an emergent theory of building performance and its analysis Building Performance Analysis will appeal to the building science community, both from industry and academia. It specifically targets advanced students in architectural engineering, building services design, building performance simulation and similar fields who hold an interest in ensuring that buildings meet the needs of their stakeholders.

Unrestricted Warfare

This book brings together a group of visionaries and technical experts from academia to industry to discuss the applications and technologies that will comprise the next set of cellular advancements (5G). In particular, the authors explore usages for future 5G communications, key metrics for these usages with their target requirements, and network architectures and enabling technologies to meet 5G requirements. The objective is to provide a comprehensive guide on the emerging trends in mobile applications, and the challenges of supporting such applications with 4G technologies.

Possible Scenarios for Homochirality on Earth

This book presents an overview of recent progress in computational techniques as well as examples of the application of existing computational methods in different areas of chemistry, physics, and biochemistry. Introductory chapters cover a broad range of fundamental topics, including: state-of-the-art basis set expansion methods for computing atomic and molecular electronic structures based on the use of relativistic quantum mechanics; the most recent developments in Hartree-Fock methods, particularly in techniques suited for very large systems; the current analysis of the solute-solvent free energy of interaction and the physical bases used to evaluate the electrostatic, cavitation, and dispersion terms; an introduction to the additive fuzzy electron density fragmentation scheme within various ab initio Hartree-Fock quantum-chemical computational schemes, which has provided the means for generating representative molecular fragment densities characteristic to their local environment within a molecule. This book also features a review of recent ab initio calculations on the structure and interactions of DNA bases, a chapter on computational approaches to the design of safer drugs and their molecular properties, and a systematic conceptual study on a route which allows one to stuff fullerenes.

Building Performance Analysis

The Food and Agriculture Organization of the United Nations has recently estimated that the world equid population exceeds 110 million. Working equids (horses, ponies, donkeys, and mules) remain essential to ensure the livelihood of poor communities around the world. In many developed countries, the equine industry has significant economical weight, with around 7 million horses in Europe

alone. The close relationship between humans and equids and the fact that the athlete horse is the terrestrial mammal that travels the most worldwide after humans are important elements to consider in the transmission of pathogens and diseases, amongst equids and to other species. The potential effect of climate change on vector ecology and vector-borne diseases is also of concern for both human and animal health. In this Special Issue, we intend to explore our understanding of a panel of equine viruses, looking at their pathogenicity, their importance in terms of welfare and potential association with diseases, their economic importance and impact on performance, and how their identification can be helped by new technologies and methods.

Sustainable Agriculture-Beyond Organic Farming

This book constitutes the thoroughly refereed post-conference proceedings of the 23rd International Symposium on High Performance Computing Systems and Applications, HPCS 2009, held in Kingston, Canada, in June 2009. The 29 revised full papers presented - fully revised to incorporate reviewers' comments and discussions at the symposium - were carefully selected for inclusion in the book. The papers are organized in topical sections on turbulence, materials and life sciences, bringing HPC to industry, computing science, mathematics, and statistics, as well as HPC systems and methods.

Air Quality Monitoring and Forecasting

This book presents the latest research on the area of nano-energetic materials, their synthesis, fabrication, patterning, application and integration with various MEMS systems and platforms. Keeping in mind the applications for this field in aerospace and defense sectors, the articles in this volume contain contributions by leading researchers in the field, who discuss the current challenges and future perspectives. This volume will be of use to researchers working on various applications of high-energy research.

Advances in Environmental Geotechnics

This book is a printed edition of the Special Issue "Alloy Steels" that was published in Metals

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