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## **Lange Handbook Of Chemistry 16th Edition**

*This updated edition of the Handbook of Inorganic Compounds is the perfect reference for anyone that needs property data for compounds, CASRN numbers for computer or other searches, a consistent tabulation of molecular weights to synthesize inorganic materials on a laboratory scale, or data related to physical and chemical properties. Fully revised*

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*Lange's Handbook of Chemistry, 70th Anniversary Edition* McGraw Hill Professional  
In this volume, operators, engineers, and researchers present information about all aspects of current processing technologies for nickel and cobalt, as well as emerging technologies for both metals. Contributions from industry and academia encompass metallurgical aspects of metals commonly associated with nickel and cobalt, such as copper and platinum group metals (PGMs). Specific focus areas of the collection include,

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*but are not limited to mineral processing, metallurgy of nickel and cobalt ores, battery materials, recycling, recovery of associated byproducts and PGMs, and sulfide and laterite processing.*

*This exhaustive work in three volumes with featuring cross-reference system provides a thorough overview of ultra-high temperature materials – from elements and chemical compounds to alloys and composites. Topics included are physical (crystallographic, thermodynamic, thermo-physical, electrical,*

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*optical, physico-mechanical, nuclear) and chemical (solid-state diffusion, interaction with chemical elements and compounds, interaction with gases, vapours and aqueous solutions) properties of the individual physico-chemical phases and multi-phase materials with melting (or sublimation) points over or about 2500 °C. The first volume focuses on carbon (graphite/graphene) and refractory metals (W, Re, Os, Ta, Mo, Nb, Ir). The second and third volumes are dedicated solely to refractory (ceramic) compounds*

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*(oxides, nitrides, carbides, borides, silicides) and to the complex materials - refractory alloys, carbon and ceramic composites, respectively. It will be of interest to researchers, engineers, postgraduate, graduate and undergraduate students in various disciplines alike. The reader is provided with the full qualitative and quantitative assessment for the materials, which could be applied in various engineering devices and environmental conditions at ultra-high temperatures, on the basis of the latest*

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*updates in the field of physics, chemistry, materials science, nanotechnology and engineering.*

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*Natural gas represents nearly one-quarter*

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*of the world's energy resources. More than half of American homes rely on it as their main heating fuel. It serves as the raw material necessary in everyday paints, plastics, medicines and explosives. It produces the cleanest of all fossil fuels. It is natural gas—and everybody should acquire a basic understanding of it. This valuable easy-to-use reference supplies all the basics that every person should know about the natural gas industry. Introductory engineers, managers and analysts will benefit from this*

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*informative, practical handbook. Natural gas remains a vital component of all energy sources, and with an increasing demand for information on this useful energy source, Natural Gas: A Basic Handbook is an essential tool for anyone involved in the energy industry.*

*The biological sciences cover a broad array of literature types, from younger fields like molecular biology with its reliance on recent journal articles, genomic databases, and protocol manuals to classic fields such as taxonomy with its*



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*scattered literature found in monographs and journals from the past three centuries. Using the Biological Literature: A Practical Guide, Fourth Edition is an annotated guide to selected resources in the biological sciences, presenting a wide-ranging list of important sources. This completely revised edition contains numerous new resources and descriptions of all entries including textbooks. The guide emphasizes current materials in the English language and includes retrospective references for*

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*historical perspective and to provide access to the taxonomic literature. It covers both print and electronic resources including monographs, journals, databases, indexes and abstracting tools, websites, and associations—providing users with listings of authoritative informational resources of both classical and recently published works. With chapters devoted to each of the main fields in the basic biological sciences, this book offers a guide to the best and most up-to-date resources in biology. It is appropriate*

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*for anyone interested in searching the biological literature, from undergraduate students to faculty, researchers, and librarians. The guide includes a supplementary website dedicated to keeping URLs of electronic and web-based resources up to date, a popular feature continued from the third edition.*

*Conventional coal, oil and gas resources used worldwide for power production and transportation are limited and unsustainable. Research and development into clean, alternative hydrocarbon fuels*

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*is therefore aimed at improving fuel security through exploring new feedstock conversion techniques, improving production efficiency and reducing environmental impacts. Advances in clean hydrocarbon fuel processing provides a comprehensive and systematic reference on the range of alternative conversion processes and technologies. Following introductory overviews of the feedstocks, environmental issues and life cycle assessment for alternative hydrocarbon fuel processing, sections go on to review*

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*solid, liquid and gaseous fuel conversion. Solid fuel coverage includes reviews of liquefaction, gasification, pyrolysis and biomass catalysis. Liquid fuel coverage includes reviews of sulfur removal, partial oxidation and hydroconversion. Gaseous fuel coverage includes reviews of Fischer-Tropsch synthesis, methanol and dimethyl ether production, water-gas shift technology and natural gas hydrate conversion. The final section examines environmental degradation issues in fuel processing plants as well as automation,*

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*advanced process control and process modelling techniques for plant optimisation* Written by an international team of expert contributors, *Advances in clean hydrocarbon fuel processing* provides a valuable reference for fuel processing engineers, industrial petrochemists and energy professionals, as well as for researchers and academics in this field. A comprehensive reference on the range of alternative conversion processes and technologies Provides an overview of the feedstocks, environmental issues and life

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*Science and Technology*

*Microfluidics and Nanofluidics*

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*Emerging Global Problems and Solutions  
Purification of Laboratory Chemicals  
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**This volume presents a unique and comprehensive glimpse of current and emerging issues of concern related to potable water. The themes discussed include: (1) historical perspective of the evolution of drinking water science and technology and drinking water standards and regulations; (2) emerging contaminants, water distribution problems and energy demand for water treatment and transportation; and (3) using alternative water sources and methods of water treatment and distribution that could**

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**resolve current and emerging global potable problems. This volume will serve as a valuable resource for researchers and environmental engineering students interested in global potable water sustainability and a guide to experts affiliated with international agencies working toward providing safe water to global communities.**

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**includes descriptions of coal, crude oil, natural gas, tar sand and tar sand bitumen, oil shale, biomass and biofuels, and minerals. Sections include: • Inorganic Chemistry • Organic Chemistry • Naturally Occurring Chemicals and Chemical Sources • Spectroscopy (available online at [www.mhprofessional.com/Langes](http://www.mhprofessional.com/Langes)) • General Information and Conversion Tables (available online at [www.mhprofessional.com/Langes](http://www.mhprofessional.com/Langes)) If you prefer the convenience of one authoritative resource, rather than a multitude of scattered and diverse references, Lange's Handbook of Chemistry, Seventeenth Edition belongs on your desk.**

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## **Electrolytes for Electrochemical Supercapacitors Biological and Biomedical Coatings Handbook**

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*energy becomes a global focus, it is important to consider flow battery systems. This book offers a detailed introduction to the function of different kinds of redox flow batteries, including vanadium flow batteries, as well as the electrochemical processes for their development, materials and components, applications, and near future prospects. Redox Flow Batteries: Fundamentals and Applications will give readers a full understanding of flow batteries from fundamentals to commercial applications.*

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*values such as temperature and pressure.*

*Contents: Organic Compounds \* General Information, Conversion Tables, and Mathematics \* Inorganic Compounds \* Properties of Atom, Radicals, and Bonds \* Physical Properties \* Thermodynamic Properties \* Spectroscopy \* Electrolytes, Electromotive Force and Chemicals \* Physicochemical Relationships \* Polymers, Rubbers, Fats, Oils, and Waxes \* Practical Laboratory Information*

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*field, thermal flow propagation and some thermal phenomena in the Earth.*

*Description of thermal properties of rocks and methods of thermal field measurements in boreholes, underground, at near-surface conditions enables to understand the principles of temperature field acquisition and geothermal model development. Processing and interpretation of geothermal data are shown on numerous field examples from different regions of the world. The book warps, for instance, such fields as analysis of thermal regime*

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*of the Earth's crust, evolution and thermodynamic conditions of the magma-ocean and early Earth atmosphere, thermal properties of permafrost, thermal waters, geysers and mud volcanoes, methods of Curie discontinuity construction, quantitative interpretation of thermal anomalies, examination of some nonlinear effects, and integration of geothermal data with other geophysical methods. This book is intended for students and researchers in the field of Earth Sciences and Environment studying thermal processes*

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*in the Earth and in the subsurface. It will be useful for specialists applying thermal field analysis in petroleum, water and ore geophysics, environmental and ecological studies, archaeological prospection and climate of the past. Electrolytes for Electrochemical Supercapacitors provides a state-of-the-art overview of the research and development of novel electrolytes and electrolyte configurations and systems to increase the energy density of electrochemical supercapacitors. Comprised*

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*of chapters written by leading international scientists active in supercapacitor research and manufacturing, this authoritative text: Describes a variety of electrochemical supercapacitor electrolytes and their properties, compositions, and systems Compares different electrolytes in terms of their effects on electrochemical supercapacitor performance Examines the interplay between the electrolytes, active electrode materials, and inactive components of the supercapacitors Discusses the design and*

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*optimization of electrolyte systems for improving electrochemical supercapacitor performance Explores the challenges electrochemical supercapacitors currently face, offering unique insight into next-generation supercapacitor applications Thus, Electrolytes for Electrochemical Supercapacitors is a valuable resource for the research and development activities of academic researchers, graduate/undergraduate students, industry professionals, and manufacturers of electrode/electrolyte systems and*

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*electrochemical energy devices such as batteries, as well as for end users of the technology.*

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*Ultra-High Temperature Materials I  
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*White's Handbook of Chlorination and Alternative Disinfectants*

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*In the present book, various applications of microfluidics and nanofluidics are introduced. Microfluidics and nanofluidics span a broad array of disciplines including mechanical, materials, and electrical engineering, surface science, chemistry, physics and biology. Also, this book deals with transport and interactions of colloidal particles and biomolecules in microchannels, which have great importance to many microfluidic applications, such as drug delivery in life science, microchannel heat exchangers in electronic cooling, and food processing industry. Furthermore, this book focuses on a detailed description of the thermal transport behavior,*



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*challenges and implications that involve the development and use of HTFs under the influence of atomistic-scale structures and industrial applications. Hydrometallurgy of Rare Earths: Extraction and Separation provides the basic knowledge for rare earth extraction and separation, including flow sheet selection criteria and related technology. The book includes the latest research findings on all rare earth separation processes, methods of controlling operation costs, and strategies that help lower wastewater and waste solid discharge. It discusses many real process parameters and actual situations in rare earth separation plants, also examining the basic principles,*

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*technologies, process parameters and advances and achievements in the area of rare earth extraction and separation. In addition, the book covers extraction separation theory as developed by Professor Guanxian Xu and Professor Chunhua Yan and the creative use of a computational simulation program to replace the bench scale and pilot plant tests and directly design rare earth extraction separation processes. Outlines the theory of solvent extraction and separation of rare earths (REs) Provides the necessary tools for a REs separation plant design Includes a unique simulation program for the calculation of all process parameters Includes Chinese nomenclature that is useful for*

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*identifying the various processes, also comparing it to the global literature*

*There are only a few discoveries and new technologies in materials science that have the potential to dramatically alter and revolutionize our material world. Discovery of two-dimensional (2D) materials, the thinnest form of materials to ever occur in nature, is one of them. After isolation of graphene from graphite in 2004, a whole other class of atomically thin materials, dominated by surface effects and showing completely unexpected and extraordinary properties, has been created. This book provides a comprehensive view and state-of-the-art knowledge about 2D*

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*materials such as graphene, hexagonal boron nitride (h-BN), transition metal dichalcogenides (TMD) and so on. It consists of 11 chapters contributed by a team of experts in this exciting field and provides latest synthesis techniques of 2D materials, characterization and their potential applications in energy conservation, electronics, optoelectronics and biotechnology.*

*This book is intended to serve as a textbook for advanced undergraduate and graduate students as well as professionals engaged in application of thermo-fluid science to the study of combustion. The relevant thermo-chemistry and thermo-physical data required*

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*for this study are provided in the 6 appendices along with appropriate curve-fit coefficients. To facilitate gradual learning, two chapters are devoted to thermodynamics of pure and gaseous mixture substances, followed by one chapter each on chemical equilibrium and chemical kinetics. This material when coupled with a dedicated chapter on understanding of equations governing transport of momentum, heat and mass in the presence of chemical reactions provides adequate grounding to undertake analysis of practical combustion equipment, of premixed and diffusion flames as well as of solid particle and liquid droplet combustion. The learnings from the aforementioned*

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*chapters are taken to a uniquely strong chapter on application case studies, some of which have special relevance for developing countries.*

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New edition covers the latest practices, regulations, and alternative disinfectants

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Since the publication of the Fourth Edition of White's Handbook of Chlorination and Alternative Disinfectants more than ten years ago, the water industry has made substantial advances in their understanding and application of chlorine, hypochlorite, and alternative disinfectants for water and wastewater treatment. This Fifth Edition, with its extensive updates and revisions, reflects the current state of the science as well as the latest practices. Balancing theory with practice, the Fifth Edition covers such important

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topics as: Advances in the use of UV and ozone as disinfectants Alternative disinfectants such as chlorine dioxide, iodine, and bromine-related products Advanced oxidation processes for drinking water and wastewater treatment New developments and information for the production and handling of chlorine Latest regulations governing the use of different disinfectants For each disinfectant, the book explains its chemistry, effectiveness, dosing, equipment, and system design



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requirements. Moreover, the advantages and disadvantages of each disinfectant are clearly set forth. References at the end of each chapter guide readers to the primary literature for further investigation. Authored and reviewed by leading experts in the field of water and wastewater treatment, this Fifth Edition remains an ideal reference for utilities, regulators, engineers, and plant operators who need current information on the disinfection of potable water, wastewater, industrial water, and swimming pools.

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the most important information sources and where to locate them, including printed and electronic sources, relevant websites and useful contacts for referral purposes. The authors use their extensive experience in reference work to offer useful tips, warn of potential pitfalls, and spotlight typical queries and how to tackle them. This new edition has been brought right up-to-date with all sources checked for currency and many new ones added. The searchability is enhanced by a comprehensive index to make those

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A timely, hands-on guide to environmental issues and regulatory standards for the petroleum industry Environmental analysis and testing methods are an integral part

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of any current and future refining activities. Today's petroleum refining industry must be prepared to meet a growing number of challenges, both environmental and regulatory.

Environmental Analysis and Technology for the Refining Industry focuses on the analytical issues inherent in any environmental monitoring or cleanup program as they apply to today's petroleum industry, not only during the refining process, but also during recovery operations, transport, storage, and

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utilization. Designed to help today's industry professionals identify test methods for monitoring and cleanup of petroleum-based pollutants, the book provides examples of the application of environmental regulations to petroleum refining and petroleum products, as well as current and proposed methods for the mitigation of environmental effects and waste management. Part I introduces petroleum technology, refining, and products, and reviews the nomenclature used by refiners, environmental scientists, and

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engineers. Part II discusses environmental technology and analysis, and provides information on environmental regulation and the impact of refining. Coverage includes:

- \* In-depth descriptions of analyses related to gaseous emissions, liquid effluents, and solid waste
- \* A checklist of relevant environmental regulations
- \* Numerous real-world examples of the application of environmental regulations to petroleum refining and petroleum products
- \* An analysis of current and proposed methods



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of environmental protection and waste management

Awareness of the importance of ensuring durability of concrete has been a growing concern of engineers, and there is now considerable understanding of the mechanisms, which cause its deterioration, and means of limiting such damage through the use of appropriate materials and approaches to design. Many of the deterioration mechanisms, which affect concrete, are the result of interaction with the non-living environment -

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chlorides in seawater, carbon dioxide in the atmosphere, cyclic freezing and thawing. However, living organisms can also cause damage – through both chemical and physical processes - which under the right conditions, can be severe. This book looks at all forms of concrete biodeterioration together for the first time. It examines, from a fundamental starting point, biodeterioration mechanisms, as well as the conditions which allow living organisms (bacteria, fungi, plants and a range of marine

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organisms) to colonise concrete. A detailed evaluation of chemical compounds produced by living organisms with respect to their interaction with the mineral constituents of concrete, and the implications it has for the integrity of structures, is also included. Approaches to avoiding biodeterioration of concrete are also covered, including selection of materials, mix proportioning, design, and use of protective systems.

Seawater Batteries

Analytic Combustion

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With Thermodynamics, Chemical Kinetics and Mass Transfer

Chapter 11. Carbon Dioxide Reforming of Methane to Syngas over Mesoporous Material Supported Nickel Catalysts

New and Future Developments in Catalysis

Ni-Co 2021: The 5th International Symposium on Nickel and Cobalt

A best seller since 1966, Purification of Laboratory Chemicals keeps engineers, scientists, chemists, biochemists and students up to date with the purification of the chemical reagents with which they

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work, the processes for their purification, and guides readerd on critical safety and hazards for the safe handling of chemicals and processes. The Sixth Edition is updated and provides expanded coverage of the latest chemical products and processing techniques, safety and hazards. The book has been reorganised and is now fully indexed by CAS Registry Numbers. Compounds are now grouped to make navigation easier and literature references for all substances and techniques have been added, and ambiguous alternate names and cross references have been removed. The only

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comprehensive chemical purification reference, a market leader since 1966, Amarego delivers essential information for research and industrial chemists, pharmacists and engineers: '... (it) will be the most commonly used reference book in any chemical or biochemical laboratory' (MDPI Journal) An essential lab practice and procedures manual. Improves efficiency, results and safety by providing critical information for day-to-day lab and processing work. Improved, clear organization and new indexing delivers accurate, reliable information on processes and techniques of purification along with detailed

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physical properties. The Sixth Edition has been reorganised and is fully indexed by CAS Registry Numbers; compounds are now grouped to make navigation easier; literature references for all substances and techniques have been added; ambiguous alternate names and cross references removed; new chemical products and processing techniques are covered; hazards and safety remain central to the book.

Learning the fundamentals of chemistry can be a difficult task to undertake for health professionals. For over 35 years, this book has helped them master

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the chemistry skills they need to succeed. It provides them with clear and logical explanations of chemical concepts and problem solving. They ' ll learn how to apply concepts with the help of worked out examples. In addition, Chemistry in Action features and conceptual questions checks brings together the understanding of chemistry and relates chemistry to things health professionals experience on a regular basis.

Featuring new experiments unique to this lab textbook, as well as new and revised essays and updated techniques, this Sixth Edition provides the



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up-to-date coverage students need to succeed in their coursework and future careers. From biofuels, green chemistry, and nanotechnology, the book's experiments, designed to utilize microscale glassware and equipment, demonstrate the relationship between organic chemistry and everyday life, with project- and biological or health science focused experiments. As they move through the book, students will experience traditional organic reactions and syntheses, the isolation of natural products, and molecular modeling. Important Notice: Media content referenced within the product

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Enables students to progressively build and apply new skills and knowledge Designed to be completed in one semester, this text enables students to fully grasp and apply the core concepts of analytical chemistry and aqueous chemical equilibria.

Moreover, the text enables readers to master common instrumental methods to perform a broad range of quantitative analyses. Author Brian Tissue has written and structured the text so that readers progressively build their knowledge, beginning with

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the most fundamental concepts and then continually applying these concepts as they advance to more sophisticated theories and applications. Basics of Analytical Chemistry and Chemical Equilibria is clearly written and easy to follow, with plenty of examples to help readers better understand both concepts and applications. In addition, there are several pedagogical features that enhance the learning experience, including: Emphasis on correct IUPAC terminology "You-Try-It" spreadsheets throughout the text, challenging readers to apply their newfound knowledge and skills Online tutorials

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materials science, nutrition, agriculture, and the life sciences.

Redox Flow Batteries

Techniques in Organic Chemistry

Extraction and Separation

Experimental Organic Chemistry: A Miniscale & Microscale Approach

Environmental Analysis and Technology for the Refining Industry

14th International Symposium on Process Systems Engineering

Open CHEMISTRY: THE MOLECULAR SCIENCE,

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Fifth Edition and take a journey into the beautiful domain of chemistry, a fascinating and powerfully enabling experience! This easy-to-read text gives learners the solid foundation needed for success in science and engineering courses. Every Problem-Solving Example includes a Strategy and Explanation section, which clearly describes the strategy and approach chosen to solve the problem. In addition, an annotated art program emphasizes the three concept levels in a pedagogically sound approach to understanding molecules, concepts, and mathematical equations. Success is within your

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This book aims to elaborate the basics and recent advances of membrane distillation (MD) as the same shows promise for seawater desalination and wastewater treatment. Starting with fundamentals of MD processes, including the heat and mass transfer analysis, energy evaluation and mathematical modelling, text includes engineering and molecular

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design of MD membranes. Various types of hybrid systems, including freeze desalination (FD)-MD, MD-crystallization (MDC), pressure retarded osmosis (PRO)-MD and forward osmosis (FO)-MD, will be discussed in this book. Further, it summarizes the future of MD from both industrial and academic perspectives along with energy sources and economic analysis.

Written by an author with over 38 years of experience in the chemical and petrochemical process industry, this handbook will present an analysis of the process steps used to produce



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industrial hydrocarbons from various raw materials. It is the first book to offer a thorough analysis of external factors effecting production such as: cost, availability and environmental legislation. An A-Z list of raw materials and their properties are presented along with a commentary regarding their cost and availability. Specific processing operations described in the book include: distillation, thermal cracking and coking, catalytic methods, hydroprocesses, thermal and catalytic reforming, isomerization, alkylation processes, polymerization processes, solvent processes, water removal, fractionation and acid gas

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removal. Flow diagrams and descriptions of more than 250 leading-edge process technologies An analysis of chemical reactions and process steps that are required to produce chemicals from various raw materials Properties, availability and environmental impact of various raw materials used in hydrocarbon processing

Using a mechanistic approach, the text explains and makes use of analysis tools rare in undergraduate organic chemistry texts (flow charts as decision maps, correlation matrices to show all possible interactions, and simplified energy surfaces used as

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problem space maps), helping readers develop a good intuition for organic chemistry and the ability to approach and solve complex problems methods of analysis that are valuable and portable to other fields. This revised Second Edition builds on and improves the legacy of the first edition's unique decision-based approach to teaching/learning organic chemistry.

Membranes, Hybrid Systems and Pilot Studies  
Foundations of College Chemistry, Alternate  
Two-dimensional Materials  
Smart Nanoparticles Technology

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Fundamentals and Applications

Know it All, Find it Fast

"Compatible with standard taper miniscale, 14/10 standard taper microscale, Williamson microscale. Supports guided inquiry"--Cover.

Written in a versatile, contemporary style that will benefit both novice and expert alike, Biological and Biomedical Coatings Handbook, Two-Volume Set covers the state of the art in the development and implementation of advanced thin films and coatings in the biological field. Consisting of two volumes—Processing and Characterization and

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Applications—this handbook details the latest understanding of advances in the design and performance of biological and biomedical coatings, covering a vast array of material types, including bio-ceramics, polymers, glass, chitosan, and nanomaterials. Contributors delve into a wide range of novel techniques used in the manufacture and testing of clinical applications for coatings in the medical field, particularly in the emerging area of regenerative medicine. An exploration of the fundamentals elements of biological and biomedical coatings, the first volume, Processing and

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Characterization, addresses: Synthesis, fabrication, and characterization of nanocoatings The sol-gel method and electrophoretic deposition Thermal and plasma spraying Hydroxyapatite and organically modified coatings Bioceramics and bioactive glass-based coatings Hydrothermal crystallization and self-healing effects Physical and chemical vapor deposition Layered assembled polyelectrolyte films With chapters authored by world experts at the forefront of research in their respective areas, this timely set provides searing insights and practical information to explore a subject that is fundamental

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