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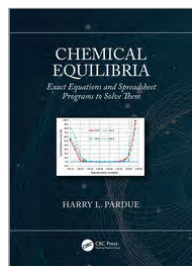
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Contents

Analytical Chemistry	2	Protein Structure Analysis	51
Basic Analytical Chemistry	3	Quantum Mechanics	52
Basic Chemistry	4	Solid State Chemistry	53
Basic Organic Chemistry	5	Solid State Physics	54
Biochemistry	6	Synthetic Organic Chemistry/Organic Analysis	55
Biophysical-Chemical Concepts	7	Theoretical Chemistry	56
Biotechnology	8	Water Chemistry	57
Chemical Biology (and Molecular)	9	Index	58
Chemical Engineering	10		
Chemical Physics	12		
Chemical Principles	13		
Chemical Thermodynamics	14		
Colloid and Surface Chemistry	15		
Complex Systems	16		
Computational and Theoretical Chemistry	17		
Crystallography	18		
Energetic Materials/Pyrotechnics	19		
Environmental Chemistry and Sustainability	20		
Environmental Science	23		
General Chemistry	24		
Green Chemistry	26		
Green Organic Chemistry	27		
Innovation	28		
Inorganic Chemistry	29		
Instrumental Analysis	30		
Kinetics and Transport Processes	31		
Life Sciences	32		
Materials Science and Engineering / Polymers	33		
Materials Science/Art Materials	34		
Medicinal Chemistry	35		
Organic Chemistry	36		
Patents	38		
Pharmaceutical Science/Pharmacy/Medicine	39		
Physical Chemistry	41		
Physical Mechanics	44		
Physical Organic Chemistry	45		
Physics	46		
Polymer Chemistry	47		
Polymer Physics	49		
Polymer Physics/Polymer Science	50		

Chemical Equilibria

Exact Equations and Spreadsheet Programs to Solve Them



Harry L. Pardue Professor Emeritus, Department of Chemistry, Purdue University, USA

Concepts, procedures and programs described in this book make it possible for readers to solve both simple and complex equilibria problems quickly and easily and to visualize results in both numerical and graphical forms. They allow the user to calculate concentrations of reactants and products for both simple and complicated situations. The user can spend less time doing calculations and more time thinking about what the results mean in terms of a larger problem in which she or he may be interested.

CRC Press

December 2018 : 267pp

Pb: 978-1-138-36722-7 : **£71.99**

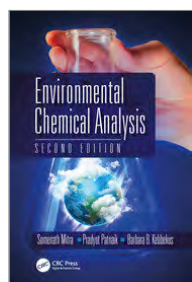
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2ND EDITION

Environmental Chemical Analysis



S. Mitra New Jersey Institute of Technology, Newark, USA
B.B. Kebbekus New Jersey Institute of Technology, Newark, USA

Environmental Chemical Analysis provides an explanation of analytical instrumentation methods for students without a background in analytical chemistry. This second edition features expanded material on sample preparation and quality assurance and control. It also includes new chapters on biological analysis and analysis of environmental particulates. It brings together sampling, sample preparation, and analytical techniques necessary for environmental applications, demonstrated through case studies of actual environmental measurement protocols.

CRC Press

August 2018 : 449pp

Pb: 978-0-849-33838-0 : **£71.99**

Hb: 978-1-138-60409-4 : **£210**

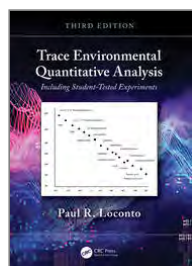
eBook: 978-0-429-45820-0

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3RD EDITION

Trace Environmental Quantitative Analysis

Including Student-Tested Experiments



Paul R. Loconto Michigan Department of Community Health, Lansing, USA

A thorough and timely update, this new edition presents principles, techniques and applications in this sub-discipline of analytical chemistry for quantifying traces of potentially toxic organic and inorganic chemical substances found in air, soil, fish and water as well as serum, plasma, urine, and other body fluids.

CRC Press

January 2024 : 766pp

Pb: 978-0-367-63106-2 : **£79.99**

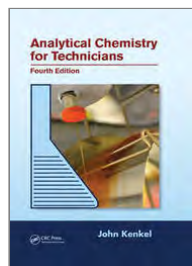
Hb: 978-0-367-44533-1 : **£215**

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4TH EDITION

Analytical Chemistry for Technicians



John Kenkel Emeritus, Southeast Community College,
Lincoln, Nebraska, USA

Covering classic quantitative analysis and related experiments, this thoroughly updated fourth edition is designed to be a powerful training tool for chemistry-based laboratory technicians. Emphasizing the practical aspects, the book begins with an introduction to analytical science and follows with a practical approach to the complex world of sophisticated electronic instrumentation commonly used in real-world laboratories. Providing a foundation for the two key qualities—the analytical mindset and a basic understanding of the analytical instrumentation—this book helps prepare individuals for success on the job.

CRC Press

August 2013 : 537pp

Hb: 978-1-439-88105-7 : £120

eBook: 978-0-429-11140-2

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Basic Chemical Concepts and Tables



Steven L. Hoenig American Public University, Charles Town, WV, USA

Written as a quick reference to the many different concepts and ideas encountered in chemistry, the author presents important subjects in a concise format that makes it a practical resource for any reader. Graduate and undergraduate chemistry students, professionals or instructors looking to refresh their understanding of a chemistry topic will find this ready reference indispensable in their daily work. Subjects covered include general chemistry, inorganic chemistry, organic chemistry, and spectral analysis. Separate chapters offer physical constants and unit measurements commonly encountered and mathematical concepts needed when reviewing or working with basic chemistry concepts.

CRC Press

November 2019 : 276pp

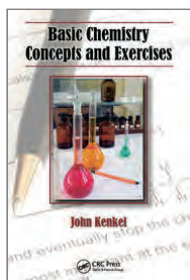
Pb: 978-0-367-23013-5 : **£49.99**

Hb: 978-0-367-23014-2 : **£135**

eBook: 978-0-429-27794-8

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Basic Chemistry Concepts and Exercises



John Kenkel Emeritus, Southeast Community College, Lincoln, Nebraska, USA

Bringing the wisdom of John Kenkel's more than 35 years of teaching experience, this volume communicates the fundamentals of chemistry in a practical, down-to-earth manner. Using conversational language and logically assembled graphics, the book concisely introduces each topic without overwhelming students with unnecessary detail. Example problems and end-of-chapter questions emphasize repetition of concepts, preparing students to become adept at the basics before they progress to an advanced general chemistry course. Enhanced with visualization techniques such as the first chapter's mythical microscope as well as interactive online homework exercises, the book clarifies challenging, abstract ideas and stimulates curiosity into what can otherwise be an overwhelming topic.

CRC Press

October 2010 : 472pp

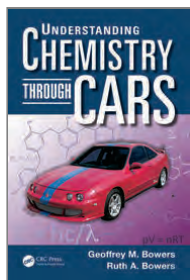
Pb: 978-1-439-81337-9 : **£58.99**

Hb: 978-1-138-40253-9 : **£180**

eBook: 978-0-429-11165-5

* For full contents and more information, visit: www.routledge.com/9781439813379

Understanding Chemistry through Cars



Geoffrey M. Bowers, Ruth A. Bowers

There is almost nothing in a car that cannot be described from a chemical perspective, thereby making cars an untapped pedagogical resource for the study of chemistry. This book is suitable as an introductory course or capstone project and provides a thorough, although not exhaustive, presentation of chemistry in relation to cars. Topics include the ideal gas law, materials chemistry, thermochemistry, solution chemistry, mass transport, polymerization, light/matter interactions, and oxidation/reduction. A Twitter account and a blog allow readers to interact directly with authors and other experts.

CRC Press

November 2014 : 261pp

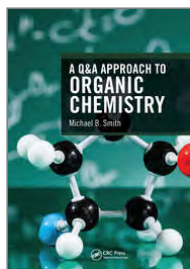
Pb: 978-1-466-57183-9 : **£47.99**

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eBook: 978-0-429-10182-3

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A Q&A Approach to Organic Chemistry



Michael B. Smith

A Q&A Approach to Organic Chemistry begins with atomic orbitals and bonding. All critical topics are covered, including bonding, nomenclature, stereochemistry, conformations, acids and bases, oxidations, reductions, substitution, elimination, acyl addition, acyl substitution, enolate anion reactions, the Diels-Alder reaction and sigmatropic rearrangements, aromatic chemistry, spectroscopy, amino acids and proteins, carbohydrates and nucleosides. All major reactions are covered. This edition has been completely revised and updated by the author, and each chapter includes end-of-chapter homework questions with the answer keys in an Appendix.

CRC Press

February 2022 : 358pp

Pb: 978-1-032-24068-8 : **£45.99**

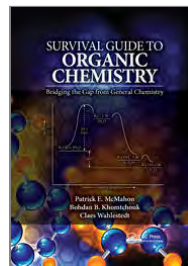
Hb: 978-0-367-22427-1 : **£145**

eBook: 978-0-429-27484-8

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Survival Guide to Organic Chemistry

Bridging the Gap from General Chemistry



Patrick E. McMahon, Bohdan B. Khomtchouk, Claes Wahlestedt

The Survival Guide to Organic Chemistry: Bridging the Gap from General Chemistry enables organic chemistry students to bridge the gap between general chemistry and organic chemistry. It makes sense of the myriad of in-depth concepts of organic chemistry, without overwhelming them in the necessary detail often given in a complete organic chemistry text. Here, the topics covered span the entire standard organic chemistry curriculum. The authors describe subjects which require further explanation, offer alternate viewpoints for understanding and provide hands-on practical problems and solutions to help master the material. This text ultimately allows students to a

CRC Press

July 2022 : 676pp

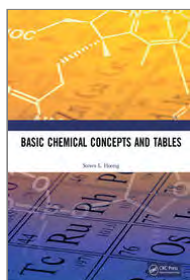
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Basic Chemical Concepts and Tables



Steven L. Hoenig American Public University, Charles Town, WV, USA

Written as a quick reference to the many different concepts and ideas encountered in chemistry, the author presents important subjects in a concise format that makes it a practical resource for any reader. Graduate and undergraduate chemistry students, professionals or instructors looking to refresh their understanding of a chemistry topic will find this ready reference indispensable in their daily work. Subjects covered include general chemistry, inorganic chemistry, organic chemistry, and spectral analysis. Separate chapters offer physical constants and unit measurements commonly encountered and mathematical concepts needed when reviewing or working with basic chemistry concepts.

CRC Press

November 2019 : 276pp

Pb: 978-0-367-23013-5 : **£49.99**

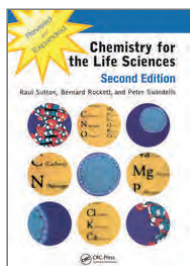
Hb: 978-0-367-23014-2 : **£135**

eBook: 978-0-429-27794-8

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2ND EDITION

Chemistry for the Life Sciences



Raul Sutton University of Wolverhampton, UK, **Bernard Rockett** Formerly of University of Wolverhampton, UK, **Peter G. Swindells**

Series: Lifelines Series

Retaining the user-friendly style that made the original popular, this updated edition continues to provide a grounding in the aspects of chemistry that developing life scientists need to understand biochemical and biomedical research. This edition adds new chapters, including one on water, covering the mole concept and colloids; another on gases, discussing pressure, solubility, and diffusion; and still another chapter on metals, covering properties, carriers, biocatalysis, and toxicity. Each topic is clearly tied to numerical considerations and core concepts. Critical information is reinforced through worked examples and questions. A solutions manual is available for qualifying instructors.

CRC Press

November 2008 : 280pp

Pb: 978-1-420-06935-8 : **£47.99**

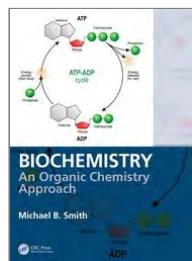
Hb: 978-1-138-40689-6 : **£180**

eBook: 978-0-429-14061-7

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Biochemistry

An Organic Chemistry Approach



Michael B. Smith University of Connecticut, Storrs, USA

Biochemistry: An Organic Chemistry Approach provides a framework for understanding various topics of biochemistry, including the chemical behavior of biomolecules, enzyme activity, and more. It goes beyond mere memorization. Using several techniques to develop a relational understanding, including homework, this text helps students fully grasp and better correlate the essential organic chemistry concepts with those concepts at the root of biochemistry. The goal is to better understand the fundamental principles of biochemistry.

CRC Press

May 2020 : 398pp

Pb: 978-0-815-36645-4 : **£110**

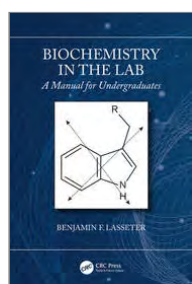
Hb: 978-0-815-36713-0 : **£220**

eBook: 978-1-351-25808-1

* For full contents and more information, visit: www.routledge.com/9780815366454

Biochemistry in the Lab

A Manual for Undergraduates



Benjamin F. Lasseter Christopher Newport University, VA, USA

Biochemistry in the Lab: A Manual for Undergraduates presents a comprehensive approach to modern biochemistry laboratory teaching together with a complete experimental experience, from molecular biology, cloning, and protein expression, to purification and characterization.

CRC Press

October 2019 : 202pp

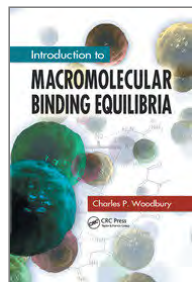
Pb: 978-1-138-58996-4 : **£49.99**

Hb: 978-1-138-58992-6 : **£135**

eBook: 978-0-429-49126-9

* For full contents and more information, visit: www.routledge.com/9781138589964

Introduction to Macromolecular Binding Equilibria



Charles P. Woodbury

This compact, graduate-level text focuses on a key area of biophysical chemistry. Introduction to Macromolecular Binding Equilibria first describes the features of binding sites for small molecules and then presents a discussion of the formulation of binding isotherms for simple mathematical models. The book addresses special problems in describing isotherms for linear polymers and examines the complications of binding cooperativity and thermodynamic linkage interactions among multiple ligands. It highlights important aspects of experimental designs, key aspects of ligand binding to planar arrays of sites, and methods for model-free analysis data used to reveal the binding isotherm.

CRC Press

September 2019 : 272pp

Pb: 978-0-367-38832-4 : **£61.99**

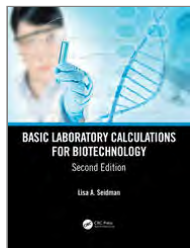
Hb: 978-1-420-05298-5 : **£175**

eBook: 978-0-429-14054-9

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Basic Laboratory Calculations for Biotechnology



Lisa A. Seidman Madison College, WI, USA

To succeed in the lab, it is crucial to be comfortable with the math calculations that are part of everyday work. This accessible introduction to common laboratory techniques focuses on the basics, helping even readers with good math skills to practice the most frequently encountered types of problems. Discusses very common laboratory problems, all applied to real situations. Explores multiple strategies for solving problems for a better understanding of the underlying math. Includes hundreds of practice problems, all with solutions and many with boxed, complete explanations; plus hundreds of "story problems" relating to real situations in the lab.

CRC Press

December 2021 : 578pp

Pb: 978-0-367-24480-4 : **£68.99**

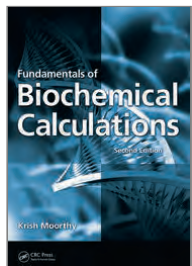
Hb: 978-0-367-24485-9 : **£135**

eBook: 978-0-429-28274-4

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Fundamentals of Biochemical Calculations



Krish Moorthy Formerly of RMIT University, Melbourne, Australia

Drawing attention to the widely applicable Ratio method for performing biochemical calculations, this fully updated text encourages scientists to learn, rather than memorize, the processes involved by developing their mathematical logic and problem solving skills. The book's user-friendly style requires no advanced knowledge of mathematics. Featuring new solved problems, useful comments, and mathematical hints, this edition also introduces three new chapters on calculations related to experimental biochemistry, molecular biology, and pharmacy. It also includes a supplementary CD with additional questions and answers.

CRC Press

November 2007 : 192pp

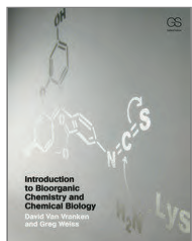
Pb: 978-1-420-05357-9 : **£47.99**

Hb: 978-1-138-40702-2 : **£180**

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Introduction to Bioorganic Chemistry and Chemical Biology



David Van Vranken , GREGORY A WEISS

This textbook uniquely blends the modern tools of organic chemistry with concepts of biology, physiology, and medicine. With a focus on human cell biology and using a problems-driven approach, the text explains the combinatorial architecture of biooligomers (genes, DNA, RNA, proteins, glycans, lipids, and terpenes) as the molecular engine for life. Accentuated by descriptions of mechanistic arrow pushing and rich illustrations, organic chemistry is used to illuminate the central dogma of molecular biology. The text contains more than 300 problems to test assimilation or the material.

Garland Science

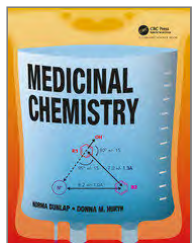
November 2012 : 504pp

Pb: 978-0-815-34214-4 : **£76.99**

eBook: 978-0-203-38109-0

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Norma K Dunlap Middle Tennessee State University, USA, **Donna M Huryn** University of Pennsylvania and University of Pittsburgh, USA

Medicinal Chemistry teaches the essential concepts of medicinal chemistry from the perspective of practicing.

Garland Science

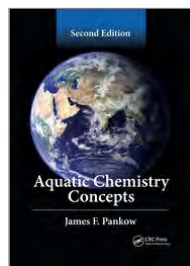
April 2018 : 508pp

Pb: 978-0-815-34556-5 : **£105**

eBook: 978-1-315-10047-0

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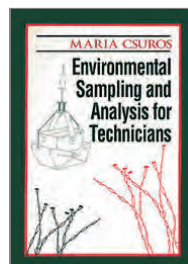
2ND EDITION

Aquatic Chemistry Concepts, Second Edition**James F. Pankow**

Aquatic Chemistry Concepts, Second Edition. Fully revised and updated, this textbook fills the need for a comprehensive treatment of aquatic chemistry and covers the many complicated equations and principles of aquatic chemistry. It presents the established science of equilibrium water chemistry using the uniquely recognizable, step-by-step Pankow format which allows a broad and deep understanding aquatic chemistry. The text is appropriate for a wide audience that includes undergraduate and graduate students, industry professionals, consultants, and regulators.

CRC Press
June 2022 : 582pp
Pb: 978-1-032-33773-9 : **£45.99**
Hb: 978-1-439-85440-2 : **£120**
eBook: 978-0-429-19886-1

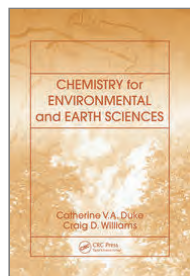
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Environmental Sampling and Analysis for Technicians**Maria Csuros** University of Pecs, Hungary

This book provides the basic knowledge in sample collection, field and laboratory quality assurance/quality control (QA/QC), sample custody, regulations and standards of environmental pollutants. The text covers sample collection, preservation, handling, detailed field activities, and sample custody. It provides an overview of the occurrence, source, and fate of toxic pollutants, as well as their control by regulations and standards. Environmental Sampling and Analysis for Technicians is an excellent introductory text for laboratory training classes, namely those teaching inorganic nonmetals, metals, and trace organic pollutants and their detection in environmental samples.

CRC Press
September 1994 : 332pp
Pb: 978-0-873-71835-6 : **£105**
Hb: 978-1-138-42440-1 : **£180**
eBook: 978-0-203-75686-7

* For full contents and more information, visit: www.routledge.com/9780873718356

Chemistry for Environmental and Earth Sciences

Catherine Vanessa Anne Duke University of Wolverhampton, UK, **Craig Denver Williams** University of Wolverhampton, UK

Chemistry for Environmental and Earth Sciences focuses on the chemistry and processes behind environmental issues such as global warming, ozone depletion, acid rain, water pollution, and soil contamination. Accessible to science as well as non-science majors, this textbook is divided into four intuitive chapters: Fire, Earth, Water, and Air. It uses worked examples and case studies drawn from current applications along with clear diagrams and concise explanations to illustrate the relevance of chemistry to geosciences. In-text and end-of-chapter questions with complete solutions also help students gain confidence in applying concepts from this book towards solving current, real-world problems.

CRC Press
October 2007 : 244pp
Pb: 978-0-849-33934-9 : **£71.99**
Hb: 978-1-138-42435-7 : **£180**
eBook: 978-0-429-12767-0

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2ND EDITION

Environmental Science and Technology

A Sustainable Approach to Green Science and Technology, Second Edition

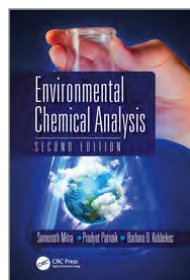
**Stanley E. Manahan**

Written by a leading expert, Environmental Science and Technology: A Sustainable Approach to Green Science and Technology, Second Edition provides a general overview of green science and technology and their essential role in ensuring environmental sustainability. This book addresses the roles of the hydrosphere, atmosphere, geosphere, and biosphere on the environment. It also considers the anthroposphere as a distinct environmental sphere. Presented in a consistent and accessible style, this text is suitable for students in environmental science and engineering, environmental scientists, ecologists, environmental policy experts, as well as those with little or no science background.

CRC Press
October 2019 : 647pp
Pb: 978-0-367-39012-9 : **£61.99**
Hb: 978-0-849-39512-3 : **£175**
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Environmental Chemical Analysis

S. Mitra New Jersey Institute of Technology, Newark, USA, **B.B. Kebbekus** New Jersey Institute of Technology, Newark, USA

Environmental Chemical Analysis provides an explanation of analytical instrumentation methods for students without a background in analytical chemistry. This second edition features expanded material on sample preparation and quality assurance and control. It also includes new chapters on biological analysis and analysis of environmental particulates. It brings together sampling, sample preparation, and analytical techniques necessary for environmental applications, demonstrated through case studies of actual environmental measurement protocols.

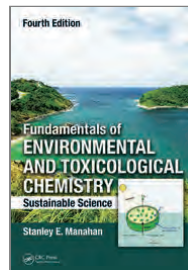
CRC Press
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Pb: 978-0-849-33838-0 : **£71.99**
Hb: 978-1-138-60409-4 : **£210**
eBook: 978-0-429-45820-0

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4TH EDITION

Fundamentals of Environmental and Toxicological Chemistry

Sustainable Science, Fourth Edition



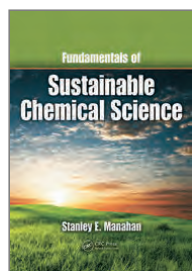
Stanley E. Manahan University of Missouri, Department of Chemistry, Columbia, USA

This book covers university-level environmental chemistry, with toxicological chemistry integrated throughout the content. This new edition of a bestseller provides an updated text with an increased emphasis on sustainability and green chemistry. Organized based on the five spheres of Earth's environment—the hydrosphere, atmosphere, geosphere, biosphere, and anthroposphere—the book presents discussions of each sphere based upon the nature, pollution, and sustainability of the sphere. For readers needing additional basic chemistry background, the book includes two chapters on general chemistry and organic chemistry.

CRC Press
February 2013 : 614pp
Hb: 978-1-466-55316-3 : **£110**
eBook: 978-0-429-09774-4

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Fundamentals of Sustainable Chemical Science



Stanley E. Manahan University of Missouri, Department of Chemistry, Columbia, USA

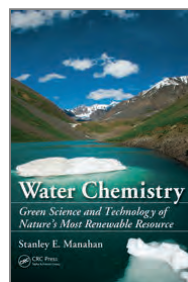
Assuming no prior background, this book presents the basics of general chemistry, organic chemistry, and biochemistry. The first chapter provides a brief mini-course in chemistry, defining key terms that are required for understanding materials presented in the rest of the text. It develops chemistry as it would be a language with its key parts. The author begins with a discussion of atoms and elements, moves to a description of chemical compounds made from those elements, and concludes with a look at chemical reactions involving elements and compounds. The chapters also include references to renewable resources, energy, and offer an emphasis on green chemistry in support of learned concepts.

CRC Press
March 2009: 392pp
Pb: 978-1-439-80239-7 : £84.99
Hb: 978-1-138-42436-4 : £180
eBook: 978-0-429-11210-2

* For full contents and more information, visit: www.routledge.com/9781439802397

Water Chemistry

Green Science and Technology of Nature's Most Renewable Resource



Stanley E. Manahan University of Missouri, Department of Chemistry, Columbia, USA

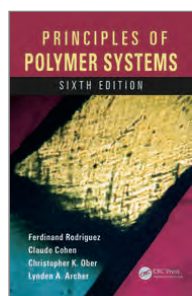
A unique approach to the chemistry of water, this textbook by top environmental author Stanley Manahan focuses on water as a renewable resource from a green chemistry and sustainability perspective. An appropriate text for current affairs in environmental chemistry written at an intermediate level, this text is devoted to the hydrosphere and explains how it relates to the other four environmental spheres. It contains chapters on basic chemistry and organic chemistry useful to those readers whose fundamental knowledge of chemistry is limited and includes coverage of, pollution, wastewater, and water treatment. A solutions manual is available with qualifying course adoption.

CRC Press
August 2010: 416pp
Pb: 978-1-439-83068-0 : £105
Hb: 978-1-138-47527-4 : £180
eBook: 978-0-429-10972-0

* For full contents and more information, visit: www.routledge.com/9781439830680

6TH EDITION

Principles of Polymer Systems



Ferdinand Rodriguez Cornell University, Ithaca, New York, USA, **Claude Cohen** Cornell University, Ithaca, New York, USA, **Christopher K. Ober** Cornell University, Ithaca, New York, USA, **Lynden Archer** Cornell University, Ithaca, New York, USA

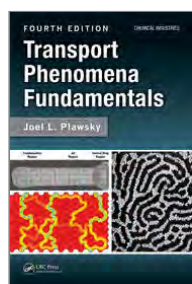
A classic text in the field of chemical engineering, this revised sixth edition offers a comprehensive exploration of polymers at a level geared toward upper-level undergraduates and beginning graduate students. It contains more theoretical background for some of the fundamental concepts pertaining to polymer structure and behavior, while also providing an up-to-date discussion of the latest developments in polymerization systems. New problems have been added to several of the chapters, and a solutions manual is available upon qualifying course adoption.

CRC Press
December 2014: 810pp
Hb: 978-1-482-22378-1 : £135
eBook: 978-0-429-17229-8

* For full contents and more information, visit: www.routledge.com/9781482223781

4TH EDITION

Transport Phenomena Fundamentals



Joel L. Plawsky Rensselaer Polytechnic Institute, Troy, New York, USA

Series: Chemical Industries

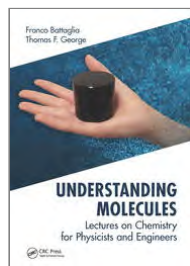
The Fourth edition of Transport Phenomena Fundamentals continues with its streamlined approach to the subject of transport phenomena, based on a unified treatment of heat, mass, and momentum transport using a balance equation approach. The new edition includes more worked examples within each chapter and adds confidence building problems at the end of each chapter. Some solutions will be included in an appendix for students to check their comprehension of key concepts. A companion website will include author videos and COMSOL®, Maple®, and MATLAB® exercises. This edition also incorporates a wider range of problems to expand the utility of the text beyond chemical engineering.

CRC Press
March 2020: 862pp
Hb: 978-1-138-08056-0 : £135
eBook: 978-1-315-11338-8

* For full contents and more information, visit: www.routledge.com/9781138080560

Understanding Molecules

Lectures on Chemistry for Physicists and Engineers



Franco Battaglia , Thomas F. George

Chemistry is a subject that many students with differing goals have to tackle. This unique general chemistry textbook is tailored to more mathematically-oriented engineering or physics students. The authors emphasize the principles underlying chemistry rather than chemistry itself and the almost encyclopedic completeness appearing in a common textbook of general chemistry is sacrificed for an emphasis to these principles. Contained within 500 pages, it is suitable for a one-semester course for students who are strong in physics and mathematics. Over 200 problems are provided to ensure understanding, and answers are provided in the text so that the students can check their progress.

CRC Press

December 2021 : 322pp

Pb: 978-1-032-24168-5 : **£45.99**

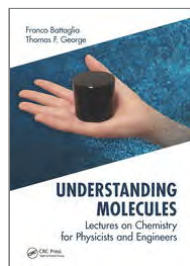
Hb: 978-1-138-32930-0 : **£135**

eBook: 978-0-429-44826-3

* For full contents and more information, visit: www.routledge.com/9781032241685

Understanding Molecules

Lectures on Chemistry for Physicists and Engineers



Franco Battaglia , Thomas F. George

Chemistry is a subject that many students with differing goals have to tackle. This unique general chemistry textbook is tailored to more mathematically-oriented engineering or physics students. The authors emphasize the principles underlying chemistry rather than chemistry itself and the almost encyclopedic completeness appearing in a common textbook of general chemistry is sacrificed for an emphasis to these principles. Contained within 500 pages, it is suitable for a one-semester course for students who are strong in physics and mathematics. Over 200 problems are provided to ensure understanding, and answers are provided in the text so that the students can check their progress.

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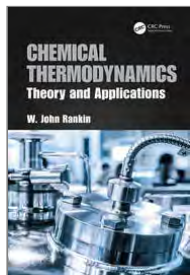
Hb: 978-1-138-32930-0 : **£135**

eBook: 978-0-429-44826-3

* For full contents and more information, visit: www.routledge.com/9781032241685

Chemical Thermodynamics

Theory and Applications



W.J. Rankin

This book develops the theory of chemical thermodynamics from first principles, demonstrates its relevance across scientific and engineering disciplines, and shows how thermodynamics can be used as a practical tool for understanding natural phenomenon and developing and improving technologies and products. The book provides the necessary foundations for the intelligent use of thermodynamic software packages. Another unique aspect is the inclusion of three applications chapters: heat and energy aspects of processing; the thermodynamics of metal production and recycling; and applications of electrochemistry.

CRC Press

November 2019 : 344pp

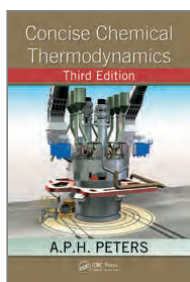
Hb: 978-0-367-22247-5 : **£105**

eBook: 978-0-429-27725-2

* For **full contents** and more information, visit: www.routledge.com/9780367222475

3RD EDITION

Concise Chemical Thermodynamics



A.P.H. Peters Hogeschool Zuyd, Heerlen, The Netherlands

This volume offers a practical, example-based exploration of a critical topic. It discusses the world's current energy consumption and the role of renewable energy, examines exothermic reactions, uses Mathcad® to calculate a plot of Gibbs energy, explains the Lambda sensor, and employs FactSage software to calculate and describe the production of silicon in an arc (oven) furnace. It also re-works problems that have proven to be the most difficult and adds several new ones to amplify complex areas.

CRC Press

July 2010 : 236pp

Pb: 978-1-439-81332-4 : **£45.99**

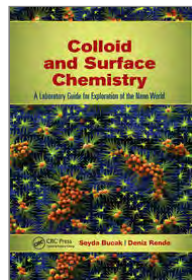
Hb: 978-1-138-47345-4 : **£180**

eBook: 978-0-429-13098-4

* For **full contents** and more information, visit: www.routledge.com/9781439813324

Colloid and Surface Chemistry

A Laboratory Guide for Exploration of the Nano World



Seyda Bucak, Deniz Rende

Colloid and interface science has become a truly interdisciplinary subject, integrating chemistry, physics, and biology. This laboratory book is designed to help students understand the basic principles of colloid and interface science through experiments underlining the fundamental principles. It includes techniques for the preparation of nanoparticles as well as everyday applications of colloid science. It is aimed at undergraduate students or graduate students without prior background in the field. Principles and laboratory techniques are learned via experiments as fundamental research tools and applications are seamlessly integrated with theory.

CRC Press

June 2019 : 278pp

Pb: 978-0-367-37901-8 : **£61.99**

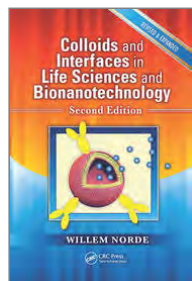
Hb: 978-1-466-55310-1 : **£175**

eBook: 978-0-429-09732-4

* For full contents and more information, visit: www.routledge.com/9780367379018

2ND EDITION

Colloids and Interfaces in Life Sciences and Bionanotechnology



Willem Norde Wageningen University, The Netherlands, and University Medical Center Groningen, The Netherlands

This classroom reference presents a concise introductory treatment of the physicochemical principles that determine interrelated colloidal and interfacial phenomena and their relevance to various life sciences. The book focuses on concepts that form the basis for understanding this behavior. Whether deciphering the spontaneous assembly of amphiphilic molecules or the intentional fouling of surfaces for the immobilization of cells in bioreactors, *Colloids and Interfaces in Life Sciences* devotes special attention to reversible and soft colloids, and discusses the colloidal domain in a historical perspective, the size and distribution of particles, and electrokinetic phenomena, and more.

CRC Press

June 2011 : 496pp

Hb: 978-1-439-81718-6 : **£84.99**

eBook: 978-0-429-10793-1

* For full contents and more information, visit: www.routledge.com/9781439817186

3RD EDITION

Principles of Colloid and Surface Chemistry, Revised and Expanded



Edited by **Paul C. Hiemenz** Emeritus -Cal State Polytechnic University, Pomona, CA, **Raj Rajagopalan** Consultant, Singapore, The Republic of Singapore

This work aims to familiarize students with the fundamentals of colloid and surface science, from various types of colloids and colloidal phenomena, and classical and modern characterization/measurement techniques to applications of colloids and surface science in engineering, technology, chemistry, physics and biological and medical sciences. The *Journal of Textile Studies* proclaims "High praise from peers . . .contains valuable information on many topics of interest to food rheologists and polymer scientists . . .[The book] should be in the libraries of academic and industrial food research organizations" and *Chromatographia* describes the book as "...an excellent textbook, excellently organised, clearly written and well laid out."

CRC Press

March 1997 : 672pp

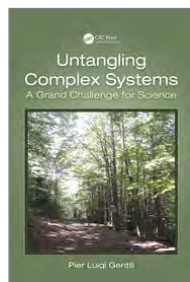
Hb: 978-0-824-79397-5 : **£71.99**

eBook: 978-1-315-27428-7

* For full contents and more information, visit: www.routledge.com/9780824793975

Untangling Complex Systems

A Grand Challenge for Science



Pier Luigi Gentili University of Perugia, Italy

This book presents the new challenges that the science of the twentieth century is facing. These new challenges consist in a deeper understanding of the properties of Complex, self-organized Systems and the ability of controlling them. A distinctive feature of this book is the description of Fuzzy Logic as a powerful method to understand and control complex systems. What makes this book unique is the demonstration of the different kinds of logic that can be processed by using molecules as computing elements.

CRC Press

January 2020 : 588pp

Pb: 978-0-367-48562-7 : **£61.99**

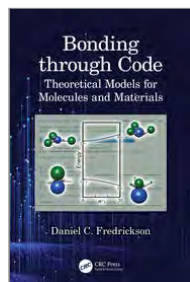
Hb: 978-1-466-50942-9 : **£175**

eBook: 978-0-429-45504-9

* For full contents and more information, visit: www.routledge.com/9780367485627

Bonding through Code

Theoretical Models for Molecules and Materials



Daniel C. Fredrickson University of Wisconsin-Madison, USA

This timely and unique publication is designed for graduates and researchers in physical inorganic chemistry covering bonding models and applications of symmetry concepts to chemical systems. The book discusses the quantum mechanical basis for molecular orbital concepts, the connections between molecular orbitals and localized views of bonding, group theory, and bonding models for a variety of compounds. Unlike other books, the concepts are made tangible to the readers by guiding them through the implementation in Matlab functions. No background in Matlab or computer programming is needed and the book will provide the necessary skills.

CRC Press

August 2022 : 244pp

Pb: 978-0-367-54487-4 : **£39.99**

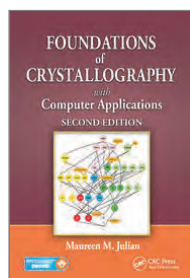
Hb: 978-1-498-76221-2 : **£120**

eBook: 978-0-429-15401-0

* For full contents and more information, visit: www.routledge.com/9780367544874

2ND EDITION

Foundations of Crystallography with Computer Applications



Maureen M. Julian Virginia Polytechnic Institute and State University, Blacksburg, USA

This book presents the fundamentals of crystallography to students studying the solid state in chemistry, physics, materials science, geological sciences, and engineering. Computers are an essential part of crystallography, and appropriate computer-based exercises are integrated into this book for self-study. The material is presented in a logical order with the goal of understanding not only how atoms are arranged in crystals, but how crystal systems are related to each other. The theoretical material is developed extensively in two dimensions. An overview and some detailed examples are given in three dimensions.

CRC Press

October 2014 : 680pp

Hb: 978-1-466-55291-3 : **£96.99**

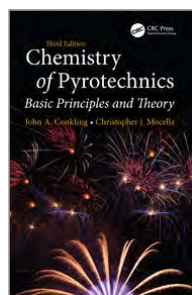
eBook: 978-0-429-09739-3

* For full contents and more information, visit: www.routledge.com/9781466552913

3RD EDITION

Chemistry of Pyrotechnics

Basic Principles and Theory, Third Edition

**Chris Mocella , John A. Conkling** Chestertown, Maryland, USA

This book provides chemists with technical insight on pyrotechnics and explosives. It emphasizes basic chemical principles and practical, hands-on knowledge in the preparation of energetic materials. It examines the interactions between and adaptations of pyrotechnics to changing technology in areas such as obscuration science and low-signature flame emission. The updated third edition discusses chemical and pyrotechnic principles, components of high-energy materials, elements of ignition, propagation, and sensitivity. It offers heat compositions, including ignition mixes, delays, thermites, and propellants and investigates the production of smoke and sound as well as light and color.

CRC Press

January 2019 : 316pp

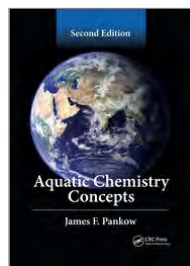
Hb: 978-1-138-07992-2 : **£84.99**

eBook: 978-0-429-26213-5

* For full contents and more information, visit: www.routledge.com/9781138079922

2ND EDITION

Aquatic Chemistry Concepts, Second Edition



James F. Pankow

Aquatic Chemistry Concepts, Second Edition. Fully revised and updated, this textbook fills the need for a comprehensive treatment of aquatic chemistry and covers the many complicated equations and principles of aquatic chemistry. It presents the established science of equilibrium water chemistry using the uniquely recognizable, step-by-step Pankow format which allows a broad and deep understanding aquatic chemistry. The text is appropriate for a wide audience that includes undergraduate and graduate students, industry professionals, consultants, and regulators.

CRC Press

June 2022 : 582pp

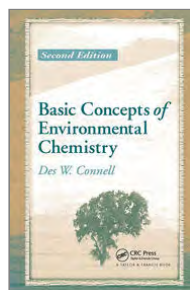
Pb: 978-1-032-33773-9 : **£45.99**Hb: 978-1-439-85440-2 : **£120**

eBook: 978-0-429-19886-1

* For full contents and more information, visit: www.routledge.com/9781032337739

2ND EDITION

Basic Concepts of Environmental Chemistry



Des W. Connell Griffith University, Queensland, Australia

Incorporating advances made since the 1997 publication of the first edition, this book includes material on toxic metals, atmospheric pollution, radionuclides, acid drainage water, and risk assessment. It addresses topics such as polarity, partition behavior, fugacity, and solubility as well as the basic chemistry of compounds and processes in the environment. The author begins with coverage of the basic properties of chemicals in terms of polarity, water solubility, and vapor pressure, followed by chapters on environmental transformations and toxicity. Expanding on these fundamentals, he describes contaminants in the environment and pollution processes in the air, water and soil environments.

CRC Press

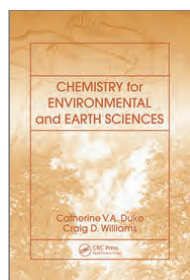
July 2005 : 480pp

Hb: 978-1-566-70676-6 : **£105**

eBook: 978-0-429-21601-5

* For full contents and more information, visit: www.routledge.com/9781566706766

Chemistry for Environmental and Earth Sciences



Catherine Vanessa Anne Duke University of Wolverhampton, UK, Craig Denver Williams University of Wolverhampton, UK

Chemistry for Environmental and Earth Sciences focuses on the chemistry and processes behind environmental issues such as global warming, ozone depletion, acid rain, water pollution, and soil contamination. Accessible to science as well as non-science majors, this textbook is divided into four intuitive chapters: Fire, Earth, Water, and Air. It uses worked examples and case studies drawn from current applications along with clear diagrams and concise explanations to illustrate the relevance of chemistry to geosciences. In-text and end-of-chapter questions with complete solutions also help students gain confidence in applying concepts from this book towards solving current, real-world problems.

CRC Press

October 2007 : 244pp

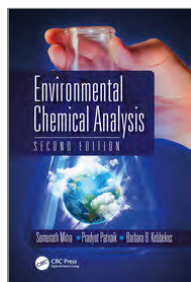
Pb: 978-0-849-33934-9 : **£71.99**Hb: 978-1-138-42435-7 : **£180**

eBook: 978-0-429-12767-0

* For full contents and more information, visit: www.routledge.com/9780849339349

2ND EDITION

Environmental Chemical Analysis



S. Mitra New Jersey Institute of Technology, Newark, USA, B.B. Kebbekus New Jersey Institute of Technology, Newark, USA

Environmental Chemical Analysis provides an explanation of analytical instrumentation methods for students without a background in analytical chemistry. This second edition features expanded material on sample preparation and quality assurance and control. It also includes new chapters on biological analysis and analysis of environmental particulates. It brings together sampling, sample preparation, and analytical techniques necessary for environmental applications, demonstrated through case studies of actual environmental measurement protocols.

CRC Press

August 2018 : 449pp

Pb: 978-0-849-33838-0 : **£71.99**Hb: 978-1-138-60409-4 : **£210**

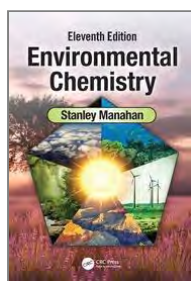
eBook: 978-0-429-45820-0

* For full contents and more information, visit: www.routledge.com/9780849338380

11TH EDITION

Environmental Chemistry

Eleventh Edition



Stanley E. Manahan University of Missouri, Department of Chemistry, Columbia, USA

With clear explanations, real-world examples and updated ancillary material, the 11th edition of Environmental Chemistry emphasizes the concepts essential to the practice of environmental science, technology and chemistry. The new edition provides a comprehensive view of key environmental issues, and significantly looks at diseases and pandemics as an environmental problem influenced by other environmental concerns like climate change.

CRC Press

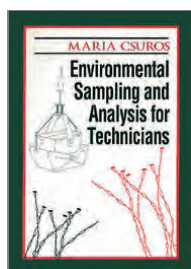
December 2024 : 764pp

Pb: 978-0-367-56054-6 : **£45.99**Hb: 978-0-367-55887-1 : **£84.99**

eBook: 978-1-003-09623-8

* For full contents and more information, visit: www.routledge.com/9780367560546

Environmental Sampling and Analysis for Technicians



Maria Csuros University of Pecs, Hungary

This book provides the basic knowledge in sample collection, field and laboratory quality assurance/quality control (QA/QC), sample custody, regulations and standards of environmental pollutants. The text covers sample collection, preservation, handling, detailed field activities, and sample custody. It provides an overview of the occurrence, source, and fate of toxic pollutants, as well as their control by regulations and standards. Environmental Sampling and Analysis for Technicians is an excellent introductory text for laboratory training classes, namely those teaching inorganic nonmetals, metals, and trace organic pollutants and their detection in environmental samples.

CRC Press

September 1994 : 332pp

Pb: 978-0-873-71835-6 : **£105**Hb: 978-1-138-42440-1 : **£180**

eBook: 978-0-203-75686-7

* For full contents and more information, visit: www.routledge.com/9780873718356

2ND EDITION

Environmental Science and Technology

A Sustainable Approach to Green Science and Technology, Second Edition



Stanley E. Manahan

Written by a leading expert, *Environmental Science and Technology: A Sustainable Approach to Green Science and Technology, Second Edition* provides a general overview of green science and technology and their essential role in ensuring environmental sustainability. This book addresses the roles of the hydrosphere, atmosphere, geosphere, and biosphere on the environment. It also considers the anthrosphere as a distinct environmental sphere. Presented in a consistent and accessible style, this text is suitable for students in environmental science and engineering, environmental scientists, ecologists, environmental policy experts, as well as those with little or no science background.

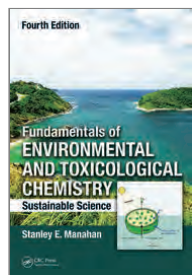
CRC Press
October 2019 : 647pp
Pb: 978-0-367-39012-9 : **£61.99**
Hb: 978-0-849-39512-3 : **£175**
eBook: 978-0-429-12466-2

* For full contents and more information, visit: www.routledge.com/9780367390129

4TH EDITION

Fundamentals of Environmental and Toxicological Chemistry

Sustainable Science, Fourth Edition

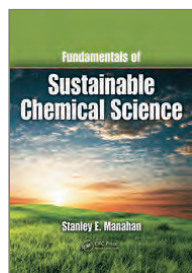


Stanley E. Manahan University of Missouri, Department of Chemistry, Columbia, USA

This book covers university-level environmental chemistry, with toxicological chemistry integrated throughout the content. This new edition of a bestseller provides an updated text with an increased emphasis on sustainability and green chemistry. Organized based on the five spheres of Earth's environment—the hydrosphere, atmosphere, geosphere, biosphere, and anthrosphere—the book presents discussions of each sphere based upon the nature, pollution, and sustainability of the sphere. For readers needing additional basic chemistry background, the book includes two chapters on general chemistry and organic chemistry.

CRC Press
February 2013 : 614pp
Hb: 978-1-466-55316-3 : **£110**
eBook: 978-0-429-09774-4

* For full contents and more information, visit: www.routledge.com/9781466553163

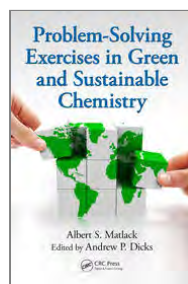
Fundamentals of Sustainable Chemical Science

Stanley E. Manahan University of Missouri, Department of Chemistry, Columbia, USA

Assuming no prior background, this book presents the basics of general chemistry, organic chemistry, and biochemistry. The first chapter provides a brief mini-course in chemistry, defining key terms that are required for understanding materials presented in the rest of the text. It develops chemistry as it would a language with its key parts. The author begins with a discussion of atoms and elements, moves to a description of chemical compounds made from those elements, and concludes with a look at chemical reactions involving elements and compounds. The chapters also include references to renewable resources, energy, and offer an emphasis on green chemistry in support of learned concepts.

CRC Press
March 2009 : 392pp
Pb: 978-1-439-80239-7 : **£84.99**
Hb: 978-1-138-42436-4 : **£180**
eBook: 978-0-429-11210-2

* For full contents and more information, visit: www.routledge.com/9781439802397

Problem-Solving Exercises in Green and Sustainable Chemistry

Albert S. Matlack University of Delaware, Newark, USA,
Andrew P. Dicks University of Toronto, Ontario, Canada

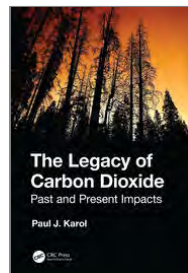
This book teaches students how to analyze and solve real-world problems that occur in green and sustainable chemistry. It describes situations based on events that have actually taken place and encourages creativity in finding solutions to problems that have multiple "correct" answers. The exercises and commentaries from the experienced author emphasize the reality that green chemistry is about making practical decisions and weighing multiple factors that are often conflicting, thus making it difficult or impossible to apply one perfect solution to a given problem.

CRC Press
October 2015 : 195pp
Pb: 978-1-482-25257-6 : **£37.99**
Hb: 978-1-138-41132-6 : **£185**
eBook: 978-0-429-15958-9

* For full contents and more information, visit: www.routledge.com/9781482252576

The Legacy of Carbon Dioxide

Past and Present Impacts



Paul Karol Carnegie Mellon University, Pittsburgh, USA

Covers the truly varied roles carbon dioxide has played and continues to play in the character of our planet. Chapters deal with the synthesis of CO₂ in stars, the evolution of the atmosphere over billions of years, the chemical and physical properties of CO₂ and how those influence common phenomena. How well this knowledge is understood and how it was determined, including existing uncertainties in our confidence and the stress from competing possibilities are discussed. Much of the technological jargon in various incorporated sciences has been modified to ease consumption by the non-expert.

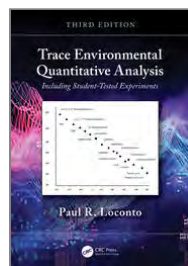
CRC Press
May 2019 : 253pp
Pb: 978-0-367-19080-4 : **£41.99**
Hb: 978-0-367-19134-4 : **£84.99**
eBook: 978-0-429-20064-9

* For full contents and more information, visit: www.routledge.com/9780367190804

3RD EDITION

Trace Environmental Quantitative Analysis

Including Student-Tested Experiments



Paul R. Loconto Michigan Department of Community Health, Lansing, USA

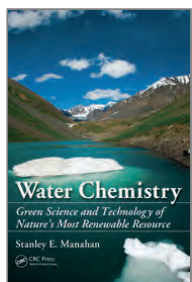
A thorough and timely update, this new edition presents principles, techniques and applications in this sub-discipline of analytical chemistry for quantifying traces of potentially toxic organic and inorganic chemical substances found in air, soil, fish and water as well as serum, plasma, urine, and other body fluids.

CRC Press
January 2024 : 766pp
Pb: 978-0-367-63106-2 : **£79.99**
Hb: 978-0-367-44533-1 : **£215**
eBook: 978-1-003-01060-9

* For full contents and more information, visit: www.routledge.com/9780367631062

Water Chemistry

Green Science and Technology of Nature's Most Renewable Resource



Stanley E. Manahan University of Missouri, Department of Chemistry, Columbia, USA

A unique approach to the chemistry of water, this textbook by top environmental author Stanley Manahan focuses on water as a renewable resource from a green chemistry and sustainability perspective. An appropriate text for current affairs in environmental chemistry written at an intermediate level, this text is devoted to the hydrosphere and explains how it relates to the other four environmental spheres. It contains chapters on basic chemistry and organic chemistry useful to those readers whose fundamental knowledge of chemistry is limited and includes coverage of, pollution, wastewater, and water treatment. A solutions manual is available with qualifying course adoption.

CRC Press

August 2010 : 416pp

Pb: 978-1-439-83068-0 : **£105**

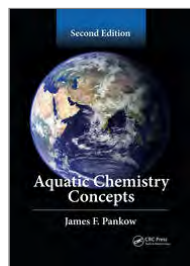
Hb: 978-1-138-47527-4 : **£180**

eBook: 978-0-429-10972-0

* For full contents and more information, visit: www.routledge.com/9781439830680

2ND EDITION

Aquatic Chemistry Concepts, Second Edition



James F. Pankow

Aquatic Chemistry Concepts, Second Edition. Fully revised and updated, this textbook fills the need for a comprehensive treatment of aquatic chemistry and covers the many complicated equations and principles of aquatic chemistry. It presents the established science of equilibrium water chemistry using the uniquely recognizable, step-by-step Pankow format which allows a broad and deep understanding aquatic chemistry. The text is appropriate for a wide audience that includes undergraduate and graduate students, industry professionals, consultants, and regulators.

CRC Press

June 2022 : 582pp

Pb: 978-1-032-33773-9 : **£45.99**

Hb: 978-1-439-85440-2 : **£120**

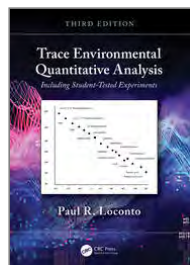
eBook: 978-0-429-19886-1

* For full contents and more information, visit: www.routledge.com/9781032337739

3RD EDITION

Trace Environmental Quantitative Analysis

Including Student-Tested Experiments



Paul R. Loconto Michigan Department of Community Health, Lansing, USA

A thorough and timely update, this new edition presents principles, techniques and applications in this sub-discipline of analytical chemistry for quantifying traces of potentially toxic organic and inorganic chemical substances found in air, soil, fish and water as well as serum, plasma, urine, and other body fluids.

CRC Press

January 2024 : 766pp

Pb: 978-0-367-63106-2 : **£79.99**

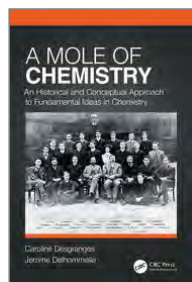
Hb: 978-0-367-44533-1 : **£215**

eBook: 978-1-003-01060-9

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A Mole of Chemistry

An Historical and Conceptual Approach to Fundamental Ideas in Chemistry



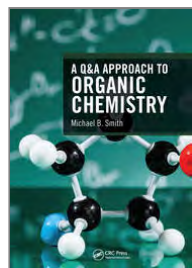
Caroline Desgranges Research Assistant Professor, UMass Lowell, USA, **Jerome Delhommelle** Associate Professor, UMass Lowell, USA

This book is intended for students in their undergraduate years who need to learn the basics of chemistry, including science and engineering as well as humanities. This is a companion textbook which provides a unique perspective on how the main scientific concepts describing nature were discovered and, eventually, how modern chemistry was born. The book makes use of context found in history, philosophy and the arts to better understand their developments, and without using mathematical equations. The focus is then set on scientific reasoning, making this book a great companion and addition to traditional chemistry textbooks.

CRC Press
March 2020 : 229pp
Pb: 978-0-367-20824-0 : **£84.99**
Hb: 978-0-367-20828-8 : **£215**
eBook: 978-0-429-26368-2

* For full contents and more information, visit: www.routledge.com/9780367208240

A Q&A Approach to Organic Chemistry



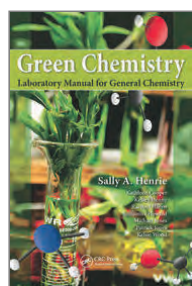
Michael B. Smith

A Q&A Approach to Organic Chemistry begins with atomic orbitals and bonding. All critical topics are covered, including bonding, nomenclature, stereochemistry, conformations, acids and bases, oxidations, reductions, substitution, elimination, acyl addition, acyl substitution, enolate anion reactions, the Diels-Alder reaction and sigmatropic rearrangements, aromatic chemistry, spectroscopy, amino acids and proteins, carbohydrates and nucleosides. All major reactions are covered. This edition has been completely revised and updated by the author, and each chapter includes end-of-chapter homework questions with the answer keys in an Appendix.

CRC Press
February 2022 : 358pp
Pb: 978-1-032-24068-8 : **£45.99**
Hb: 978-0-367-22427-1 : **£145**
eBook: 978-0-429-27484-8

* For full contents and more information, visit: www.routledge.com/9781032240688

Green Chemistry Laboratory Manual for General Chemistry



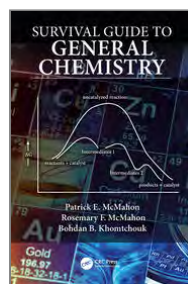
Sally A. Henrie Union University, Jackson, Tennessee, USA

Green chemistry involves designing novel ways to create and synthesize products and implement processes that will eliminate or greatly reduce negative environmental impacts. Providing educational laboratory materials that challenge students with the customary topics found in a general chemistry laboratory manual, this lab manual enables students to see how green chemistry principles can be applied to real-world issues. Following a consistent format, each lab experiment includes objectives, prelab questions, and detailed step-by-step procedures for performing the experiments. Additional questions encourage further research about how green chemistry principles compare with traditional, more hazardous experimental methods.

CRC Press
March 2015 : 384pp
Pb: 978-1-482-23020-8 : **£84.99**
Hb: 978-1-138-41024-4 : **£180**
eBook: 978-0-429-08968-8

* For full contents and more information, visit: www.routledge.com/9781482230208

Survival Guide to General Chemistry



Patrick E. McMahon Benedictine University, Organic Chemistry and General Chemistry, Lisle, Illinois, USA, **Rosemary McMahon**, **Bohdan Khomtchouk**

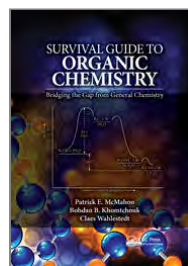
This work evolved over thirty combined years of teaching general chemistry to a variety of student demographics. The focus is not to recap or review the theoretical concepts well described in the available texts. Instead, the topics and descriptions in this book make available specific, detailed step-by-step methods and procedures for solving the major types of problems in general chemistry. Explanations, instructional process sequences, solved examples and completely solved practice problems are greatly expanded, containing significantly more detail than can usually be devoted to in a comprehensive text. Many chapters also provide alternative viewpoints as an aid to understanding.

CRC Press
February 2019 : 532pp
Pb: 978-1-138-33362-8 : **£110**
Hb: 978-1-138-33372-7 : **£300**
eBook: 978-0-429-44582-8

* For full contents and more information, visit: www.routledge.com/9781138333628

Survival Guide to Organic Chemistry

Bridging the Gap from General Chemistry



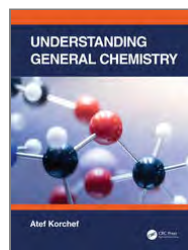
Patrick E. McMahon, **Bohdan B. Khomtchouk**, **Claes Wahlestedt**

The Survival Guide to Organic Chemistry: Bridging the Gap from General Chemistry enables organic chemistry students to bridge the gap between general chemistry and organic chemistry. It makes sense of the myriad of in-depth concepts of organic chemistry, without overwhelming them in the necessary detail often given in a complete organic chemistry text. Here, the topics covered span the entire standard organic chemistry curriculum. The authors describe subjects which require further explanation, offer alternate viewpoints for understanding and provide hands-on practical problems and solutions to help master the material. This text ultimately allows students to a

CRC Press
July 2022 : 676pp
Pb: 978-1-032-33979-5 : **£45.99**
Hb: 978-1-498-77707-0 : **£135**
eBook: 978-1-315-38018-6

* For full contents and more information, visit: www.routledge.com/9781032339795

Understanding General Chemistry



Atef Korchef King Khalid University, Abha, Kingdom of Saudi Arabia

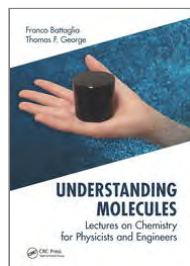
This introductory textbook details the fundamentals of general chemistry through a wide range of topics, relating the structure of atoms and molecules to the properties of matter, in an easy to understand format with helpful pedagogy to fuel learning through step-by-step worked exercises, main objectives at the beginning of every chapter, get smart and check your reading sections, chapter-ending summaries, and extensive end-of-chapter problems with the corresponding answers and explanations. Ideal for chemistry courses for non-science majors as well as health sciences and preparatory engineering students.

CRC Press
March 2022 : 280pp
Pb: 978-1-032-18914-7 : **£49.99**
Hb: 978-1-032-18940-6 : **£135**
eBook: 978-1-003-25705-9

* For full contents and more information, visit: www.routledge.com/9781032189147

Understanding Molecules

Lectures on Chemistry for Physicists and Engineers



Franco Battaglia , Thomas F. George

Chemistry is a subject that many students with differing goals have to tackle. This unique general chemistry textbook is tailored to more mathematically-oriented engineering or physics students. The authors emphasize the principles underlying chemistry rather than chemistry itself and the almost encyclopedic completeness appearing in a common textbook of general chemistry is sacrificed for an emphasis to these principles. Contained within 500 pages, it is suitable for a one-semester course for students who are strong in physics and mathematics. Over 200 problems are provided to ensure understanding, and answers are provided in the text so that the students can check their progress.

CRC Press

December 2021 : 322pp

Pb: 978-1-032-24168-5 : **£45.99**

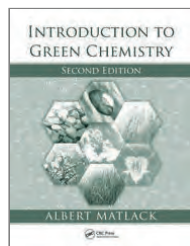
Hb: 978-1-138-32930-0 : **£135**

eBook: 978-0-429-44826-3

* For full contents and more information, visit: www.routledge.com/9781032241685

2ND EDITION

Introduction to Green Chemistry



Albert S. Matlack University of Delaware, Newark, USA

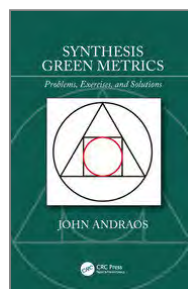
In the nearly 10 years since the publication of the bestselling first edition, interest in green chemistry and clean processes has increased. Designed to be a text and a reference, the second edition provides an update from the frontiers of green chemistry. Copiously illustrated with over 800 figures, the book takes a broad, interdisciplinary approach to the subject.

CRC Press
April 2010 : 600pp
Pb: 978-1-420-07811-4 : £100

* For full contents and more information, visit: www.routledge.com/9781420078114

Synthesis Green Metrics

Problems, Exercises, and Solutions



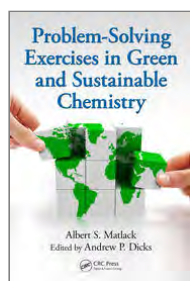
John Andraos CareerChem, Toronto, Ontario, Canada

Green chemistry promotes improved syntheses as an intellectual endeavour that can have a great impact both on preserving and utilizing our planet's finite resources and the quality of human life. This masterful accomplishment provides an evaluation of environmental impact metrics according to life cycle assessment analysis based on the Mackay compartment environmental model and Guinée environmental impact potentials formalism. Assumptions, limitations, and dealing with missing data are addressed. Best literature resources for finding key toxicological parameters are provided and applied to individual reactions as well as entire synthesis plans, in order to target molecules of interest.

CRC Press
January 2019 : 526pp
Pb: 978-0-367-00225-1 : £120
Hb: 978-0-367-00226-8 : £260
eBook: 978-0-429-40068-1

* For full contents and more information, visit: www.routledge.com/9780367002251

Problem-Solving Exercises in Green and Sustainable Chemistry



Albert S. Matlack University of Delaware, Newark, USA,
Andrew P. Dicks University of Toronto, Ontario, Canada

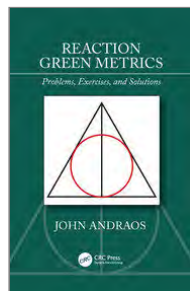
This book teaches students how to analyze and solve real-world problems that occur in green and sustainable chemistry. It describes situations based on events that have actually taken place and encourages creativity in finding solutions to problems that have multiple "correct" answers. The exercises and commentaries from the experienced author emphasize the reality that green chemistry is about making practical decisions and weighing multiple factors that are often conflicting, thus making it difficult or impossible to apply one perfect solution to a given problem.

CRC Press
October 2015 : 195pp
Pb: 978-1-482-25257-6 : £37.99
Hb: 978-1-138-41132-6 : £185
eBook: 978-0-429-15958-9

* For full contents and more information, visit: www.routledge.com/9781482252576

Reaction Green Metrics

Problems, Exercises, and Solutions



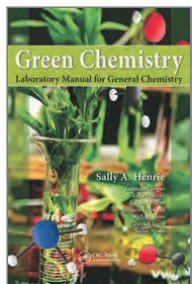
John Andraos CareerChem, Toronto, Ontario, Canada

This book contains a series of exercises and problems posed in the subject of green metrics. Essentially it is a "how to" book on evaluating the material efficiency, environmental impact, safety-hazard impact, and energy efficiency of any kind of chemical reaction or synthesis plan. Only the essential green metrics in each of these categories are used. The introduction highlights the hierarchy of metrics used throughout the book, explains the structure of how the book is arranged, how the problems are posed, and how the reader is to use the book. Examples refer to themes according to the headings given in the table of contents and are arranged in a hierarchical order.

CRC Press
December 2018 : 604pp
Pb: 978-1-138-38894-9 : £105
Hb: 978-1-138-38895-6 : £180
eBook: 978-0-429-42424-3

* For full contents and more information, visit: www.routledge.com/9781138388949

Green Chemistry Laboratory Manual for General Chemistry



Sally A. Henrie Union University, Jackson, Tennessee, USA

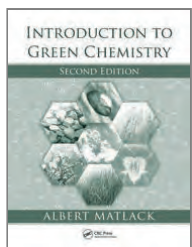
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CRC Press
March 2015 : 384pp
Pb: 978-1-482-23020-8 : £84.99
Hb: 978-1-138-41024-4 : £180
eBook: 978-0-429-08968-8

* For full contents and more information, visit: www.routledge.com/9781482230208

2ND EDITION

Introduction to Green Chemistry



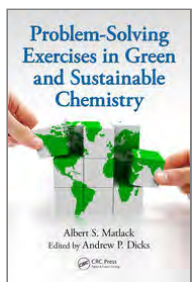
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CRC Press
April 2010 : 600pp
Pb: 978-1-420-07811-4 : £100

* For full contents and more information, visit: www.routledge.com/9781420078114

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Andrew P. Dicks University of Toronto, Ontario, Canada

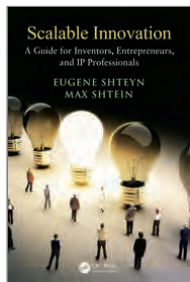
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CRC Press
October 2015 : 195pp
Pb: 978-1-482-25257-6 : £37.99
Hb: 978-1-138-41132-6 : £185
eBook: 978-0-429-15958-9

* For full contents and more information, visit: www.routledge.com/9781482252576

Scalable Innovation

A Guide for Inventors, Entrepreneurs, and IP Professionals



Eugene Shteyn Stanford University, California, USA, **Max Shtein** University of Michigan, Ann Arbor, USA

Based on recent advances in cognitive sciences, this book introduces a model for the innovation process, helping inventors, investors, and entrepreneurs to understand the nature and timing of opportunities and risks on the path to success. The authors apply systems thinking to discover real-life challenges, and provide tools for turning these challenges into opportunities for practical, scalable innovation. Using illustrative case studies, they analyze several landmark innovations in detail, revealing surprising and essential elements common to all of them.

CRC Press

June 2013 : 334pp

Pb: 978-1-466-59097-7 : **£47.99**

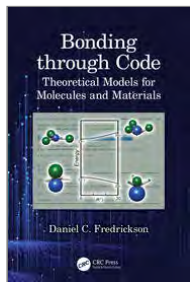
Hb: 978-1-138-43824-8 : **£185**

eBook: 978-0-429-16863-5

* For full contents and more information, visit: www.routledge.com/9781466590977

Bonding through Code

Theoretical Models for Molecules and Materials



Daniel C. Fredrickson University of Wisconsin-Madison, USA

This timely and unique publication is designed for graduates and researchers in physical inorganic chemistry covering bonding models and applications of symmetry concepts to chemical systems. The book discusses the quantum mechanical basis for molecular orbital concepts, the connections between molecular orbitals and localized views of bonding, group theory, and bonding models for a variety of compounds. Unlike other books, the concepts are made tangible to the readers by guiding them through the implementation in Matlab functions. No background in Matlab or computer programming is needed and the book will provide the necessary skills.

CRC Press

August 2022 : 244pp

Pb: 978-0-367-54487-4 : **£39.99**

Hb: 978-1-498-76221-2 : **£120**

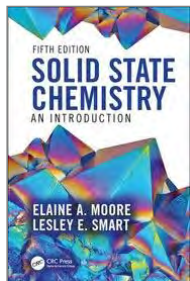
eBook: 978-0-429-15401-0

* For full contents and more information, visit: www.routledge.com/9780367544874

5TH EDITION

Solid State Chemistry

An Introduction



Elaine A. Moore The Open University, Milton Keynes, UK,
Lesley E. Smart The Open University, Milton Keynes, UK

Solid State Chemistry: An Introduction presents a wide range of the synthetic and physical techniques used to prepare and characterize solids. Going beyond this, this largely nonmathematical introduction to solid state chemistry includes the bonding and electronic, magnetic, electrical and optical properties of solids. Solids of particular interest – porous solids, superconductors and nanostructures are included. Practical examples of applications and modern developments are given. It offers students the opportunity to apply their knowledge in real-life situations and serve them well throughout their degree course.

CRC Press

August 2020 : 442pp

Pb: 978-0-367-13572-0 : **£39.99**

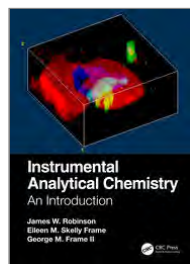
Hb: 978-0-367-13580-5 : **£175**

eBook: 978-0-429-02728-4

* For full contents and more information, visit: www.routledge.com/9780367135720

Instrumental Analytical Chemistry

An Introduction



James W. Robinson Louisiana State University, Baton Rouge, USA, **Eileen Skelly Frame**, **George M. Frame II** New York State Department of Health, Albany, USA

This book is written to teach undergraduate students and those with no analytical chemistry background how contemporary analytical instrumentation works, as well as its uses and limitations. Mathematics is kept to a minimum. No background in calculus, physics, or physical chemistry is required. The major fields of modern instrumentation are covered, including applications of each type of instrumental technique. This text uniquely combines instrumental analysis with organic spectral interpretation (IR, NMR, and MS). It provides detailed coverage of sampling, sample handling, sample storage, and sample preparation.

CRC Press

June 2021 : 920pp

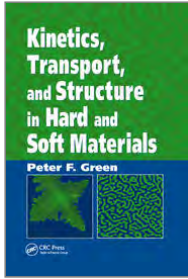
Hb: 978-1-138-19647-6 : **£91.99**

IEPB: 978-1-032-20582-3 : **£29.99**

eBook: 978-1-315-30115-0

* For full contents and more information, visit: www.routledge.com/9781138196476

Kinetics, Transport, and Structure in Hard and Soft Materials



Peter F. Green

Kinetics, Transport, and Structure in Hard and Soft Materials discusses the connection between the mechanisms of transport of atomic, or molecular entities that occur in a diverse range of materials, and structure. The text is divided into four parts. Part I discusses the fundamentals of diffusional transport (Tools), establishing the foundation for the discussions in Parts II and III on the mechanisms of transport in crystalline materials and in structurally disordered materials. Part IV analyzes phenomena such as spinodal decomposition, Mullins-Sekerka instabilities, and other types of instabilities that lead to morphological evolution facilitated by long-range collective motions of structural entities.

CRC Press

September 2019 : 372pp

Pb: 978-0-367-39297-0 : **£61.99**

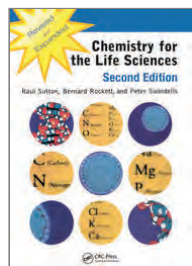
Hb: 978-1-574-44768-2 : **£84.99**

eBook: 978-0-429-11859-3

* For full contents and more information, visit: www.routledge.com/9780367392970

2ND EDITION

Chemistry for the Life Sciences



Raul Sutton University of Wolverhampton, UK, **Bernard Rockett** Formerly of University of Wolverhampton, UK, **Peter G. Swindells**

Series: Lifelines Series

Retaining the user-friendly style that made the original popular, this updated edition continues to provide a grounding in the aspects of chemistry that developing life scientists need to understand biochemical and biomedical research. This edition adds new chapters, including one on water, covering the mole concept and colloids; another on gases, discussing pressure, solubility, and diffusion; and still another chapter on metals, covering properties, carriers, biocatalysis, and toxicity. Each topic is clearly tied to numerical considerations and core concepts. Critical information is reinforced through worked examples and questions. A solutions manual is available for qualifying instructors.

CRC Press

November 2008 : 280pp

Pb: 978-1-420-06935-8 : **£47.99**

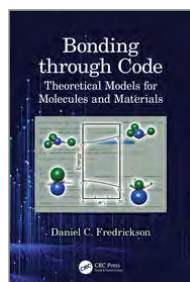
Hb: 978-1-138-40689-6 : **£180**

eBook: 978-0-429-14061-7

* For **full contents** and more information, visit: www.routledge.com/9781420069358

Bonding through Code

Theoretical Models for Molecules and Materials



Daniel C. Fredrickson University of Wisconsin-Madison, USA

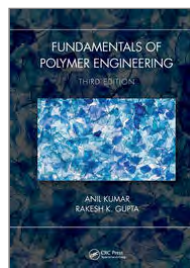
This timely and unique publication is designed for graduates and researchers in physical inorganic chemistry covering bonding models and applications of symmetry concepts to chemical systems. The book discusses the quantum mechanical basis for molecular orbital concepts, the connections between molecular orbitals and localized views of bonding, group theory, and bonding models for a variety of compounds. Unlike other books, the concepts are made tangible to the readers by guiding them through the implementation in Matlab functions. No background in Matlab or computer programming is needed and the book will provide the necessary skills.

CRC Press
August 2022 : 244pp
Pb: 978-0-367-54487-4 : **£39.99**
Hb: 978-1-498-76221-2 : **£120**
eBook: 978-0-429-15401-0

* For full contents and more information, visit: www.routledge.com/9780367544874

3RD EDITION

Fundamentals of Polymer Engineering, Third Edition



Anil Kumar, Rakesh K. Gupta

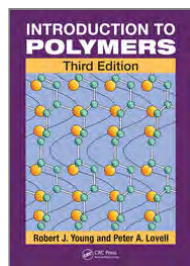
This textbook for a first course on polymers assumes some familiarity with thermodynamics and transport phenomena. It covers physical and chemical aspects and the concept of property being determined by structure. It discusses polymer synthesis, associated kinetics and molecular weights and uses this information for reactor design. It covers emulsion polymerization, polymer characterization and thermodynamics, and behavior of polymers as melts, solutions and solids. It examines crystallization, diffusion of and through polymers, polymer processing, and introduces new information on polyolefin technology, biobased plastics, and post-consumer plastic recycling. Chapters updated throughout.

CRC Press
December 2018 : 616pp
Hb: 978-1-498-75950-2 : **£105**
eBook: 978-0-429-39850-6

* For full contents and more information, visit: www.routledge.com/9781498759502

3RD EDITION

Introduction to Polymers



Robert J. Young University of Manchester, UK, **Peter A. Lovell** University of Manchester, UK

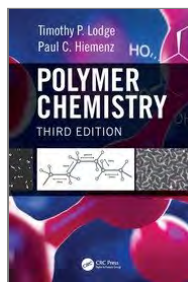
Thoroughly updated, this long-awaited new edition of a bestselling text provides extensive, detailed, and balanced coverage of polymer chemistry and polymer physics, spanning synthesis, characterization, bulk properties and morphology, and mechanical and electrical properties of polymers. The material has been completely reorganized and expanded to offer a coherent format for teaching and learning the fundamental aspects of contemporary polymer science. This edition incorporates the most important developments that have occurred in the past two decades, including "living" radical polymerization, supramolecular polymerization, and block and graft copolymer synthesis methods.

CRC Press
June 2011 : 688pp
Pb: 978-0-849-33929-5 : **£58.99**
Hb: 978-1-138-45957-1 : **£185**
eBook: 978-0-429-10948-5

* For full contents and more information, visit: www.routledge.com/9780849339295

3RD EDITION

Polymer Chemistry



Timothy P. Lodge University of Minnesota-Twin Cities, Minneapolis, USA, **Paul C. Hiemenz** Emeritus - Cal State Polytechnic University, Pomona, CA

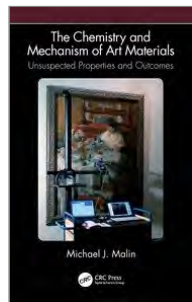
A well-rounded and articulate examination of polymer properties at the molecular level, this book focuses on fundamental principles based on underlying chemical structures, polymer synthesis, characterization, and properties. It emphasizes the logical progression of concepts and provide mathematical tools as needed, and fully derived problems for advanced calculations. This book expands and reorganizes material within chapters 2-5 to better develop polymer chemistry concepts and update the remaining chapters. New examples and problems will be added throughout.

CRC Press
July 2020 : 676pp
Hb: 978-1-466-58164-7 : **£84.99**
IEPB: 978-1-032-20585-4 : **£39.99**
eBook: 978-0-429-19081-0

* For full contents and more information, visit: www.routledge.com/9781466581647

The Chemistry and Mechanism of Art Materials

Unsuspected Properties and Outcomes



Michael J. Malin Western Connecticut State University, Chemistry Dept.

This unique book presents an integrated approach to the chemistry of art materials, exploring the many chemical processes involved. The author presents historical vignettes about artists' materials (inorganic pigments and organic solvents) that focus on relevant chemical mechanisms. The chemical mechanisms include chemical structures and stepwise transformation of starting materials to final products. The approach is descriptive and non-mathematical throughout, the level is suitable for readers that have taken a general and organic chemistry course.

CRC Press

December 2021 : 202pp

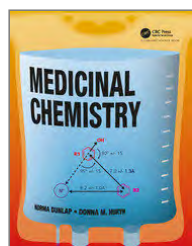
Pb: 978-0-367-51345-0 : **£61.99**

Hb: 978-0-367-49075-1 : **£175**

eBook: 978-1-003-05345-3

* For full contents and more information, visit: www.routledge.com/9780367513450

Medicinal Chemistry



Norma K Dunlap Middle Tennessee State University, USA, **Donna M Huryn** University of Pennsylvania and University of Pittsburgh, USA

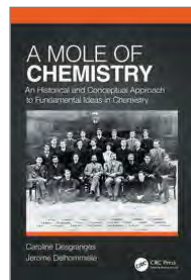
Medicinal Chemistry teaches the essential concepts of medicinal chemistry from the perspective of practicing.

Garland Science
April 2018 : 508pp
Pb: 978-0-815-34556-5 : **£105**
eBook: 978-1-315-10047-0

* For full contents and more information, visit: www.routledge.com/9780815345565

A Mole of Chemistry

An Historical and Conceptual Approach to Fundamental Ideas in Chemistry



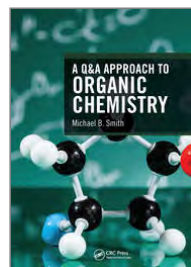
Caroline Desgranges Research Assistant Professor, UMass Lowell, USA, **Jerome Delhommelle** Associate Professor, UMass Lowell, USA

This book is intended for students in their undergraduate years who need to learn the basics of chemistry, including science and engineering as well as humanities. This is a companion textbook which provides a unique perspective on how the main scientific concepts describing nature were discovered and, eventually, how modern chemistry was born. The book makes use of context found in history, philosophy and the arts to better understand their developments, and without using mathematical equations. The focus is then set on scientific reasoning, making this book a great companion and addition to traditional chemistry textbooks.

CRC Press
March 2020 : 229pp
Pb: 978-0-367-20824-0 : **£84.99**
Hb: 978-0-367-20828-8 : **£215**
eBook: 978-0-429-26368-2

* For full contents and more information, visit: www.routledge.com/9780367208240

A Q&A Approach to Organic Chemistry



Michael B. Smith

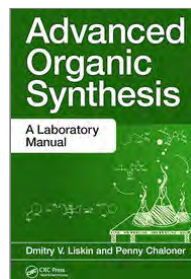
A Q&A Approach to Organic Chemistry begins with atomic orbitals and bonding. All critical topics are covered, including bonding, nomenclature, stereochemistry, conformations, acids and bases, oxidations, reductions, substitution, elimination, acyl addition, acyl substitution, enolate anion reactions, the Diels-Alder reaction and sigmatropic rearrangements, aromatic chemistry, spectroscopy, amino acids and proteins, carbohydrates and nucleosides. All major reactions are covered. This edition has been completely revised and updated by the author, and each chapter includes end-of-chapter homework questions with the answer keys in an Appendix.

CRC Press
February 2022 : 358pp
Pb: 978-1-032-24068-8 : **£45.99**
Hb: 978-0-367-22427-1 : **£145**
eBook: 978-0-429-27484-8

* For full contents and more information, visit: www.routledge.com/9781032240688

Advanced Organic Synthesis

A Laboratory Manual



Dmitry V. Liskin Christopher Newport University, Virginia, USA, **Penny Chaloner** Imperial College London, UK

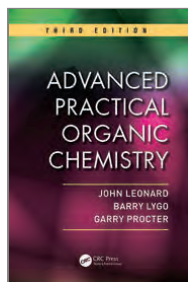
This book is designed for students aspiring to gain knowledge and techniques in organic synthesis. It focuses on a mechanistic background of key reactions in organic chemistry, gives insight into well-established trends, and introduces new developments in the field. Featuring experiments that were performed by the author as a graduate student as well as some of his recently published experiments, it provides undergraduates with theoretical knowledge and practical experience needed to succeed in graduate school or industry.

CRC Press
November 2015 : 132pp
Pb: 978-1-482-24496-0 : **£61.99**
Hb: 978-1-138-40691-9 : **£180**
eBook: 978-0-429-17248-9

* For full contents and more information, visit: www.routledge.com/9781482244960

3RD EDITION

Advanced Practical Organic Chemistry



John Leonard AstraZeneca, Macclesfield, UK, **Barry Lygo** University of Nottingham, UK, **Garry Procter** University of Manchester, UK

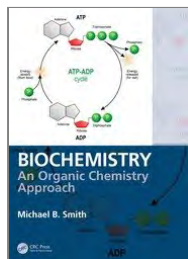
With an emphasis on the most up-to-date techniques commonly used in organic synthesis, this third edition reference draws on the extensive experience of the authors and their association with some of the world's leading laboratories of synthetic organic chemistry. Written mainly for graduate and advanced undergraduate students as well as industrial organic chemists, this book provides sufficient guidance to allow the researcher to carry out reactions under conditions that offer the highest chance of success. It offers fully updated information and re-drawn figures to illustrate the information at the highest possible standard.

CRC Press
January 2013 : 356pp
Pb: 978-1-439-86097-7 : **£79.99**
Hb: 978-1-138-45593-1 : **£180**
eBook: 978-0-429-16876-5

* For full contents and more information, visit: www.routledge.com/9781439860977

Biochemistry

An Organic Chemistry Approach



Michael B. Smith University of Connecticut, Storrs, USA

Biochemistry: An Organic Chemistry Approach provides a framework for understanding various topics of biochemistry, including the chemical behavior of biomolecules, enzyme activity, and more. It goes beyond mere memorization. Using several techniques to develop a relational understanding, including homework, this text helps students fully grasp and better correlate the essential organic chemistry concepts with those concepts at the root of biochemistry. The goal is to better understand the fundamental principles of biochemistry.

CRC Press
May 2020 : 398pp
Pb: 978-0-815-36645-4 : **£110**
Hb: 978-0-815-36713-0 : **£220**
eBook: 978-1-351-25808-1

* For full contents and more information, visit: www.routledge.com/9780815366454

Introduction to Bioorganic Chemistry and Chemical Biology



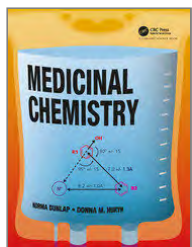
David Van Vranken, **GREGORY A. WEISS**

This textbook uniquely blends the modern tools of organic chemistry with concepts of biology, physiology, and medicine. With a focus on human cell biology and using a problems-driven approach, the text explains the combinatorial architecture of biooligomers (genes, DNA, RNA, proteins, glycans, lipids, and terpenes) as the molecular engine for life. Accentuated by descriptions of mechanistic arrow pushing and rich illustrations, organic chemistry is used to illuminate the central dogma of molecular biology. The text contains more than 300 problems to test assimilation or the material.

Garland Science
November 2012 : 504pp
Pb: 978-0-815-34214-4 : **£76.99**
eBook: 978-0-203-38109-0

* For full contents and more information, visit: www.routledge.com/9780815342144

Medicinal Chemistry



Norma K Dunlap Middle Tennessee State University, USA, **Donna M Huryn** University of Pennsylvania and University of Pittsburgh, USA

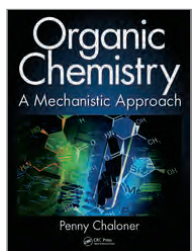
Medicinal Chemistry teaches the essential concepts of medicinal chemistry from the perspective of practicing.

Garland Science
April 2018 : 508pp
Pb: 978-0-815-34556-5 : **£105**
eBook: 978-1-315-10047-0

* For full contents and more information, visit: www.routledge.com/9780815345565

Organic Chemistry

A Mechanistic Approach



Penny Chaloner Imperial College London, UK

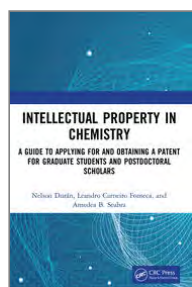
This textbook classifies organic chemistry according to mechanism rather than classification of functional groups, with the intention of having students understand by means of problem solving. The emphasis is on the development of skills through a student-centered pedagogical approach. The inclusion of chromatography, spectroscopy, and spectrometry early in the book is an important concept. The book contains the customary chapters on biomolecules, but also presents chapters on industrially important processes and their economics, and environmental chemistry, areas in which every 21st-century-educated scientist should have familiarity.

CRC Press
December 2014 : 1286pp
Hb: 978-1-482-20690-6 : **£150**
eBook: 978-0-429-17136-9

* For full contents and more information, visit: www.routledge.com/9781482206906

Intellectual Property in Chemistry

A Guide to Applying for and Obtaining a Patent for Graduate Students and Postdoctoral Scholars



Nelson Durán Institute of Chemistry, University of Campinas, Brazil, **Leandro Carneiro Fonseca** Institute of Chemistry, University of Campinas, Brazil, **Amedea B. Seabra** Center for Natural and Human Sciences - Federal University of ABC, Brazil

This book provides detailed instructions for reading and writing a patent. The book presents useful instructions for undergraduate and graduate students as well as post-doctoral, researchers and professors in the field of Chemistry and related areas. Written from a practical point of view it answers the simple and often asked question: how should I read and write a patent? The book is particularly directed to graduate students, who are initiating their research and often lack experience with patents. The ability to write and comprehend patents is fundamental for the success of their projects.

CRC Press

December 2018 : 139pp

Pb: 978-1-138-60082-9 : **£79.99**

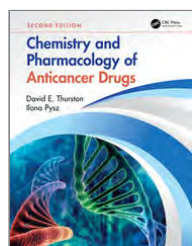
Hb: 978-1-138-60083-6 : **£165**

eBook: 978-0-429-47057-8

* For full contents and more information, visit: www.routledge.com/9781138600829

2ND EDITION

Chemistry and Pharmacology of Anticancer Drugs



David E. Thurston, Ilona Pysz

This book is a comprehensive survey of all families of anticancer agents and therapeutic approaches currently in use or in advanced stages of clinical trials, including biological-based therapies. The book is unique in providing molecular structures for all anticancer agents, discussing them in terms of history of development, chemistry, mechanism of action, structure-function relationships and pharmacology. This book is an indispensable resource for cancer researchers, medicinal chemists and other biomedical scientists. The new edition of this book will have a Companion Website offering regular updates to the twelve chapters useful for both students and instructors.

CRC Press
March 2021 : 618pp
Pb: 978-1-439-85326-9 : £120
Hb: 978-1-138-32358-2 : £195
eBook: 978-1-315-37472-7

* For full contents and more information, visit: www.routledge.com/9781439853269

2ND EDITION

Drug Delivery

Fundamentals and Applications, Second Edition



Edited by **Anya Hillery** Saint Louis University, Madrid Campus, Avenida del Valle 34, 28003 Madrid, Spain,
Kinam Park Purdue University, 206 S. Martin Jischke Drive, West Lafayette, IN 47907, USA

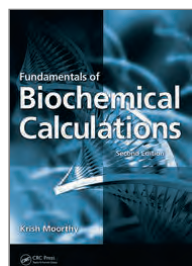
This book provides a comprehensive introduction to advanced drug delivery and targeting, covering their principles, current applications, and potential future developments. This edition has been updated to reflect significant trends and cutting-edge advances that have occurred since the first edition was published. All the original chapters have been retained, but the material therein has been updated. Eight new chapters have been added that deal with entirely new technologies and approaches.

CRC Press
September 2016 : 632pp
Pb: 978-1-482-21771-1 : £115
Hb: 978-1-138-40736-7 : £180
eBook: 978-1-315-38257-9

* For full contents and more information, visit: www.routledge.com/9781482217711

2ND EDITION

Fundamentals of Biochemical Calculations



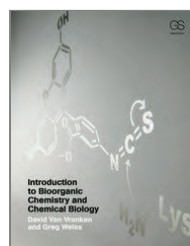
Krish Moorthy Formerly of RMIT University, Melbourne, Australia

Drawing attention to the widely applicable Ratio method for performing biochemical calculations, this fully updated text encourages scientists to learn, rather than memorize, the processes involved by developing their mathematical logic and problem solving skills. The book's user-friendly style requires no advanced knowledge of mathematics. Featuring new solved problems, useful comments, and mathematical hints, this edition also introduces three new chapters on calculations related to experimental biochemistry, molecular biology, and pharmacy. It also includes a supplementary CD with additional questions and answers.

CRC Press
November 2007 : 192pp
Pb: 978-1-420-05357-9 : £47.99
Hb: 978-1-138-40702-2 : £180
eBook: 978-0-429-14218-5

* For full contents and more information, visit: www.routledge.com/9781420053579

Introduction to Bioorganic Chemistry and Chemical Biology



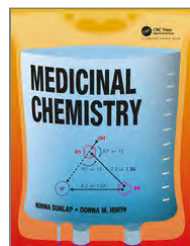
David Van Vranken, GREGORY A WEISS

This textbook uniquely blends the modern tools of organic chemistry with concepts of biology, physiology, and medicine. With a focus on human cell biology and using a problems-driven approach, the text explains the combinatorial architecture of biooligomers (genes, DNA, RNA, proteins, glycans, lipids, and terpenes) as the molecular engine for life. Accentuated by descriptions of mechanistic arrow pushing and rich illustrations, organic chemistry is used to illuminate the central dogma of molecular biology. The text contains more than 300 problems to test assimilation of the material.

Garland Science
November 2012 : 504pp
Pb: 978-0-815-34214-4 : £76.99
eBook: 978-0-203-38109-0

* For full contents and more information, visit: www.routledge.com/9780815342144

Medicinal Chemistry



Norma K Dunlap Middle Tennessee State University, USA, **Donna M Huryn** University of Pennsylvania and University of Pittsburgh, USA

Medicinal Chemistry teaches the essential concepts of medicinal chemistry from the perspective of practicing.

Garland Science
April 2018 : 508pp
Pb: 978-0-815-34556-5 : £105
eBook: 978-1-315-10047-0

* For full contents and more information, visit: www.routledge.com/9780815345565

3RD EDITION

Pharmaceutical Dosage Forms and Drug Delivery

Revised and Expanded



Ram I. Mahato, Ajit S. Narang

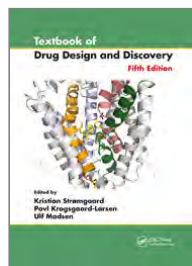
Completely revised and updated, this third edition of Pharmaceutical Dosage Forms and Drug Delivery elucidates the basic principles of pharmaceuticals, biopharmaceuticals, dosage form design, and drug delivery – including emerging new biotechnology-based treatment modalities. The authors integrate aspects of physical pharmacy, chemistry, biology, and biopharmaceuticals into drug delivery.

CRC Press
June 2022 : 728pp
Pb: 978-1-032-33935-1 : £45.99
Hb: 978-1-482-25362-7 : £120
eBook: 978-1-315-15694-1

* For full contents and more information, visit: www.routledge.com/9781032339351

5TH EDITION

Textbook of Drug Design and Discovery



Edited by **Kristian Stromgaard , Povl Krogsgaard-Larsen , Ulf Madsen**

Building on the success of the previous editions, the Textbook of Drug Design and Discovery, Fifth Edition, has been thoroughly revised and updated to provide a complete source of information on all facets of drug design and discovery for students of chemistry, pharmacy, pharmacology, biochemistry, and medicine. The information is presented in an up-to-date review form with an underlying and fundamental focus on the educational aspects. Additionally, several new chapters have been added.

CRC Press

July 2022 : 452pp

Pb: 978-1-032-33994-8 : **£49.99**

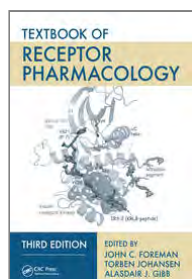
Hb: 978-1-498-70278-2 : **£120**

eBook: 978-1-315-37181-8

* For full contents and more information, visit: www.routledge.com/9781032339948

3RD EDITION

Textbook of Receptor Pharmacology



Edited by **John C. Foreman , Torben Johansen , Alasdair J. Gibb**

Originating from a renowned course on receptor pharmacology, this text presents in-depth coverage of this rapidly expanding research area. The book combines current understanding of classical quantitative pharmacology and drug-receptor interactions with the basics of receptor structure and signal transduction mechanisms. It focuses on molecular investigation of receptor structure, quantitative functional studies of agonists and antagonists, ligand binding, and signal transduction at the cell membrane. This edition includes updated chapters on receptor structure and signal transduction by G-proteins and tyrosine kinases as well as enhancements to the quantitative treatment of drug-receptor

CRC Press

June 2021 : 312pp

Pb: 978-1-032-09937-8 : **£45.99**

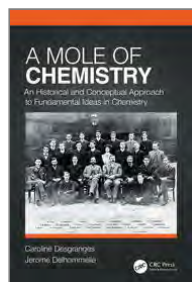
Hb: 978-1-420-05254-1 : **£135**

eBook: 978-0-429-14730-2

* For full contents and more information, visit: www.routledge.com/9781032099378

A Mole of Chemistry

An Historical and Conceptual Approach to Fundamental Ideas in Chemistry



Caroline Desgranges Research Assistant Professor, UMass Lowell, USA, **Jerome Delhommelle** Associate Professor, UMass Lowell, USA

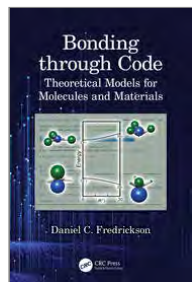
This book is intended for students in their undergraduate years who need to learn the basics of chemistry, including science and engineering as well as humanities. This is a companion textbook which provides a unique perspective on how the main scientific concepts describing nature were discovered and, eventually, how modern chemistry was born. The book makes use of context found in history, philosophy and the arts to better understand their developments, and without using mathematical equations. The focus is then set on scientific reasoning, making this book a great companion and addition to traditional chemistry textbooks.

CRC Press
March 2020 : 229pp
Pb: 978-0-367-20824-0 : £84.99
Hb: 978-0-367-20828-8 : £215
eBook: 978-0-429-26368-2

* For full contents and more information, visit: www.routledge.com/9780367208240

Bonding through Code

Theoretical Models for Molecules and Materials



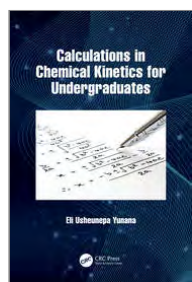
Daniel C. Fredrickson University of Wisconsin-Madison, USA

This timely and unique publication is designed for graduates and researchers in physical inorganic chemistry covering bonding models and applications of symmetry concepts to chemical systems. The book discusses the quantum mechanical basis for molecular orbital concepts, the connections between molecular orbitals and localized views of bonding, group theory, and bonding models for a variety of compounds. Unlike other books, the concepts are made tangible to the readers by guiding them through the implementation in Matlab functions. No background in Matlab or computer programming is needed and the book will provide the necessary skills.

CRC Press
August 2022 : 244pp
Pb: 978-0-367-54487-4 : £39.99
Hb: 978-1-498-76221-2 : £120
eBook: 978-0-429-15401-0

* For full contents and more information, visit: www.routledge.com/9780367544874

Calculations in Chemical Kinetics for Undergraduates



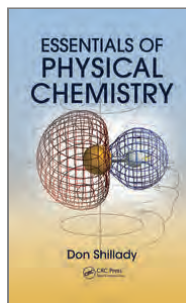
Eli Usheunepa Yunana Alumni University of Glasgow.

This book aims to restore passion for problem solving and applied quantitative skills in undergraduate chemistry students. Avoiding complicated chemistry jargon and providing hints and step wise explanations in every calculation problem, the author helps students overcome their fear of handling mathematically applied problems in physical chemistry. This solid foundation in their early studies will enable them to connect fundamental theoretical chemistry to real experimental applications in their graduate work and beyond.

CRC Press
June 2022 : 92pp
Pb: 978-1-032-22820-4 : £25.99
Hb: 978-1-032-22834-1 : £61.99
eBook: 978-1-003-27438-4

* For full contents and more information, visit: www.routledge.com/9781032228204

Essentials of Physical Chemistry



Don Shillady Virginia Commonwealth University, Richmond, USA

Particularly well-suited for students not pursuing a traditional chemistry curriculum, such as premedical and forensic science students, this book presents a stand-alone approach to teaching physical chemistry in a one-semester course, a current trend in undergraduate education. This new undergraduate textbook succeeds in inspiring a thorough understanding rather than merely exposing students to what they all too often perceive as a painful and confusing experience. The author includes real-world applications, worked examples, end-of-chapter problems, key solutions, thermodynamic data, and much more to assist in the teaching and learning of physical chemistry.

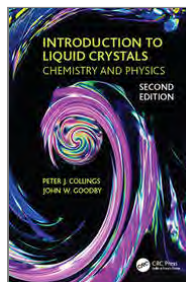
CRC Press
July 2011 : 512pp
Hb: 978-1-439-84097-9 : £53.99
eBook: 978-0-429-18437-6

* For full contents and more information, visit: www.routledge.com/9781439840979

2ND EDITION

Introduction to Liquid Crystals

Chemistry and Physics, Second Edition



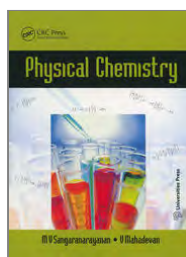
Peter J. Collings Swarthmore College, Swarthmore, PA, USA, **John W. Goodby** University of York, York, UK

Introduction to Liquid Crystals: Chemistry and Physics, Second Edition relies on only introductory level chemistry and physics as the foundation for understanding liquid crystal science. Liquid crystals combine the material properties of solids with the flow properties of fluids. As such they have provided the foundation for a revolution in low-power, flat-panel display technology LCDs. In this book, the essential elements of liquid crystal science are introduced and explained from the perspectives of the chemist, physicist and engineer.

CRC Press
October 2019 : 531pp
Pb: 978-1-138-29876-7 : £61.99
Hb: 978-1-138-29885-9 : £215
eBook: 978-1-315-09834-0

* For full contents and more information, visit: www.routledge.com/9781138298767

Physical Chemistry



M. V. Sangaranarayanan Universities Press, India, **V. Mahadevan** Universities Press, India

This text presents a unified treatment of the classical topics of physical chemistry in a lucid manner to aid easy comprehension. It clear, concise presentation develops the subject matter in a logical manner, allowing students to learn and apply the concepts rather than memorize the subject by rote. Extensive exercises are provided at the end of each chapter for the student to test his/her understanding of the concepts. Interesting facts have been highlighted in grey boxes. Worked examples complement the text wherever required. The exercises at the end of each chapter will be extremely valuable to sharpen problem-solving skills.

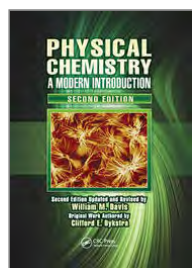
CRC Press
April 2012 : 592pp
Hb: 978-1-466-51183-5 : £56.99

* For full contents and more information, visit: www.routledge.com/9781466511835

2ND EDITION

Physical Chemistry

A Modern Introduction, Second Edition

**William M. Davis**

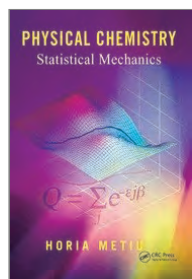
Designed specifically for a two-semester introductory course sequence in physical chemistry, this text presents core principles and topics. Straightforward and streamlined, it presents the necessary amount of detail for comprehension. Organized in such a way that the various topics covered are connected to each other, it allows students to see physical chemistry as an interconnected discipline and not a series of unrelated concepts. Each chapter in this new edition has been thoroughly updated and includes new information on computational applications, more end of chapter problems, and new chapters on nanotechnology and surface chemistry

CRC Press
September 2018 : 520pp
Pb: 978-1-138-11399-2 : **£64.99**
Hb: 978-1-439-81077-4 : **£185**
eBook: 978-0-429-06720-4

* For full contents and more information, visit: www.routledge.com/9781138113992

Physical Chemistry

Statistical Mechanics

**Horia Metiu** University of California Santa Barbara, USA

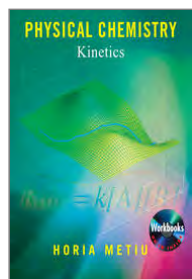
This is a new undergraduate textbook on physical chemistry by Horia Metiu published as four separate paperback volumes

Taylor & Francis
February 2006 : 318pp
Pb: 978-0-815-34085-0 : **£36.99**
eBook: 978-0-429-25893-0

* For full contents and more information, visit: www.routledge.com/9780815340850

Physical Chemistry

Kinetics

**Horia Metiu** University of California Santa Barbara, USA

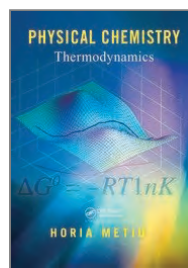
This is a new undergraduate textbook on physical chemistry by Horia Metiu published as four separate paperback volumes

Taylor & Francis
February 2006 : 192pp
Pb: 978-0-815-34089-8 : **£36.99**
eBook: 978-0-429-25894-7

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Physical Chemistry

Thermodynamics

**Horia Metiu** University of California Santa Barbara, USA

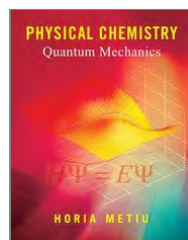
This is a new undergraduate textbook on physical chemistry by Horia Metiu published as four separate paperback volumes

Taylor & Francis
February 2006 : 318pp
Pb: 978-0-815-34091-1 : **£68.99**
eBook: 978-0-429-25892-3

* For full contents and more information, visit: www.routledge.com/9780815340911

Physical Chemistry

Quantum Mechanics

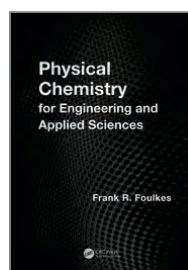
**Horia Metiu** University of California Santa Barbara, USA

This is a new undergraduate textbook on physical chemistry by Horia Metiu published as four separate paperback volumes

Taylor & Francis
February 2006 : 512pp
Pb: 978-0-815-34087-4 : **£58.99**
eBook: 978-0-429-25891-6

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Physical Chemistry for Engineering and Applied Sciences

**Frank R. Foulkes** Toronto, Ontario, Canada

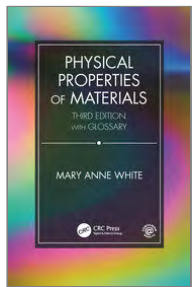
This book is the result of more than 30 years of teaching by the author of a one-semester course in physical chemistry to first-year students at the University of Toronto. The enrollment varied from 300 to 800 students per year over the years. The book is unique in that it provides the detailed development of the equations, which can be followed relatively easily even with only moderate mathematical skills and backgrounds. The book provides interesting and inspiring examples, as well as many problems and solutions.

CRC Press
September 2012 : 704pp
Hb: 978-1-466-51846-9 : **£105**
eBook: 978-0-429-09875-8

* For full contents and more information, visit: www.routledge.com/9781466518469

3RD EDITION

Physical Properties of Materials, Third Edition



Mary Anne White Dalhousie University, Halifax, Nova Scotia, Canada

The book focuses on the optical, thermal, electrical, magnetic and mechanical properties of materials. It introduces various materials via their properties and application of materials through tutorials via a companion website. In comparison with other textbooks it has broader coverage of physical properties and deep connections concerning the relationship between structure and origins of the properties. New topics include reference to the latest research topics in materials science and engineering, including boron nitride nanotubes, new cloaking technologies, new energy storage materials, and materials for renewable energy capture. It now features a glossary at the end of the book.

CRC Press

October 2018 : 518pp

Pb: 978-1-138-60510-7 : **£61.99**

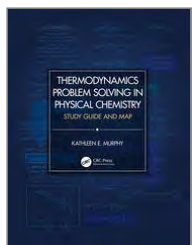
Hb: 978-1-138-56917-1 : **£145**

eBook: 978-0-429-46826-1

* For full contents and more information, visit: www.routledge.com/9781138605107

Thermodynamics Problem Solving in Physical Chemistry

Study Guide and Map



Kathleen E. Murphy Daemen College, Amherst, NY, USA

This innovative and unique workbook and “map” guides physical chemistry students through the decisions to be made to assess a problem situation, create appropriate solutions, and gain confidence through practice solving physical chemistry problems. The workbook includes six major sections with 20 - 30 solved problems in each section that span from easy, single objective questions to difficult, multistep analysis problems. Each section of the workbook has “key points” that highlight major features of the topic to remind students of what they need to apply to solve problems in the topic area. Consequently, the workbook and map can act as a “test” review for the students.

CRC Press

March 2020 : 138pp

Pb: 978-0-367-23116-3 : **£32.99**

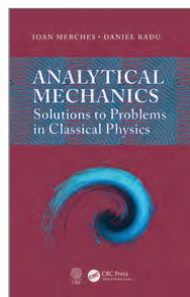
Hb: 978-0-367-23147-7 : **£84.99**

eBook: 978-0-429-27840-2

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Analytical Mechanics

Solutions to Problems in Classical Physics



Ioan Merches Al.I.Cuza University, Iasi, Romania, **Daniel Radu**

The principles and methods of analytical mechanics are very efficient for investigating not only mechanics but also in areas such as field theory, plasma physics, and quantum mechanics. This text presents a short theoretical description of these subjects, followed by solved problems. The authors thoroughly discuss solutions to the problems by taking a comprehensive approach to explore the methods of investigation. They carefully perform the calculations step by step, graphically displaying some solutions via Mathematica® 4.0.

CRC Press

August 2014 : 456pp

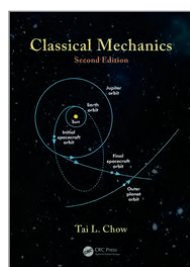
Hb: 978-1-482-23939-3 : **£84.99**

eBook: 978-0-429-06861-4

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2ND EDITION

Classical Mechanics



Tai L. Chow California State University, Stanislaus, Turlock, USA

Emphasizing a modern perspective, this book presents a complete account of the classical mechanics of particles and systems for physics students at the advanced undergraduate level. This edition has been updated with two new sections and three new chapters as well as four new appendices. The text assumes readers have been exposed to courses in calculus and calculus-based general physics, while no prior knowledge of differential equations is required. Each chapter contains homework problems of varying degrees of difficulty to enhance understanding of the material in the text.

CRC Press

May 2013 : 640pp

Hb: 978-1-466-56998-0 : **£110**

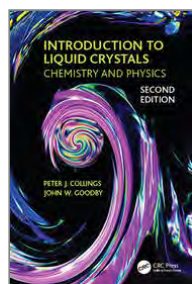
eBook: 978-0-429-10142-7

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2ND EDITION

Introduction to Liquid Crystals

Chemistry and Physics, Second Edition



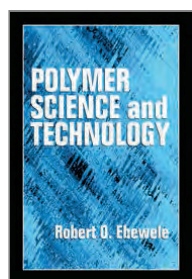
Peter J. Collings Swarthmore College, Swarthmore, PA, USA, **John W. Goodby** University of York, York, UK

Introduction to Liquid Crystals: Chemistry and Physics, Second Edition relies on only introductory level chemistry and physics as the foundation for understanding liquid crystal science. Liquid crystals combine the material properties of solids with the flow properties of fluids. As such they have provided the foundation for a revolution in low-power, flat-panel display technology LCDs. In this book, the essential elements of liquid crystal science are introduced and explained from the perspectives of the chemist, physicist and engineer.

CRC Press
October 2019 : 531pp
Pb: 978-1-138-29876-7 : **£61.99**
Hb: 978-1-138-29885-9 : **£215**
eBook: 978-1-315-09834-0

* For full contents and more information, visit: www.routledge.com/9781138298767

Polymer Science and Technology



Robert O. Ebewele University of Benin, Benin City, Nigeria

By consolidating into one volume the fundamentals currently covered piecemeal across several reference, this book simplifies the learning of polymer science. Its primary focus is the ultimate property of the finished polymer product. Part I explains polymer fundamentals. Part II discusses how polymers are prepared from monomers and the transformation of polymers into useful everyday articles. Part III examines the properties and applications of polymers. Polymer Science and Technology presents these aspects of the science in a readily understandable way. It emphasizes basic, qualitative comprehension of concepts, rather than their rote memorization or detailed mathematical analysis.

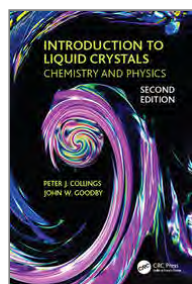
CRC Press
March 2000 : 504pp
Hb: 978-0-849-38939-9 : **£120**
eBook: 978-0-429-12792-2

* For full contents and more information, visit: www.routledge.com/9780849389399

2ND EDITION

Introduction to Liquid Crystals

Chemistry and Physics, Second Edition



Peter J. Collings Swarthmore College, Swarthmore, PA, USA, **John W. Goodby** University of York, York, UK

Introduction to Liquid Crystals: Chemistry and Physics, Second Edition relies on only introductory level chemistry and physics as the foundation for understanding liquid crystal science. Liquid crystals combine the material properties of solids with the flow properties of fluids. As such they have provided the foundation for a revolution in low-power, flat-panel display technology LCDs. In this book, the essential elements of liquid crystal science are introduced and explained from the perspectives of the chemist, physicist and engineer.

CRC Press

October 2019 : 531pp

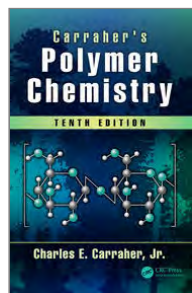
Pb: 978-1-138-29876-7 : **£61.99**Hb: 978-1-138-29885-9 : **£215**

eBook: 978-1-315-09834-0

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10TH EDITION

Carraher's Polymer Chemistry



Charles E. Carraher Jr. Florida Atlantic University, Boca Raton, USA

This successful textbook integrates the core areas of polymer science. Along with updating of each chapter, new content will be added to reflect the growing applications in Biochemistry, Biomaterials, and Sustainable Industries. Providing a user-friendly approach to the world of polymeric materials, the book allows students to integrate their chemical knowledge and establish a connection between fundamental and applied chemical information. It contains all of the elements of an introductory text with synthesis, property, application, and characterization. Special sections in each chapter contain definitions, learning objectives, questions, case studies and additional reading.

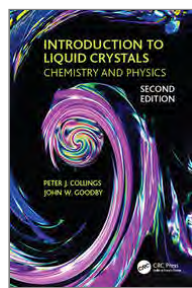
CRC Press
October 2017 : 816pp
Hb: 978-1-498-73738-8 : £135
eBook: 978-1-315-11660-0

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2ND EDITION

Introduction to Liquid Crystals

Chemistry and Physics, Second Edition



Peter J. Collings Swarthmore College, Swarthmore, PA, USA, **John W. Goodby** University of York, York, UK

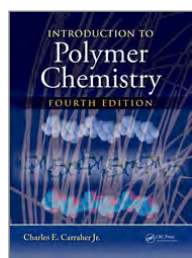
Introduction to Liquid Crystals: Chemistry and Physics, Second Edition relies on only introductory level chemistry and physics as the foundation for understanding liquid crystal science. Liquid crystals combine the material properties of solids with the flow properties of fluids. As such they have provided the foundation for a revolution in low-power, flat-panel display technology LCDs. In this book, the essential elements of liquid crystal science are introduced and explained from the perspectives of the chemist, physicist and engineer.

CRC Press
October 2019 : 531pp
Pb: 978-1-138-29876-7 : £61.99
Hb: 978-1-138-29885-9 : £215
eBook: 978-1-315-09834-0

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4TH EDITION

Introduction to Polymer Chemistry



Charles E. Carraher Jr. Florida Atlantic University, Boca Raton, USA

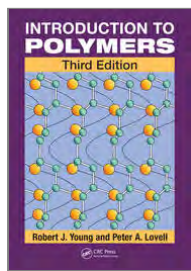
Introduction to Polymer Chemistry provides undergraduate students with a much-needed, well-rounded presentation of the principles and applications of natural, synthetic, inorganic, and organic polymers. With an emphasis on the environment and green chemistry and materials, this fourth edition continues to provide detailed coverage of natural and synthetic giant molecules, inorganic and organic polymers, elastomers, adhesives, coatings, fibers, plastics, blends, caulks, composites, and ceramics. Building on undergraduate work in foundational courses, the text fulfills the American Chemical Society Committee on Professional Training (ACS CPT) in-depth course requirement

CRC Press
January 2017 : 588pp
Hb: 978-1-498-73761-6 : £71.99
eBook: 978-1-315-36948-8

* For full contents and more information, visit: www.routledge.com/9781498737616

3RD EDITION

Introduction to Polymers



Robert J. Young University of Manchester, UK, **Peter A. Lovell** University of Manchester, UK

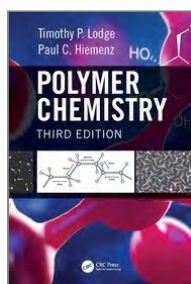
Thoroughly updated, this long-awaited new edition of a bestselling text provides extensive, detailed, and balanced coverage of polymer chemistry and polymer physics, spanning synthesis, characterization, bulk properties and morphology, and mechanical and electrical properties of polymers. The material has been completely reorganized and expanded to offer a coherent format for teaching and learning the fundamental aspects of contemporary polymer science. This edition incorporates the most important developments that have occurred in the past two decades, including "living" radical polymerization, supramolecular polymerization, and block and graft copolymer synthesis methods.

CRC Press
June 2011 : 688pp
Pb: 978-0-849-33929-5 : £58.99
Hb: 978-1-138-45957-1 : £185
eBook: 978-0-429-10948-5

* For full contents and more information, visit: www.routledge.com/9780849339295

3RD EDITION

Polymer Chemistry



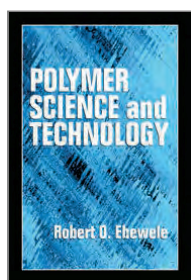
Timothy P. Lodge University of Minnesota-Twin Cities, Minneapolis, USA, **Paul C. Hiemenz** Emeritus - Cal State Polytechnic University, Pomona, CA

A well-rounded and articulate examination of polymer properties at the molecular level, this book focuses on fundamental principles based on underlying chemical structures, polymer synthesis, characterization, and properties. It emphasizes the logical progression of concepts and provide mathematical tools as needed, and fully derived problems for advanced calculations. This book expands and reorganizes material within chapters 2-5 to better develop polymer chemistry concepts and update the remaining chapters. New examples and problems will be added throughout.

CRC Press
July 2020 : 676pp
Hb: 978-1-466-58164-7 : £84.99
IEPB: 978-1-032-20585-4 : £39.99
eBook: 978-0-429-19081-0

* For full contents and more information, visit: www.routledge.com/9781466581647

Polymer Science and Technology



Robert O. Ebewele University of Benin, Benin City, Nigeria

By consolidating into one volume the fundamentals currently covered piecemeal across several reference, this book simplifies the learning of polymer science. Its primary focus is the ultimate property of the finished polymer product. Part I explains polymer fundamentals. Part II discusses how polymers are prepared from monomers and the transformation of polymers into useful everyday articles. Part III examines the properties and applications of polymers. Polymer Science and Technology presents these aspects of the science in a readily understandable way. It emphasizes basic, qualitative comprehension of concepts, rather than their rote memorization or detailed mathematical analysis.

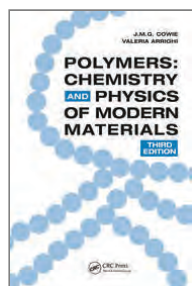
CRC Press
March 2000 : 504pp
Hb: 978-0-849-38939-9 : £120
eBook: 978-0-429-12792-2

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3RD EDITION

Polymers

Chemistry and Physics of Modern Materials, Third Edition



J.M.G. Cowie Heriot-Watt University, Edinburgh, Scotland
, Valeria Arrighi Heriot-Watt University, Scotland

Underscoring the multidisciplinary nature of polymer science, this third edition provides a broad-based and comprehensive text at an introductory, reader-friendly level. With nearly 50 percent new or updated material, this edition presents new polymerization methods, characterization techniques, and applications in electronic, biological, and medical settings. New topics include controlled radical polymerization, novel polymer architectures, chain dimension, morphology, determining molecular weights, metallocene catalysts, copolymers, and rheological behavior. The book features real world examples, new chapter problems, and a solutions manual.

CRC Press

July 2007 : 520pp

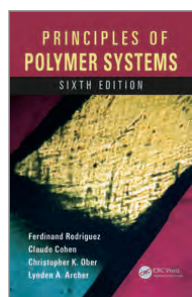
Pb: 978-0-849-39813-1 : **£96.99**

eBook: 978-0-429-12554-6

* For full contents and more information, visit: www.routledge.com/9780849398131

6TH EDITION

Principles of Polymer Systems



Ferdinand Rodriguez Cornell University, Ithaca, New York, USA, **Claude Cohen** Cornell University, Ithaca, New York, USA, **Christopher K. Ober** Cornell University, Ithaca, New York, USA, **Lynden Archer** Cornell University, Ithaca, New York, USA

A classic text in the field of chemical engineering, this revised sixth edition offers a comprehensive exploration of polymers at a level geared toward upper-level undergraduates and beginning graduate students. It contains more theoretical background for some of the fundamental concepts pertaining to polymer structure and behavior, while also providing an up-to-date discussion of the latest developments in polymerization systems. New problems have been added to several of the chapters, and a solutions manual is available upon qualifying course adoption.

CRC Press

December 2014 : 810pp

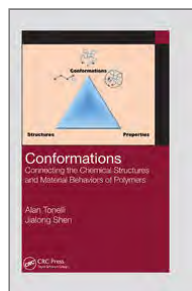
Hb: 978-1-482-22378-1 : **£135**

eBook: 978-0-429-17229-8

* For full contents and more information, visit: www.routledge.com/9781482223781

Conformations

Connecting the Chemical Structures and Material Behaviors of Polymers



Alan E. Tonelli, Jialong Shen

The authors provide both the polymer/materials science student and practicing materials engineer a means of understanding the differences in behaviors/properties of materials made from chemically distinct polymers. This knowledge can assist them in designing polymers with chemical structures that lead to their desired material behaviors and properties. The reader will learn how the detailed chemical structures of polymers can be characterized, how their microstructural dependent conformational preferences can be evaluated, and how these conformational preferences can be connected to the behaviors and properties of their materials.

CRC Press

December 2021 : 236pp

Pb: 978-1-032-24153-1 : **£45.99**

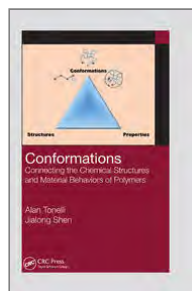
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Connecting the Chemical Structures and Material Behaviors of Polymers



Alan E. Tonelli, Jialong Shen

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CRC Press

December 2021 : 236pp

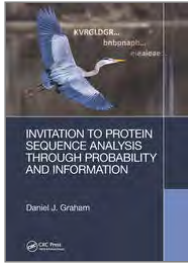
Pb: 978-1-032-24153-1 : **£45.99**

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eBook: 978-0-203-70360-1

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Invitation to Protein Sequence Analysis Through Probability and Information



Daniel Graham

This book explores the remarkable information correspondences and probability structures of proteins. Correspondences are pervasive in biochemistry and bioinformatics: proteins share homologies, folding patterns, and mechanisms. Probability structures are just as paramount: folded state graphics reflect Angstrom-scale maps of electron density. The author explores protein sequences (primary structures), both individually and in sets (systems) with the help of probability and information tools. This perspective will enhance the reader's knowledge of how an important class of molecules is designed and put to task in natural systems, and how we can approach class members in hands-on ways.

CRC Press

December 2021 : 310pp

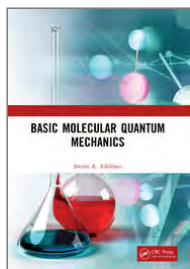
Pb: 978-1-032-24241-5 : **£43.99**

Hb: 978-0-367-13452-5 : **£110**

eBook: 978-0-429-02825-0

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Basic Molecular Quantum Mechanics



Steven A. Adelman Purdue University, Department of Chemistry, West Lafayette, Indiana, USA

This book introduces quantum mechanics by covering the fundamentals of quantum mechanics and some of its most important chemical applications: vibrational and rotational spectroscopy and electronic structure of atoms and molecules. Thoughtfully organized, the author builds up quantum mechanics systematically with each chapter preparing the student for the more advanced chapters and complex applications.

CRC Press

August 2021 : 464pp

Pb: 978-1-498-73399-1 : **£76.99**

Hb: 978-1-032-01065-6 : **£185**

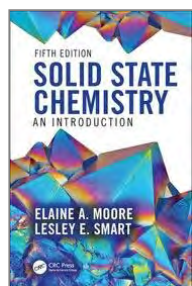
eBook: 978-0-429-15574-1

* For full contents and more information, visit: www.routledge.com/9781498733991

5TH EDITION

Solid State Chemistry

An Introduction



Elaine A. Moore The Open University, Milton Keynes, UK,
Lesley E. Smart The Open University, Milton Keynes, UK

Solid State Chemistry: An Introduction presents a wide range of the synthetic and physical techniques used to prepare and characterize solids. Going beyond this, this largely nonmathematical introduction to solid state chemistry includes the bonding and electronic, magnetic, electrical and optical properties of solids. Solids of particular interest – porous solids, superconductors and nanostructures are included. Practical examples of applications and modern developments are given. It offers students the opportunity to apply their knowledge in real-life situations and serve them well throughout their degree course.

CRC Press

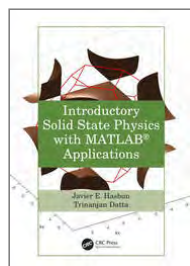
August 2020 : 442pp

Pb: 978-0-367-13572-0 : **£39.99**Hb: 978-0-367-13580-5 : **£175**

eBook: 978-0-429-02728-4

* For full contents and more information, visit: www.routledge.com/9780367135720

Introductory Solid State Physics with MATLAB Applications



Javier E. Hasbun , Trinanjan Datta

Solid state physics, the study and prediction of the fundamental physical properties of materials, forms the backbone of modern materials science and has many technological applications. The unique feature of this text is the MATLAB®-based computational approach with several numerical techniques and simulation methods included. This is highly effective in addressing the need for visualization and a direct hands-on approach in learning the theoretical concepts of solid state physics. The code is freely available to all textbook users.

CRC Press

October 2019 : 570pp

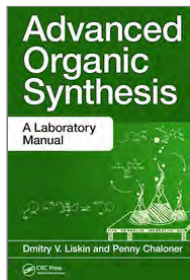
Hb: 978-1-466-51230-6 : **£84.99**

eBook: 978-0-429-08660-1

* For full contents and more information, visit: www.routledge.com/9781466512306

Advanced Organic Synthesis

A Laboratory Manual



Dmitry V. Liskin Christopher Newport University, Virginia, USA, **Penny Chaloner** Imperial College London, UK

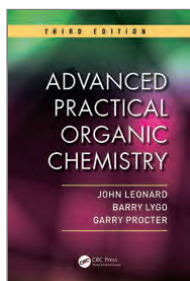
This book is designed for students aspiring to gain knowledge and techniques in organic synthesis. It focuses on a mechanistic background of key reactions in organic chemistry, gives insight into well-established trends, and introduces new developments in the field. Featuring experiments that were performed by the author as a graduate student as well as some of his recently published experiments, it provides undergraduates with theoretical knowledge and practical experience needed to succeed in graduate school or industry.

CRC Press
November 2015 : 132pp
Pb: 978-1-482-24496-0 : **£61.99**
Hb: 978-1-138-40691-9 : **£180**
eBook: 978-0-429-17248-9

* For full contents and more information, visit: www.routledge.com/9781482244960

3RD EDITION

Advanced Practical Organic Chemistry



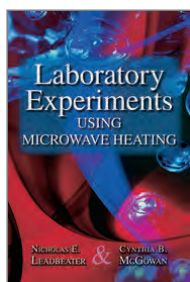
John Leonard AstraZeneca, Macclesfield, UK, **Barry Lygo** University of Nottingham, UK, **Garry Procter** University of Manchester, UK

With an emphasis on the most up-to-date techniques commonly used in organic synthesis, this third edition reference draws on the extensive experience of the authors and their association with some of the world's leading laboratories of synthetic organic chemistry. Written mainly for graduate and advanced undergraduate students as well as industrial organic chemists, this book provides sufficient guidance to allow the researcher to carry out reactions under conditions that offer the highest chance of success. It offers fully updated information and re-drawn figures to illustrate the information at the highest possible standard.

CRC Press
January 2013 : 356pp
Pb: 978-1-439-86097-7 : **£79.99**
Hb: 978-1-138-45593-1 : **£180**
eBook: 978-0-429-16876-5

* For full contents and more information, visit: www.routledge.com/9781439860977

Laboratory Experiments Using Microwave Heating



Nicholas E. Leadbeater University of Connecticut, Storrs, USA, **Cynthia B. McGowan** Merrimack College, North Andover, Massachusetts, USA

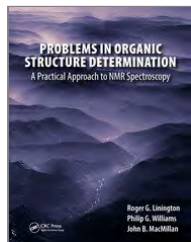
This book presents 22 experiments encompassing organic, inorganic, and analytical chemistry performed using microwave heating, making them fast and easy to accomplish in a laboratory period. All the experiments have been tested and verified in laboratory classes. Each chapter includes an introduction to the experiment, end-of-chapter questions, and two detailed protocols for performing the reaction using a small monomode and a larger multimode microwave unit. A number of the transformations use water as a solvent for a greener, more sustainable approach, while maintaining high reaction yields.

CRC Press
April 2013 : 232pp
Pb: 978-1-439-85609-3 : **£84.99**
eBook: 978-0-429-10830-3

* For full contents and more information, visit: www.routledge.com/9781439856093

Problems in Organic Structure Determination

A Practical Approach to NMR Spectroscopy



Roger G. Linington Simon Fraser University, Burnaby, British Columbia, Canada, **Philip G. Williams** University of Hawaii, USA, **John B. MacMillan** U.T. Southwestern, Texas, USA

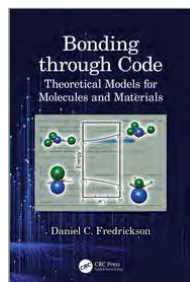
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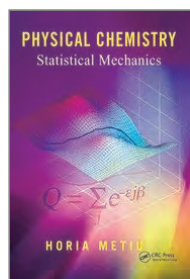
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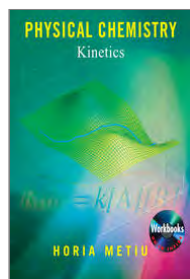
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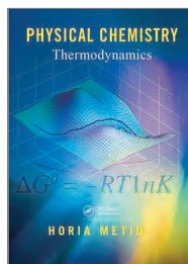
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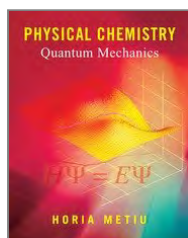
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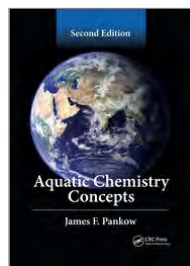
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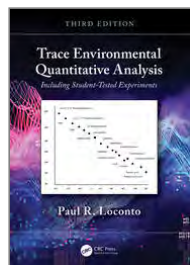
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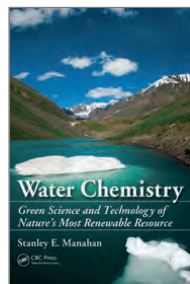
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A.		Chemistry for Environmental and Earth Sciences .	10	Introduction to Green Chemistry .	27	Polymer Science and Technology .	43
Advanced Organic Synthesis .	36	Chemistry for the Life Sciences .	32	Introduction to Liquid Crystals .	45	Polymer Science and Technology .	47
Advanced Organic Synthesis .	55	Chemistry of Pyrotechnics .	19	Introduction to Liquid Crystals .	46	Principles of Colloid and Surface Chemistry,	
Advanced Practical Organic Chemistry .	55	Classical Mechanics .	44	Introduction to Liquid Crystals .	41	Revised and Expanded .	15
Advanced Practical Organic Chemistry .	36	Colloid and Surface Chemistry .	15	Introduction to Liquid Crystals .	47	Principles of Polymer Systems .	11
A Mole of Chemistry .	36	Colloids and Interfaces in Life Sciences and		Introduction to Macromolecular Binding		Principles of Polymer Systems .	48
A Mole of Chemistry .	24	Bionanotechnology .	15	Equilibria .	7	Problem-Solving Exercises in Green and	
A Mole of Chemistry .	41	Concise Chemical Thermodynamics .	14	Introduction to Polymer Chemistry .	47	Sustainable Chemistry .	26
Analytical Chemistry for Technicians .	3	Conformations .	50	Introduction to Polymers .	47	Problem-Solving Exercises in Green and	
Analytical Mechanics .	44	Conformations .	49	Introduction to Polymers .	33	Sustainable Chemistry .	21
A Q&A Approach to Organic Chemistry .	24	D.		Introductory Solid State Physics with MATLAB		Problem-Solving Exercises in Green and	
A Q&A Approach to Organic Chemistry .	5	Drug Delivery .	39	Applications .	54	Sustainable Chemistry .	27
A Q&A Approach to Organic Chemistry .	36	E.		Invitation to Protein Sequence Analysis		Problems in Organic Structure Determination .	55
Aquatic Chemistry Concepts, Second Edition .	23	Environmental Chemical Analysis .	10	Through Probability and Information .	51	R.	
Aquatic Chemistry Concepts, Second Edition .	10	Environmental Chemical Analysis .	2	K.		Reaction Green Metrics .	26
Aquatic Chemistry Concepts, Second Edition .	20	Environmental Chemical Analysis .	20	Kinetics, Transport, and Structure in Hard and Soft		S.	
Aquatic Chemistry Concepts, Second Edition .	57	Environmental Chemistry .	20	Materials .	31	Scalable Innovation .	28
B.		Environmental Sampling and Analysis for		L.		Solid State Chemistry .	53
Basic Chemical Concepts and Tables .	5	Technicians .	20	Laboratory Experiments Using Microwave Heating		Solid State Chemistry .	29
Basic Chemical Concepts and Tables .	4	Environmental Sampling and Analysis for			55	Survival Guide to General Chemistry .	24
Basic Chemistry Concepts and Exercises .	4	Technicians .	10	M.		Survival Guide to Organic Chemistry .	24
Basic Concepts of Environmental Chemistry .	20	Environmental Science and Technology .	10	Medicinal Chemistry .	9	Survival Guide to Organic Chemistry .	5
Basic Laboratory Calculations for Biotechnology .	8	Environmental Science and Technology .	21	Medicinal Chemistry .	35	Synthesis Green Metrics .	26
Basic Molecular Quantum Mechanics .	52	Essentials of Physical Chemistry .	41	Medicinal Chemistry .	39	T.	
Biochemistry .	6	F.		Medicinal Chemistry .	37	Textbook of Drug Design and Discovery .	40
Biochemistry .	36	Foundations of Crystallography with Computer		O.		Textbook of Receptor Pharmacology .	40
Biochemistry in the Lab .	6	Applications .	18	Organic Chemistry .	37	The Chemistry and Mechanism of Art Materials .	34
Bonding through Code .	17	Fundamentals of Biochemical Calculations .	9	P.		The Legacy of Carbon Dioxide .	21
Bonding through Code .	41	Fundamentals of Biochemical Calculations .	39	Pharmaceutical Dosage Forms and Drug Delivery	39	Thermodynamics Problem Solving in Physical	
Bonding through Code .	33	Fundamentals of Environmental and		Physical Chemistry .	42	Chemistry .	43
Bonding through Code .	29	Toxicological Chemistry .	21	Physical Chemistry .	42	Trace Environmental Quantitative Analysis .	23
Bonding through Code .	56	Fundamentals of Polymer Engineering, Third		Physical Chemistry .	56	Trace Environmental Quantitative Analysis .	57
C.		Edition .	33	Physical Chemistry .	56	Trace Environmental Quantitative Analysis .	2
Calculations in Chemical Kinetics for		Fundamentals of Sustainable Chemical Science .	11	Physical Chemistry .	56	Trace Environmental Quantitative Analysis .	21
Undergraduates .	41	Fundamentals of Sustainable Chemical Science .	21	Physical Chemistry .	56	Transport Phenomena Fundamentals .	11
Carraher's Polymer Chemistry .	47	G.		Physical Chemistry .	56	U.	
Chemical Equilibria .	2	Green Chemistry Laboratory Manual for General		Physical Chemistry .	56	Understanding Chemistry through Cars .	4
Chemical Thermodynamics .	14	Chemistry .	24	Physical Chemistry .	42	Understanding General Chemistry .	24
Chemistry and Pharmacology of Anticancer		Green Chemistry Laboratory Manual for General		Physical Chemistry .	41	Understanding Molecules .	25
Drugs .	39	Chemistry .	27	Physical Chemistry .	42	Understanding Molecules .	12
Chemistry for Environmental and Earth Sciences .	20	I.		Physical Chemistry for Engineering and Applied	42	Untangling Complex Systems .	16
		Instrumental Analytical Chemistry .	30	Sciences .	42	W.	
		Intellectual Property in Chemistry .	38	Physical Properties of Materials, Third Edition .	43	Water Chemistry .	22
		Introduction to Bioorganic Chemistry and		Polymer Chemistry .	33	Water Chemistry .	57
		Chemical Biology .	36	Polymer Chemistry .	47		
		Introduction to Bioorganic Chemistry and		Polymers .	48		
		Chemical Biology .	39				
		Introduction to Bioorganic Chemistry and					
		Chemical Biology .	9				

Water Chemistry	11
---------------------------	----

Young, Lovell	47
Young, Lovell	33
Yunana	41

