

organomagnesium and organozinc, organosilicon, and related organotin, organoiron, and organopalladium chemistry. This edition includes *n*-butyllithium.

QD262 2012-392879 978-0-08-044860-2
Principles of asymmetric synthesis, 2d ed.
Gawley, Robert E. and Jeffrey Aubé.
Elsevier, ©2012 555 p. \$69.95 (pa)

Retaining the format of the 1996 first edition, Gawley (chemistry and biochemistry, U. of Arkansas) and Aubé (medicinal chemistry U. of Kansas-Lawrence) select several reaction categories that comprise many of the most useful synthetic reactions types. Their focus is on the principles that govern relative and absolute configurations in transition state assemblies. After a general introduction and glossary, they cover practical aspects of asymmetric synthesis; enolate azacetalization, and organolithium alkylations; 1,2-additions and 1,4-additions to C=X bonds; aldol and Michael additions of allyls, enolates, and enolate equivalents; cycloadditions and rearrangements; reductions and hydroborations, and oxidations.

QD272 2013-007564 978-1-118-32549-0
Organic structures from spectra, 5th ed.
Field, L. D. and S. Sternhell, J. R. Kalman.
John Wiley & Sons, ©2013 495 p. \$55.00 (pa)

Australian chemists Field (U. of New South Wales), Sternhell (U. of Sydney), and Kalman (U. of Technology Sydney) present a textbook for intermediate or advanced undergraduate courses on deriving structural information from spectroscopic data, an integral part of organic chemistry. Students are assumed to have completed an elementary course of organic chemistry and a mechanistically-oriented intermediate course and to have been exposed to elementary spectroscopic theory in a physical chemistry course. They cover ultraviolet and infrared spectroscopy, mass spectrometry, and various forms of nuclear magnetic resonance spectroscopy. About three quarters of the book is devoted to problems.

QD305 978-3-527-33205-2
Modern methods in stereoselective aldol reactions.
Title main entry. Ed. by Rainer Mahrwald.
Wiley-VCH, ©2013 536 p. \$210.00

Extending the coverage of its predecessor, *Modern Aldol Reactions*, this reference focuses on the latest developments and offers new tools for use of the aldol reaction in the development of natural products and pharmaceuticals. Mahrwald (Humboldt University Berlin, Germany) has brought together eight contributed chapters providing a comprehensive review. Topics include stereoselective acetate aldol reactions, the vinylogous Mukaiyama aldol reaction, organocatalyzed aldol reactions, supsilyl protective groups, asymmetric induction, polypropionate synthesis via substrate-controlled stereoselective aldol couplings of chiral fragments, applications of oxazolidinethiones and thiazolidinethiones, and enzyme-catalyzed aldol additions.

QD322 978-3-527-32379-1
Carbohydrates — tools for stereoselective synthesis.
Title main entry. Ed. by Mike Martin Kwabena Boyesen.
Wiley-VCH, ©2013 376 p. \$200.00

Chemists from Spain and other parts of the world describe how carbohydrates can be used as starting materials to synthesize stereoselective auxiliaries, reagents, ligands, and organocatalysts. Conventional wisdom holds that carbohydrates are too finicky and unreliable for such use. The topics include reactions of nucleophiles with electrophiles bound to carbohydrate auxiliaries, cyclopropanation, aldol-type reactions, carbohydrate-derived ligands in asymmetric Tsuji-Trost reactions, and enantioselective addition reactions catalyzed by carbohydrate-derived organocatalysts.

QD341 2013-935684 978-1-60595-056-3
Graphene in composite materials; synthesis, characterization and applications.
Koratkar, Nikhil A.
DEStech Publications, Inc., ©2013 188 p. \$174.50

Koratkar (Rensselaer Polytechnic Institute) reviews graphene's atomic structure and methods for its synthesis, and introduces the mechanical, electrical, and thermal properties of graphene as a nanofiller in polymer composites. Based on papers published by the author's research group, the graduate textbook explores combining graphene-infused epoxy resins with conventional microfiber reinforcement to create hierarchically organized multiscale composites, the possibility of developing graphene ceramic and metal-matrix composites, and liquid matrices for graphene oxide colloids leading to novel graphene cutting fluids, coolants, and coatings. Color images are provided.

QD341 978-1-84735-965-0
Innovative graphene technologies; developments and characterisation; v.1.

Title main entry. Ed. by Atul Tiwari.
Smithers Rapra, ©2013 534 p. \$250.00

The discovery or invention of graphene—a sheet of carbon one atom thick—was hailed as the foundation for a whole new generation of commercial products, but none has actually appeared to date. In order to keep the potential of graphene from being forgotten, physicists and materials scientists synthesize the information available on it for young scholars and researchers in chemistry, materials science, physics, and engineering. The book is suitable as a reference or as a graduate or undergraduate textbook. This first volume considers the development and characterization of graphene, with such discussions as preparing and characterizing graphene synthesized by the low-temperature exfoliation and reduction of graphite oxide, graphene-reinforced polymer nanocomposites in various challenges, innovative strategies for incorporate graphene in polymer matrices, ferromagnetic graphene as a promising material for room-temperature spintronics, photochemical and photocatalytic activity of graphene materials, and wave propagation in graphene structures. The second volume explores the evaluation and applications of graphene.

QD411 978-2-7108-0991-3
Catalysis by transition metal sulphides; from molecular theory to industrial application.

Title main entry. Ed. by Hervé Toulhoat and Pascal Raybaud.
Editions Technip, ©2013 787 p. \$130.00 (pa)

French chemists, most of them with IFP Energies nouvelles, set out the current state of the technology used to refine petroleum and other fuel oils. They cover insights into fundamentals aspects from density function theory calculations and experimental surfaces sciences, preparing and characterizing industrial hydrotreating catalysis, and applications in producing clean fuels. Among the topics are periodic trends in catalysis by sulphides, principles involved in preparing hydrotreatment catalysis, characterizing impregnation solutions and oxide catalysts, deep desulphurization of middle distillates, and process design factors specific to the hydrotreatment of vegetable oils. There is no index. Translated from the French by Lionbridge. Distributed in the US by Atlas Books.

QD415 2012-041614 978-3-13-100373-7
Color atlas of biochemistry, 3d ed.

Koolman, Jan and Klaus-Heinrich Roehm. (Flexibook)
Thieme Medical Publishers, ©2013 495 p. \$54.99 (pa)

This excellent desk reference provides a detailed summary of various biochemical processes and functions in human physiology. They are organized into nine sections and an appendix of important units and prefixes. Each entry is two pages, with the left containing text and the right presenting graphics and tables. They begin with the basics, advance to biomolecules, and continue with metabolic processes, cell organelles, molecular genetics, tissues and organs, nutrition, signaling systems, and growth and development. With over 220 pictures and concise descriptions, this text makes an excellent study-aid to a more thorough textbook. Its orientation toward human biochemistry makes it ideal for medical or pre-med students. The authors are a retired biochemistry professor with an interest in insects and a current professor of medicine, both from Germany.

QD453 978-0-8243-1064-6
Annual review of physical chemistry; v.64, 2013.

Title main entry. Ed. by Mark A. Johnson, Todd J. Martinez, Paul S. Cremer and Jay T. Groves.
Annual Reviews, ©2013 672 p. \$92.00

Richard N. Zare (chemistry, Stanford U.) kicks off this year's volume by recounting his experience with the hydrogen games and other adventures in chemistry. Another 27 studies consider such topics as fluctuations and relaxation dynamics of liquid water revealed by linear and nonlinear spectroscopy, charge transport at the metal-organic interface, ultrafast photochemistry in liquids, single-molecule fluorescence imaging in living cells, dynamic nuclear polarization methods in solids and solutions to explore membrane proteins and membrane systems, and molecular switches and motors on surfaces. The papers are also published online.

QD453 2012-044530 978-1-4665-0620-6
Concepts and methods in modern theoretical chemistry; statistical mechanics.

Title main entry. Ed. by Swapna Kumar Ghosh and Pratim Kumar Chattaraj. (Atoms, molecules, and clusters)
CRC Press, ©2013 316 p. \$119.95
Fourteen papers introduce the statistical mechanical treatment of