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CRC Handbook of Chemistry and Physics, 94th Edition CRC Press
Transport and transformation processes are key for determining how humans and other organisms are exposed to chemicals. These processes are largely controlled by the chemicals' physical-chemical properties. This new edition of the Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals is a comprehensive series in four volumes that serves as a reference source for environmentally relevant physical-chemical property data of numerous groups of chemical substances. The handbook contains physical-chemical property data from peer-reviewed journals and other valuable sources on over 1200 chemicals of environmental concern. The handbook contains new data on the temperature dependence of selected physical-chemical properties, which allows scientists and engineers to perform better chemical assessments for climatic conditions outside the 20–25-degree range for which property values are generally reported. This second edition of the Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals is an essential reference for university libraries, regulatory agencies, consultants, and industry professionals, particularly those concerned with chemical synthesis, emissions, fate, persistence, long-range transport, bioaccumulation, exposure, and biological effects of chemicals in the environment. This resource is also available on CD-ROM
CRC Handbook of Optical Resolutions via Diastereomeric Salt Formation CRC-Press
Researchers in chemistry, chemical engineering, pharmaceutical science, forensics, and environmental science make routine use of chemical analysis, but the information these researchers need is often scattered in different sources and difficult to access. The CRC Handbook of Basic Tables for Chemical Analysis: Data-Driven Methods and Interpretation, Fourth Edition is a one-stop reference that presents updated data in a handy format specifically designed for use when reaching a decision point in designing an analysis or interpreting results. This new edition offers expanded coverage of calibration and uncertainty, and continues to include the critical information scientists rely on to perform accurate analysis. Enhancements to the Fourth Edition: Compiles a huge array of useful and important data into a single, convenient source Explanatory text provides context for data and guidelines on applications Coalesces information from several different fields Provides information on the most useful "wet" chemistry methods as well as instrumental techniques, with an expanded discussion of laboratory safety Contains information of historical importance necessary to interpret the literature and understand current methodology. Unmatched in its coverage of the range of information scientists need in the lab, this resource will be referred to again and again by practitioners who need quick, easy access to the data that forms the basis for experimentation and analysis.
Handbook of Photochemistry CRC Press
As a key area of chemistry, improving the greenness of analytical techniques is of great interest to researchers. The last decade has seen some significant developments in this area, including the use of new smart materials as analytical tools. Covering topics including solvent selection, miniaturization and metrics for the evaluation of "greenness" this book will be of use to researchers, both in academia and in industry, interested in integrating safer and more sustainable analytical techniques into their work.
Applied Pyrolysis Handbook CRC Press
Mirroring the growth and direction of science for a century, the CRC Handbook of Chemistry and Physics, now in its 92nd edition, continues to be the most accessed and respected scientific reference in the world, used by students and Nobel Laureates. Available in its traditional print format, the Handbook is also available as an innovative interactive product on DVD and online. Among a wealth of enhancements, this edition analyzes, updates, and validates molecular formulas and weights, boiling and melting points, densities, and refractive indexes in the Physical Constants of Organic Compounds Table through comparisons with critically evaluated data from the NIST Thermodynamics Research Center. New Tables: Analytical Chemistry Abbreviations Used In Analytical Chemistry Basic Instrumental Techniques of Analytical Chemistry Correlation Table for Ultraviolet Active Functionalities Detection of Outliers in Measurements Polymer Properties Second Virial Coefficients of Polymer Solutions Updated Tables: Properties of the Elements and Inorganic Compounds Update of the Melting, Boiling, Triple, and Critical Points of the Elements Fluid Properties Major update and expansion of Viscosity of Gases table Major update and expansion of Thermal Conductivity of Gases table Major update of Properties of Cryogenic Fluids Major update of Recommended Data for Vapor-Pressure Calibration Expansion of table on the Viscosity of Liquid Metals Update of Permittivity (Dielectric Constant) of Gases table Added new refrigerant R-1234yf to Thermophysical Properties of Selected Fluids at Saturation table Molecular Structure and Spectroscopy Major update of Atomic Radii of the Elements Update of Bond Dissociation Energies Update of Characteristic Bond Lengths in Free Molecules Atomic, Molecular, and Optical Physics Update of Electron Affinities Update of Atomic and Molecular Polarizabilities Nuclear and Particle Physics Major update of the Table of the Isotopes Properties of Solids Major update and expansion of the Electron Inelastic Mean Free Paths table Update of table on Semiconducting Properties of Selected Materials Geophysics, Astronomy, and Acoustics Update of the Global Temperature Trend table to include 2010 data Health and Safety Information Major update of Threshold Limits for Airborne Contaminants The Handbook is also available as an eBook.
Handbook of Food Analysis - Two Volume Set CRC Press
Winner of an Oustanding Academic Title Award for 2011! Researchers in organic chemistry, chemical engineering, pharmaceutical science, forensics, and environmental science make routine use of chemical analysis, but the information these researchers need is often scattered in different sources and difficult to access. The CRC Handbook of Basic Tables for Chemical Analysis, Third Edition is a one-stop reference that presents updated data in a handy format specifically designed for use when reaching a decision point in designing an analysis or interpreting results. In response to a decade of reader input, this

new edition has been expanded to include even more of the critical information scientists rely on to perform accurate analysis. Enhancements to the Third Edition: Includes data from the CRC Handbook of Fundamental Spectroscopic Correlation Charts into this volume for the first time Presents new information on gas, liquid, and thin layer chromatography; nuclear magnetic resonance spectrometry; infrared spectrophotometry; and mass spectrometry Reviews the detection of outliers in experimental data Provides basic information on thermocouples, chemical indicators, and chromatographic column regeneration Explores the latest stationary phases for chromatographic methods and extractions Examines carcinogens and chemical, electrical, radiation, and laser hazards Includes information on laboratory safety and equipment, from advice on choosing lab gloves and apparel to selecting respirators Unmatched in its coverage of the range of information scientists need in the lab, this resource will be referred to again and again by practitioners who need quick, easy access to the data that forms the basis for experimentation and analysis.

CRC Handbook of Furnace Atomic Absorption Spectroscopy CRC Press

If you are a researcher in organic chemistry, chemical engineering, pharmaceutical science, forensics, or environmental science, you make routine use of chemical analysis. And like its best-selling predecessor was, the Handbook of Basic Tables for Chemical Analysis, Second Edition is your one-stop source for the information needed to design chemical analyses. Here's what is new in the Second Edition: New chapters on solutions, electroanalytical methods, electrophoresis, and laboratory safety An expanded section on gas chromatography that includes data on compounds that attack common detectors New information on detector optimization An updated section on high performance liquid chromatography that provides the most recent chiral stationary phases, detector information, and revised solvent tables Updated information on the most useful "wet" chemistry methods Enlarged section of Miscellaneous Tables Going far beyond the landmark first edition in terms of scope and applications, the second edition provides current and updated data culled from a wide range of resources and consolidated into a concise yet easy-to-use format. The book's laser-like focus on core information gives you the knowledge you need when you need it - at the decision point.

CRC Handbook of Basic Tables for Chemical Analysis CRC Press

Analytical chemistry today is almost entirely instrumental analytical chemistry and it is performed by many scientists and engineers who are not chemists. Analytical instrumentation is crucial to research in molecular biology, medicine, geology, food science, materials science, and many other fields. With the growing sophistication of laboratory equipment, there is a danger that analytical instruments can be regarded as "black boxes" by those using them. The well-known phrase "garbage in, garbage out" holds true for analytical instrumentation as well as computers. This book serves to provide users of analytical instrumentation with an understanding of their instruments. This book is written to teach undergraduate students and those working in chemical fields outside analytical chemistry 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. Each chapter includes: A discussion of the fundamental principles underlying each technique Detailed descriptions of the instrumentation. An extensive and up to date bibliography End of chapter problems Suggested experiments appropriate to the technique where relevant 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. In addition, the authors have included many instrument manufacturers' websites, which contain extensive resources.

CRC Handbook of Organic Photochemistry and Photobiology, Third Edition - Two Volume Set CRC Press

Radioanalytical methods have become among the most important means for elemental analysis and the determination of chemical species Their extreme sensitivity has made them indispensable in a wide range of applications, including mineral analysis, medical and biophysical work, criminology, history, archaeology, and space research. This handbook combines theoretical and practical radioanalytical work covering the entire field of radioanalytical chemistry. Topics discussed include analysis by activation and nuclearreactions, isotope dilution analysis, radioreagent methods, analysis by absorption and the scattering of radiation. The handbook is extremely useful to scientists conducting applied and basic research in subjects related to analytical measurements, engineers designing control facilities and equipment, and professors and students working with analyticalchemistry, radiochemistry, radioanalytical chemistry, enviromental chemistry, biology, and physics.

CRC Handbook of Furnace Atomic Absorption Spectroscopy Routledge

Optically active compounds are gaining ever-increasing importance in organic chemistry, both in the academic and the industrial arenas. The rational synthesis of the growing number of chiral chemicals, drugs, and natural products demands efficient methods for producing these compounds in an enantiomerically, highly pure form. Despite the available alternative techniques, optical resolution via Diastereomeric salt formation remains the most widely used method of preparing pure enantiomers. The CRC Handbook of Optical Resolutions Via Diastereomeric Salt Formation is the first book to exclusively address this important organic chemical process. It provides fast, one-stop access to a wealth of information, including all of the available data on 100 resolving agents, a list of 500 optically active compounds available in bulk along with their suppliers, data on more than 3,500 resolutions, and 4,200 citations. This handbook helps answer virtually any question that may arise during the development of a new resolution process. Which resolving agent and solvent should I use under these conditions? How can I separate the diastereoisomers? How can I optimize a resolution process? How do I determine enantiomeric purity? Which supplier has the resolving agent I need? For a racemate already resolved, what were the resolving agent, solvent, and relevant citation? This is the first book to deal exclusively with all aspects of this important organic chemical process, both theoretical and practical. With an abundance of analyzed examples, this single, authoritative reference provides all of the information you need to perform, develop, and optimize optical resolutions via Diastereomeric salt formation

Handbook of Water Analysis, Third Edition Royal Society of Chemistry

The CRC Handbook of Chromatography is a series of work-bench references for scientists and researchers using chromatographic

systems for the analysis of organic and inorganic compounds. This handbook is an assemblage of tables where, besides data obtained by modern separation methods, older sources often difficult to access have been included to give maximum information. For use in scientific research and routine analysis where the exact determination of plant pigments, because of their light absorbing properties and defined tasks, is necessary.
Challenges in Green Analytical Chemistry CRC Press
Extensively revised and updated, Handbook of Water Analysis, Third Edition provides current analytical techniques for detecting various compounds in water samples. Maintaining the detailed and accessible style of the previous editions, this third edition demonstrates water sampling and preservation methods by enumerating different ways to measure chemical and radiological characteristics. It gives step-by-step descriptions of separation, residue determination, and clean-up techniques. See What's New in the Second Edition: Includes five new chapters covering ammonia, nitrates, nitrites, and petroleum hydrocarbons, as well as organoleptical and algal analysis methodology Compares older methods still frequently used with recently developed protocols, and examines future trends Features a new section regarding organoleptical analysis of water acknowledging that ultimately the consumers of drinking water have the final vote over its quality with respect to odor, flavor, and color The book covers the physical, chemical, and other relevant properties of various substances found in water. It then describes the sampling, cleanup, extraction, and derivatization procedures, and concludes with detection methods. Illustrated with procedure flow charts and schematics, the text includes numerous tables categorizing methods according to type of component, origin of the water sample, parameters and procedures used, and application range. With contributions from international experts, the book guides you through the entire scientific investigation starting with a sampling strategy designed to capture the real-world situation as closely as possible, and ending with an adequate chemometrical and statistical treatment of the acquired data. By organizing data into more than 300 tables, graphs, and charts, and supplementing the text with equations and illustrations, the editors distill a wealth of knowledge into a single accessible reference.
The Organic Chemistry of Sugars CRC Press
The only combined organic photochemistry and photobiology handbookAs spectroscopic, synthetic and biological tools become more and more sophisticated, photochemistry and photobiology are merging-making interdisciplinary research essential. Following in the footsteps of its bestselling predecessors, the CRC Handbook of Organic Photochemistry and Pho
CRC Handbook of Chromatography CRC Press
This volume dictionary brings together accurate chemical, structural and bibliographic data on the most commonly used reagents in the various branches of analytical chemistry. Covering both organic and inorganic compounds, the "Dictionary of Analytical Reagents" contains over 5,000 reagents significant in analytical chemistry, grouped into 5,000 entries. All the reagents included in the dictionary have been synthesized, characterized by or are of proven use to analytical chemists. Compiled by a distinguished board of leading figures in the world of analytical chemistry, each an expert in their own specialist field, the "Dictionary of Analytical Reagents" is a companion volume to the renowned "Dictionary of Organic Compounds" and follows a similar format. The dictionary is arranged in such a way as to facilitate browsing, with entries ordered alphabetically by entry name (often its trivial name). Clearly laid out in an easy-to-follow manner, each entry contains a wealth of data invaluable to the analytical chemist including synonyms, analytical applications, extensive and up-to-date hazard/toxicity data, solubility, dissociation constant and selected references labelled to indicate their content (e.g. analytical application, spectral data, synthesis). High quality structure diagrams are included to assist the analytical chemist in identifying the reagent needed and are drawn to standard orientations. Coverage extends to metal extractants, spectrophotometric reagents, indicators, fluorescence labelling reagents, resolving agents, nmr shift reagents and reference standards, buffers, gc and ms derivatisation reagents, amperometric reagents, titrimetric and gravimetric reagents, biological stains and dyes. Compounds are comprehensively indexed by Name, Molecular Formula, CAS Registry Number and Type of Compound. The unique Type of Compound Index is particularly valuable as compounds are indexed by use (eg NMR shift reagent), by analyte (eg nickel) and by compound group (eg formazan, crown ether), making the data accessible by a variety of criteria. Thus, chemists can use the dictionary to find information on how to analyze for a particular substance, how a particular compound may be used as an analytical reagent or what other reagents are available for a specific analytical use. Having located all appropriate reagents via the index, the user can then browse through the entries to obtain specific data, all fully referenced in the selective bibliography. Analytical chemists - be they in the manufacturing or pharmaceutical industry, working in hospital laboratories as clinical chemists or pollution analysts monitoring heavy metal residues in waste water - constantly need to make decisions about which reagent to choose for a particular application. This dictionary fulfils that need by being the most comprehensive, reliable and up-to-date compilation of reagents available. This book should be of interest to analytical chemists in academic and industrial establishments, forensic scientists, chromatographers, biochemists, standards institutions, companies selling laboratory chemicals, and water authorities.
A Manual for the Chemical Analysis of Metals CRC Press
Analytical pyrolysis allows scientists to use routine laboratory instrumentation for analyzing complex, opaque, or insoluble samples more effectively than other analytical techniques alone. Applied Pyrolysis Handbook, Second Edition is a practical guide to the application of pyrolysis techniques to various samples and sample types for a diversity of fields including microbiology, forensic science, industrial research, and environmental analysis. This second edition incorporates recent technological advances that increase the technique's sensitivity to trace elements, improve its reproducibility, and expand its applicability. The book reviews the types of instrumentation available to perform pyrolysis and offers guidance for interfacing instruments and integrating other analytical techniques, including gas chromatography and mass spectrometry. Fully updated with new sample pyrograms, figures, references, and real-world examples, this edition also highlights new areas of application including surfactants, historical artifacts, and environmental materials. This book illustrates how the latest advances make pyrolysis a practical, cost-effective, reliable, and flexible alternative for increasingly complex sample analyses. Applied Pyrolysis Handbook, Second Edition is an essential, one-stop guide for determining if pyrolysis meets application-specific needs as well as performing pyrolysis and handling the data obtained.
Instrumental Analytical Chemistry CRC Press

The CRC Handbook of Chromatography is a series of work-bench references for scientists and researchers using chromatographic systems for the analysis of organic and inorganic compounds. This handbook is an assemblage of tables where, besides data obtained by modern separation methods, older sources often difficult to access have been included to give maximum information. For use in scientific research and routine analysis where the exact determination of plant pigments, because of their light absorbing properties and defined tasks, is necessary.

CRC Handbook of Organic Analytical Reagents CRC Press

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CRC Handbook of Chemistry and Physics, 98th Edition CRC Press

Since the publication of the second edition of this handbook in 1993, the field of photochemical sciences has continued to expand across several disciplines including organic, inorganic, physical, analytical, and biological chemistries, and, most recently, nanosciences. Emphasizing the important role light-induced processes play in all of these fie

A Handbook of Organic Analysis CRC Press

The Handbook of Organic Analytical Reagents, 2nd Edition, is an indispensable source book of physico-chemical properties, preparation, and analytical applications of the most commonly used organic reagents. Updated from the 1st Edition, this volume includes data on 40 new reagents (such as ultra-high sensitive azo dyes, fluorescent calcium indicators, and chromogenic crown ethers and porphyrin reagents), a new Reagent Index listing reagents according to the elements to be assayed, and completely updated references. Each entry contains information on synonyms, sources and methods of synthesis, analytical applications, complexation reactions and the properties of complexes, purification and purity of the reagent, and other regeants with a related structure. The Handbook of Organic Analytical Reagents, 2nd Edition, is an invaluable bench-side reference for professional analytical chemists and graduate students.

CRC Handbook of Chemistry and Physics CRC Press

Radioanalytical methods have become among the most important means for elemental analysis and the determination of chemical species Their extreme sensitivity has made them indispensable in a wide range of applications, including mineral analysis, medical and biophysical work, criminology, history, archaeology, and space research. This handbook combines theoretical and practical radioanalytical work covering the entire field of radioanalytical chemistry. Topics discussed include analysis by activation and nuclearreactions, isotope dilution analysis, radioreagent methods, analysis by absorption and the scattering of radiation. The handbook is extremely useful to scientists conducting applied and basic research in subjects related to analytical measurements, engineers designing control facilities and equipment, and professors and students working with analyticalchemistry, radiochemistry, radioanalytical chemistry, enviromental chemistry, biology, and physics.

Handbook of Radioanalytical Chemistry CRC Press

The CRC Handbook of Chemistry and Physics, 98th Edition is an update of a classic reference. The 98th Edition contains several new features including, but not limited to - a major update to the table of isotopes, the first major compilation of high quality data of protein-ligand binding thermodynamics, and an important new collection of NMR data critical for understanding outcomes of organic syntheses. Plus, twelve lists have been updated such as, the physical properties of organic compounds and the latest experimental values of bond dissociation energies. Building on the new feature first introduced in the 94th edition, four historical figures in science will be honored on the end plates.

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