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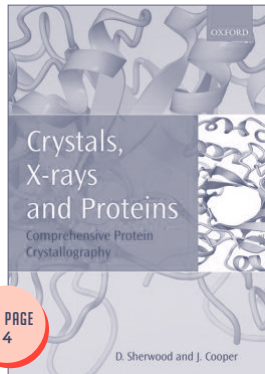


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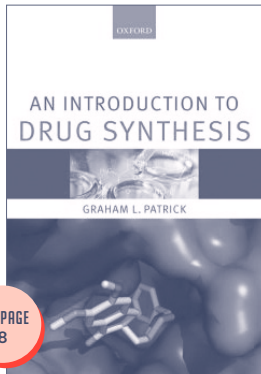


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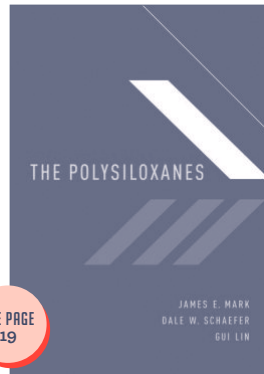
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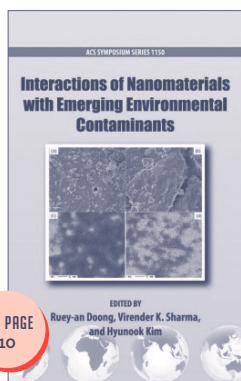
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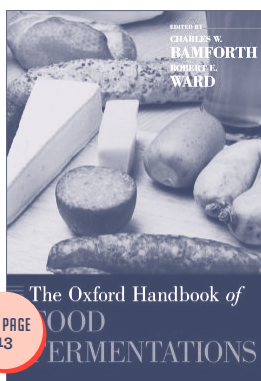
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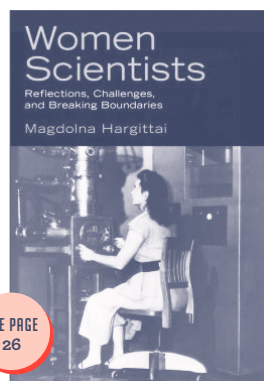
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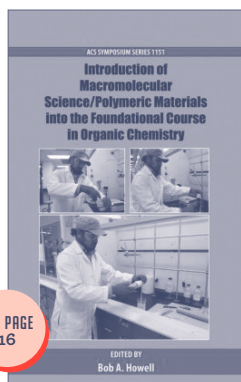
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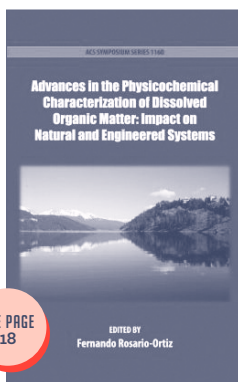
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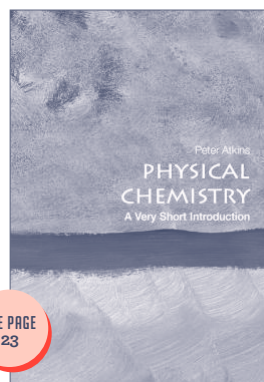
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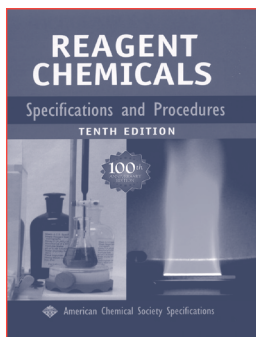
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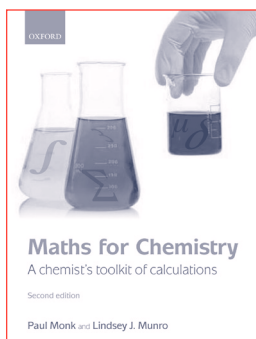
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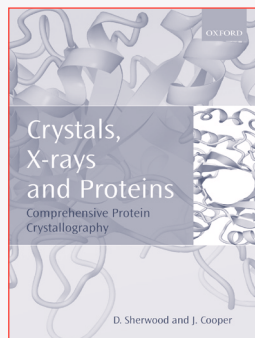
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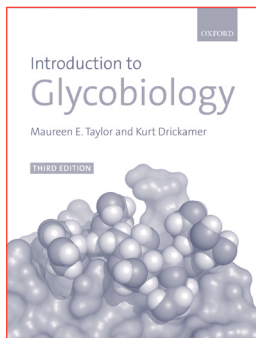
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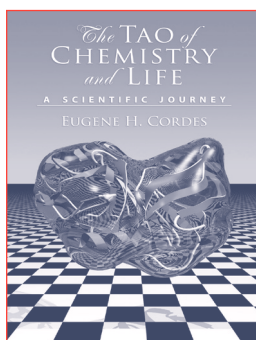
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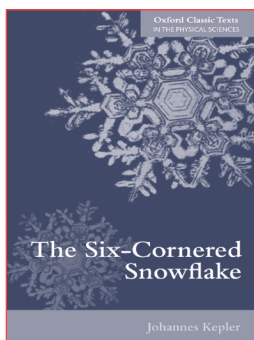
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Translated by C. HARDIE

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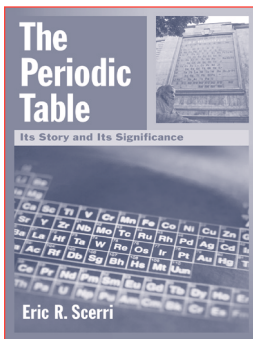
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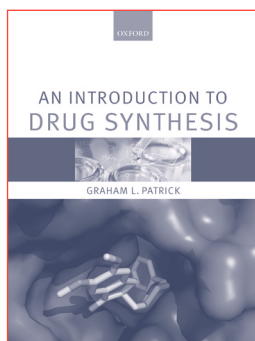
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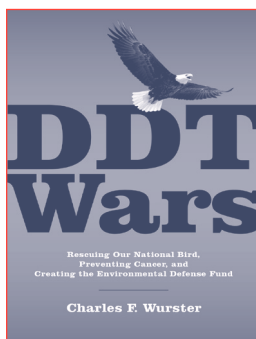
OCCURRENCE, FATE AND IMPACT OF ATMOSPHERIC POLLUTANTS ON ENVIRONMENTAL HEALTH

Edited by LAURA L. MCCONNELL, *United States Department of Agriculture*, JORDI DACHS, *Institute for Environmental Assessment and Water Research*, and CATHLEEN J. HAPEMAN, *United States Department of Agriculture*

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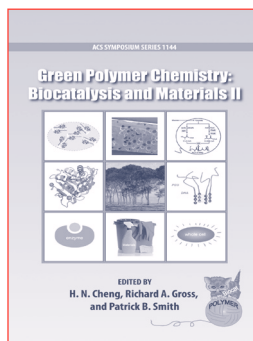
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Edited by RUEYAN DOONG, *National Tsing Hua University*, VIRENDER K. SHARMA, *Florida Institute of Technology*, and HYUNOOK KIM, *University of Seoul*

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SUSTAINABILITY OF THE SUGAR AND SUGARETHANOL INDUSTRIES

Edited by GILLIAN EGGLESTON, *Agricultural Research Service, U.S. Department of Agriculture*

This book provides an increasing awareness, understanding, and implementation of the recent great and dramatic advances in both the worldwide sugar and sugarethanol industries.

(ACS Symposium Series 1058)

(American Chemical Society)

2011 320 pp. 73

978-0-84-122598-5 Hardcover ~~\$150.00~~/\$120.00

ADVANCES IN CO₂ CONVERSION AND UTILIZATION

Edited by YUN HANG HU, *Michigan Technological University*

Carbon dioxide is a major greenhouse gas. There are several technological options for sequestration of CO₂ into one of the other global pools, including oceanic injection, geological injection, and scrubbing and mineral carbonation. The cost and leakage are principal issues of the geological sequestration which need to be resolved. For those reasons, the utilization of CO₂ is being considered an attractive solution to solve CO₂ issues. To promote research and development in CO₂ areas, a symposium on CO₂ conversion and utilization was organized as a part of the 238th American Chemical Society (ACS) National Meeting, August 16-20, 2009, Washington, DC. This symposium was sponsored by the ACS Division of Fuel Chemistry. This book was based on this ACS symposium.

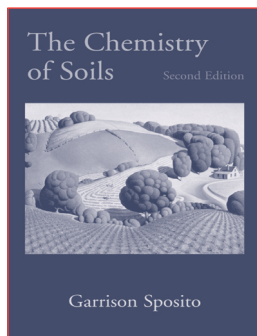
(ACS Symposium Series 1056)

(American Chemical Society)

2011 296 pp. 145 b/w and 2 color illus.

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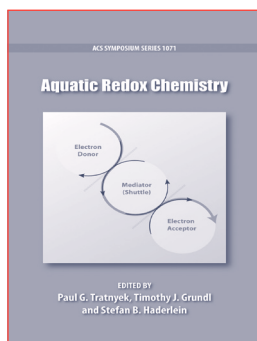
**THE CHEMISTRY OF SOILS**

Second Edition

GARRISON SPOSITO, *University of California, Berkeley*

An updated version of the standard soil chemistry text published in 1989, *The Chemistry of Soils, Second Edition* covers topics that illustrate current applications to environmental chemistry, ecosystem biogeochemistry, and scientific agriculture, with a strong emphasis placed on the role of soil microbes as mediators of soil chemical phenomena.

2008 344 pp. 68 line illus.

978-0-19-531369-7 Hardcover ~~\$95.00~~/\$76.00
**AQUATIC REDOX CHEMISTRY**

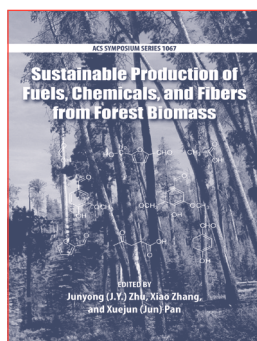
Edited by PAUL TRATNYEK, TIMOTHY GRUNDL, and STEFAN HADERLEIN

This volume provides a comprehensive overview of aquatic redox chemistry through chapters contributed by many of the leading investigators in the field.

(ACS Symposium Series 1071)

(American Chemical Society)

2012 632 pp.

978-0-84-122652-4 Hardcover ~~\$195.00~~/\$156.00**SUSTAINABLE PRODUCTION OF FUELS, CHEMICALS, AND FIBERS FROM FOREST BIOMASS**Edited by JUNYONG ZHU, *US Forest Service, Forest Products Laboratory*, XIAO ZHANG, *Washington State University*, and XUEJUN PAN, *University of Wisconsin*

This book offers a perspective on transforming the technologies, infrastructures, and knowledge that are part of forest products manufacturing processes to help establish a forest biorefinery industry for sustainable production of energy, chemicals, and products.

(ACS Symposium Series 1067)

(American Chemical Society)

2012 536 pp.

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FOOD CHEMISTRY

THE OXFORD HANDBOOK OF FOOD FERMENTATIONS

Edited by CHARLES W. BAMFORTH, *University of California, Davis*, and ROBERT E. WARD, *Utah State University*

Fermentation, as a chemical and biological process, is everywhere. Countless societies throughout history have used it to form a vast array of foods and drinks, many of which were integral and essential to those cultures; it could be argued that the production of beer and bread formed the basis of many agriculturebased civilizations. Today, nearly every person on the planet consumes fermented products, from beer and wine, to bread and dairy products, to certain types of meat and fish. Fermentation is a nearly ubiquitous process in today's food science, and an aspect of chemistry truly worth understanding more fully.

In *The Oxford Handbook of Food Fermentations*, Charles W. Bamforth and Robert E. Ward have collected and edited contributions from many of the world's experts on food fermentation, each focused on a different fermentation product. The volume contains authoritative accounts on fermented beverages, distilled beverages, and a diverse set of foods, as well as chapters on relevant biotechnology. Each chapter embraces the nature of the product, its production, and its final composition. The text also touches on the raw materials and processes involved in producing packaged foodstuff, and the likely future trends in each area. In the conclusion, Bamforth and Ward present a comparison between the various products and the diverse technologies employed to produce them. Fermentation is a multifaceted process that affects a wide variety of products we consume, and *The Oxford Handbook of Food Fermentations* is the definitive resource that captures the science behind fermentation, as well as its diverse applications.



- Contains articles on the science involved in the fermentation of various food and drinks.
- Compares different fermented food products, and the technologies used to produce them.
- Covers foods, fermented beverages, distilled beverages, dairy products, and biotechnology.

(Oxford Handbooks)

2014 832 pp. 136 line art, 41 halftones

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BEER

Tap into the Art and Science of Brewing

Third Edition

CHARLES BAMFORTH, *University of California Davis*

Written by one of the world's leading authorities and hailed by *American Brewer* as "brilliant" and "by a wide margin the best reference now available," *Beer* offers an amusing and informative account of the art and science of brewing, examining the history of brewing and how the brewing process has evolved through the ages. The third edition features more information concerning the history of beer especially in the United States; British, Japanese, and Egyptian beer; beer in the context of health and nutrition; and the various styles of beer.

2009 272 pp. 60 halftones, 30 line illus.

978-0-19-530542-5 Hardcover ~~\$29.95~~/\$23.96
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 Oxford Scholarship Online

CONTROLLING MAILLARD PATHWAYS TO GENERATE FLAVORS

Edited by DONALD MOTTRAM and ANDREW TAYLOR

This book describes recent research and developments relate to the control of the Maillard reaction to give optimum flavor quality. These include kinetic modeling of the reaction, the effect of physical parameters (temperature, time, moisture content, pH), and the effect of chemical parameters (amino acid and sugar composition, the presence of other components).

(ACS Symposium Series 1042)

(American Chemical Society)

2011 174 pp. 66 b/w illus.

978-0-84-122579-4 Hardcover ~~\$150.00~~/\$120.00

VOLATILE SULFUR COMPOUNDS IN FOOD

Edited by MICHAEL QIAN, XUETONG FAN, and KANJANA MAHATTANATAWEE

Although the importance of sulfur compounds to the flavor and offflavor characteristics of foods is well known, achieving a complete understanding of how this group of compounds contributes to specific food products has been challenging due to their high reactivity, low sensory thresholds, and low concentration in food systems. Due to the advancement of modern analytical instrumentation with improved sensitivity and reliability, new knowledge on volatile sulfur compounds has been accumulating at a rapid rate. This book brings together intelligent insights and approaches from prominent scientists in the fields of food and flavor to bring a deep understanding about the flavor contributions of sulfur compounds.

(ACS Symposium Series 1068)

(American Chemical Society)

2012 368 pp.

978-0-84-122616-6 Hardcover ~~\$150.00~~/\$120.00

RECENT ADVANCES IN THE ANALYSIS OF FOOD AND FLAVORS

Edited by STEPHEN TOTH and CYNTHIA MUSSINAN, both at *International Flavors and Fragrances*

Illustrates how new, highly sophisticated instrumentation can be used to address the issues of most interest to today's food and flavor chemists.

(ACS Symposium Series 1098)

(American Chemical Society)

2013 224 pp. 64 b/w illus.

978-0-84-122759-0 Hardcover ~~\$150.00~~/\$120.00

AFRICAN NATURAL PLANT PRODUCTS
VOLUME IIDiscoveries and Challenges in Chemistry,
Health, and Nutrition

Edited by H. RODOLFO JULIANI,
JAMES E. SIMON, and CHITANG HO, all at *Rutgers
University*

African Natural Plant Products was originally conceived as a vehicle to present scientific discoveries, challenges, and to create a dialogue focused on African natural products, an area still very underexplored as a vehicle to benefit the African people. This series will provide a scientific stimulus for greater research, enhanced collaboration, and confirmation and/or validation on the uses and importance of African natural plant products, particularly those steeped in a rich traditional history.

Volume II "Discoveries and Challenges in Chemistry, Health and Nutrition" is a new installment of an international effort to provide a communication platform for scientists to share their interest in African plants and products. The book seeks to promote the identification of new uses and applications that can contribute to the development of the African continent, as the value of plant uses emerges from the interaction of the rich biodiversity of the African ecosystems with societies and cultures. The focus will expand to include health and nutritional considerations in addition to the core natural product chemistry and continue to present new findings.

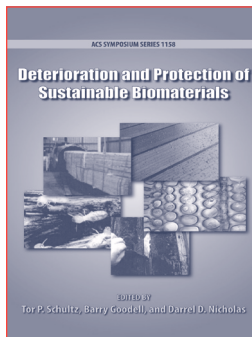
(ACS Symposium Series)
(American Chemical Society)

2014 352 pp.
978-0-84-122804-7 **Hardcover** ~~¥150.00~~/¥120.00

MATERIALS CHEMISTRY

DETERIORATION AND PROTECTION OF
SUSTAINABLE BIOMATERIALS

Edited by TOR P. SCHULTZ, BARRY GOODELL, and
DARREL D. NICHOLAS



Wood and other structural lignocellulose biomaterials are renewable resources that provide sustainable products that require considerably less energy to manufacture into useable products than other alternatives produced from nonrenewable

resources. However, these materials are readily biodegradable and as such must be protected if they are to be used in adverse environments. Consequently, their protection through chemical and nonchemical means plays a vital role in the satisfactory utilization of many products.

This publication represents the third ACS book addressing scientific and practical aspects of biodeterioration and protection of lignocellulose materials. The objective of this third book diverges from the prior texts, in that it provides an overall view of our current understanding of the microbial and thermal degradation of plant biomass along with new developments in the rapidly changing field of wood protection.

(ACS Symposium Series)
(American Chemical Society)
2014 416 pp. 71 illus.

978-0-84-123004-0 **Hardcover** ~~¥175.00~~/¥140.00

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TEACHING GENERAL CHEMISTRY

A Materials Science Companion

ARTHUR B. ELLIS, MARGRET J. GESELBRACHT, BRIAN J. JOHNSON, GEORGE C. LISENSKY, and
WILLIAM R. ROBINSON

This resource volume, written especially for teachers of introductory chemistry courses, is in a ready-to-use format that will enable instructors to integrate materials chemistry into their curriculum. The book collects a critical mass of text, demonstrations, and laboratory experiments. The first ten chapters present a general introduction to solids; numerous easy-to-do teacher demonstrations are integrated into the material. The second part of the volume consists of fifteen laboratory experiments for students. Examples from cutting-edge research, as well as everyday life, spark student interest while illustrating the basic ideas that are important to an understanding of chemistry.

(American Chemical Society)

1993 575 pp.
978-0-84-122725-5 **Paperback** ~~¥56.95~~/¥29.56

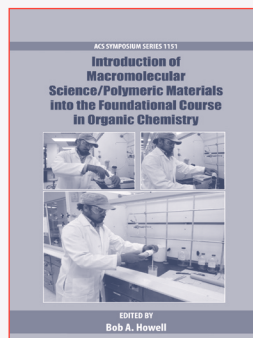
ORGANIC CHEMISTRY

INTRODUCTION OF MACROMOLECULAR SCIENCE/ POLYMERIC MATERIALS INTO THE FOUNDATIONAL COURSE IN ORGANIC CHEMISTRY

Edited by BOB A. HOWELL, *Central Michigan University*

Currently most undergraduate programs in chemistry provide inadequate training in the area of polymeric materials. This despite the fact that these materials are largely responsible for the quality of life that everyone enjoys and that most chemistry graduates, at whatever level they decide to seek employment, will work in a polymer or a polymer-related area. This situation has been recognized by the ACS Committee on Professional Training. Current committee guidelines contain the expectation that a treatment of polymeric materials will be a part of all foundational courses in chemistry. This is, perhaps, most readily done for the foundational organic chemistry course. Most commercial polymers commonly used by the consuming public are organic in composition and are formed by simple, easily understood organic reactions. The preparation of polymeric materials can be used to illustrate many of the fundamental concepts of organic chemistry. Inclusion of some treatment of polymeric materials serves to stimulate student interest and enthusiasm for the course and to emphasize the central role that these materials occupy in their daily lives and the overall wellbeing of society. This volume, a product of an ACS symposium meeting, discusses these materials based on the most current trends and developments, and shows how these trends can be applied to organic chemistry courses.

- Stems from an official meeting of the American Chemical Society.
- Discusses how polymeric materials can be worked in to foundational chemistry courses.



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(ACS Symposium Series)

(American Chemical Society)

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FLUORINATED HETEROCYCLES

Edited by ANDREI GAKH and KENNETH L. KIRK

This is the first ACS symposium series book solely devoted to fluorinated heterocyclic compounds. Its contents encompass all aspects of chemistry and applications of fluoroheterocycles including synthesis, biological activity, computational and medicinal research covering all major classes of heterocycles as well as popular fluorine-containing fragments.

(ACS Symposium Series 1003)

(American Chemical Society)

2009 384 pp. 3 halftone color, 6 halftone b/w & 200 line b/w illus.

978-0-84-126953-8 Hardcover ~~£160.00~~/£128.00

MODERN ORGANIC SYNTHESIS IN THE LABORATORY

JIE JACK LI, CHRIS LIMBERAKIS, and DEREK A. PFLUM, all at *Pfizer Global Research and Development*Searching for reaction in organic synthesis has been made much easier in the current age of computer databases. However, the dilemma now is which procedure one selects among the ocean of choices. Especially for novices in the laboratory, it becomes a daunting task to decide what reaction conditions to experiment with first in order to have the best chance of success. This collection intends to serve as an “older and wiser labmate” one could have by compiling many of the most commonly used experimental procedures in organic synthesis. With chapters that cover such topics as functional group manipulations, oxidation, reduction, and carbon-carbon bond formation, *Modern Organic Synthesis in the Laboratory* will be useful for both graduate students and professors in organic chemistry and medicinal chemists in the pharmaceutical and agrochemical industries.

2007 224 pp. 4 halftone illus.

978-0-19-518799-1 Paperback ~~£74.00~~/£59.20
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ORGANIC SYNTHESIS

State of the Art 20112013

DOUGLASS F. TABER, *University of Delaware*, and
TRISTAN LAMBERT, *Columbia University*

Organic Synthesis: State of the Art 20112013 is a convenient, concise reference that summarizes the most important current developments in organic synthesis, from functional group transformations to complex natural product synthesis. The fifth volume in the esteemed State of the Art series, the book compiles two years' worth of Douglass Taber's popular weekly column Organic Chemistry Highlights. The series is an invaluable resource, leading chemists quickly and easily to the most significant developments in the field.

The book is logically divided into two sections: the first section focuses on specific topics in organic synthesis, such as CN Ring Construction and CarbonCarbon Bond Formation. Each topic is presented using the most significant publications within those areas of research. The journal references are included in the text. The second section focuses on benchmark total syntheses, with an analysis of the strategy for each, and discussions of pivotal transformations.

2014 280 pp.

978-0-19-020079-4 Hardcover ~~\$110.00~~/\$88.00

PHYSICAL CHEMISTRY

IONIC TRANSPORT PROCESSES

in Electrochemistry and Membrane Science

KYOSTI KONTTURI, *Aalto University, Finland*,
LASSE MURTOMAKI, *Aalto University, Finland*,
and JOSE A. MANZANARES, *University of Valencia, Spain*

Modelling of heterogeneous processes, such as electrochemical reactions, extraction, or ionexchange, usually requires solving the transport problem associated to the process. Since the processes at the phase boundary are described by scalar quantities and transport quantities are vectors or tensors, coupling them can take place only via conservation of mass, charge, or momentum. In this book, the transport of ionic species is addressed in a versatile manner, emphasizing the mutual coupling of fluxes in particular. Treatment is based on the formalism of irreversible thermodynamics, i.e. on linear (ionic) phenomenological equations, from which the most frequently used NernstPlanck equation is derived. Limitations and assumptions made are thoroughly discussed.

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ADVANCES IN THE PHYSICOCHEMICAL CHARACTERIZATION OF DISSOLVED ORGANIC MATTER

Impact on Natural and Engineered Systems

Edited by FERNANDO ROSARIOORTIZ

The study of dissolved organic matter (DOM) has fascinated researchers in different fields of science and engineering for many decades. The impact that DOM has on a wide array of environmental processes has resulted in the development of a multidisciplinary community of researchers all focusing on using different analytical techniques and experimental design to better understand DOM. This book offers select case studies focusing on the advanced characterization of DOM in different environments and with respect to different processes. It results from the conclusion of a symposium that E. M. Thurman and Fernando RosarioOrtiz organized for the 245th meeting of the American Chemical Society, which was held on April 711, 2013 in New Orleans, Louisiana.

(ACS Symposium Series)

(American Chemical Society)

2014 328 pp. 74 illus.

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color plate section

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Oxford Scholarship Online

ADVANCES IN TEACHING PHYSICAL CHEMISTRY

Edited by MARK D ELLISON and TRACY A SCHOOLCRAFT, *Shippensburg University*

Tour the landscape of physical chemistry teaching that has changed in the past decade because of advances in research, chemical education, and computational and experimental tools. Thought-provoking chapters by veteran teachers are also included.

(ACS Symposium Series 973)

(American Chemical Society)

2007 364 pp.

978-0-841239982 Hardcover ~~\$160.00~~/\$128.00

POLYMER CHEMISTRY

POLYMER COMPOSITES FOR ENERGY HARVESTING, CONVERSION, AND STORAGE

Edited by LAN LI, WINNIE WONGNG,
and EFF SHARP

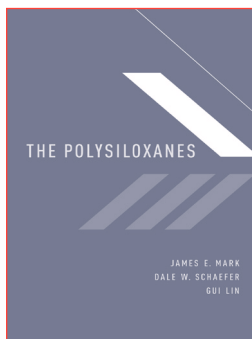
This proceedings volume contains articles that were presented at the symposium on Polymer Composites for Energy Harvesting, Conversion and Storage, at the 245th meeting of the American Chemical Society in 2013. The volume explores polymer composites in terms of their chemical synthesis, characterization, and applications in the energy field, from photovoltaics to fuel cells, from thermoelectrics to energy harvesting and storage. The articles include state-of-art synthesis, characterization, and measurement techniques applied to polymer composites. Such methods addressed the key challenges involved in the processing of polymer composites, such as structural and morphological control, interface characterization, property optimization, and the identification of potential candidates for desired performance.

(ACS Symposium Series)

(American Chemical Society)

2014 232 pp. 122

978-0-84-122936-5 Hardcover ~~\$150.00~~/\$120.00



THE POLYSILOXANES

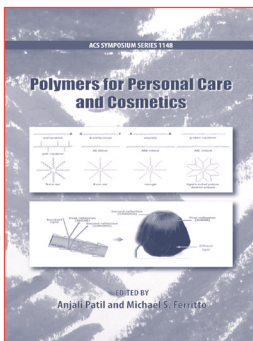
JAMES E. MARK, DALE W. SCHAEFER, and GUI LIN, *all at University of Cincinnati*

Polysiloxanes are the most studied inorganic and semiinorganic polymers because of their many

medical and commercial uses. *The Polysiloxanes* examines novel aspects of polysiloxane science and engineering, including properties, work in progress, and important unsolved problems. The volume, with ten comprehensive chapters, examines the history, preparation and analysis, synthesis, characterization, and applications of these polymeric materials.

2015 304 pp. 68

978-0-19-518173-9 Hardcover ~~\$125.00~~/\$100.00



POLYMERS FOR PERSONAL CARE AND COSMETICS

Edited by
ANJALI PATIL
and MICHAEL S.
FERRITTO

This book is based
on an international
symposium on
“Polymers for
Cosmetics and
Personal Care”

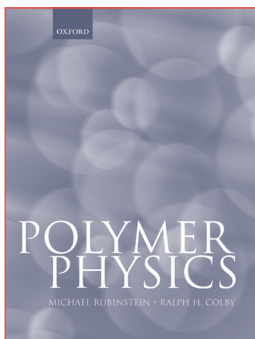
held at the 244th National ACS Meeting in Philadelphia on August 22, 2012. The aim of this book is to cover the many facets of polymers used in cosmetics and personal care products and to bring together researchers from industries and academic disciplines from different countries. To our knowledge, this is the first compilation of progress made in the use of polymers in cosmetics and personal industry.

(ACS Symposium Series)
(American Chemical Society)

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POLYMER PHYSICS

MICHAEL
RUBINSTEIN,
*University of
North Carolina,
Chapel Hill,*
and RALPH H.
COLBY, *Penn
State University*

This text
includes all the
fundamental

concepts required to fully understand
polymer melts, solutions and gels in terms of
both static structure and dynamics.

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~~\$142.95~~/\$114.36

APS POLYMR

PROFESSIONAL REFERENCE

DEVELOPING AND MAINTAINING A SUCCESSFUL UNDERGRADUATE RESEARCH PROGRAM

Edited by TIMOTHY W. CHAPP, *Allegheny
College,* and MARK A. BENVENUTO, *University of
Detroit Mercy*

For many, if not all, faculty members, research is the source of passion for chemistry, and sharing it with a rising generation of chemists often comprises a substantial part of the decision to pursue a career in the field of undergraduate education.

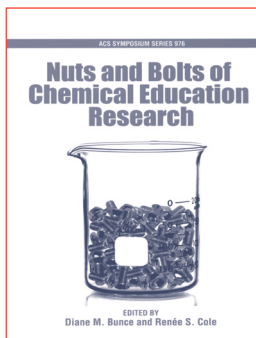
This book provides a starting point for developing such a culture at the department level. In several cases the starting point is redesigning introductory or research methods courses to place a stronger emphasis on authentic research and its associated skills. In other cases the establishment of a thriving research group by one faculty member is the catalyst for initiating the departmental transformation. There are also several examples of how to set up an undergraduate research group in departments that place a heavy emphasis on research, and those that place less emphasis on research. Many of these offer roadmaps for developing interdisciplinary research groups or translating resourceintensive graduatelevel research to an environment that is resourcerestrictive. In still other cases the research has an experiential learning component. For many of the above examples the departmental/institutional role is not always obvious and may not be influential or important. This is a reminder that undergraduate research need not be “institutional” to be successful.

(ACS Symposium Series)
(American Chemical Society)

2014 232 pp. 13 illus.

978-0-84-122928-0 Hardcover ~~\$150.00~~/\$120.00

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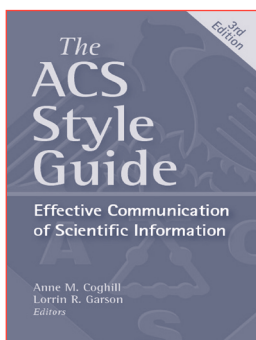
**NUTS AND BOLTS OF CHEMICAL EDUCATION RESEARCH**DIANE M. BUNCE, *Catholic University of America*, and RENEE S. COLE, *University of Central Missouri*

The purpose of this book is to address the key elements of planning chemical education research projects and educational outreach/evaluation components of science grants from a pragmatic point of view.

(ACS Symposium Series 976)

(American Chemical Society)

2008 248 pp.

978-0-84-126958-3 Paperback ~~\$64.00~~/\$67.20**THE ACS STYLE GUIDE****Effective Communication of Scientific Information**

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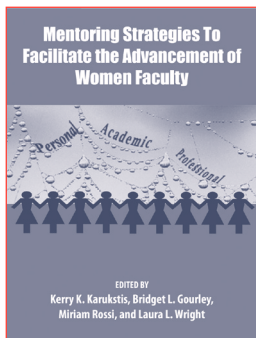
Edited by ANNE M. COGHILL and LORRIN R. GARSON, ACS

The definitive style guide for those involved in the creative process of writing, editing and producing print and electronic publications in chemistry and related sciences. This edition includes contemporary information on electronic tools involved in publishing.

(American Chemical Society)

2006 448 pp. 8 halftone & 10 line illus.

978-0-84-123999-9 Hardcover ~~\$58.50~~/\$47.60

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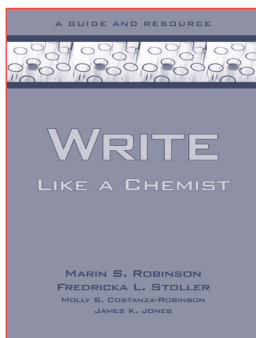
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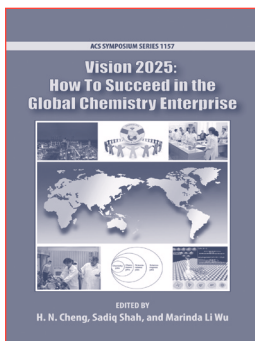
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VISION 2025

How to Succeed in the Global Chemistry Enterprise

Edited by H. N. CHENG, SADIQ SHAH, and MARINDA LI WU

This book was developed from the American Chemical Society (ACS) Presidential Symposium on “Vision 2025: How to Succeed in the Global Chemistry Enterprise,” held at the 245th National Meeting of the ACS in New Orleans in April 2013. The symposium speakers (and authors of the book chapters) were top leaders of the chemistry enterprise, including Presidents of international chemical societies, corporate executives, academic thought leaders, federal science agency directors, and successful entrepreneurs.

The purpose was to provide their collective perspectives on the global chemistry enterprise and share their experiences and ideas in order to benefit

chemistry professionals and students in the future. Some of the topics covered included current activities of international chemical societies, successful global collaborative efforts, ideas on further cooperative and educational opportunities, and examples of recent successful research or entrepreneurial efforts. A total of 22 chapters are included in this book with contributions from almost all symposium speakers. For convenience, they are divided into three sections: 1) Perspectives from U.S. leaders, 2) Perspectives from international leaders, and 3) Successful global startups, collaborations, and overseas assignments.

(ACS Symposium Series)

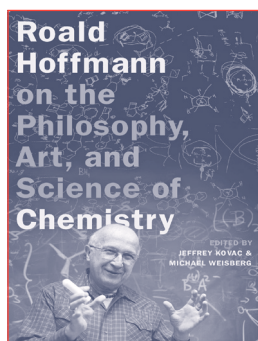
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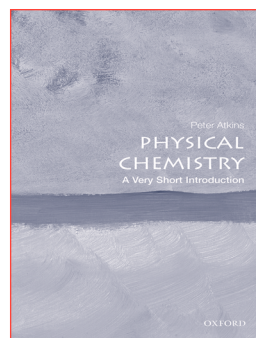
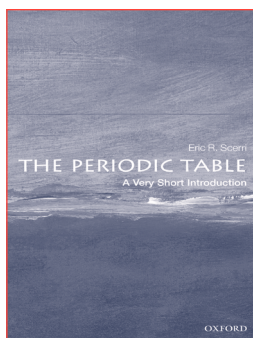
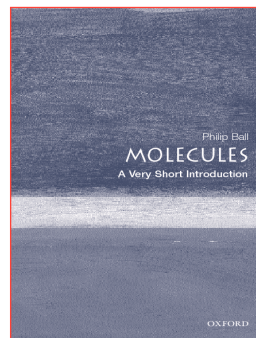
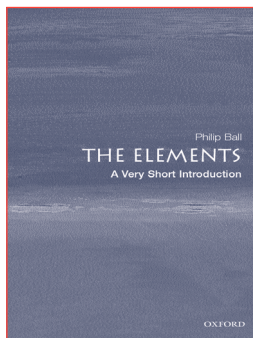
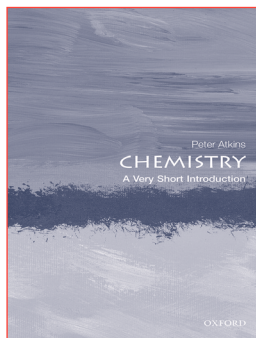
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Over a career that spans nearly fifty years, Roald Hoffmann has thought and written copiously about the broader context of chemistry and its relationship to philosophy and poetry. This book gathers together for the first time his most significant contributions, organized around several important themes to emphasize the principal ideas and insights.

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GENERAL INTEREST

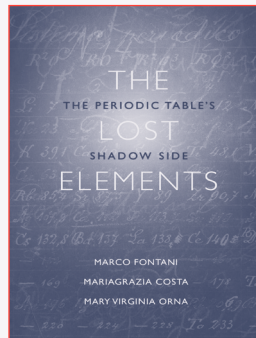
THE LOST ELEMENTS**The Periodic Table's Shadow Side**

MARCO FONTANI, *University of Florence*, MARIAGRAZIA COSTA, *University of Florence*, and MARY VIRGINIA ORNA, *College of New Rochelle*

From the Preface:

*"I have not read as truly interesting book as this one in decades – dip into it, open it on any page, and you are immediately drawn into a tale of human ambition, folly, and ...ingenuity. In this lovingly researched book you have the dead ends, the voyages of discovery whose end is certain shipwreck. In **The Lost Elements**, these failures speak to us. The byways recounted in this book turn into lovely meandering paths, leading to an understanding of how chemistry really works."*

—Roald Hoffmann, *Cornell University*



The Periodic Table of Elements hasn't always looked like it does now, a wellorganized chart arranged by atomic number. In the midnineteenth century, chemists were of the belief that the elements should be sorted by atomic weight. However, the weights of many elements were calculated incorrectly, and over time it became clear that not only did the elements need rearranging, but that the periodic table contained many gaps and omissions: there were elements yet to be discovered, and the allure of finding one had scientists rushing to fill in the blanks.

The Lost Elements: The Periodic Table's Shadow Side collects the most notable of these instances, stretching from the nineteenth century to the present. The book tells the story of how scientists have come to understand elements, by discussing the failed theories and false discoveries that shaped the path of scientific progress. Fontani, Costa, and Orna introduce us to the key figures in the development of today's periodic table, including Lavoisier and Mendeleev. Featuring a preface from Nobel Laureate Roald Hoffmann, *The Lost Elements* is an expansive history of the wrong side of chemical discovery—and reveals how these errors and gaffes have helped shape the table as much as any other form of scientific progress.

CONTENTS:

Part I. Before 1789: Early Errors and Early Elements

Part II. 1789-1869: From Lavoisier to Mendeleev: The First Errors at the Dawn of Concept

Part III. 1869-1914: From the Periodic Table to Moseley's Revolution: Rips and Tears in Mendeleev's Net

Part IV. 1914-1939: From Nuclear Classification to the First Accelerators: Chemists' Paradise Lost...(and Physicists' Paradise Regained)

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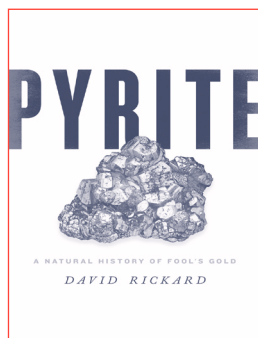
Part VI. No Place for Them in the Periodic Table: Bizarre Elements

Part VII. Modern Alchemy: The Dream to Transmute the Elements Has Always Been with Us

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GENERAL INTEREST



PYRITE
A Natural History of Fool's Gold
 DAVID RICKARD

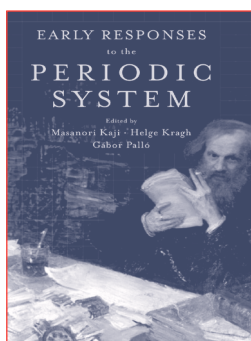
Most people have heard of pyrite, the brassy yellow mineral commonly known as fool's gold. But despite being the most common sulfide on the earth's surface, pyrite's

bright crystals have attracted a noteworthy amount of attention from many different cultures, and its nearly identical visual appearance to gold has led to tales of fraud, trickery, and claims of alchemy. Pyrite occupies a unique place in human history: it became an integral part of mining lore in America during the 19th century, and it has a presence in ancient Sumerian texts, Greek philosophy, and medieval poetry, becoming a symbol for anything overvalued.

In *Pyrite*, geochemist and author David Rickard blends basic science and historical narrative to describe the many unique ways pyrite makes appearances in our world. He follows pyrite back through the medieval alchemists to the ancient Arab, Chinese, Indian, and Classical worlds, showing why the mineral was central to the development of these various ancient cultures. Pyrite can be tracked to the beginnings of humankind, and Rickard reveals how it contributed to the origins of our art and storytelling and even to our biologic development as humans. But pyrite has unique scientific properties as well: the book distills how oxidation makes fool's gold look like a precious metal, and shows how pyrite can choke out oxygen from water, creating large "dead zones" in our oceans. Rickard analyzes pyrite's role in manufacturing sulfuric acid, a compound used for everything from cleaning drains to fertilizing crops. Its influence extends from human evolution and the formation of societies, through science and industry, to our understanding of ancient, modern, and future earth environments. Energetic and accessible, *Pyrite* is the first book to show readers the history and science of one of the world's most fascinating minerals.

2015 304 pp. 58 illus.

978-0-19-020367-2 Hardcover ~~\$29.95~~/\$23.96



EARLY RESPONSES TO THE PERIODIC SYSTEM

Edited by
 MASANORI KAJI,
Tokyo Institute of Technology,
 HELGE KRAGH,
Aarhus University, and
 GABOR PALLO,
Budapest University of Technology and Economics

The reception of the periodic system of elements has received little attention. Many historians have studied Mendeleev's discovery of the periodic system, but few have analyzed how the scientific community perceived and employed it. American historian of science Stephen G. Brush concluded that the periodic law had been generally accepted in the United States and Britain and suggested the need to extend this study to other countries.

The collection, organized by nationstate, explores how local actors regarded the new discovery as law, classification, or theoretical interpretation. The section on France discusses how a small but significant group of authors, including Adolphe Wurtz and Édouard Grimaux, introduced the periodic system as support for the atomic theory—not as the final solution to the longstanding quest for a natural classification of elements. The chapter on Germany discusses the role of Lothar Meyer, also awarded The Davy Medal for the discovery of the periodic system. Meyer's role was considered less important, and he was forgotten in his home country, Germany where educational tradition was well established, and the periodic system was not used as a novel didactic approach. In addition to discussing the appropriation of the periodic system, the collection examines metaphysical reflections on nature based on the periodic system outside on chemistry and considers how far we can push the categories of "response" and "reception."

2015 320 pp. 30 illus.

978-0-19-020007-7 Hardcover ~~\$35.00~~/\$28.00

WOMEN SCIENTISTS

Reflections, Challenges, and Breaking Boundaries

MAGDOLNA HARGITTAI, *Budapest University of Technology and Economics*

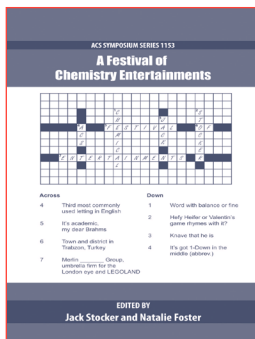
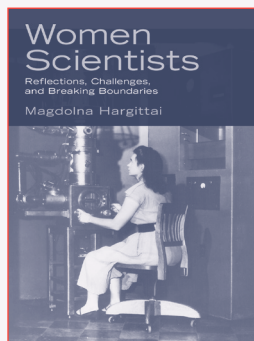
Magdolna Hargittai uses over fifteen years of indepth conversation with female physicists, chemists, biomedical researchers, and other scientists to form cohesive ideas on the state of the modern female scientist. The compilation, based on sixty conversations, examines unique challenges that women with serious scientific aspirations face. In addition to addressing challenges and the unjustifiable underrepresentation of women at the higher levels of academia, Hargittai takes a balanced approach by discussing how some of the most successful of these women have managed to obtain professional success and personal happiness.

Women Scientists portrays scientists from different backgrounds, different geographical regions—eighteen countries from four continents—and leaders from a variety of professional backgrounds, including eight Nobel laureate women. The book is divided into three sections: “Husband and Wife Teams,” “Women at the Top,” and “In High Positions.” Hargittai uses her own experience to introduce her first section on the lives of prominent scientific couples and addresses the joys and disadvantages of husband and wife teams. The second section is a comprehensive exploration of the struggles and triumphs of “women at the top.” Hargittai introduces women from countries where relatively little has been written about female scientists. The final section focuses on women scientists involved with science administration and leadership. Hargittai’s biographical sketches offer role models for budding scientists. The book is a much needed account of female presence and influence in the sciences.

- Contains portraits of sixty notable female scientists, including eight of the sixteen women Nobel prize winners.
- Interview subjects come from a wide variety of scientific disciplines.
- Covers a wide geographical scope.

2015 366 pp. 106 illus.

978-0-19-935998-1 Hardcover ~~\$29.95~~/\$23.96



A FESTIVAL OF CHEMISTRY ENTERTAINMENTS

Edited by JACK STOCKER and NATALIE FOSTER

This book, a part of the American Chemical Society’s Symposium Series, is a collection of some delightful bits of whimsy and humor, both intentional and accidental, from the world of chemistry. Underneath those famous white lab coats clearly beat hearts that are capable of finding and enjoying the lighter side of their science. From chemistrybased crossword puzzles to papers delivered in verse and song, this is a surprising collection of the quirkiest incidents and episodes in the recent history of chemistry. Topics include Ken Reese’s backpage column of *Chemical and Engineering News*, the music that accompanied the papers of physicist Howard Shapiro, and the hidden whimsy found in the supposedly somber records of the Chemical Abstracts Service.

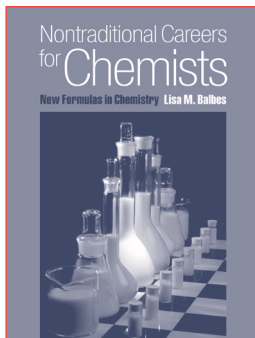
(ACS Symposium Series)

(American Chemical Society)

2014 136 pp. 72 illus.

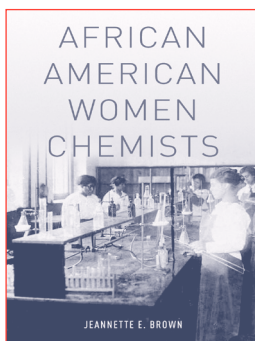
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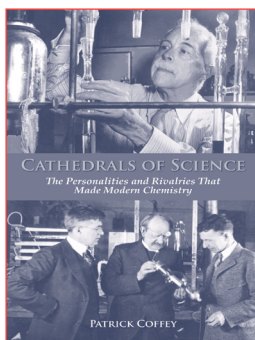
This volume describes the wide variety of professional fields available to those with a background or interest in chemistry. More than a dozen general fields are described, including possible career paths, training and personality requirements, as well as profiles of over 50 people currently working in those fields.

2006 320 pp. 14 halftone illus.

978-0-19-518367-2 Paperback ~~\$29.95~~/\$23.96**AFRICAN AMERICAN WOMEN CHEMISTS**JEANNETTE BROWN, *New Jersey Institute of Technology*,

“Like pioneers in any field, these women were more than just chemical researchers or educators; they were true ‘Renaissance women,’ often dually employed as reporters, editors, activists, or even priests, and playing leadership roles in national and grassroots organizations. Brown’s factual accounts, while often impassive and dull, are greatly informative, and are supported by extensive citations of texts, journal articles, and personal interviews. Although books on African American chemists and female African American scientists do exist, this book is the first biographical reference on this specific underrepresented population. Summing Up: Highly recommended. Students of all levels and general readers.”—D. L. Jacobs, Rider University

2011 264 pp. illus.

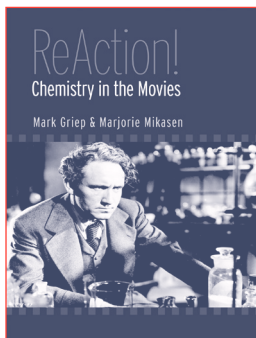
978-0-19-974288-2 Hardcover ~~\$35.00~~/\$28.00**CATHEDRALS OF SCIENCE****The Personalities and Rivalries That Made Modern Chemistry**PATRICK COFFEY, *University of California, Berkeley*

Like any other human endeavor, chemistry was built by real people, with all their strengths and faults. *Cathedrals of Science* describes its construction—the intersection of science and personality that transformed chemistry, with its chemists struggling for understanding, squabbling over scientific credit, and making moral choices about chemical warfare, totalitarianism, and nuclear weapons.

2008 400 pp. 26 halftone & 31 line illus.

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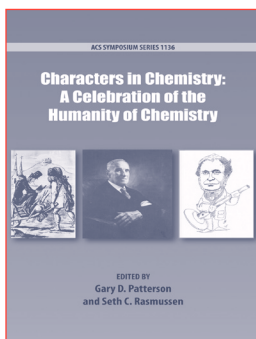
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2009 352 pp. 50 halftone illus.

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**CHARACTERS IN CHEMISTRY****A Celebration of the Humanity of Chemistry**

Edited by GARY D. PATTERSON, *Carnegie Mellon University*, and
SETH C. RASMUSSEN, *North Dakota State University*

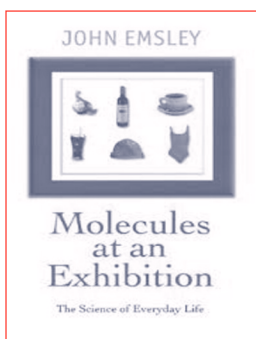
This book is a collection of essays, written by an international group of historians of chemistry, about some of the most interesting chemists dating back into the 18th century. The contributing authors are well-established biographers, and their subjects make a diverse cast of chemistry characters. Among the chemists covered are Robert Bunsen, Joseph Black, John Dalton, Lucretia Borgia, William Crookes, and Humphry Davy. These chemists come from all over the world, and from different eras. Together, this collection truly is a celebration of the wide range of personalities and characters that have worked in chemistry over the centuries.

(ACS Symposium Series 1136)

(American Chemical Society)

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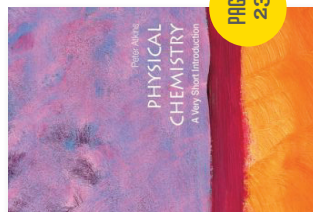
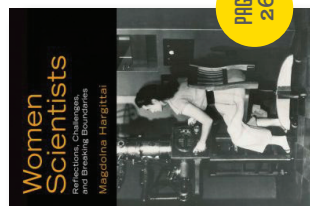
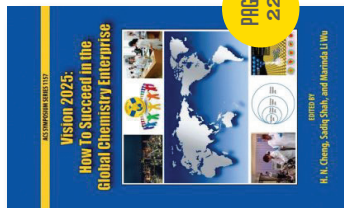
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