



[eBooks] Magnetobiology: Underlying Physical Problems

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Magnetobiology-Vladimir N. Binih 2002-04-08 Why do some people feel unwell during a lightning storm? Why is there a correlation between the level of electromagnetic background and the incidence of cancer? Why do so many medical centers use electromagnetic exposures to treat a wide variety of disorders in humans? The international scientific community is extremely interested in a theory of magnetobiology and the answers to these and other questions, as evidenced by the growing number of research associations in the United States, Europe, and other parts of the world. The World Health Organization (WHO) has named electromagnetic contamination in occupational and residential areas as a stress factor for human beings. This book stands out among recent texts on magnetobiology because it draws on a strong foundation of empirical and theoretical evidence to explain the various effects of magnetic fields on the human body.-

The Physical Basis of Biochemistry-Peter R. Bergethon 2010-09-10 Biological chemistry has changed since the completion of the human genome project. There is a renewed interest and market for individuals trained in biophysical chemistry and molecular biophysics. The Physical Basis of Biochemistry, Second Edition, emphasizes the interdisciplinary nature of biophysical chemistry by incorporating the quantitative perspective of the physical sciences without sacrificing the complexity and diversity of the biological systems, applies physical and chemical principles to the understanding of the biology of cells and explores the explosive developments in the area of genomics, and in turn, proteomics, bioinformatics, and computational and visualization technologies that have occurred in the past seven years. The book features problem sets and examples, clear illustrations, and extensive appendixes that provide additional information on related topics in mathematics, physics and chemistry.

Biological Effects of Static Magnetic Fields-Xin Zhang 2017-04-20 The book summarizes the emerging topic about the effects of SMF on biological samples ranging from single molecules, subcellular compartments, and cells to whole organisms, as well as the potential application of SMF in clinical treatment of cancer and other diseases. With the development and growing popularity of modern appliances, including MRI in the hospitals, the potential impact of magnetic fields on human health is invoking increasing concerns. At the same time, SMF has been used in the clinical treatment of tumors and other diseases for decades. However, there are still some reservations and uncertainties about these treatments, which are largely due to the differential biological effects reported in the literature. These experimental inconsistencies are mainly caused by variations such as different magnetic field types, intensities, treatment time as well as biological samples examined. This volume will help clarify some dilemmas in this field and encourage further investigations in order to achieve a better understanding of the biological effects of SMF, aiming for a rational application of SMF in clinical therapy in the near future. The book is useful for scientists doctors, and students who are interested in magnetic fields and life sciences.

Bioelectromagnetism-Jaakko Malmivuo 1995 This text applies engineering science and technology to biological cells and tissues that are electrically conducting and excitable. It describes the theory and a wide range of applications in both electric and magnetic fields.

Electromagnetic Fields in Biology and Medicine-Marko S. Markov 2015-03-02 Through a biophysical approach, Electromagnetic Fields in Biology and Medicine provides state-of-the-art knowledge on both the biological and therapeutic effects of Electromagnetic Fields (EMFs). The reader is guided through explanations of general problems related to the benefits and hazards of EMFs, step-by-step engineering processes, and basic results obtained from laboratory and clinical trials. Basic biological mechanisms reviewed by several authors lead to an understanding of the effects of EMFs on microcirculation as well as on immune and anti-inflammatory responses. Based upon investigational mechanisms for achieving potential health benefits, various EMF medical applications used around the world are presented. These include the frequent use of EMFs in wound healing and cartilage/bone repair as well as use of EMFs in pain control and inhibition of cancer growth. Final chapters cover the potential of using the novel biophysical methods of electroporation and nanoelectroporation in electrochemotherapy, gene therapy, and nonthermal ablation. Also covered is the treatment of tendon injuries in animals and humans. This book is an invaluable tool for scientists, clinicians, and medical and engineering students.

Effects of EMFs from Undersea Power Cables on Elasmobranchs and Other Marine Species: Final Report-T. Tricas 2012-12-01

Mobile Communications and Public Health-Marko Markov 2018-06-13 This book represents a comprehensive overview of the distribution of the various forms of mobile communications devices, with increasing variations and intensities that constitute a serious hazard to both the biosphere and mankind. Contributors stress the lack of controls over mobile communication signal sources, as well as the absence of monitoring the health of individuals exposed to microwave radiation. The work also entails a review of the engineering behind mobile communication technology, including a summary of basic scientific evidence of the effects of biological exposure to microwaves, and unique coverage on potential hazards of mobile communication for children. Marko S. Markov has been professor and chairman of the Department of Biophysics and Radiobiology of Sofi University for 22 years. With over 45 years of basic science research experience, and over 40 years in the clinical application of electromagnetic fields, he is recognized as one of the world’s best experts in the subject. His list of publications includes 196 papers and 18 books. Presents an overview of what modern science knows about mobile communications signals Details the latest research on potential hazards related to uncontrolled use of mobile devices Provides information related to children’s organisms not developed biologically prior to exposure to microwave signals Offers methods of control of the house and work environment Explores the link between science and electromagnetics hazards.

Ultra-Low Field Nuclear Magnetic Resonance-Robert Kraus Jr. 2014-02-26 This book is designed to introduce the reader to the field of NMR/MRI at very low magnetic fields, from milli-Tesla to micro-Tesla, the ultra-low field (ULF) regime. The book is focused on applications to imaging the human brain, and hardware methods primarily based upon pre-polarization methods and SQUID-based detection. The goal of the text is to provide insight and tools for the reader to better understand what applications are best served by ULF NMR/MRI approaches. A discussion of the hardware challenges, such as shielding, operation of SQUID sensors in a dynamic field environment, and pulsed magnetic field generation are presented. One goal of the text is to provide the reader a framework of understanding the approaches to estimation and mitigation of low signal-to-noise and long imaging time, which are the main challenges. Special attention is paid to the combination of MEG and ULF MRI, and the benefits and challenges presented by trying to accomplish both with the same hardware. The book discusses the origin of unique relaxation contrast at ULF, and special considerations for image artifacts and how to correct them (i.e. concomitant gradients, ghost artifacts). A general discussion of MRI, with special consideration to the challenges of imaging at ULF and unique opportunities in pulse sequences, is presented. The book also presents an overview of some of the primary applications of ULF NMR/MRI being pursued.

Biophysics-William Bialek 2012-12-17 Interactions between the fields of physics and biology reach back over a century, and some of the most significant developments in biology—from the discovery of DNA’s structure to imaging of the human brain—have involved collaboration across this disciplinary boundary. For a new generation of physicists, the phenomena of life pose exciting challenges to physics itself, and biophysics has emerged as an important subfield of this discipline. Here, William Bialek provides the first graduate-level introduction to biophysics aimed at physics students. Bialek begins by exploring how photon counting in vision offers important lessons about the opportunities for quantitative, physics-style experiments on diverse biological phenomena. He draws from these lessons three general physical principles—the importance of noise, the need to understand the extraordinary performance of living systems without appealing to finely tuned parameters, and the critical role of the representation and flow of information in the business of life. Bialek then applies these principles to a broad range of phenomena, including the control of gene expression, perception and memory, protein folding, the mechanics of the inner ear, the dynamics of biochemical reactions, and pattern formation in developing embryos. Featuring numerous problems and exercises throughout, Biophysics emphasizes the unifying power of abstract physical principles to motivate new and novel experiments on biological systems. Covers a range of biological phenomena from the physicist’s perspective Features 200 problems Draws on statistical mechanics, quantum mechanics, and related mathematical concepts Includes an annotated bibliography and detailed appendixes Instructor’s manual (available only to teachers)

The Geomagnetic Field and Life-A. Dubrov 2013-11-11 I am very pleased that my book The Geomagnetic Field and Life is being published in English in the United States. Thanks to the initiative of Plenum Press, a publishing house that is widely known in all countries, I have a great new opportunity to make direct contact with friends throughout the world. My book on the geomagnetic field can be regarded as an abstraction, whose purpose is to provide a better picture and understanding of the world around us, its main driving forces, and factors, to help us to know ourselves, and to proceed further. The essence of the abstraction is that in treating the problem I have deliberately ignored the diverse effects of various external factors on living organisms and have confined myself to an analysis of the effect of the GMF. This approach allows me to go one step further-to draw various conclusions and propose theories that might bring us closer to a proper understanding of the true nature of the phenomena. Philosophers have long been aware that by such abstract thinking we can determine the nature of phenomena more reliably, completely, and comprehensively, penetrate to the very core of the observed effects, and perceive the depth of their interrelations.

Integrative Biophysics-Fritz-Albert Popp 2013-03-09 Most of the specialists working in this interdisciplinary field of physics, biology, biophysics and medicine are associated with "The International Institute of Biophysics" (IIB), in Neuss, Germany, where basic research and possibilities for applications are coordinated. The growth in this field is indicated by the increase in financial support, interest from the scientific community and frequency of publications. Audience: The scientists of IIB have presented the most essential background and applications of biophotonics in these lecture notes in biophysics, based on the summer school lectures by this group. This book is devoted to questions of elementary biophysics, as well as current developments and applications. It will be of interest to graduate and postgraduate students, life scientists, and the responsible officials of industries and governments looking for non-invasive methods of investigating biological tissues.

Bioengineering and Biophysical Aspects of Electromagnetic Fields-Frank S. Barnes 2007 Bioengineering and Biophysical Aspects of Electromagnetic Fields primarily contains discussions on the physics, engineering, and chemical aspects of electromagnetic (EM) fields at both the molecular level and larger scales, and investigates their interactions with biological systems. The first volume of the bestselling and newly updated Handbook of Biological Effects of Electromagnetic Fields, Third Edition, this book adds material describing recent theoretical developments, as well as new data on material properties and interactions with weak and strong static magnetic fields. Newly separated and expanded chapters describe the external and internal electromagnetic environments of organisms and recent developments in the use of RF fields for imaging. Bioengineering and Biophysical Aspects of Electromagnetic Fields provides an accessible overview of the current understanding on the scientific underpinnings of these interactions, as well as a partial introduction to experiments on the interactions themselves.

My Double Unveiled-Giuseppe Vitiello 2001 This introduction to the dissipative quantum model of brain and to its possible implications for consciousness studies is addressed to a broad interdisciplinary audience. Memory and consciousness are approached from the physicist point of view focusing on the basic observation that the brain is an open system continuously interacting with its environment. The unavoidable dissipative character of the brain functioning turns out to be the root of the brain’s large memory capacity and of other memory features such as memory association, memory confusion, duration of memory. The openness of the brain implies a formal picture of the world which is modeled on the same brain image: a sort of brain copy or [Double], where world objectiveness and the brain implicit subjectivity are conjugated. Consciousness is seen to arise from the permanent [dialogue] of the brain with its Double. The author’s narration of his (re-)search gives a cross-over of the physics of elementary particles and condensed matter, and the brain’s basic dynamics. This dynamic interplay makes for a [satisfying feeling of the unity of knowledge]. (Series A)

Electricity and Magnetism in Biology and Medicine-Ferdinando Bersani 2012-12-06 This book, a selection of the papers presented at the 2nd World Congress for Electricity and Magnetism, provides state-of-the-art information on applications of electricity and electromagnetic fields on living organisms, especially man.

Physical and Chemical Bases of Biological Information Transfer-Julia Vassileva-Popova 2012-12-06 Mathematical Approach and Models of Regulatory Mechanisms.- A New Mathematical Approach of Hormonal Regulatory Mechanisms during Growth.- The Allosteric Model of Monod, Wyman and Changeux and the Phenomenon of Rising B/F-Curves in Hormone-Antibody Reactions.- Oxytocin Effect of the Depolarized Rat Uterus: A Mathematical Approach Using System Identification.- Method for Measuring the Development of Control Systems in Time.- Analytical Investigation of the Oscillatory Phenomenon in Hormone Regulation.- Substrate Concentration and Its Effect on the Application of the Law of Mass Action-A Brownian.

Inside the Photon-Tony Fleming 2014-03-20 Over the past decade biophotonics has appeared as a new department within the academic structure across the globe. With experimental work going back for more than a century, application of the scientific method has shown the importance of biophotonics within biological and medical practice. At the same time, a new mathematical description of physics and biophysics has emerged. Self-Field Theory (SFT) describes the role of photon as a binding agent between an electron and a proton within atomic structures. SFT is being rapidly accepted by the physics community as a distinct physical theory. This is now an alternative view, in addition to classical electromagnetics and the quantum theories, that forms the basis of a chemical bond. Atomic chemistry underpins biochemistry, the pharmaceutical approach to medical therapy, and has been a staple of biological and medical knowledge over the 20th century. The biophoton within SFT provides another layer of structural organization that sits underneath atomic chemistry. This book is the first to describe SFTs role within biophotonics and as such provides a theory of biophotonics capable of describing a

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wide range of experimental biophotonic phenomena. Inside the Photon: A Journey towards Health describes the newly discovered layer of biophotonics underlying all atomic chemistry and biochemistry. As with the variety of snowflakes, the range in biological species within flora for instance is dependent on this biophotonic layer of interaction within atomic and biomolecular structures. A new range of energies that can be balanced only within the biophotonic states are responsible for these innumerable varieties of biological species. The photon, the quantum of acoustic, or vibrational, energy is also described and given status alongside the photon. Hence the 'biophonor' sits aside the biophoton as an element within biological structures. Sounds can create structure in the same way biophotons can use structure to communicate. Therapies such as homeopathy, acupuncture, traditional Chinese medicines are given fresh impetus including putative understanding of mechanism. Mitosis is understood via the cell cycle and how electric, acoustic, and magnetic fields can induce changes at the biophotonic level. The possibility arises of medical therapy without invasive surgery and without the side effects of drug-based therapies.

Priming and Pretreatment of Seeds and Seedlings-Mirza Hasanuzzaman 2019-10-15 This book introduces readers to both seed treatment and seedling pretreatments, taking into account various factors such as plant age, growing conditions and climate. Reflecting recent advances in seed priming and pretreatment techniques, it demonstrates how these approaches can be used to improve stress tolerance and enhance crop productivity. Covering the basic phenomena involved, mechanisms and recent innovations, the book offers a comprehensive guide for students, researchers and scientists alike, particularly Plant Physiologists, Agronomists, Environmental Scientists, Biotechnologists, and Botanists, who will find essential information on physiology and stress tolerance. The book also provides a valuable source of information for professionals at seed companies, seed technologists, food scientists, policymakers, and agricultural development officers around the world.

Static Fields-IPCS 2006 This book examines the health effects of exposure to static electric and magnetic fields found in selected industries, such as medical facilities with magnetic resonance imaging (MRI), high-energy physics research facilities and some transportation systems. To date, research on their health effects lags far behind the rapid advances in technology. Electric and magnetic fields are generated by natural phenomena such as the Earth’s magnetic field, thunderstorms, and by man-made sources that use electricity. When such fields do not vary with time they are referred to as static. For static electric fields, studies carried out to date suggest that the main effect is discomfort from electric discharges to the body. For static magnetic fields, acute effects are only likely to occur when there is movement of a person in the field. For example, a person moving within a relatively high field can experience sensations of vertigo and nausea, and sometimes a metallic taste in the mouth and perceptions of light flashes. Although only temporary, such effects may have a safety impact for workers executing delicate procedures, e.g. surgeons performing operations within MRI units. Even when at rest, a person will experience internal body movement, such as blood flow or heart beat. When placed within a high magnetic field, electrical fields and currents are generated around the heart and major blood vessels that can impede the flow of blood. Possible effects range from minor changes in heartbeat to an increase in the risk of abnormal heart rhythms that might be life threatening.

The Scientific Basis of Integrative Health-Leonard Wisneski 2017-05-25 Since the first suffering supplicant offered a prayer to his god or the first mother cradled an ailing child in her caring arms, we have witnessed how human health and healing go beyond any inventory of parts and infusion of chemicals. We humans are a complex melding of thought, emotion, spirit and energy and each of those components is as critical to our well-being as our physiological status. Even if we are just beginning to quantify and document these seemingly intangible aspect, to ignore them in the practice of medicine is neglect and an invitation to do harm. The Scientific Basis of Integrative Health has been extensively updated and expanded to provide a comprehensive guide to integrative medicine. Taking a balanced and objective approach, this leading text bridges the gap between Western science and Eastern philosophy. It provides doctors and other health practitioners with information on complementary and alternative approaches to health, that is authoritative, evidence based, and epidemiologically substantiated. Written for doctors and healthcare professionals by pioneering practitioners and updated with the newest research across and increasing range of possibilities, this third edition includes nine new chapters covering topics such as: Electrophotonic imaging; Neuroacupuncture; Naturopathic medicine; Integrative nutrition.

RF / Microwave Interaction with Biological Tissues-André Vander Vorst 2006-02-06 From engineering fundamentals to cutting-edge clinicalapplications This book examines the biological effects of RF/microwaves andtheir medical applications. Readers will discover new developmentsin therapeutic applications in such areas as cardiology, urology,surgery, ophthalmology, and oncology. The authors also presentdeveloping applications in such areas as cancer detection and organimaging. Focusing on frequency ranges from 100 kHz to 10 GHz, RF/MicrowaveInteraction with Biological Tissues is divided into sixchapters. * Fundamentals in Electromagnetics–examines penetration ofRF/microwaves into biological tissues; skin effect; relaxationeffects in materials and the Cole-Cole model (display); the nearfield of an antenna; blackbody radiation and the various associatedlaws; and microwave measurements. * RF/Microwave Interaction Mechanisms in BiologicalMaterials–includes a section devoted to the fundamentals ofthermodynamics and a discussion on energy and entropy. * Biological Effects–investigates the effects of radio frequencyfields on the nervous system, the brain and spinal cord, theblood-brain barrier, and cells and membranes. * Thermal Therapy–includes a description of applicators and anextensive discussion on the foundation of dielectric heating andinductive heating. * EM-Wave Absorbers Protecting the Biological and MedicalEnvironment–investigates materials for EM-wave absorbers from botha theoretical and applications perspective. Special attention isgiven to ferrite absorbers. * RF/Microwave Delivery Systems for TherapeuticApplications–begins with the fundamental features of majorcomponents used in RF/microwave delivery systems for thetherapeuticapplications. New research towards the development of futuremeasurement techniques is also presented. The book features problem sets at the end of each chapter, makingit an excellent introduction for bioengineering and engineeringstudents. Researchers, physicians, and technicians in the fieldwill also find this an excellent reference that offers all thefundamentals, the most cutting-edge applications, and insight intofuture developments. An Instructor’s Manual presenting detailed solutions to all theproblems in the book is available from the Wiley editorialdepartment.

The Mathematical Mechanic-Mark Levi 2012-07-22 In this delightful book, Levi turns math and physics upside down, revealing how physics can simplify proofs and lead to quicker solutions and new theorems, and how physical solutions can illustrate why results are true in ways lengthy mathematical calculations never can.

Biological Effects of Magnetic Fields-Madeleine F. Barnothy 2013-12-19 I. Theoretical Considerations. - 1. Introduction. - 2. Simple Theoretical Models for Magnetic Interactions with Biological Units. - 3. Basic Concepts Related to Magnetic Fields and Magnetic Susceptibility. - 4. The Vector Character of Field and Gradient and Its Possible Implications for Biomagnetic Experiments and Space Travel. - 5. Rotational Diffusion in a Magnetic Field and Its Possible Magnetobiological Implications. - 6. Distortion of the Bond Angle in a Magnetic Field and Its Possible Magnetobiological Implications. - 7. A Possible Effect of the Magnetic Field Upon the Genetic Code. - II. Effect.

Biophotonics and Coherent Systems in Biology-L.V. Belousov 2007-01-03 This book is an account of the original papers presented by the participants of the 3rd Alexander Gurwitsch Conference on the Biophotonics and Coherent Systems in Biology, Biophysics and Biotechnology which took place in Tauric University (Crimea, Ukraine) September 27 – October 1, 2004. It features an introduction by Dr. Fritz-Albert Popp (International Institute for Biophysics), leading pioneer of biophotons.

Neural Engineering-Bin He 2013-01-09 Neural Engineering, 2nd Edition, contains reviews and discussions of contemporary and relevant topics by leading investigators in the field. It is intended to serve as a textbook at the graduate and advanced undergraduate level in a bioengineering curriculum. This principles and applications approach to neural engineering is essential reading for all academics, biomedical engineers, neuroscientists, neurophysiologists, and industry professionals wishing to take advantage of the latest and greatest in this emerging field.

Human Heart, Cosmic Heart-Thomas Cowan 2016-10-22 Thomas Cowan was a 20-year-old Duke grad—bright, skeptical, and already disillusioned with industrial capitalism—when he joined the Peace Corps in the mid-1970s for a two-year tour in Swaziland. There, he encountered the work of Rudolf Steiner and Weston A. Price—two men whose ideas would fascinate and challenge him for decades to come. Both drawn to the art of healing and repelled by the way medicine was—and continues to be—practiced in the United States, Cowan returned from Swaziland, went to medical school, and established a practice in New Hampshire and, later, San Francisco. For years, as he raised his three children, suffered the setback of divorce, and struggled with a heart condition, he remained intrigued by the work of Price and Steiner and, in particular, with Steiner’s provocative claim that the heart is not a pump. Determined to practice medicine in a way that promoted healing rather than compounded ailments, Cowan dedicated himself to understanding whether Steiner’s claim could possibly be true. And if Steiner was correct, what, then, is the heart? What is its true role in the human body? In this deeply personal, rigorous, and riveting account, Dr. Cowan offers up a daring claim: Not only was Steiner correct that the heart is not a pump, but our understanding of heart disease—with its origins in the blood vessels—is completely wrong. And this gross misunderstanding, with its attendant medications and risky surgeries, is the reason heart disease remains the most common cause of death worldwide. In Human Heart, Cosmic Heart, Dr. Thomas Cowan presents a new way of understanding the body’s most central organ. He offers a new look at what it means to be human and how we can best care for ourselves—and one another.

Emf*d-Joseph Mercola 2020 5G is about to be rolled-out across many countries - but what are the risks to your health? Dr Mercola, author of the most visited health website, explains what electromagnetic fields are, where you find them in your daily life, how they affect you and the proven toll that they have on conditions such as cancer, heart disease and neuropsychiatric illnesses. Dr Mercola offers actionable strategies to protect yourself at home, at work and out in the world, and to repair the damage done at a cellular level.

Hybrid Nanostructures for Cancer Theranostics-Raghvendra Ashok Bohara 2018-11-19 Hybrid nanostructures are nanoparticles which incorporate two or more structures. These structures may represent organic or inorganic material, but they synergistically improve the application of the material for end users. Hybrid Nanostructures for Cancer Theranostics explores how hybrid nanostructures are used in cancer treatment. Focusing on the properties of hybrid nanostructures, the book demonstrates how their unique characteristics can be used to create more effective treatment techniques. In the second half of the book, the chapters examine how hybrid nanostructures are currently being used in practice, assessing the pros and cons of using different types of nanostructures for different treatments. This valuable resource will allow readers to understand the core and emerging concept of functionalization, bioconjugation, hyperthermia and phototherapy of nanoparticles which allows for the greater use of hybrid nanomaterials in cancer theranostics. Shows how the use of novel hybrid nanostructures can lead to more effective cancer treatments. Explores how hybrid nanostructures are used for different treatment types, including photo thermal therapy and drug delivery. Explains how the use of hybrid nanostructures can lead to more rapid cancer diagnosis.

Physical Chemistry-Harold H. Trimm 2011-04-15 Physical chemistry covers diverse topics, from biochemistry to materials properties to the development of quantum computers. Physical chemistry applies physics and math to problems that interest chemists, biologists, and engineers. Physical chemists use theoretical constructs and mathematical computations to understand chemical properties and describe the behavior of molecular and condensed matter. Their work involves manipulations of data as well as materials. Physical chemistry entails extensive work with sophisticated instrumentation and equipment as well as state-of-the-art computers. This new volume presents a selection of articles on topics in the field.

Magneto-Biology and Medicine-Anatoly Buchachenko 2014-01-01 Life is controlled by chemistry. Chemistry is not the whole life but the life is totally chemistry. Chemistry is a key to biology. Nothing in biology can be understood without chemistry and chemical reactions. There are many factors controlling biochemical reactions, however the most intriguing is the magnetic field. The ability to respond to magnetic fields is ubiquitous and universal among the five kingdoms of organisms. Magneto-biology is a field of knowledge which considers phenomena accompanying the influence of magnetic fields, permanent and alternating, on the biological systems at all levels: molecular, cellular, and whole organism. There is no doubt that magnetic fields do the human health and feeling of well-being; the latter is a key factor stimulating both social and scientific interest in magneto-biology. This book considers numerous biological and biomedical effects of the two magnetic fields: internal fields created by magnetic nuclei, and external magnetic fields, both permanent and oscillating. It critically summarizes magnetic effects on the biological clocks, biological compass for orientation and navigation of migrating animals, the influence of cells phones on the health. It demonstrates magnetic and isotope effects on the food chains and metabolism, ecology and epidemiology. It explains the origin of trans-cranial magnetic stimulation of cognitive processes to prevent neurodegenerative disorders; it enlightens magnetic stimulation of the ATP synthesis and protein phosphorylation, magnetic control of the DNA synthesis and gene expression. It shows how magnetic fields can be used to eliminate ATP deficiency at cardiac diseases and how to use magnetic stable isotope ions as the medical agents against hypoxia and cardiac insufficiency, as a means for controlling cell proliferation and stimulating destruction and apoptosis of the cancer cells. The uniqueness of this book is that it is focused on the chemical biology and medicine, on the discovery and analysis of chemical magneto-dependent mechanisms. This book gives a collection of scattered information, its critical analysis, generalization and explanation of physics and chemistry of magneto-biological effects as a basis for the deliberate usage in medicine (for the trans-cranial magnetic stimulation of cognitive processes and genetics, in particular).

Electromagnetics in Biology-Makoto Kato 2007-01-15 This book will serve as an ideal guide to the relatively new and complex field of bioelectromagnetics for students and researchers interested in the interaction of biological systems and electromagnetic fields. Coverage details:(1) biological responses of human and animals, both in vivo and in vitro methodologies, to magnetic and/or electromagnetic field exposure, (2) characteristics of effective fields, (3) hypotheses to explain possible mechanisms of interaction between the fields and cells, and (4) induced current in ELF and induced heat in RF fields as key interaction mechanisms.

1000 Solved Problems in Classical Physics-Ahmad A. Kamil 2011-03-18 This book basically caters to the needs of undergraduates and graduates physics students in the area of classical physics, specially Classical Mechanics and Electricity and Electromagnetism. Lecturers/ Tutors may use it as a resource book. The contents of the book are based on the syllabi currently used in the undergraduate courses in USA, U.K., and other countries. The book is divided into 15 chapters, each

chapter beginning with a brief but adequate summary and necessary formulas and Line diagrams followed by a variety of typical problems useful for assignments and exams. Detailed solutions are provided at the end of each chapter.

Electrochemistry-Christine Lefrou 2012-05-24 This textbook offers original and new approaches to the teaching of electrochemical concepts, principles and applications. Throughout the text the authors provide a balanced coverage of the thermodynamic and kinetic processes at the heart of electrochemical systems. The first half of the book outlines fundamental concepts appropriate to undergraduate students and the second half gives an in-depth account of electrochemical systems suitable for experienced scientists and course lecturers. Concepts are clearly explained and mathematical treatments are kept to a minimum or reported in appendices. This book features: - Questions and answers for self-assessment - Basic and advanced level numerical descriptions - Illustrated electrochemistry applications This book is accessible to both novice and experienced electrochemists and supports a deep understanding of the fundamental principles and laws of electrochemistry.

Physics, Uspekhi- 2005

The Water Wizard-Alick Bartholomew 1998 The kombucha tea fungus is a health drink that costs very little. The fungus reproduces itself and, therefore, is capable of being passed on. It enables people to use an alternative to conventional medicine for the treatment of health problems.

Experiments in Modern Physics-Adrian Constantin Melissinos 1966 The present text is an outgrowth of such a laboratory course given by the author at the University of Rochester between 1959 and 1963. It consisted of a one-year course with two 3-hour meetings in the laboratory and two 1-hour lecture meetings weekly; the students had access to the laboratory at all times and, in general, worked during hours of their own choice well in excess of the scheduled periods. The students worked in pairs, which in most cases provides a highly motivating and successful relationship.The material included in this course was selected from those experiments in atomic and nuclear physics that have laid the foundation and provided the evidence for modern quantum theory. The experiments were set up in such a fashion that they could be completed in a two- to four-week period of normal work taking into account the other demands on the studentâ€™s time.

Cosmic Rays in the Earth's Atmosphere and Underground-Lev Dorman 2013-03-19 The present monograph as well as the next one (Dorman, M2005) is a result of more than 50 years working in cosmic ray (CR) research. After graduation in December 1950 Moscow Lomonosov State University (Nuclear and Elementary Particle Physics Division, the Team of Theoretical Physics), my supervisor Professor D. I. Blokhintsev planned for me, as a winner of a Red Diploma, to continue my education as an aspirant (a graduate student) to prepare for Ph. D. in his very secret Object in the framework of what was in those time called the Atomic Problem. To my regret the KGB withheld permission, and I, together with other Jewish students who had graduated Nuclear Divisions of Moscow and Leningrad Universities and Institutes, were faced with a real prospect of being without any work. It was our good fortune that at that time there was being brought into being the new Cosmic Ray Project (what at that time was also very secret, but not as secret as the Atomic Problem), and after some time we were directed to work on this Project. It was organized and headed by Prof. S. N. Vernov (President of All-Union Section of Cosmic Rays) and Prof. N. V. Pushkov (Director of IZMIRAN); Prof. E. L. Feinberg headed the theoretical part of the Project.

Magnetic Multilayers-L H Bennett 1994-12-16 This book focuses on an increasingly important area of materials science and technology, namely, the fabrication and properties of artificial materials where slabs of magnetized materials are sandwiched between slabs of nonmagnetized materials. It includes reviews by experts on the theory and descriptions of the various experimental techniques such as those using nuclear or electron spin probes, as well as optical, X-ray or neutron probes. It also reviews potential applications such as the giant magnetoresistance, and one specialized preparation technique, the electrodeposition. The various chapters are tutorial in nature, making the subject accessible to nonspecialists, as well as useful to researchers in the field. Contents: Application of Magnetic Multilayers (M Pardavi-Horvath)Magnetic Coupling in Metallic Multilayers (Y Yafet)First-Principles Calculations of Magnetic Interfaces and Multilayers (M Weinert ' S Blügel)Influence of Imperfections on the Magnetic Properties of Fe/Ag Films and Multilayers (J Pirnay et al.)NMR Studies on Magnetic Multilayers (H A M de Gronckel ' W J M de Jonge)Conversion Electron Mössbauer

Spectroscopy of Magnetic Multilayers (Ch Sauer ' W Zinn)Resonance in Coupled Ferromagnetic Layer Structures (P E Wigen)Magnetic Circular X-Ray Dichroism (F Baudelet et al.)Magneto-Optical Spectra in Multilayers (K Sato)Neutron and X-Ray Diffraction Studies of Magnetic Multilayers (C F Majkrzak et al.)Giant Magnetoresistance (GMR) in Multilayers (M Pardavi-Horvath)Electrodeposited Magnetic Multilayers (M P Dariel et al.) Readership: Graduate students, professional researchers and well-educated others (eg. contract officers). keywords:Magnetic Multilayers;Circular Dichroism;Giant Magnetoresistance;Magnetic Interfaces;Magnetic Multilayers: Effect of Imperfections;Conversion Electron Mossbauer Spectroscopy;Multilayer Magnetic Coupling;Magneto-Optical Spectroscopy;Neutron Diffraction;Magnetic Xray Diffraction;Magnetic Multilayer Fabrication;Supermirrors;Magnetic Recording;RKKY Coupling;Nuclear Magnetic Resonance;Ferromagnetic Resonance

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Handbook of Seed Physiology-Roberto Benech-Arnold 2004-09-21 The latest findings in seed physiology—discussed as they relate to agricultural problems! Presenting the latest findings in the area of seed physiology as well as the practical applications of that knowledge in the field, the Handbook of Seed Physiology: Applications to Agriculture provides a comprehensive view of seed biology and its role in crop performance. Key topics include seed germination, crop emergence, crop establishment, dormancy, preharvest sprouting, plant hormones, abscisic and gibberellic acids, weeds, grain quality, oil crops, and malting quality. Abundant case studies provide information of value to researchers, students, and professionals in the fields of seed science, field crop research, crop science, agronomy, and seed technology. The Handbook of Seed Physiology discusses vital topics which serve as the basis for the development of techniques and processes to improve seed performance and crop yield. In this text, you will explore: the effect of the soil physical environment on seed germination the roles of physiology, genetics, and environment in the inception, maintenance, and termination of dormancy the relationship between the termination of dormancy and the synthesis and signaling of gibberellins and abscisic acid mechanisms of orthodox seed deterioration and approaches for repair of seed damage characteristics, behavior, and mechanisms of desiccation tolerance in recalcitrant seeds the role of seed moisture in free radical assaults on seeds and the protective function of raffinose oligosaccharides the production of free radicals and their effect on lipids and lipid peroxidation components of grain quality in oil crops and factors influencing them structural components and genotypic and environmental factors affecting barley malting quality In addition to the latest scientific information in the area of seed physiology, this text provides insights into practical applications of that knowledge through the description of: screening protocols for germination tolerance to temperature and water stress methods for improving seed performance in the field techniques for controlling preharvest sprouting of cereals breeding and production strategies for improving grain quality population-based threshold models in the prediction of germination and emergence patterns modeling changes in dormancy to predict weed emergence Extensive reference sections accompanying each chapter include both foundation texts and current research. Principles and concepts discussed in the text are elaborated upon through equations, figures, and tables covering such topics as water and soil thermal regimes; seed water potential; temperature and water effects on germination; free radical attack; and molecular structures. Exploring concepts, techniques, and processes related to seed germination and crop establishment, this comprehensive, one-of-a-kind reference is an indispensable tool for seed scientists and agricultural professionals. Add it to your library today and put seed physiology research to work in establishing high-quality "next crops"!

Intermediate Physics for Medicine and Biology-Russell K. Hobbie 1988 This text is specifically designed to provide students of medicine and biology with a treatment of physics related to their fields of study. Assuming a basic understanding of physics, it develops ideas from first principles, using calculus and statistics when necessary but avoiding complex mathematics. Coverage includes translational and rotational equilibrium, with a description of the forces in the hip joint as a clinical example; exponential growth and decay, giving examples from pharmacology and physiology; nuclear physics and medical applications; X-ray production and their biological effects; diffusion and transport of solute in an infinite medium, and much more. Most chapters have been revised, and new material has been added on charged membranes, biomagnetism, image reconstruction, and magnetic resonance imaging. The text also contains computer programs on numerical integrations, Fourier series, and image reconstruction.