

Atkins Temel Genel Kimya

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 - presenting science as a series of mere facts - also the necessary mandate: to show how science is done, and

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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

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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 Provides solutions to the 'a' exercises, and the odd-numbered discussion questions and problems that feature in the eighth edition of Atkins' Physical Chemistry. This manual

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offers comments and advice to aid understanding. It is intended for students and instructors alike.

Complex environmental problems are often reduced to an inappropriate level of simplicity. While this book does not seek to present a comprehensive scientific and technical coverage of all aspects of the subject matter, it makes the issues, ideas, and language of environmental engineering accessible and understandable to the nontechnical reader. Improvements introduced in the fourth edition include a complete rewrite of the chapters dealing with risk assessment and ethics, the introduction of new theories of radiation damage, inclusion of environmental disasters like Chernobyl and Bhopal, and general updating of all the content, specifically that on radioactive waste. Since this book was first published in 1972, several generations of students have become environmentally aware and conscious of their responsibilities to the planet earth. Many of these environmental pioneers are now teaching in colleges and universities, and have in their classes students with the same sense of dedication and resolve that they themselves brought to the discipline. In those days, it was sometimes difficult to explain what indeed environmental science or engineering was, and why the development of these fields was so important to the future of the earth and to human civilization. Today there is no question that the human species has the capability of destroying its collective home, and that we have indeed taken major steps toward doing exactly that. And yet, while, a lot has changed in a generation, much has not. We still

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have air pollution; we still contaminate our water supplies; we still dispose of hazardous materials improperly; we still destroy natural habitats as if no other species mattered. And worst of all, we still continue to populate the earth at an alarming rate. There is still a need for this book, and for the college and university courses that use it as a text, and perhaps this need is more acute now than it was several decades ago. Although the battle to preserve the environment is still raging, some of the rules have changed. We now must take into account risk to humans, and be able to manipulate concepts of risk management. With increasing population, and fewer alternatives to waste disposal, this problem is intensified. Environmental laws have changed, and will no doubt continue to evolve. Attitudes toward the environment are often couched in what has become known as the environmental ethic. Finally, the environmental movement has become powerful politically, and environmentalism can be made to serve a political agenda. In revising this book, we have attempted to incorporate the evolving nature of environmental sciences and engineering by adding chapters as necessary and eliminating material that is less germane to today's students. We have nevertheless maintained the essential feature of this book -- to package the more important aspects of environmental engineering science and technology in an organized manner and present this mainly technical material to a nonengineering audience. This book has been used as a text in courses which require no prerequisites, although a high school knowledge of chemistry is important. A knowledge of college level algebra is also

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useful, but calculus is not required for the understanding of the technical and scientific concepts. We do not intend for this book to be scientifically and technically complete. In fact, many complex environmental problems have been simplified to the threshold of pain for many engineers and scientists. Our objective, however, is not to impress nontechnical students with the rigors and complexities of pollution control technology but rather to make some of the language and ideas of environmental engineering and science more understandable.

Summer in San Francisco and a killer is on the loose. Twelve victims so far. Scrawled in each victim's blood, a single word: "Morningstar." Two innocents suddenly find their lives swept up in a maelstrom of madness and murder. Shelley Masterton -- her dreams invaded by a dead friend, one of the killer's victims -- becomes an unwitting recruit in a plan for revenge from beyond the grave. And freelance journalist Donovan Moon receives a phone call offering the scoop of a lifetime: Morningstar is on the line...and wants to talk. When Peter Atkins' debut novel Morningstar was first published in the U.K., the praise was unanimous. Clive Barker called it "Vividly imagined and stylishly realized -- a mingling of thriller and horror story that makes for an irresistible ride" and Neil Gaiman declared it to be "The best first novel I've read in a long time." Morningstar now reveals its terrors and wonders to a new generation of readers.

First published in 1989. Includes CD Rom demo.

Most people remember chemistry from their schooldays as largely incomprehensible, a

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subject that was fact-rich but understanding-poor, smelly, and so far removed from the real world of events and pleasures that there seemed little point, except for the most introverted, in coming to terms with its grubby concepts, spells, recipes, and rules. Peter Atkins wants to change all that. In this Very Short Introduction to Chemistry, he encourages us to look at chemistry anew, through a chemist's eyes, in order to understand its central concepts and to see how it contributes not only towards our material comfort, but also to human culture. Atkins shows how chemistry provides the infrastructure of our world, through the chemical industry, the fuels of heating, power generation, and transport, as well as the fabrics of our clothing and furnishings. By considering the remarkable achievements that chemistry has made, and examining its place between both physics and biology, Atkins presents a fascinating, clear, and rigorous exploration of the world of chemistry - its structure, core concepts, and exciting contributions to new cutting-edge technologies. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable. Water is abundant in nature, non-toxic, non-flammable and renewable and could therefore be safer and economical for the chemical industry wherever it is used as a solvent. This book provides a comprehensive overview of developments in the use of

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water as a solvent for metal catalysis, illustrating the enormous potential of water in developing new catalytic transformations for fine chemicals and molecular materials synthesis. A group of international experts cover the most important metalcatalyzed reactions in water and bring together cutting-edge results from recent literature with the first-hand knowledge gained by the chapter authors. This is a must-have book for scientists in academia and industry involved in the field of catalysis, greener organic synthetic methods, water soluble ligands and catalyst design, as well as for teachers and students interested in innovative and sustainable chemistry.

This market-leading textbook provides the most authoritative, applications-rich coverage of key concepts, models, and issues in money and banking. The Sixth Edition Update features a careful revision of data, figures, and boxes that reflects the current economic landscape--providing students with up-to-date information making the economic theory more relevant to their daily lives. In this text, Mishkin draws from his service as Executive Vice President and Director of Research at the Federal Reserve Bank of New York, to offer fresh insights into the monetary policy process, the operation of the Federal Reserve, the regulation and supervision of the financial system, and the internationalization of financial markets. In addition, Mishkin provides a careful, step-by-step development of models, an approach found in the best principles of economics textbooks. In addition, the text provides a careful, step-by-step development of models and contains over 400 end-of-chapter problems to reinforce

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essential chapter content.

Fundamentals of Electrochemistry provides the basic outline of most topics of theoretical and applied electrochemistry for students not yet familiar with this field, as well as an outline of recent and advanced developments in electrochemistry for people who are already dealing with electrochemical problems. The content of this edition is arranged so that all basic information is contained in the first part of the book, which is now rewritten and simplified in order to make it more accessible and used as a textbook for undergraduate students. More advanced topics, of interest for postgraduate levels, come in the subsequent parts. This updated second edition focuses on experimental techniques, including a comprehensive chapter on physical methods for the investigation of electrode surfaces. New chapters deal with recent trends in electrochemistry, including nano- and micro-electrochemistry, solid-state electrochemistry, and electrocatalysis. In addition, the authors take into account the worldwide renewal of interest for the problem of fuel cells and include chapters on batteries, fuel cells, and double layer capacitors.

The past, present, and future of green chemistry and green engineering From college campuses to corporations, the past decade witnessed a rapidly growing interest in understanding sustainable chemistry and engineering. Green Chemistry and Engineering: A Practical Design Approach integrates the two disciplines into a single study tool for students and a practical guide for working chemists and engineers.

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In *Green Chemistry and Engineering*, the authors—each highly experienced in implementing green chemistry and engineering programs in industrial settings—provide the bottom-line thinking required to not only bring sustainable chemistry and engineering closer together, but to also move business towards more sustainable practices and products. Detailing an integrated, systems-oriented approach that bridges both chemical syntheses and manufacturing processes, this invaluable reference covers:

- Green chemistry and green engineering in the movement towards sustainability
- Designing greener, safer chemical synthesis
- Designing greener, safer chemical manufacturing processes
- Looking beyond current processes to a lifecycle thinking perspective
- Trends in chemical processing that may lead to more sustainable practices

The authors also provide real-world examples and exercises to promote further thought and discussion. The EPA defines green chemistry as the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Green engineering is described as the design, commercialization, and use of products and processes that are feasible and economical while minimizing both the generation of pollution at the source and the risk to human health and the environment. While there is no shortage of books on either discipline, *Green Chemistry and Engineering* is the first to truly integrate the two.

Clinical Chemistry considers what happens to the body's chemistry when affected by disease. Each chapter covers the relevant basic science and effectively applies this to

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clinical practice. It includes discussion on diagnostic techniques and patient management and makes regular use of case histories to emphasise clinical relevance, summarise chapter key points and to provide a useful starting point for examination revision. The clear and engaging writing style appreciated by generations of readers has been retained in this new (eighth) edition, while the content has been thoroughly updated throughout. The approach and scope of this trusted text makes it ideal for integrated medical curricula for medical training and for students and practitioners of clinical and biomedical science. Additional (electronic) self-assessment material, completes this superb learning package. Bonus self-assessment materials - interactive clinical cases and two tier level MCQs ('standard' and 'advanced') New introductory chapter on basic biochemistry - including solutions, solutes, ionisation, pH, buffers, amino acids, peptides and proteins, enzyme activity, including kinetic properties, DNA structure 'Light bulb' sections give practical advice and clarify difficult concepts or potential pitfalls Updated references to core guidelines (UK and international) reflect latest best practice

Are you looking for: a clear and accessible introduction to 'signals and systems'? a text that integrates the use of MATLAB throughout and provides an introductory tutorial to the software? comprehensive coverage of both continuous and discrete-time signal processing? a book that will be useful for further study? If the answer to any of the above questions is 'Yes' then this is the ideal coursebook for you. System Analysis and

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Signal Processing provides a self-contained text suitable for students of 'signals and systems' and signal processing, from introductory to graduate level; it also serves as a useful companion for those studying network analysis and communications. Clear explanations and easy-to-follow examples using practical situations help to make this book one of the most accessible on the topic. This is the only book you will need on the subject. Key Features a readable and concise treatment of the essential topics, emphasizing physical interpretations the smooth introduction of relevant mathematics in context a broad subject coverage including sections on spectral estimation, digital filter design, network analysis, transforms, analogue filters, automatic control, correlators and the processing of narrow-band signals practical and straightforward design and analysis techniques examples and problems that can be solved with Versions 4 and 5 of the student edition of MATLAB well-designed end of chapter problems that contribute to the learning process FREE solutions manual available to adopting lecturers

In his new book, Steve Jones takes on the challenge of going back to the book of the millennium, Charles Darwin's *The Origin of Species*. Before *The Origin*, biology was a set of unconnected facts. Darwin made it into a science, linked by the theory of evolution, the grammar of the living world. It reveals ties between cancer and the genetics of fish, between brewing and inherited disease, between the sex lives of crocodiles and the politics of Brazil. Darwin used the biology of the nineteenth century to prove his case. Now, that science has been revolutionized and his case can be

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reargued using the twentieth century's astonishing advances. From AIDS to dinosaurs, from conservation to cloned sheep, bursting with anecdotes, jokes and irresistible facts, *Almost Like a Whale* is a popular account of the science that makes biology make sense. It will catch the millennial mood and tell all those for whom Darwin is merely a familiar name what he really meant. It exposes the Darwinian delusions which try (and fail) to explain human behaviour in evolutionary terms, and, while giving an up-to-date account of our own past, shows how humans are the first species to step beyond the constraints of biology.

A brief version of the best-selling physical chemistry book. Its ideal for the one-semester physical chemistry course, providing an introduction to the essentials of the subject without too much math.

Atkins ve Jones'un genel kimya ilkeler ve içyüzünü kavrama problem çözümleri Genel KimyaE?itim Yay?nevi

Written for calculus-inclusive general chemistry courses, *Chemical Principles* helps students develop chemical insight by showing the connections between fundamental chemical ideas and their applications. Unlike other texts, it begins with a detailed picture of the atom then builds toward chemistry's frontier, continually demonstrating how to solve problems, think about nature and matter, and visualize chemical concepts as working chemists do. Flexibility in level is crucial, and is largely established through clearly labeling (separating in boxes) the calculus coverage in the text: Instructors have

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the option of whether to incorporate calculus in the coverage of topics. The multimedia integration of Chemical Principles is more deeply established than any other text for this course. Through the unique eBook, the comprehensive Chemistry Portal, Living Graph icons that connect the text to the Web, and a complete set of animations, students can take full advantage of the wealth of resources available to them to help them learn and gain a deeper understanding.

The critical analysis of science textbooks is vital in improving teaching and learning at all levels in the subject, and this volume sets out a range of academic perspectives on how that analysis should be done. Each chapter focuses on an aspect of science textbook appraisal, with coverage of everything from theoretical and philosophical underpinnings, methodological issues, and conceptual frameworks for critical analysis, to practical techniques for evaluation. Contributions from many of the most distinguished scholars in the field give this collection its sure-footed contemporary relevance, reflecting the international standards of UNESCO as well as leading research organizations such as the American Association for the Advancement of Science (whose Project 2061 is an influential waypoint in developing protocols for textbook analysis). Thus the book shows how to gauge aspects of textbooks such as their treatment of controversial issues, graphical depictions, scientific historiography, vocabulary usage, accuracy, and readability. The content also covers broader social themes such as the portrayal of women and minorities. "Despite newer, more active

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pedagogies, textbooks continue to have a strong presence in classrooms and to embody students' socio-historical inheritance in science. Despite their ubiquitous presence, they have received relatively little on-going empirical study. It is imperative that we understand how textbooks influence science learning. This book presents a welcome and much needed analysis." Tina A. Grotzer Harvard University, Cambridge, Massachusetts, USA The present book provides a much needed survey of the current state of research into science textbooks, and offers a wide range of perspectives to inform the 'science' of writing better science textbooks. Keith S Taber University of Cambridge, Cambridge, United Kingdom

A pioneering volume addressing issues related to cultures, ideologies, and the dictionary. A cross-cultural and cross-linguistic study with focus on selected Western and non-Western languages. A number of in-depth case studies illustrates the dominant role ideology and other types of bias play in the making of a dictionary. The volume includes invited papers of 40 internationally recognized scholars.

An introductory journey through the periodic table explains how every tangible object is comprised of the various elements, while chronicling the history of element discovery and explaining how elemental knowledge can be applied

1. Introduction to microwave chemistry 11; 2. Solvents 29; 3. Chemical reactions in the presence and absence of solvent 77; 4. Synthetic applications 95; 5. Getting started with microwave synthesis 157; 6. Microwave safety considerations 175; 7. Microwave

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hardware 181.

Bu kitap; üniversitemizin çeşitli fakülte ve bazı yüksekokullarında okutulan Genel Kimya dersi için hazırlanmış bir kaynaktır. Fakülte ve yüksekokul öğrencilerinin yanında: ortaöğretim kimya öğretmenleri ve öğrencilerine de yararlı olacağını düşünüyoruz. Kitabın içeriğinin oluşumunda, yıllarca Genel Kimya dersini vermiş olmanın getirdiği tecrübeden yararlanmıştır ve ders ortamında anlatıldığı gibi hazırlanan kitabın konularının kolayca anlaşılabilir olmasına özen gösterilmiştir. Kitapta, konuların teorik olarak açıklamalarının yanında, çözümlü örneklerle ve sorularla oldukça fazla yer verilmeye çalışılmıştır. Ayrıca, bölüm sonları çok sayıda soru eklenmiştir.

Laboratory Safety: Theory and Practice focuses on theoretical aspects of the hazards the students, technicians, and scientists encounter in the laboratory. It presents methods of risk assessment that can be applied to technologies as they are translated from the scientist's mind to the laboratory bench. It is organized into three sections designated as General Laboratory Safety, Biological Laboratory Safety, and Medical and Psychological Factors. The first section, encompassing three chapters, discusses hazards found in almost all laboratories; pertinent safety theories and practices; ubiquitous compounds that are either toxic or carcinogenic and guidelines for their use; and radiation hazards. Chapters 4 to 7 focus on the safety in the biological laboratory. Discussions on relatively complex group of viruses, approach to recombinant DNA research, and awareness on the possible hazards associated with the field are included in this book. Chapters 6 and 7 present design and function of

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biohazard laboratories and the hazards relating to laboratory animals. The final section discusses medical surveillance of persons at risk and the psychological factors involved in accident control. It presents a comprehensive list of chemical agents, their sources, subsequent physical effects, and the accepted mode of medical surveillance. Various genetic screening tests and their potential use for the evaluation of presumptive and actual mutagens are also covered. This book is ideal for safety and design engineers, students, technicians, and scientists.

Any literate person should be familiar with the central ideas of modern science. In his sparkling new book, Peter Atkins introduces his choice of the ten great ideas of science. With wit, charm, patience, and astonishing insights, he leads the reader through the emergence of the concepts, and then presents them in a strikingly effective manner. At the same time, he works into his engaging narrative an illustration of the scientific method and shows how simple ideas can have enormous consequences. His choice of the ten great ideas are: * Evolution occurs by natural selection, in which the early attempts at explaining the origin of species is followed by an account of the modern approach and some of its unsolved problems. * Inheritance is encoded in DNA, in which the story of the emergence of an understanding of inheritance is followed through to the mapping of the human genome. * Energy is conserved, in which we see how the central concept of energy gradually dawned on scientists as they mastered the motion of particles and the concept of heat. * All change is the consequence of the purposeless collapse of energy and matter into disorder, in which the extraordinarily simple concept of entropy is used to account for events in the world. * Matter is atomic, in which we see how the concept of atoms emerged and how the different personalities of the elements

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arise from the structures of their atoms. * Symmetry limits, guides, and drives, in which we see how concepts related to beauty can be extended to understand the nature of fundamental particles and the forces that act between them. * Waves behave like particles and particles behave like waves, in which we see how old familiar ideas gave way to the extraordinary insights of quantum theory and transformed our perception of matter. * The universe is expanding, in which we see how a combination of astronomy and a knowledge of elementary particles accounts for the origin of the universe and its long term future. * Spacetime is curved by matter, in which we see the emergence of the theories of special and general relativity and come to understand the nature of space and time. * If arithmetic is consistent, then it is incomplete, in which we learn the origin of numbers and arithmetic, see how the philosophy of mathematics lets us understand the nature of this most cerebral of subjects, and are brought to the limits of its power. C. P. Snow once said 'not knowing the second law of thermodynamics is like never having read a work by Shakespeare'. This is an extraordinary, exciting book that not only will make you literate in science but give you deep enjoyment on the way.

Calculus 2

From the sudden expansion of a cloud of gas or the cooling of a hot metal, to the unfolding of a thought in our minds and even the course of life itself, everything is governed by the four Laws of Thermodynamics. These laws specify the nature of 'energy' and 'temperature', and are soon revealed to reach out and define the arrow of time itself: why things change and why death must come. In this Very Short Introduction Peter Atkins explains the basis and deeper implications of each law, highlighting their relevance in everyday examples. Using the minimum of mathematics, he introduces concepts such as entropy, free energy, and to the

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brink and beyond of the absolute zero temperature. These are not merely abstract ideas: they govern our lives. In this concise and compelling introduction Atkins paints a lucid picture of the four elegant laws that, between them, drive the Universe. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

The majority of people, in cultures worldwide, seek fulfilment and happiness in marriage and couples relationships. Many mental health professionals now find they are increasingly consulted when such relationships encounter difficulties that threaten the wellbeing of the couples involved. The costs of such difficulties can be high, to society, to children and to other family members, in both emotional and economic terms. Psychologists, psychiatrists, therapists, counsellors and social workers will find in this uniquely comprehensive handbook a critical review of knowledge in this wide field, as well as a guide to best practice in its many areas of intervention. The scope of the handbook includes an overview of healthy, normal marriage processes, the major influences on marital quality and stability, the interaction between individual adjustment, environmental events, and relationship satisfaction, and interventions designed to assist couples to enhance their relationship. The emphasis in the chapters which review research is on explicating the implications of current state-of-the-art knowledge for assessment and intervention with couples. Over half the book comprises detailed guidelines on how to conduct interventions for relationship problems. This includes work on different approaches to couples therapy, adapting couples therapy to the needs of

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couples in which one partner has significant individual psychopathology, working with just one partner, responding to crises initiated by extramarital affairs, mediating divorce, and working with families in which there are combined marital and parenting difficulties.

How did we become the linguistic, cultured, and hugely successful apes that we are? Our closest relatives--the other mentally complex and socially skilled primates--offer tantalizing clues. In *Tree of Origin* nine of the world's top primate experts read these clues and compose the most extensive picture to date of what the behavior of monkeys and apes can tell us about our own evolution as a species. It has been nearly fifteen years since a single volume addressed the issue of human evolution from a primate perspective, and in that time we have witnessed explosive growth in research on the subject. *Tree of Origin* gives us the latest news about bonobos, the make love not war apes who behave so dramatically unlike chimpanzees. We learn about the tool traditions and social customs that set each ape community apart. We see how DNA analysis is revolutionizing our understanding of paternity, intergroup migration, and reproductive success. And we confront intriguing discoveries about primate hunting behavior, politics, cognition, diet, and the evolution of language and intelligence that challenge claims of human uniqueness in new and subtle ways. *Tree of Origin* provides the clearest glimpse yet of the apelike ancestor who left the forest and began the long journey toward modern humanity.

Explains how different kinds of chemical reactions ranging from precipitation and combustion to polymerization and catalysis are formed, including examples, color illustrations, and real-life applications for each reaction.

Spessard and Miessler's *Organometallic Chemistry*, originally published by Prentice Hall in

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1997, is widely acknowledged as the most appropriate text for undergraduates and beginning graduate students taking this course. It is a highly readable and approachable text that starts with the basic inorganic chemistry needed to understand this advanced topic. Unlike the primary competing book by Crabtree (Wiley), S/M places a strong emphasis on structure and bonding in the first several chapters, which lay the foundation for later discussion of reaction types and applications. The organization of material is much more accessible for students who have never seen organometallic chemistry before. In addition to being pitched at the right level for undergraduate students, S/M presents outstanding explanations of important core topics such as molecular orbitals and bonding and supports these discussions with detailed illustrations and praised end of chapter problems. The second edition has been significantly revised and updated to include advancements over the last ten years in NMR, IR spectroscopy, nanotechnology and physical methods. The authors have significantly updated four chapters (9, 10, 11 and 12). Chapter 9 (catalysis) has been revised to cover the advances in catalytic cycle research. Chapter 10 in the first edition, which covered carbene complexes, metathesis, and polymerization, has been divided into two chapters in view of the expanded research efforts that have occurred over the last ten years in these areas. Chapter 10 in the second edition now focuses on carbene complexes, and Chapter 11 covers aspects of metathesis and polymerization reactions including an expanded discussion of Schrock and Grubbs metal carbene catalysts. Chapter 12 (Chapter 11, first edition) is a substantially-revised treatment of the applications of organometallic chemistry to organic synthesis. This chapter offers an extensive discussion of asymmetric hydrogenation and oxidation methodology as well as a greatly revised treatment of Tsuji-Trost allylation, the Heck reaction, and palladium-

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catalyzed cross-coupling reactions. The latter topic includes discussion of the Stille, Suzuki, Sonogashira, and Negishi cross-couplings, reactions that have had a profound impact on the synthesis of anti-tumor compounds and other potent pharmaceuticals. In addition, the authors have included more molecular model illustrations, and introduced more modern examples and medical/medicinal applications across the text. They have included 53% more in-chapter exercises and end-of-chapter problems (23% more exercises and 81% more EOCs). The second edition has been extensively updated to include current literature (62% more references to the chemical literature).

This introduction to organic chemistry includes the currently controversial issue of halogenated organic compounds in the environment, and presents the concept of environmentally benign synthesis, as well as exploring molecular modelling.

This program shows how elementary students can use skillstreaming in order to use proper social skills in dealing with difficult situations. Skill cards list the steps needed to successfully perform each of the 60 prosocial skills outlined in skillstreaming the elementary school child. How teachers view the nature of scientific knowledge is crucial to their understanding of science content and how it can be taught. This book presents an overview of the dynamics of scientific progress and its relationship to the history and philosophy of science, and then explores their methodological and educational implications and develops innovative strategies based on actual classroom practice for teaching topics such the nature of science, conceptual change, constructivism, qualitative-quantitative research, and the role of controversies, presuppositions, speculations, hypotheses, and predictions. Field-tested in science education courses, this book is designed to involve readers in critically thinking about the history and

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philosophy of science and to engage science educators in learning how to progressively introduce various aspects of 'science-in-the-making' in their classrooms, to promote discussions highlighting controversial historical episodes included in the science curriculum, and to expose their students to the controversies and encourage them to support, defend or critique the different interpretations. Innovating Science Teacher Education offers guidelines to go beyond traditional textbooks, curricula, and teaching methods and innovate with respect to science teacher education and classroom teaching.

The marvellous complexity of the Universe emerges from several deep laws and a handful of fundamental constants that fix its shape, scale, and destiny. There is a deep structure to the world which at the same time is simple, elegant, and beautiful. Where did these laws and these constants come from? And why are the laws so fruitful when written in the language of mathematics? Peter Atkins considers the minimum effort needed to equip the Universe with its laws and its constants. He explores the origin of the conservation of energy, of electromagnetism, of classical and quantum mechanics, and of thermodynamics, showing how all these laws spring from deep symmetries. The revolutionary result is a short but immensely rich weaving together of the fundamental ideas of physics. With his characteristic wit, erudition, and economy, Atkins sketches out how the laws of Nature can spring from very little. Or arguably from nothing at all.

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