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Specific Ion Effects John Wiley & Sons

Real insight from leading experts in the field into the causes of the unique photovoltaic performance of perovskite solar cells, describing the fundamentals of perovskite materials and device architectures. The authors cover materials research and development, device fabrication and engineering methodologies, as well as current knowledge extending beyond perovskite photovoltaics, such as the novel spin physics and multiferroic properties of this family of materials. Aimed at a better and clearer understanding of the latest developments in the hybrid perovskite field, this is a must-have for material scientists, chemists, physicists and engineers entering or already working in this booming field.

Dipole Moments in Organic Chemistry John Wiley & Sons

The book is a multi-author survey (in 15 chapters) of the current state of knowledge and recent developments in our understanding of oxide surfaces. The author list includes most of the acknowledged world experts in this field. The material covered includes fundamental theory and experimental studies of the geometrical, vibrational and electronic structure of such surfaces, but with a special emphasis on the chemical properties and associated reactivity. The main focus is on metal oxides but coverage extends from 'simple' rocksalt materials such as MgO through to complex transition metal oxides with different valencies.

Nonaqueous Electrochemistry Spin Publishing

The simulation of physical systems requires a simplified, hierarchical approach which models each level from the atomistic to the macroscopic scale. From quantum mechanics to fluid dynamics, this book systematically treats the broad scope of computer modeling and simulations, describing the fundamental theory behind each level of approximation. Berendsen evaluates each stage in relation to its applications giving the reader insight into the possibilities and limitations of the models. Practical guidance for applications and sample

programs in Python are provided. With a strong emphasis on molecular models in chemistry and biochemistry, this 2007 book will be suitable for advanced undergraduate and graduate courses on molecular modeling and simulation within physics, biophysics, physical chemistry and materials science. It will also be a useful reference to all those working in the field. Additional resources for this title including solutions for instructors and programs are available online at www.cambridge.org/9780521835275.

Experimental Techniques in Nuclear and Particle Physics Springer Science & Business Media

The authors of this book are pioneers of the passive, integrative sampling approach and developers of globally applied semipermeable membrane devices (SPMDs). The book will boost understanding of how passive samplers such as SPMD function by examining basic exchange processes that mediate the concentration of SVOCs in a sampling matrix. The book delineates fundamental theory and modeling techniques, while providing a practical guide for its proper application.

Organic Chemistry John Wiley & Sons

Specific ion effects are important in numerous fields of science and technology. They have been discussed for over 100 years, ever since the pioneering work done by Franz Hofmeister and his group in Prague. Over the last decades, hundreds of examples have been published and periodically explanations have been proposed. However, it is only recently that a profound understanding of the basic effects and their reasons could be achieved. Today, we are not far from a general explanation of specific ion effects. This book summarizes the main new ideas that have come up in the last ten years. In this book, the efforts of theoreticians are substantially supported by the experimental results stemming from new and exciting techniques. Both the new theoretical concepts and the experimental landmarks are collected and critically discussed by eminent scientists and well-known specialists in this field. Beyond the rigorous explanations, guidelines are given to non-specialists in order to help them understand the general rules governing specific ion effects in chemistry, biology, physics and engineering.

Adsorption Phenomena World Scientific

This book reflects the current status of theoretical and experimental research of graphene based nanostructures, in particular quantum dots, at a level accessible to young researchers, graduate students, experimentalists and theorists. It presents the current state of research of graphene quantum dots, a single or few monolayer thick islands of graphene. It introduces the reader to the electronic and optical properties of graphite, intercalated graphite and graphene, including Dirac fermions, Berry's phase associated with sublattices and valley degeneracy, covers single particle properties of graphene quantum dots, electron-electron interaction, magnetic properties and optical properties of gated graphene nanostructures. The electronic, optical and magnetic properties of the graphene quantum dots as a function of size, shape, type of edge and carrier density are considered. Special attention is paid to the understanding of edges and the emergence of edge states for zigzag edges. Atomistic tight binding and effective mass approaches to single particle calculations are performed. Furthermore, the theoretical and numerical treatment of electron-electron interactions at the mean-field, HF, DFT and configuration-interaction level is described in detail.

Free Energy Methods in Drug Discovery Springer Nature

A comprehensive volume on interfacial catalysis, this book includes contributions from an international group of specialists in chemistry, environmental science, informatics, physiology, nuclear energy, and physics. The editor has organized the material into the main topics of fundamental characteristics, phase transfer catalysis, reversed micelles, biological aspects, and interfacial photocatalysis. Individual topics include self-organized microheterogeneous structures, nanochemistry, interfacial catalysis in metal complexation, the role of water molecules in ion transfer at the oil/water interface, and ultrathin films in enhanced oil recovery.

Investigation of the Dipole Moment and Relaxation Time of Organic Molecules Springer Science & Business Media

Presents both the fundamental concepts and the most recent applications in solid-phase organic synthesis. With its emphasis on basic concepts, *Solid-Phase Organic Synthesis* guides readers through all the steps needed to design and perform successful solid-phase organic syntheses. The authors focus on the fundamentals of heterogeneous supports in the synthesis of organic molecules, explaining the use of a solid material to facilitate organic synthesis. This comprehensive text not only presents the fundamentals, but also reviews the most recent research findings and applications, offering readers everything needed to conduct their own state-of-the-art science experiments. Featuring chapters written by leading researchers in the field, *Solid-Phase Organic Synthesis* is divided into two parts: Part One, Concepts and Strategies, discusses the linker groups used to attach the synthesis substrate to the solid support, colorimetric tests to identify the presence of functional groups, combinatorial synthesis, and diversity-oriented synthesis. Readers will discover how solid-phase synthesis is currently used to facilitate the discovery of new molecular functionality. The final chapter discusses how using a support can change or increase reaction selectivity. Part Two, Applications, presents examples of the solid-phase synthesis of various classes of organic molecules. Chapters explore general asymmetric synthesis on a support, strategies for heterocyclic synthesis, and synthesis of radioactive organic molecules, dyes, dendrimers, and oligosaccharides. Each chapter ends with a set of conclusions that underscore the key concepts and methods. References in each chapter enable readers to investigate any topic in greater depth. With its presentation of basic concepts as well as recent findings and applications, *Solid-Phase Organic Synthesis* is the ideal starting point for students and researchers in organic, medicinal, and combinatorial chemistry who want to take full advantage of current solid-phase synthesis techniques.

Dipole Moments in Organic Chemistry Springer Science & Business Media

A wealth of information in one accessible book. Written by international experts from multidisciplinary fields, this in-depth exploration of oxide ultrathin films covers all aspects of these systems, starting with preparation and characterization, and going on to geometrical and electronic structure, as well as applications in current and future systems and devices. From the Contents: Synthesis and Preparation of Oxide Ultrathin Films Characterization Tools of Oxide Ultrathin Films Ordered Oxide Nanostructures on Metal Surfaces Unusual Properties of Oxides and Other Insulators in the Ultrathin Limit Silica and High-K Dielectrics Thin Films in Microelectronics Oxide Passive Films and Corrosion Protection Oxide Films as Catalytic Materials and as Models of Real Catalysts Oxide Films in Spintronics Oxide Ultrathin Films in Solid Oxide Fuel Cells Transparent Conducting and Chromogenic Oxide Films as Solar Energy Materials Oxide Ultrathin Films in Sensor Applications Ferroelectricity in Ultrathin Film Capacitors Titania Thin Films in Biocompatible Materials and Medical Implants Oxide Nanowires for New Chemical Sensor Devices

Merrill Chemistry McGraw-Hill Europe

Chemistry: A Guided Approach 6th Edition follows the underlying principles developed by years of research on how readers learn and draws on testing by those using the POGIL methodology. This text follows inquiry based learning and correspondingly emphasizes the underlying concepts and the reasoning behind the concepts. This text offers an approach that follows modern cognitive learning principles by having readers learn how to create knowledge based on experimental data and how to test that knowledge.

Crown Ethers and Cryptands CRC Press

An examination of applications of electrochemical techniques to many organic and inorganic compounds that are either unstable or insoluble in water. It focuses on the continuing drive toward miniaturization in electronics met by designs for high-energy density batteries (based on nonaqueous systems). It addresses applications to nonaqueous batteries, supercapacitors, highly sensitive reagents, and electroorganic and electroinorganic synthesis.

Nanoclusters and Nanocrystals Oxford University Press, USA

Nonstoichiometric Oxides discusses the thermodynamic and structural studies of nonstoichiometric oxides. This eight-chapter text also covers the defect-defect interactions in these compounds. The introductory chapters describe the thermodynamic properties of nonstoichiometric oxides in terms of defect complexes using the classical thermodynamic principles and from a statistical thermodynamics point of view. These chapters also include statistical thermodynamic models that indicate the ordered nonstoichiometric phase range in these oxides. The subsequent chapters examine the transport properties, such as diffusion and electrical conductivity. Diffusion theories and experimental diffusion coefficients for several systems, as well as the electrical properties of the highly defective ionic and mixed oxide conductor, are specifically tackled in these chapters. The concluding chapters present the pertinent results obtained in nonstoichiometric oxide structural studies using high-resolution electron microscopy and X-ray and neutron diffraction. Inorganic chemists and inorganic chemistry teachers and students will greatly appreciate this book.

Chemistry CRC Press

This book describes the rapidly expanding field of two-dimensional (2D) transition metal carbides and nitrides (MXenes). It covers fundamental knowledge on synthesis, structure, and properties of these new materials, and a description of their processing, scale-up and emerging applications. The ways in which the quickly expanding family of MXenes can outperform other novel nanomaterials in a variety of applications, spanning from energy storage and conversion to electronics; from water science to transportation; and in defense and medical applications, are discussed in detail.

Chemistry of Electronic Ceramic Materials Hodder Education

Thorough and up-to-date, this book presents recent developments in this exciting research field. To begin with, the text covers the fabrication of chiral nanomaterials via various synthesis methods, including electron beam lithography, ion beam etching, chemical synthesis and biological DNA directed assembly. This is followed by the relevant theory and reaction mechanisms, with a discussion of the characterization of chiral nanomaterials according to the optical properties of metal nanoparticles, semiconductor nanocrystals, and nanoclusters. The whole is rounded off by a summary of applications in the field of catalysis, sensors, and biomedicine. With its comprehensive yet concise coverage of the whole spectrum of research, this is invaluable reading for senior researchers and entrants to the field of nanoscience and materials science.

Green Toxicology CRC Press

Emphasises on contemporary applications and an intuitive problem-solving approach that helps students discover the exciting potential of chemical science. This book incorporates fresh applications from the three major areas of modern research: materials, environmental chemistry, and biological science.

Dipole Moments Cambridge University Press

This revision of the introductory textbook of physical chemistry has been designed to broaden its appeal, particularly to students with an interest in biological applications.

Dipole Moments in Organic Chemistry Springer

Chemistry 2e is designed to meet the scope and sequence requirements of the two-semester general chemistry course. The textbook provides an important opportunity for students to learn the core concepts of chemistry and understand how those concepts apply to their lives and the world around them. The book also includes a number of innovative features, including interactive exercises and real-world applications, designed to enhance student learning. The second edition has been revised to incorporate clearer, more current, and more dynamic explanations, while maintaining the same organization as the first edition. Substantial improvements have been made in the figures, illustrations, and example exercises that support the text narrative. Changes made in Chemistry 2e are described in the preface to help instructors transition to the second edition.

Non-covalent Interactions in the Synthesis and Design of New Compounds Elsevier

Physical Sciences Data, Volume 16: Gaussian Basis Sets for Molecular Calculations provides information pertinent to the Gaussian basis sets, with emphasis on lithium, radon, and important ions. This book discusses the polarization functions prepared for lithium through radon for further improvement of the basis sets. Organized into three chapters, this volume begins with an overview of the basis set for the most stable negative and positive ions. This text then explores the total atomic energies given by the basis sets. Other chapters consider the distinction between diffuse functions and polarization function. This book presents as well the exponents of polarization function. The final chapter deals with the Gaussian basis sets. This book is a valuable resource for chemists, scientists, and research workers.

Elements of Physical Chemistry John Wiley & Sons

I have been teaching courses on experimental techniques in nuclear and particle physics to master students in physics and in engineering for many years. This book grew out of the lecture notes I made for these students. The physics and engineering students have rather different expectations of what such a course should be like. I hope that I have nevertheless managed to write a book that can satisfy the needs of these different target audiences. The lectures themselves, of course, need to be adapted to the needs of each group of students. An engineering student will not question a statement like “ the velocity of the electrons in atoms is 1% of the velocity of light ” , a physics student will. Regarding units, I have written factors h and c explicitly in all equations throughout the book. For physics students it would be preferable to use the convention that is common in physics and omit these constants in the equations, but that would probably be confusing for the engineering students. Physics students tend to be more interested in theoretical physics courses. However, physics is an experimental science and physics students should understand how experiments work, and be able to make experiments work. This is an open access book.

Graphene Quantum Dots Royal Society of Chemistry

This book introduces the broad and basic principles of crown ether and cryptand chemistry at the advanced undergraduate, graduate and working professional level.