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## UF03HM - JACKSON VEGA

Since the first attempts at structure-based drug design about four decades ago, molecular modelling techniques for drug design have developed enormously, along with the increasing computational power and structural and biological information of active compounds and potential target molecules. Nowadays, molecular modeling can be considered to be an integral component of the modern drug discovery and development toolbox. Nevertheless, there are still many methodological challenges to be overcome in the application of molecular modeling approaches to drug discovery. The eight original research and five review articles collected in this book provide a snapshot of the state-of-the-art of molecular modeling in drug design, illustrating recent advances and critically discussing important challenges. The topics covered include virtual screening and pharmacophore modelling, chemoinformatic applications of artificial intelligence and machine learning, molecular dynamics simulation and enhanced sampling to investigate contributions of molecular flexibility to drug–receptor interactions, the modeling of drug–receptor solvation, hydrogen bonding and polarization, and drug design against protein–protein interfaces and membrane protein receptors.

Homology modeling is an extremely useful and versatile technique that is gaining more and more space and demand in research in computational and theoretical biology. This book, “Homology Molecular Modeling - Perspectives and Applications”, brings together unpublished chapters on this technique. In this book, 7 chapters are intimately related to the theme of molecular modeling, carefully selected and edited for academic and scientific readers. It is an indispensable read for anyone interested in the areas of bioinformatics and computa-

tional biology. Divided into 4 sections, the reader will have a didactic and comprehensive view of the theme, with updated and relevant concepts on the subject. This book was organized from researchers to researchers with the aim of spreading the fascinating area of molecular modeling by homology.

Chemical Engineering Design, Second Edition, deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, this edition has been specifically developed for the U.S. market. It provides the latest US codes and standards, including API, ASME and ISA design codes and ANSI standards. It contains new discussions of conceptual plant design, flowsheet development, and revamp design; extended coverage of capital cost estimation, process costing, and economics; and new chapters on equipment selection, reactor design, and solids handling processes. A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data, and Excel spreadsheet calculations, plus over 150 Patent References for downloading from the companion website. Extensive instructor resources, including 1170 lecture slides and a fully worked solutions manual are available to adopting instructors. This text is designed for chemical and biochemical engineering students (senior undergraduate year, plus appropriate for capstone design courses where taken, plus graduates) and lecturers/tutors, and professionals in industry (chemical process, biochemical, pharmaceutical, petrochemical sectors). New to this edition: Revised organization into Part I: Process Design, and Part II: Plant Design. The broad themes of Part I are flowsheet development, economic analysis, safety and environmental impact and optimization. Part II contains chapters on equipment design and selection that can be used as supplements to a lecture course or as essential references for students or practicing engineers working on design projects. New discussion of conceptual plant design, flowsheet development and revamp design Significantly increased coverage of capital cost estimation, process costing and economics New chapters on equipment selection, reactor design and solids handling processes New sections on fermentation, adsorption, membrane separations, ion exchange and chromatography Increased coverage of batch processing, food, pharmaceutical and biological processes All equipment chapters in Part II revised and updated with current information Updated throughout for latest US codes and standards, including API, ASME and ISA design codes and ANSI standards Additional worked examples and homework problems The most complete and up to date coverage of equipment selection 108 realistic commercial design projects from diverse industries A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data and Excel spreadsheet calculations plus over 150 Patent References, for downloading from the companion website Extensive instructor resources: 1170 lecture slides plus fully worked solutions manual available to adopting instructors

The Sixth Edition of a classic in organic chemistry continues its tradition of excellence Now in its sixth edition, March's Advanced Organic Chemistry remains the gold standard in organic chemistry. Throughout its six editions, students and chemists from around the world have relied on it as an essential resource for plann-

ing and executing synthetic reactions. The Sixth Edition brings the text completely current with the most recent organic reactions. In addition, the references have been updated to enable readers to find the latest primary and review literature with ease. New features include: More than 25,000 references to the literature to facilitate further research Revised mechanisms, where required, that explain concepts in clear modern terms Revisions and updates to each chapter to bring them all fully up to date with the latest reactions and discoveries A revised Appendix B to facilitate correlating chapter sections with synthetic transformations

Very broad overview of the field intended for an interdisciplinary audience; Lively discussion of current challenges written in a colloquial style; Author is a rising star in this discipline; Suitably accessible for beginners and suitably rigorous for experts; Features extensive four-color illustrations; Appendices featuring homework assignments and reading lists complement the material in the main text

Experiential learning is a powerful and proven approach to teaching and learning that is based on one incontrovertible reality: people learn best through experience. Now, in this extensively updated book, David A. Kolb offers a systematic and up--to-date statement of the theory of experiential learning and its modern applications to education, work, and adult development. Experiential Learning, Second Edition builds on the intellectual origins of experiential learning as defined by figures such as John Dewey, Kurt Lewin, Jean Piaget, and L.S. Vygotsky, while also reflecting three full decades of research and practice since the classic first edition. Kolb models the underlying structures of the learning process based on the latest insights in psychology, philosophy, and physiology. Building on his comprehensive structural model, he offers an exceptionally useful typology of individual learning styles and corresponding structures of knowledge in different academic disciplines and careers. Kolb also applies experiential learning to higher education and lifelong learning, especially with regard to adult education. This edition reviews recent applications and uses of experiential learning, updates Kolb's framework to address the current organizational and educational landscape, and features current examples of experiential learning both in the field and in the classroom. It will be an indispensable resource for everyone who wants to promote more effective learning: in higher education, training, organizational development, lifelong learning environments, and online.

7.1 Introduction -- 7.2 Rotational Energy Exchange Models -- 7.2.1 Constant Collision Number -- 7.2.2 The Parker Model -- 7.2.3 Variable Probability Exchange Model of Boyd -- 7.2.4 Nonequilibrium Direction Dependent Model -- 7.2.5 Model Results -- 7.3 Vibrational Energy Exchange Models -- 7.3.1 Constant Collision Number -- 7.3.2 The Millikan-White Model -- 7.3.3 Quantized Treatment for Vibration -- 7.3.4 Model Results -- 7.4 Dissociation Chemical Reactions -- 7.4.1 Total Collision Energy Model -- 7.4.2 Redistribution of Energy Following a Dissociation Reaction -- 7.4.3 Vibrationally Favored Dissociation Model -- 7.5 General Chemical Reactions -- 7.5.1 Reaction Rates and Equilibrium Constant -- 7.5.2 Backward Reaction Rates in DSMC -- 7.5.3 Three-Body Recombination Reactions -- 7.5.4 Post-Reaction Energy Redistribution and General Implementation --

7.5.5 DSMC Solutions for Reacting Flows -- 7.6 Summary -- Appendix A: Generating Particle Properties -- Appendix B: Collisional Quantities -- Appendix C: Determining Post-Collision Velocities -- Appendix D: Macroscopic Properties -- Appendix E: Common Integrals -- References -- Index

Changes and additions to the new edition of this classic textbook include a new chapter on symmetries, new problems and examples, improved explanations, more numerical problems to be worked on a computer, new applications to solid state physics, and consolidated treatment of time-dependent potentials.

This book provides simultaneously a design blueprint, user guide, research agenda, and communication platform for current and future developments in artificial intelligence (AI) approaches to systems biology. It places an emphasis on the molecular dimension of life phenomena and in one chapter on anatomical and functional modeling of the brain. As design blueprint, the book is intended for scientists and other professionals tasked with developing and using AI technologies in the context of life sciences research. As a user guide, this volume addresses the requirements of researchers to gain a basic understanding of key AI methodologies for life sciences research. Its emphasis is not on an intricate mathematical treatment of the presented AI methodologies. Instead, it aims at providing the users with a clear understanding and practical know-how of the methods. As a research agenda, the book is intended for computer and life science students, teachers, researchers, and managers who want to understand the state of the art of the presented methodologies and the areas in which gaps in our knowledge demand further research and development. Our aim was to maintain the readability and accessibility of a textbook throughout the chapters, rather than compiling a mere reference manual. The book is also intended as a communication platform seeking to bride the cultural and technological gap among key systems biology disciplines. To support this function, contributors have adopted a terminology and approach that appeal to audiences from different backgrounds.

Fully updated and rewritten by a basic scientist who is also a practicing physician, the third edition of this popular textbook remains comprehensive, authoritative and readable. Taking a receptor-based, target--centered approach, it presents the concepts central to the study of drug action in a logical, mechanistic way grounded on molecular and principles. Students of pharmacy, chemistry and pharmacology, as well as researchers interested in a better understanding of drug design, will find this book an invaluable resource. Starting with an overview of basic principles, Medicinal Chemistry examines the properties of drug molecules, the characteristics of drug receptors, and the nature of drug-receptor interactions. Then it systematically examines the various families of receptors involved in human disease and drug design. The first three classes of receptors are related to endogenous molecules: neurotransmitters, hormones and immunomodulators. Next, receptors associated with cellular organelles (mitochondria, cell nucleus), endogenous macromolecules (membrane proteins, cytoplasmic enzymes) and pathogens (viruses, bacteria) are examined. Through this evaluation of receptors, all the main types of human disease and all major categories of drugs are considered. There have been many changes

in the third edition, including a new chapter on the immune system. Because of their increasingly prominent role in drug discovery, molecular modeling techniques, high throughput screening, neuropharmacology and genetics/genomics are given much more attention. The chapter on hormonal therapies has been thoroughly updated and re-organized. Emerging enzyme targets in drug design (e.g. kinases, caspases) are discussed, and recent information on voltage-gated and ligand-gated ion channels has been incorporated. The sections on antihypertensive, antiviral, antibacterial, anti-inflammatory, antiarrhythmic, and anticancer drugs, as well as treatments for hyperlipidemia and peptic ulcer, have been substantially expanded. One new feature will enhance the book's appeal to all readers: clinical-molecular interface sections that facilitate understanding of the treatment of human disease at a molecular level.

Molecular models are as vital a tool for the study of chemistry as calculators are for the study of mathematics. Molecular Visions models may be assembled in infinite combinations enabling the user to construct not only familiar configurations but also undiscovered possibilities. Models are intended to inspire the imagination, stimulate thought, and assist the visualization process. They present the user with a solid form of an abstract object that can otherwise only be visualized by the chemist. While chemistry textbooks use letters and graphics to describe molecules, molecular models make them "real". MOLECULAR VISIONS Organic Kit #1 is in a green plastic box, 9"x4"x2"

Demonstrates how anyone in math, science, and engineering canmaster DFT calculations Density functional theory (DFT) is one of the most frequentlyused computational tools for studying and predicting the propertiesof isolated molecules, bulk solids, and material interfaces,including surfaces. Although the theoretical underpinnings of DFTare quite complicated, this book demonstrates that the basicconcepts underlying the calculations are simple enough to beunderstood by anyone with a background in chemistry, physics,engineering, or mathematics. The authors show how the widespreadavailability of powerful DFT codes makes it possible for studentsand researchers to apply this important computational technique toa broad range of fundamental and applied problems. Density Functional Theory: A Practical Introductionoffers a concise, easy-to-follow introduction to the key conceptsand practical applications of DFT, focusing on plane-wave DFT. Theauthors have many years of experience introducing DFT to studentsfrom a variety of backgrounds. The book therefore offers severalfeatures that have proven to be helpful in enabling students tomaster the subject, including: Problem sets in each chapter that give readers the opportunityto test their knowledge by performing their own calculations Worked examples that demonstrate how DFT calculations are usedto solve real-world problems Further readings listed in each chapter enabling readers toinvestigate specific topics in greater depth This text is written at a level suitable for individuals from avariety of scientific, mathematical, and engineering backgrounds.No previous experience working with DFT calculations is needed.

Designed to serve as a textbook for postgraduate students of physics and chemistry, this second edition improves the clarity of treatment, extends the range of topics, and includes more worked examples

with a view to providing all the material needed for a course in molecular spectroscopy—from first principles to the very useful spectral data that comprise figures, charts and tables. To improve the conceptual appreciation and to help students develop more positive and realistic impressions of spectroscopy, there are two new chapters—one on the spectra of atoms and the other on laser spectroscopy. The chapter on the spectra of atoms is a detailed account of the basic principles involved in molecular spectroscopy. The chapter on laser spectroscopy covers some new experimental techniques for the investigation of the structure of atoms and molecules. Additional sections on interstellar molecules, inversion vibration of ammonia molecule, fibre-coupled Raman spectrometer, Raman microscope, supersonic beams and jet-cooling have also been included. Besides worked-out examples, an abundance of review questions, and end-of-chapter problems with answers are included to aid students in testing their knowledge of the material contained in each chapter. Solutions manual containing the complete worked-out solutions to chapter-end problems is available for instructors.

The second edition of MODERN GARDE MANGER: A GLOBAL PERSPECTIVE, was written for both the working chef and the serious student engaged in the practice and study of culinary arts. The first edition was winner of the International Association of Culinary Professionals (IACP) Cookbook Award. Its carefully researched information and fully tested recipes span the international spectrum of the modern garde manger station. Four sections covering twenty chapters focus on the chef's required knowledge and responsibilities. This second edition has been reorganized to provide a clearer transition from subject to subject, and skill set to skill set. Special features include: Chapter Goals; Professional Profiles; Ask the Expert; People, Places, Things; Review Questions; Activities and Applications; and Key Words in Review. The text contains material on molecular cuisine, plus creative equipment used by garde manger chefs. There are more than 800 four-color photographs of which more than 300 are new, including many finished plates, platters, showpieces and step-by-step procedures, plus many additional recipes and expanded content on food show competition, buffet table layouts, ice sculpting techniques and more. . While Modern Garde Manger, 2e still retains its exposure to international recipes and techniques, more traditionally American recipes and techniques have been included in this edition. MODERN GARDE MANGER 2E is the most comprehensive book of its kind available for today's student and professional chef. In addition, a CourseMate website is available to accompany the text. CourseMate includes: an interactive eBook; Engagement Tracker, a first-of-its-kind tool that monitors student engagement in the course; and interactive teaching and learning tools including quizzes, flashcards, crossword puzzles, PowerPoint slides and more. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Designed for general chemistry courses that consider a lot of organic examples, or for students who plan to continue in organic chemistry. This molecular model set can be used to construct realistic scale models illustrating the molecular structures of many thousands of compounds. With it one can build molecular models of repre-

sentative compounds.
FROM REVIEWS OF THE SERIES "Reviews in Computational Chemistry remains the most valuable reference to methods and techniques in computational chemistry." -JOURNAL OF MOLECULAR GRAPHICS AND MODELLING "One cannot generally do better than to try to find an appropriate article in the highly successful Reviews in Computational Chemistry. The basic philosophy of the editors seems to be to help the authors produce chapters that are complete, accurate, clear, and accessible to experimentalists (in particular) and other nonspecialists (in general)." -JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

For two-semester courses in Organic Chemistry taken primarily by science and pre-health majors. This text, organized with a traditional functional-group approach, applies the most modern teaching and pedagogical techniques to the study of organic chemistry. In a highly accessible fashion, this top-selling text bridges the gap between conceptual understanding and actual application while strongly emphasizing the development of problem-solving skills. Additionally, it provides up-to-date aspects of spectroscopy, relevant photographs, and many applications to polymer chemistry integrated throughout the text.
For beginners and specialists in other fields: the Nobel Laureate's introduction to atomic spectra and their relationship to atomic structures, stressing basics in a physical, rather than mathematical, treatment. 80 illustrations.
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.
From the website: The IUCN/SSC Primate Specialist Group is publishing new guidelines for surveys and monitoring of great ape populations. These guidelines address a need which has existed since great ape studies began -- the challenge of collecting consistently high-quality data for comparison between a wide variety of sites, and often across many years. This need is driven less by academic interest than by the urgent demands of field-based conservation. The maelstrom of threats which now endanger all the great apes must be addressed by immediate action on every scale: initiatives at individual sites, strategies on the regional and national level, and species-wide action plans and international accords. All of these efforts must be founded on accurate field data -- and to fully understand the impact of specific threats, and to measure if conservation programs are succeeding, it is essential to have baseline density estimates and sustained monitoring of great ape popula-

tions. The newest publication in the Best Practice series outlines current approaches to these issues, offering guidance and perspective on choices that must be made by wildlife biologists, site managers, government agencies and the conservation community at large. This report provides an overview of the variety of survey methodologies that have been developed, as well as a decision tree to help select the approach that is best for a particular site or situation, depending on available resources. As a continuation of this report, a series of modules will be made available online, which will present detailed information on survey design, field techniques, analytical approaches, and practical issues such as logistics, finance and standardized reporting. These new IUCN guidelines will help researchers to standardize their data collection and, just as importantly, will allow for improved comparisons between datasets. This will complement the A.P.E.S. database (http://apes.eva.mpg.de), which is intended to serve as a repository for survey data on great apes, and to analyze trends in their populations. These survey and monitoring guidelines, combined with resources available via A.P.E.S., are important steps towards a comprehensive understanding of the conservation status of great apes, at both the population and species level. .

Those of us who read a daily newspaper or scan a weekly magazine have grown accustomed to being told that the science of genetics influences countless aspects of our existence, from human development, health, and disease to the ecological balance of our planet. We accept this, and yet most of us have only the faintest idea of what a gene really is or how it functions. This book, then, is a primer on modern genetics, and its aim is to teach any interested general reader all he or she needs to know about how genes work - and about how a detailed knowledge of their workings can be applied to some of the most pressing problems of our time. Written by two world-renowned researchers in molecular biology and illustrated with uncommon clarity and precision, Dealing with Genes will satisfy the interest of general readers, including those who have little formal background in biology. It will also serve admirably as an authoritative text for students taking nonmajors courses in biology, genetics, molecular biology, biotechnology, and related disciplines.

The growth in the world's nuclear industry, motivated by peaking world oil supplies, concerns about the greenhouse effect, and domestic needs for energy independence, has resulted in a heightened focus on the need for next-generation nuclear fuel-cycle technologies. Ion Exchange and Solvent Extraction: A Series of Advances, Volume 19 provides a comprehensive look at the state of the science underlying solvent extraction in its role as the most powerful separation technique for the reprocessing of commercial spent nuclear fuel. Capturing the current technology and scientific progress as it exists today and looking ahead to potential developments, the book examines the overall state of solvent extraction in reprocessing, new molecules for increased selectivity and performance, methods for predicting extractant properties, and actinide-lanthanide group separation. The contributors also explore the simultaneous extraction of radionuclides by mixing extractants, the cause and nature of third-phase formation, the effects of radiation on the solvent and its performance, analytical techniques for measur-

ing process concentrations, new centrifugal contactors for more efficient processing, and new chemistry using novel media. The long-term vision of many professionals in the field entails a proliferation-free nuclear energy economy in which little or no waste is stored or released into the environment and all potential energy values in spent nuclear fuel are recycled. This text opens a window on that possibility, offering insight from world leaders on the cutting edge of nuclear research.

In this third edition, core applications have been added along with more recent developments in the theories of chemical reaction kinetics and molecular quantum mechanics, as well as in the experimental study of extremely rapid chemical reactions. * Fully revised concise edition covering recent developments in the field * Supports student learning with step by step explanation of fundamental principles, an appropriate level of math rigor, and pedagogical tools to aid comprehension * Encourages readers to apply theory in practical situations

The fundamental aim underlying Cellular and Biochemical Sciences is to emphasize diversified topics of current interest to postgraduate students pursuing different courses in the area of biological sciences including Zoology, Botany, Biochemistry and Biotechnology. The text is also relevant to the students of Life Sciences, Biosciences, Cell Biology, Bioengineering and Pharmacology. A total of 58 topics have been incorporated in the book and some of the topics are rarely found in other books of Biology. New information has been introduced which updates existing knowledge and enables the book to justify its claim as the most comprehensive text in the sphere of cellular and biochemical sciences at the postgraduate and competitive examination levels. Each and every chapter has been designed in lucid and readable manner. There are references, suggested readings, long questions and objective questions at the end of chapters for revision of topics.

Membrane Computing was introduced as a computational paradigm in Natural Computing. The models introduced, called Membrane (or P) Systems, provide a coherent platform to describe and study living cells as computational systems. Membrane Systems have been investigated for their computational aspects and employed to model problems in other fields, like: Computer Science, Linguistics, Biology, Economy, Computer Graphics, Robotics, etc. Their inherent parallelism, heterogeneity and intrinsic versatility allow them to model a broad range of processes and phenomena, being also an efficient means to solve and analyze problems in a novel way. Membrane Computing has been used to model biological systems, becoming with time a thorough modeling paradigm comparable, in its modeling and predicting capabilities, to more established models in this area. This book is the result of the need to collect, in an organic way, different facets of this paradigm. The chapters of this book, together with the web pages accompanying them, present different applications of Membrane Systems to Biology. Deterministic, non-deterministic and stochastic systems paired with different algorithms and methodologies show the full potential of this framework. The book is addressed to researchers interested in applications of discrete biological models and the interplay between Membrane Systems and other approaches to analyze complex systems.

Essentials of Computational Chemistry provides a balanced introduction to this dynamic subject. Suitable for both experimentalists and theorists, a wide range of samples and applications are included drawn from all key areas. The book carefully leads the reader thorough the necessary equations providing information explanations and reasoning where necessary and firmly placing each equation in context.

Book is in the Baton Rouge Library (08/14/06).

This text covers new techniques and applications in chemical genomics for researchers, professionals and graduates in biology, biomedicine and chemistry.

BANNED: The Golden Book of Chemistry Experiments was a children's chemistry book written in the 1960s by Robert Brent and illustrated by Harry Lazarus, showing how to set up your own home laboratory and conduct over 200 experiments. The book is controversial, as many of the experiments contained in the book are now considered too dangerous for the general public. There are apparently only 126 copies of this book in libraries worldwide. Despite this, its known as one of the best DIY chemistry books every published. The book was a source of inspiration to David Hahn, nicknamed "the Radioactive Boy Scout" by the media, who tried to collect a sample of every chemical element and also built a model nuclear reactor (nuclear reactions however are not covered in this book), which led to the involvement of the authorities. On the other hand, it has also been the inspiration for many children who went on to get advanced degrees and productive chemical careers in industry or academia.

This enzymology textbook for graduate and advanced undergraduate students covers the syllabi of most universities where this subject is regularly taught. It focuses on the synchrony between the two broad mechanistic facets of enzymology: the chemical and the kinetic, and also highlights the synergy between enzyme structure and mechanism. Designed for self-study, it explains how to plan enzyme experiments and subsequently analyze the data collected. The book is divided into five major sections: 1] Introduction to enzymes, 2] Practical aspects, 3] Kinetic Mechanisms, 4] Chemical Mechanisms, and 5] Enzymology Frontiers. Individual concepts are treated as stand-alone chapters; readers can explore any single concept with minimal cross-referencing to the rest of the book. Further, complex approaches requiring specialized techniques and involved experimentation (beyond the reach of an average laboratory) are covered in theory with suitable references to guide readers. The book provides students, researchers and academics in the broad area of biology with a sound theoretical and practical knowledge of enzymes. It also caters to those who do not have a practicing enzymologist to teach them the subject.

Introduction to Computational Chemistry 3rd Edition provides a comprehensive account of the fundamental principles underlying different computational methods. Fully revised and updated throughout to reflect important method developments and improvements since publication of the previous edition, this timely update includes the following significant revisions and new topics: Polarizable force fields Tight-binding DFT More extensive DFT functionals, excited states and time dependent molecular properties Accelerated Molecular Dynamics methods Tensor decomposi-

tion methods Cluster analysis Reduced scaling and reduced prefactor methods Additional information is available at: www.wiley.com/go/jensen/computationalchemistry3

This book provides a myriad of fresh ideas and energetic approaches to the newer aspects of everyday drug modelling. With contributions from some of the best young talents of today, Molecular Modelling and Drug Design encourages a break from old traditions and probes the unexplored avenues of the modelling tool. The contributors' views act as a gauge to future trends in computer-aided drug design-an area that continues to expand and play an ever more significant role in drug discovery.

Up-to-date information on 1,780 colleges and universities.

Despite the fact that fluid dynamics and filtration through porous media and mathematics, there are classical research areas in engineering, physics, are still many industrial processes that require the study of new mathemat ical models for flows of particular complexity, due to the peculiar properties of the systems involved. The aim of this book is to provide a number of examples showing how frequently such situations arise in various branches of industrial technology. The selection of the subjects was motivated not only by their industrial rel evance and mathematical interest. What I had in mind was a collection of problems having a really distinctive character, thus bringing some fresh air into one of the oldest and most revered domains of applied mathematics. The incredible richness of nonstandard flow problems in industrial appli cations has always been, and still is, a constant surprise to me. Therefore I tried to offer a very large spectrum of subjects, with special attention devoted to those problems in which the modeling phase is far from being obvious, and the mathematical content is absolutely nontrivial. With such a view to diversity, topics have been selected from a variety of sources (such as glass industry, polymers science, coffee brewing, fuels pipelining), and contributors from different backgrounds (mathematics, physics, chemical engineering) have been included. Consequently, the mathematical nature of the problems formulated spans over a large range, so that their theoret ical investigation and numerical computation require a variety of different techniques.

This kit enables users to build virtually all simple molecules encountered in organic chemistry. Includes space-filling models that simulate the true shape of saturated compounds. Provides open models that form realistic single, double, and triple bonds — even strained rings. Allows smooth rotation of the bonds to make conformational analysis easy. Contains enough components to create several models at once. The components are precision--tooled from quality plastics, are virtually indestructible, and come in a sturdy plastic case for easy storage. Provides a useful Instruction Book — with photos, diagrams, and concise discussions of chemical principles.

Designed for students in Nebo School District, this text covers the Utah State Core Curriculum for chemistry with few additional topics.

This book focuses on X-ray spectroscopy for chemical state analysis covering X-ray physics, spectroscopic characteristics used for functional and toxic materials, and the author's ideas related to X-ray experiments. This book also provides novel theo-

retical interpretations of X-ray spectra along with experimental techniques needed for both synchrotron radiation users and laboratory experimentalists. Presenting not only practical information, this book also covers basic knowledge of commercially available spectrometers and the basic physics of optics and electromagnetism related to X-rays. Furthermore, the author introduces the forgotten history of X-ray physics in the beginning of twentieth century. This book is of use for researchers studying catalysts, charge-transfer materials, surface characterization, and toxic trace elements via X-ray spectroscopy for chemical state analysis as well as quantitative analysis.