

Principles Of General Chemistry Silberberg 2nd Edition

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with each edition chemistry the molecular nature of matter and change by martin silberberg is becoming a favorite among faculty and students silberberg's 5th edition contains features that make it the most comprehensive and relevant text for any student enrolled in a general chemistry course the text contains

unprecedented macroscopic to microscopic molecular illustrations consistent step by step worked exercises in every chapter and an extensive range of end of chapter problems which provide engaging applications covering a wide variety of freshman interests including engineering medicine materials and environmental studies all of these qualities make chemistry the molecular nature of matter and change the centerpiece for any general chemistry course

silberberg s principles of general chemistry offers students the same authoritative topic coverage as its parent text chemistry the molecular nature of matter and change the principles text allows for succinct coverage of content with minimal emphasis on pedagogic learning aids this more straightforward approach to learning appeals to today s efficiency minded value conscious instructors and students without sacrificing depth clarity or rigor

by libby weberg this valuable ancillary is designed to help you recognize your learning style understand how to read classify and create a problem solving list and practice problem solving skills for each section of a chapter the author provides study objectives and a summary of the corresponding text following the summary are sample problems with detailed solutions each chapter has true false questions and a self test with all answers provided at the end of the chapter

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silberberg s principles of general chemistry offers students the same authoritative topic coverage as his 4th edition textbook while appealing to today s efficiency minded and value conscious instructors and students principles allows for succinct coverage of content with minimal emphasis on pedagogic learning aids this new approach offers a more straightforward approach to learning the core principles without sacrificing depth clarity or rigor

designed to help students recognize their learning style understand how to read classify and create a problem solving list and practice problem solving skills each chapter provides study objectives and a summary of the text followed by sample problems with detailed solutions as well as true false questions and a self test with all answers provided at the end of the chapter

this general chemistry text offers a logical approach to problem solving visualization of atomic molecular interactions and essential connections between

chemical principles and real world processes

chemistry seeks to provide qualitative and quantitative explanations for the observed behaviour of elements and their compounds doing so involves making use of three types of representation the macro the empirical properties of substances the sub micro the natures of the entities giving rise to those properties and the symbolic the number of entities involved in any changes that take place although understanding this triplet relationship is a key aspect of chemical education there is considerable evidence that students find great difficulty in achieving mastery of the ideas involved in bringing together the work of leading chemistry educators who are researching the triplet relationship at the secondary and university levels the book discusses the learning involved the problems that students encounter and successful approaches to teaching based on the reported research the editors argue for a coherent model for understanding the triplet relationship in chemical education

this supplement contains detailed solutions and explanations for all colored problems in the main text

this supplement prepared by mary kay orgill of the university of nevada las vegas contains detailed solutions and explanations for all problems in the main text that have colored numbers

research in science education has recognized the importance of history and philosophy of science hps nature of science nos is considered to be an essential part of hps with important implications for teaching science the role played by textbooks in developing students informed conceptions of nos has been a source of considerable interest for science educators in some parts of the world textbooks become the curriculum and determine to a great extent what is taught and learned in the classroom given this background and interest this monograph has evaluated nos in university level general chemistry textbooks published in u s a most textbooks in this study provided little insight with respect to the nine criteria used for evaluating nos some of the textbooks however inevitably refer to hps and thus provide guidelines for future textbooks a few of the textbooks go into considerable detail to present the atomic models of dalton thomson rutherford bohr and wave mechanical to illustrate the tentative nature of scientific theories an important nos aspect these results lead to the question are we teaching science as practiced by scientists an answer to this question can help us to understand the importance of nos by providing students an hps based environment so that they too just like the scientists feel the thrill and excitement of discovering new things this monograph provides students and teachers guidelines for introducing various aspects of nos based on historical episodes

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whether you are an avid student or an inquisitive learner the chemistry connection from atoms to applications is your key to unlocking the amazing world of chemistry this book breaks down the basic components of matter atoms molecules and chemical reactions into clear explanations simplifying complicated ideas this book makes the connections demonstrating how chemistry affects everything around us from the smallest particles to the most significant applications in daily life you will learn about the amazing mechanisms that underpin everything in our world including the food we consume the technologies we use and even the surrounding natural beauty through lucid illustrations meaningful comparisons and useful advice the chemistry connection makes science approachable and interesting for all readers this book provides a thorough exploration of the fundamentals of chemistry and its practical applications making it ideal for anybody wishing to brush up on their knowledge develop a better understanding of the topic or just quench their curiosity explore and learn how atoms relate to your surroundings

this book explores the relationship between the content of chemistry education and the history and philosophy of science hps framework that underlies such education it discusses the need to present an image that reflects how chemistry developed and progresses it proposes that chemistry should be taught the way it is practiced by chemists as a human enterprise at the interface of scientific practice and hps finally it sets out to convince teachers to go beyond the traditional classroom practice and explore new teaching strategies the importance of hps has been recognized for the science curriculum since the middle of the 20th century the need for teaching chemistry within a historical context is not difficult to understand as hps is not far below the surface in any science classroom a review of the literature shows that the traditional chemistry classroom curricula and textbooks while dealing with concepts such as law theory model explanation hypothesis observation evidence and idealization generally ignore elements of the history and philosophy of science this book proposes that the conceptual understanding of chemistry requires knowledge and understanding of the history and philosophy of science professor niaz's book is most welcome coming at a time when there is an urgently felt need to upgrade the teaching of science the book is a huge aid for adding to the usual way of presenting science as a series of mere facts also the necessary mandate to show how science is done and how science through its history and philosophy is part of the cultural development of humanity gerald holton mallinckrodt professor of physics professor of history of science harvard university in this stimulating and sophisticated blend of history of chemistry philosophy of science and science pedagogy professor mansoor niaz has succeeded in offering a promising new approach to the teaching of fundamental ideas in chemistry historians and philosophers of chemistry and above all chemistry teachers will find this book full of valuable and highly usable new ideas alan rocke case western reserve university this book artfully connects chemistry and chemistry education to the human context in which chemical science is practiced and the historical and philosophical background that illuminates that practice mansoor niaz deftly weaves together historical episodes in the quest for scientific knowledge with the psychology of learning and philosophical reflections on the nature of scientific knowledge and method the result is a compelling case for historically and philosophically informed science education highly recommended harvey siegel university of miami books that analyze the philosophy and history of science in chemistry are quite rare chemistry education and contributions from history and philosophy of science by mansoor niaz is one of the rare books on the history and philosophy of chemistry and their importance in teaching this science the book goes through all the main concepts of chemistry and analyzes the historical and philosophical developments as

well as their reflections in textbooks closest to my heart is chapter 6 which is devoted to the chemical bond the glue that holds together all matter in our earth the chapter emphasizes the revolutionary impact of the concept of the covalent bond on the chemical community and the great novelty of the idea that was conceived 11 years before quantum mechanics was able to offer the mechanism of electron pairing and covalent bonding the author goes then to describe the emergence of two rival theories that explained the nature of the chemical bond in terms of quantum mechanics these are valence bond vb and molecular orbital mo theories he emphasizes the importance of having rival theories and interpretations in science and its advancement he further argues that this vb mo rivalry is still alive and together the two conceptual frames serve as the tool kit for thinking and doing chemistry in creative manners the author surveys chemistry textbooks in the light of the how the books preserve or not the balance between the two theories in describing various chemical phenomena this talmudic approach of conceptual tension is a universal characteristic of any branch of evolving wisdom as such mansoor s book would be of great utility for chemistry teachers to examine how can they become more effective teachers by recognizing the importance of conceptual tension sason shaik saeree k and louis p fiedler chair in chemistry director the lise meitner minerva center for computational quantum chemistry the hebrew university of jerusalem israel

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