

A Text Book Physical Chemistry

A Textbook of Physical Chemistry: Second Edition provides both a traditional and theoretical approach in the study of physical chemistry. The book covers subjects usually covered in chemistry textbooks such as ideal and non-ideal gases, the kinetic molecular theory of gases and the distribution laws, and the additive physical properties of matter. Also covered are the three laws of thermodynamics, thermochemistry, chemical equilibrium, liquids and their simple phase equilibria, the solutions of nonelectrolytes, and heterogenous equilibrium. The text is recommended for college-level chemistry students, especially those who are in need of a textbook for the subject.

Learning the basics of physical chemistry with a unique, innovative approach. Georg Job and Regina Rueffler introduce readers to an almost intuitive understanding of the two fundamental concepts, chemical potential and entropy. Avoiding complex mathematics, these concepts are illustrated with the help of numerous demonstration experiments. Using these concepts, the subjects of chemical equilibria, kinetics and electrochemistry are presented at an undergraduate level. The basic quantities and equations necessary for the qualitative and quantitative description of chemical transformations are introduced by using everyday experiences and particularly more than one hundred illustrative experiments, many presented online as videos. These are in turn supplemented by nearly 400 figures, and by learning objectives for each chapter. From a review of the German edition: "This book is the most revolutionary textbook on physical chemistry that has been published in the last few decades."

Volume five covers dynamics of Chemical Reactions, Statistical Thermodynamics and Macromolecules in five chapters such as Adsorption, Chemical Kinetics, Photo-chemistry, Statistical Thermodynamics and Macromolecules. Originally published in 1950, this textbook was intended for school students with the aim of providing an introductory understanding of chemistry. The book introduces physical chemistry through multiple and diverse experiments; each experiment designed to reinforce a new topic and reflect theorems, approaches and historical development. Notably, the treatment throughout is from the point of view of the kinetic-molecular theory rather than that of the laws of thermodynamics, whilst emphasis is also placed upon physico-chemical phenomena and their significance in various branches of science, such as metallurgy, chemical syntheses and mineralogy. There are twelve chapters in total, with chapter titles ranging from 'Atoms and molecules' to 'Mass action and the ionic dissociation theory'. Various diagrams and plate sections are also included for reference. This book will be of value to chemistry students and scholars as well as those interested in the history of education.

Thermodynamics, Statistical Mechanics & Kinetics

The Structure of Physical Chemistry

Basic Physical Chemistry

Essentials of Physical Chemistry

Atkins' Physical Chemistry 11e

This book is designed for a one-semester course, for undergraduates, not necessarily chemistry majors, who need to know something about physical chemistry. The emphasis is not on mathematical rigor, but subtleties and conceptual difficulties are not hidden. It covers the essential topics in physical chemistry, including the state of matter, thermodynamics, chemical kinetics, phase and chemical equilibria, introduction to quantum theory, and molecular spectroscopy. Supplementary materials are available upon request for all instructors who adopt this book as a course text. Please send your request to sales@wspc.com.

Emphasizes a molecular approach to physical chemistry, discussing principles of quantum mechanics first and then using those ideas in development of thermodynamics and kinetics. Chapters on quantum subjects are interspersed with ten math chapters reviewing mathematical topics used in subsequent chapters. Includes material on current physical chemical research, with chapters on computational quantum chemistry, group theory, NMR spectroscopy, and lasers. Units and symbols used in the text follow IUPAC recommendations. Includes exercises. Annotation copyrighted by Book News, Inc., Portland, OR

This elegant book provides a student-friendly introduction to the subject of physical chemistry. It is concise and more compact than standard textbooks on the subject and it emphasises the two important concepts underpinning physical chemistry: quantum mechanics and the second law of thermodynamics. The principles are challenging to students because they both focus on uncertainty and probability. The book explains these fundamental concepts clearly and shows how they offer the key to understanding the wide range of chemical phenomena including atomic and molecular spectra, the structure and properties of solids, liquids and gases, chemical equilibrium, and the rates of chemical reactions.

In the phase transitions among the solid, liquid, and gaseous forms of water, we see a profound demonstration of how properties at the molecular scale dictate the behavior of the bulk material. As ice is heated beyond its melting point, new avenues for molecular motion become open to the energy being added. Upon entering the gas phase, the water molecules can explore new territory, unavailable to the liquid or solid. These transformations can be seen as a shifting balance between the forces that bind the molecules and the thermal energy that excites these motions--a window through thermodynamics on the intricate mechanisms that drive chemistry.

Modern Physical Chemistry

Physical Chemistry: A Molecular Approach

The Route to Understanding

A Textbook of Physical Chemistry – Volume 1

A Very Short Introduction

This book is fourth of the five volume series, which provides an extensive coverage of the topics discussed, focusing on the applications of the principles involved. Each of the five volumes distinguishes itself by projecting the subject through a numb

This textbook covers the fundamentals of physical chemistry, explaining the concepts in an accessible way and guiding the readers in a step-by-step manner. The contents are broadly divided into two sections: the classical physico-chemical topics (thermodynamics, kinetics, electrochemistry, transport, and catalysis), and the fabric of matter and its interactions with radiation. Particular care has been taken in the presentation of the algebraic parts of physico-chemical concepts, so that the readers can easily follow the explanations and re-work relevant discussion and derivations with pen and paper. The book is accompanied by a rich mathematical appendix. Each chapter includes a selection of (numerical) exercises and problems, so that students can practice and apply the learned topics. An appendix with solutions allows for controlling the learning success. Carefully prepared illustrative color images make this book a great support for teaching physical chemistry to undergraduate students. This textbook mainly addresses undergraduate students in life sciences, biochemistry or engineering, offering them a comprehensive and comprehensible introduction for their studies of physical chemistry. It will also appeal to undergraduate chemistry students as an accessible introduction for their physical chemistry studies.

With its easy-to-read approach and focus on core topics, PHYSICAL CHEMISTRY, 2e provides a concise, yet thorough examination of calculus-based physical chemistry. The Second Edition, designed as a learning tool for students who want to learn physical chemistry in a functional and relevant way, follows a traditional organization and now features an increased focus on thermochemistry, as well as new problems, new two-column examples, and a dynamic new four-color design. Written by a dedicated chemical educator and researcher, the text also includes a review of calculus applications as applied to physical chemistry. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This is not a traditional textbook. It aims to reveal in one single continuous logical development what each successive kind of physical hypothesis tells us about the nature of things.

A Textbook of Physical Chemistry (Vol. 5)

A Molecular Approach

Textbook of Physical Chemistry

Physical Chemistry

Physical Chemistry Essentials

"Physical Chemistry in Depth" is not a stand-alone text, but complements the text of any standard textbook on "Physical Chemistry" into depth having in mind to provide profound understanding of some of the topics presented in these textbooks. Standard textbooks in Physical Chemistry start with thermodynamics, deal with kinetics, structure of matter, etc. The "Physical Chemistry in Depth" follows this adjustment, but adds chapters that are treated traditionally in ordinary textbooks inadequately, e.g., general scaling laws, the graphlike structure of matter, and cross connections between the individual disciplines of Physical Chemistry. Admittedly, the text is loaded with some mathematics, which is a prerequisite to thoroughly understand the topics presented here. However, the mathematics needed is explained at a really low level so that no additional mathematical textbook is needed.

This book covers various metallurgical topics, viz. roasting of sulfide minerals, matte smelting, slag, reduction of oxides and reduction smelting, interfacial phenomena, steelmaking, secondary steelmaking, role of halides in extraction of metals, refining, hydrometallurgy and electrometallurgy. Each chapter is illustrated with appropriate examples of applications of the technique in extraction of some common, reactive, rare or refractory metal together with worked out problems explaining the principle of the operation.

For many processes and applications in science and technology a basic knowledge of liquids and solutions is a must. Gaining a better understanding of the behavior and properties of pure liquids and solutions will help to improve many processes and to advance research in many different areas. This book provides a comprehensive, self-contained and integrated survey of this topic and is a must-have for many chemists, chemical engineers and material scientists, ranging from newcomers in the field to more experienced researchers. The author offers a clear, well-structured didactic approach and provides an overview of the most important types of liquids and solutions. Special topics include chemical reactions, surfaces and phase transitions. Suitable both for introductory as well as intermediate level as more advanced parts are clearly marked. Includes also problems and solutions.

This is a new undergraduate textbook on physical chemistry by Horia Metiu published as four separate paperback volumes. These four volumes on physical chemistry combine a clear and thorough presentation of the theoretical and mathematical aspects of the subject with examples and applications drawn from current industrial and academic research. By using the computer to solve problems that include actual experimental data, the author is able to cover the subject matter at a practical level. The books closely integrate the theoretical chemistry being taught with industrial and laboratory practice. This approach enables the student to compare theoretical projections with experimental results, thereby providing a realistic grounding for future practicing chemists and engineers. Each volume of Physical Chemistry includes Mathematica– and Mathcad– Workbooks on CD-ROM. Metiu's four separate volumes-Thermodynamics, Statistical Mechanics, Kinetics, and Quantum Mechanics-offer built-in flexibility by allowing the subject to be covered in any order. These textbooks can be used to teach physical chemistry without a computer, but the experience is enriched substantially for those students who do learn how to read and write Mathematica– or Mathcad– programs. A TI-89 scientific calculator can be used to solve most of the exercises and problems.

Introducing Chemical Equilibrium, Kinetics and Electrochemistry by Numerous Experiments

Physical Chemistry: Experimental and Theoretical

A Computer-based Approach using Mathematica® and Gaussian

Physical Chemistry for the Biosciences

A textbook for B.Sc Classes as per the UGC Model Syllabus. The book is visually beautiful and authors communicate their enthusiasm and enjoyment of the subject in every chapter. This textbook is currently in use at hundreds of colleges and universities throughout the country and is a national best-seller. There are hundreds of computer-generated coloured diagrams, graphs, photos and tables . A text- and exercise book for physical chemistry students! This book deals with the fundamental aspects of physical chemistry taught at the undergraduate level in chemistry and the engineering sciences in a compact and practice-oriented form. Numerous problems and detailed solutions offer the possibility of an in-depth reflection of topics like chemical thermodynamics and kinetics, atomic structure and spectroscopy. Every chapter starts with a recapitulation of important background information, before leading over to representative exercises and problems. Detailed descriptions systematically present and explain the solutions to the problems, so that readers can carefully check their own solutions and get clear-cut introductions on how to approach similar problems systematically. The book addresses students at the (upper) undergraduate level, as well as tutors and teachers. It is a rich source of exercises for exam preparation and can be used alongside classical textbooks. Furthermore it can serve teachers and tutors for the conception of their lessons. Its well-thought-through presentation, structure and design make the book appeal to everybody who wants to succeed with the physical chemistry lessons and exercises.

Physical Chemistry for the Biosciences has been optimized for a one-semester introductory course in physical chemistry for students of biosciences.

This is one of the four volumes that provides a thorough understanding of the principles and basic concepts of physical chemistry. Emphasis is placed on applications of the principles. This volume deals with thermo-dynamics and chemical equilibrium.

A Textbook of Physical Chemistry, 6th Edition

Volume 3: Molecular Thermodynamics and Kinetics

Physical Chemistry: Quantum Mechanics

A Textbook of Physical Chemistry

Physical Chemistry of Metallurgical Processes

Essentials of Physical Chemistry is a classic textbook on the subject explaining fundamentals concepts with discussions, illustrations and exercises. With clear explanation, systematic presentation, and scientific accuracy, the book not only helps the students clear misconceptions about the basic concepts but also enhances students' ability to analyse and systematically solve problems. This bestseller is primarily designed for B.Sc. students and would equally be useful for the aspirants of medical and engineering entrance examinations.

This book has been successfully guiding undergraduate students of science, engineering and pharmacy of the Indian universities since 1978 due to its approach of teaching the subject in the simplest possible way. The book emphasizes on fundamental rather than excessive details and develops the topics from the first principles. It contains a considerable number of worked-out examples exposing the students to practical applications of equations and helping them comprehend the magnitude of many different physiochemical quantities. Both the traditional cgs/esu and the newer SI systems of units have been used identically. This is so because in spite of wider acceptance of the SI units, the cgs units continue to be used in most chemical literature. New in this Edition • Quick Recap' section with every chapter to bring the concepts on fingertips • Vastly augmented section on MCQs for complete comprehension • Additional review questions to make them broad based • Revised and updated topics

The first part of this book looks at the consequence of chemical and topological defects existing on real surfaces, which explain the wettability of super hydrophilic and super hydrophobic surfaces. There follows an in-depth analysis of the acido-basicity of surfaces with, as an illustration, different wettability experiments on real materials. The next chapter deals with various techniques enabling the measurement of acido basicity of the surfaces including IR and XPS technics. The last part of the book presents an electrochemical point of view which explains the surface charges of the oxide at contact with water or other electrolyte solutions in the frame of Bronsted acido-basicity concept. Various consequences are deduced from such analyses illustrated by original measurement of the point of zero charge or by understanding the basic principles of the electrowetting experiments.

Peter Atkins' Very Short Introduction explores the contributions physical chemistry has made to all branches of chemistry. Providing insight into its central concepts Atkins reveals the cultural contributions physical chemistry has made to our understanding of the natural world.

Introduction to Physical Chemistry

Multidisciplinary Applications in Society

Molecular Physical Chemistry

Fundamentals, Modeling, and Applications

Text-Book of Physical Chemistry

Designed for a two-semester introductory course sequence in physical chemistry, Physical Chemistry: A Modern Introduction, Second Edition offers a streamlined introduction to the subject. Focusing on core concepts, the text stresses fundamental issues and includes basic examples rather than the myriad of applications often presented in other, more encyclopedic books. Physical chemistry need not appear as a large assortment of different, disconnected, and sometimes intimidating topics. Instead, students should see that physical chemistry provides a coherent framework for chemical knowledge, from the molecular to the macroscopic level. The book offers: Novel organization to foster student understanding, giving students the strongest sophistication in the least amount of time and preparing them to tackle more challenging topics Strong problem-solving emphasis, with numerous end-of-chapter practice exercises, over two dozen in-text worked examples, and a number of clearly identified spreadsheet exercises A quick review in calculus, via an appendix providing the necessary mathematical background for the study of physical chemistry Powerful streamlined development of group theory and advanced topics in quantum mechanics, via appendices covering molecular symmetry and special quantum mechanical approaches

A Textbook of Physical Chemistry, Second Edition serves as an introductory text to physical chemistry. Topics covered range from wave mechanics and chemical bonding to molecular spectroscopy and photochemistry; ideal and nonideal gases; the three laws of thermodynamics; thermochemistry; and solutions of nonelectrolytes. The kinetics of gas-phase reactions; colloids and macromolecules; and nuclear chemistry and radiochemistry are also discussed. This edition is comprised of 22 chapters; the first of which introduces the reader to the behavior of ideal and nonideal gases, with particular emphasis on the van der Waals equation. The discussion then turns to the kinetic molecular theory of gases and the application of the Boltzmann principle to the treatment of molar polarization; dipole and magnetic moments; the phenomenology of light absorption; and classical and statistical thermodynamics. The chapters that follow focus on the traditional sequence of chemical and phase equilibria, electrochemistry, and chemical kinetics in gas phase and solution phase. This book also considers wave mechanics and its applications; molecular spectroscopy and photochemistry; and the excited state, and then concludes with an analysis of crystal structure, colloid and polymer chemistry, and radio and nuclear chemistry. This reference material is intended primarily as an introductory text for students of physical chemistry.

In this new textbook on physical chemistry, fundamentals are introduced simply yet in more depth than is common. Topics are arranged in a progressive pattern, with simpler theory early and more complicated theory later. General principles are induced from key experimental results. Some mathematical background is supplied where it would be helpful. Each chapter includes worked-out examples and numerous references. Extensive problems, review, and discussion questions are included for each chapter. More detail than is common is devoted to the nature of work and heat and how they differ. Introductory Caratheodory theory and the standard integrating factor for dGrev are carefully developed. The fundamental role played by uncertainty and symmetry in quantum mechanics is emphasized. In chemical kinetics, various methods for determined rate laws are presented. The key mechanisms are detailed. Considerable statistical mechanics and reaction rate theory are then surveyed. Professor Duffey has given us a most readable, easily followed text in physical chemistry.

This is the physical chemistry textbook for students with an affinity for computers! It offers basic and advanced knowledge for students in the second year of chemistry masters studies and beyond. In seven chapters, the book presents thermodynamics, chemical kinetics, quantum mechanics and molecular structure (including an introduction to quantum chemical calculations), molecular symmetry and crystals. The application of physical-chemical knowledge and problem solving is demonstrated in a chapter on water, treating both the water molecule as well as water in condensed phases. Instead of a traditional textbook top-down approach, this book presents the subjects on the basis of examples, exploring and running computer programs (Mathematica®), discussing the results of molecular orbital calculations (performed using Gaussian) on small molecules and turning to suitable reference works to obtain thermodynamic data. Selected Mathematica® codes are explained at the end of each chapter and cross-referenced with the text, enabling students to plot functions, solve equations, fit data, normalize probability functions, manipulate matrices and test physical models. In addition, the book presents clear and step-by-step explanations and provides detailed and complete answers to all exercises. In this way, it creates an active learning environment that can prepare students for pursuing their own research projects further down the road. Students who are not yet familiar with Mathematica® or Gaussian will find a valuable introduction to computer-based problem solving in the molecular sciences. Other

computer applications can alternatively be used. For every chapter learning goals are clearly listed in the beginning, so that readers can easily spot the highlights, and a glossary in the end of the chapter offers a quick look-up of important terms.

Physical Chemistry from a Different Angle

Elements of Physical Chemistry

TEXTBOOK OF PHYSICAL CHEMISTRY

A Modern Introduction, Second Edition

Elementary Physical Chemistry

The advancements in society are intertwined with the advancements in science. To understand how changes in society occurred, and will continue to change, one has to have a basic understanding of the laws of physics and chemistry. Physical Chemistry: Multidisciplinary Applications in Society examines how the laws of physics and chemistry (physical chemistry) explain the dynamic nature of the Universe and events on Earth, and how these events affect the evolution of society (multidisciplinary applications). The ordering of the chapters reflects the natural flow of events in an evolving Universe: **Philosophy of Science, the basis of the view that natural events have natural causes - Cosmology, the origin of everything from the Big Bang to the current state of the Universe - Geoscience, the physics and chemistry behind the evolution of the planet Earth from its birth to the present - Life Science, the molecules and mechanisms of life on Earth - Ecology, the interdependence of all components within the Ecosphere and the Universe - Information Content, emphasis on how words and phrases and framing of issues affect opinions, reliability of sources, and the limitations of knowledge. Addresses the four Ws of science: Why scientists believe Nature works the way it does, Who helped develop the fields of science, What theories of natural processes tell us about the nature of Nature, and Where our scientific knowledge is taking us into the future Gives a historical review of the evolution of science, and the accompanying changes in the philosophy of how science views the nature of the Universe Explores the physics and chemistry of Nature with minimal reliance on mathematics Examines the structure and dynamics of the Universe and our Home Planet Earth Provides a detailed analysis of how humans, as members of the Ecosphere, have influenced, and are continuing to influence, the dynamics of events on the paludarium called Earth Presents underlying science of current political issues that shape the future of humankind Emphasizes how words and phrases and framing of issues can influence the opinions of members of society Makes extensive use of metaphors and everyday experiences to illustrate principles in science and social interactions**

A Textbook for B.Sc. (Part III and Hons.) and Postgraduate Courses of Indian Universities. In this edition, I have made major changes in the light of modern concepts introduced in syllabi at the under-graduate and postgraduate level as well. With matter has also been updated. The subject matter has been arranged systematically, in a lucid style and simple language. New Problems and exercises have also been introduced to acquaint the students with trend of questions they except in the examinations.

Atkins' Physical Chemistry: Molecular Thermodynamics and Kinetics is designed for use on the second semester of a quantum-first physical chemistry course. Based on the hugely popular Atkins' Physical Chemistry, this volume approaches molecular thermodynamics with the assumption that students will have studied quantum mechanics in their first semester. The exceptional quality of previous editions has been built upon to make this new edition of Atkins' Physical Chemistry even more closely suited to the needs of both lecturers and students. Re-organised into discrete 'topics', the text is more flexible to teach from and more readable for students. Now in its eleventh edition, the text has been enhanced with additional learning features and maths support to demonstrate the absolute centrality of mathematics to physical chemistry. Increasing the digestibility of the text in this new approach, the reader is brought to a question, then the math is used to show how it can be answered and progress made. The expanded and redistributed maths support also includes new 'Chemist's toolkits' which provide students with succinct reminders of mathematical concepts and techniques right where they need them. Checklists of key concepts at the end of each topic add to the extensive learning support provided throughout the book, to reinforce the main take-home messages in each section. The coupling of the broad coverage of the subject with a structure and use of pedagogy that is even more innovative will ensure Atkins' Physical Chemistry remains the textbook of choice for studying physical chemistry.

An advanced-level textbook of physical chemistry for the graduate (B.Sc) and postgraduate (M.Sc) students of Indian and foreign universities. This book is a part of four volume series, entitled "A Textbook of Physical Chemistry - Volume I, II, III, IV". CONTENTS: Chapter 1. Quantum Mechanics - I: Postulates of quantum mechanics; Derivation of Schrodinger wave equation; Max-Born interpretation of wave functions; The Heisenberg's uncertainty principle; Quantum mechanical operators and their commutation relations; Hermitian operators (elementary ideas, quantum mechanical operator for linear momentum, angular momentum and energy as Hermitian operator); The average value of the square of Hermitian operators; Commuting operators and uncertainty principle(x & p ; E & t); Schrodinger wave equation for a particle in one dimensional box; Evaluation of average position, average momentum and determination of uncertainty in position and momentum and hence Heisenberg's uncertainty principle; Pictorial representation of the wave equation of a particle in one dimensional box and its influence on the kinetic energy of the particle in each successive quantum level; Lowest energy of the particle. Chapter 2. Thermodynamics - I: Brief resume of first and second Law of thermodynamics; Entropy changes in reversible and irreversible processes; Variation of entropy with temperature, pressure and volume; Entropy concept as a measure of unavailable energy and criteria for the spontaneity of reaction; Free energy, enthalpy functions and their significance, criteria for spontaneity of a process; Partial molar quantities (free energy, volume, heat concept); Gibb's-Duhem equation. Chapter 3. Chemical Dynamics - I: Effect of temperature on reaction rates; Rate law for opposing reactions of 1st order and 11nd order; Rate law for consecutive & parallel reactions of 1st order reactions; Collision theory of reaction rates and its limitations; Steric factor; Activated complex theory; Ionic reactions: single and double sphere models; Influence of solvent and ionic strength; The comparison of collision and activated complex theory. Chapter 4. Electrochemistry - I: Ion-Ion Interactions: The Debye-Huckel theory of ion- ion interactions; Potential and excess charge density as a function of distance from the central ion; Debye Huckel reciprocal length; Ionic cloud and its contribution to the total potential; Debye - Huckel limiting law of activity coefficients and its limitations; Ion-size effect on potential; Ion-size paramter and the theoretical mean-activity coefficient in the case of ionic clouds with finite-sized ions; Debye - Huckel-Onsager treatment for aqueous solutions and its limitations; Debye-Huckel-Onsager theory for non-aqueous solutions; The solvent effect on the mobility at infinite dilution; Equivalent conductivity (Λ) vs. concentration c $^{1/2}$ as a function of the solvent; Effect of ion association upon conductivity (Debye- Huckel - Bjerrum equation). Chapter 5. Quantum Mechanics - II: Schrodinger wave equation for a particle in a three dimensional box; The concept of degeneracy among energy levels for a particle in three dimensional box; Schrodinger wave equation for a linear harmonic oscillator & its solution by polynomial method; Zero point energy of a particle possessing harmonic motion and its consequence; Schrodinger wave equation for three dimensional Rigid rotator; Energy of rigid rotator; Space quantization; Schrodinger wave equation for hydrogen atom, separation of variable in polar spherical coordinates and its solution; Principle, azimuthal and magnetic quantum numbers and the magnitude of their values; Probability distribution function; Radial distribution function; Shape of atomic orbitals (s , p & d). Chapter 6. Thermodynamics - II: Classius-Clayperon equation; Law of mass action and its thermodynamic derivation; Third law of thermodynamics (Nernst heat theorem, determination of absolute entropy, unattainability of absolute zero) and its limitation; Phase diagram for two completely miscible components systems; Eutectic systems, Calculation of eutectic point; Systems forming solid compounds $A_x B_y$ with congruent and incongruent melting points; Phase diagram and thermodynamic treatment of solid solutions. Chapter 7. Chemical Dynamics - II: Chain reactions: hydrogen-bromine reaction, pyrolysis of acetaldehyde, decomposition of ethane; Photochemical reactions (hydrogen - bromine & hydrogen -chlorine reactions); General treatment of chain reactions (ortho-para hydrogen conversion and hydrogen - bromine reactions); Apparent activation energy of chain reactions, Chain length; Rice-Herzfeld mechanism of organic molecules decomposition(acetaldehyde); Branching chain reactions and explosions (H_2 - O_2 reaction); Kinetics of (one intermediate) enzymatic reaction : Michaelis-Menton treatment; Evaluation of Michaelis 's constant for enzyme-substrate binding by Lineweaver-Burk plot and Eadie-Hofstae methods; Competitive and non-competitive inhibition. Chapter 8. Electrochemistry - II: Ion Transport in Solutions: Ionic movement under the influence of an electric field; Mobility of ions; Ionic drift velocity and its relation with current density; Einstein relation between the absolute mobility and diffusion coefficient; The Stokes-Einstein relation; The Nernst -Einstein equation; Walden's rule; The Rate-process approach to ionic migration; The Rate process equation for equivalent conductivity; Total driving force for ionic transport, Nernst - Planck Flux equation; Ionic drift and diffusion potential; the Onsager phenomenological equations; The basic equation for the diffusion; Planck-Henderson equation for the diffusion potential.

Physical Chemistry in Depth

A Textbook of Physical Chemistry (Vol. 2)

Advanced Physical Chemistry

Liquid-State Physical Chemistry

Physical Chemistry and Acid-Base Properties of Surfaces

A Textbook of Physical ChemistryElsevier

This textbook presents a straightforward introduction to physical chemistry. Whilst stressing the fundamentals of the subject, it avoids the mathematical details of specialised techniques such as quantum theory, nuclear magnetic resonance, and spectroscopy. To promote an appreciation of 3-dimensional structure in the study of stereo-chemistry and solids, many of the illustrations are presented as stereoscopic views, and directions for observing them are given in an appendix. Each chapter ends with a set of problems of varying degrees of difficulty, which will assist the student in gaining familiarity with the themes of the book, and in testing their ability to apply these themes to new situations: full solutions are provided. The SI system of units is used throughout and appendices provide a reference source of numerical data. Some mathematical arguments are also developed in appendices, because their inclusion in the text might distract readers from the development of the subject. The book has been developed from an earlier publication by the author, *Modern Physical Chemistry*, published by Penguin Books Ltd.

Elements of Physical Chemistry has been carefully crafted to help students increase their confidence when using physics and mathematics to answer fundamental questions about the structure of molecules, how chemical reactions take place, and why matter behaves as they do.

This comprehensive textbook, now in its second edition, is mainly written as per the latest syllabi of physical chemistry of all the leading universities of India as well as the new syllabus recommended by the UGC. This thoroughly revised and updated edition covers all the areas of physical chemistry, such as thermodynamics, quantum chemistry, molecular spectroscopy, chemical kinetics, electrochemistry and nanotechnology. In a methodical and accessible style, the book discusses classical, irreversible and statistical thermodynamics, statistical mechanics, and describes macroscopic chemical systems, steady states and thermodynamics at a molecular level. It elaborates the underlying principles of quantum mechanics, molecular spectroscopy, X-ray crystallography and solid state chemistry and their applications. The book explains various instrumentation techniques such as potentiometry, polarography, voltammetry, conductometry and coulometry. It also describes kinetics, rate laws and chemical processes at the electrodes. In addition, the text deals with corrosion and nanomaterials. This text is primarily designed for the undergraduate and postgraduate students of chemistry (B.Sc. and M.Sc.) for their course in physical chemistry. Key Features • Gives a thorough treatment to ensure a solid grasp of the major concepts. • Contains a large number of figures and diagrams that help amplify key concepts. • Contains several worked-out examples for better understanding of the subject matter. • Provides numerous chapter-end exercises to foster conceptual understanding.

Exam Survival Guide: Physical Chemistry

This title includes a number of Open Access chapters. 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.

Written primarily to meet the requirements of students at the undergraduate level, this book aims for a self-learning approach. The fundamentals of physical chemistry have been explained with illustrations, diagrams, tables, experimental techniques and solved problems.