Bibliography On The History Of Chemistry And Chemical Technology 17th

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Explore a comprehensive bibliography focusing on the fascinating history of chemistry and chemical technology during the 17th century. This essential resource offers a curated list of primary and secondary materials, providing invaluable insights into the scientific advancements, key figures, and evolving methodologies that shaped early modern chemical thought and industrial practices. Ideal for researchers, students, and enthusiasts seeking historical chemistry resources from the 1600s.

Bibliography On The History Of Chemistry And Chemical Technology 17th

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the law of conservation of mass.
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foundations of spectroscopy
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out the concept of free
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response of dynamic
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Drug Discovery
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Nervous System Uses Neurotransmitters
Example of Endocrine Gland Not Functioning Correctly
History and Celebration of Endocrinology at Stanford | DoM Grand Rounds | 13 December 2023 - History and Celebration of Endocrinology at Stanford | DoM Grand Rounds | 13 December 2023 by Stanford Department of Medicine 145 views 2 months ago 47 minutes - During this Grand Rounds, experts discuss "**History**, and Celebration of **Endocrinology**, at Stanford" Presenter: Federic Kraemer, ...
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Pioneer Gland
Thyroid Gland
Thymus
Digestive Tract
Pancreas
Adrenal Glands
Adrenal Medulla
Gonads
Posterior Pituitary
Antidiuretic Hormone
Anterior Pituitary
Regulatory Hormones
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Growth Hormone
Insulin
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Pulp and Paper

Summary: The production of forestry products is based on a complex chain of knowledge in which the biological material wood with all its natural variability is converted into a variety of fiber-based products, each one with its detailed and specific quality requirements. This four volume set covers the entire spectrum of pulp and paper chemistry and technology from starting material to processes and products including market demands. Supported by a grant from the Ljungberg Foundation, the Editors at the Royal Institute of Technology, Stockholm, Sweden coordinated over 30 authors from university and industry to create this comprehensive overview. This work is essential for all students of wood science and a useful reference for those working in the pulp and paper industry or on the chemistry of renewable resources

Pulp and Paper

In this two volume set, Dr. Herbert Sixta, head of the cellulose and viscose research department at Lenzing AG in Austria, has brought together a team of authors to produce the first comprehensive handbook on the market. Alongside the traditional aspects of pulping processes, pulp used in industry and paper pulps, this book describes all pulping processes used for paper and board manufacturing as well as waste liquor treatment, pulp bleaching and environmental aspects, while also covering pulp properties and applications. From the content: - Chemical Pulp - Mechanical Pulp - Recovered Paper and Recycled Fibers - Analytical Characterization of Pulps This handbook is essential reading for all chemists and engineers in the paper and pulp industry.

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This text of applied chemistry considers the interface between chemistry and chemical engineering, using examples of some of the important process in dustries. Integrated with this is detailed consid- eration of measures which may be taken for avoidance or control of potential emissions. This new emphasis in applied chemistry has been developed through eight years of experience gained from working in industry in research, development and environment al control fields, plus twelve years of teaching here using this approach. It is aimed primarily towards science and engineering students as well as to envi ronmentalists and practising professionals with responsibilities or an interest in this interface. By providing the appropriate process information back to back with emis sions and control data, the potential for process fine-tuning is improved for both raw material efficiency and emission control objectives. This approach also emphasizes integral process changes rather than add-on units for emis sion control. Add-on units have their place, when rapid action on an urgent emission problem is required, or when control simply is not feasible by pro cess integral changes alone. Obviously fundamental process changes for emission containment are best conceived at the design stage. However, at whatever stage process modifications are installed, this approach to control should appeal to the industrialist in particular, in that something more sub stantial than decreased emissions may be gained.

Pulp and Paper Chemistry and Technology. 4 Vols

In its Second Edition, Handbook of Pulping and Papermaking is a comprehensive reference for industry and academia. The book offers a concise yet thorough introduction to the process of papermaking from the production of wood chips to the final testing and use of the paper product. The author has updated the extensive bibliography, providing the reader with easy access to the pulp and paper literature. The book emphasizes principles and concepts behind papermaking, detailing both the physical and chemical processes. A comprehensive introduction to the physical and chemical processes in pulping and papermaking Contains an extensive annotated bibliography Includes 12 pages of color plates

Handbook of Pulp, 2 Volume Set

Forests and Forest Plants is a component of Encyclopedia of Food and Agricultural Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. Forests are an essential part of Earth's life support systems. Forest resources are essential for humankind. They provide both vital goods and services. They provide food, fuel, shelter, soil and water protection, and filter the air we breathe. This publication on Forest and Forest Plants provides the user with such information as to create an awareness of the value of our forestlands and the products and environmental services they provide. The three volumes on Forests and Forest Plants are organized starting with first the necessity of : the World's Forest Resources – including classification and distribution of forest, urban forestry and agroforestry; Important Tree Species including trees in reclamation and arid zone forestry; Forests and Forest Products including wood and non word products; the Role of Forests in the Biosphere – preserving biological diversity, functions in the hydrological cycle, etc.; and Conservation and Breeding of Forest Trees – what is being done to improve our forest resources - silviculture, tree nurseries, and forest protection. The theme Forest and Forest Plants has led to the conclusion that there are substantial difficulties in matching environmental concerns and sustainability with an ever-increasing world population. Thus there is a tension between maximizing for food, wood and production on the one hand and implementing sustainable development and environmental protection on the other. These three volumes are aimed at the following five major target audiences: University and College Students Educators, Professional Practitioners, Research Personnel and Policy Analysts, Managers, and Decision Makers, NGOs and GOs.

Paper Chemistry and Technology

Volume 1 of the Handbook of Colorants Chemistry comprehensively covers the fundamentals of color as well as the underlying scientifi c principles, via the presentation of molecular compositions of inorganic and organic pigments. The author explains the chemical and physical production of color and the infl uence of the physical-geometric pigment parameters on the color shade. This volume also deals with historical and modern pigments, dyes, and binders, as well as their mode of action. The complementary “Volume 2: in Painting, Art and Inks” (ISBN 978-3-11-077700-0) focuses on paints, painting and drawing systems used by the painter and craftsman. The book is supplemented by a comprehensive bibliography with references to standard works, monographs, and original papers. The reader is provided with a unique overview of the fi eld of color chemistry.

Modern Chemical Technology and Emission Control

Much interest has been directed to the versatile possibilities of using lignocellulosic biomass resources (i.e., “renewable raw materials”) for the full-scale production of various chemicals and other bioproducts together with solid, liquid, and gaseous fuels. Introduces modern aspects and various technologies of lignocellulosic biomass conversion for producing chemicals, biofuels, and other products in a reader friendly way. Starting with fundamentals of biorefi nery, the author further describes chemical, biochemical, and thermal conversion approaches. In addition, the properties and biorefining principles of non-wood biomass feedstock

Handbook of Pulping and Papermaking

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of Technology, Stockholm, Sweden coordinated over 30 authors from university and industry to create this comprehensive overview. This work is essential for all students of wood science and a useful reference for those working in the pulp and paper industry or on the chemistry of renewable resources.

Forests And Forest Plants - Volume II

Cellulose represents the most widely spread organic polymer found in nature and it was used for a long time as a raw material for paper, textiles, film and flexible packing material. Due to its accessibility in huge amounts by photosynthesis process as a renewable material, cellulose is considered at present the answer to many problems connected with sustainable development. This explains the great scientific interest for this compound along with a lot of preoccupations to systematize the accumulated information in reviews and books. This book will present the aspects of cellulose obtaining in the correleation with its integration in a new concept of biorefining. Thus usual technological steps of pulp manufacture (pulping, bleaching) will be continued with chemistry charactersitics of by-products and their utilization, fiber characterization for paper obtaining, cellulose derivatives and special products resulted in cellulose processing (beads and microspheres, micro-and nano-structures, fibers production, their antibacterial properties, optical functional film, and hydrogen). This extensive book should prove to be a very useful tool for scientists, students and postgraduates working in the field of pulp, paper and cellulose derivatives aiming at opening a new era for renewable resources processed by biorefining.

Handbook of Colorants Chemistry

The agricultural and forestry processing wastes (lignocellulosics) are an important material resource and energy source. However, if untreated they can pose a danger to the environment and potentially valuable resources. Microorganisms contribute significantly to solving the problem of biomass degradation, its recycling and conservation. In the recent years, an increasing interest shown by the textile, food, feed & pulp, and paper industries in the microbial and enzymatic processes has triggered in-depth studies of lignocellulolytic microorganisms and their enzymes. Moreover, the advent of recombinant DNA technology in the late 1970s further paved the way for developing technologies based on lignocellulolytic microbes and enzymes. Lignocellulose Biotechnology presents a comprehensive review of the research directed towards environmentally friendly agricultural and forest by-products. The book comprises 22 chapters, divided in four sections. It deals with a wide range of topics including biodiversity of lignocellulose degrading microorganisms and their enzymes, molecular biology of biodegradation of lignin, characterization of lignocellulolytic enzymes, bioconversion of plant biomass to produce enzymes, animal feed, bioethanol and industrial applications of lignocellulolytic enzymes. The chapters dealing with industrial applications also address current biotechnological approaches in lignocellulose bioconversion to value added products. This book is essential for students, researchers, scientists, and engineers working in the fields of environmental microbiology, environmental biotechnology, life sciences, waste management, and biomaterials.

Chemistry for Biomass Utilization

Biermann's Handbook of Pulp and Paper: Raw Material and Pulp Making, Third Edition is a comprehensive reference for industry and academia covering the entire gamut of pulping technology. This book provides a thorough introduction to the entire technology of pulp manufacture; features chapters covering all aspects of pulping from wood handling at the mill site through pulping and bleaching and pulp drying. It also includes a discussion on bleaching chemicals, recovery of pulping spent liquors and regeneration of chemicals used and the manufacture of side products. The secondary fiber recovery and utilization and current advances like organosolv pulping and attempts to close the cycle in bleaching plants are also included. Hundreds of illustrations, charts, and tables help the reader grasp the concepts being presented. This book will provide professionals in the field with the most up-to-date and comprehensive information on the state-of- the-art techniques and aspects involved in pulp making. It has been updated, revised and extended. Alongside the traditional aspects of pulping and papermaking processes, this book also focuses on biotechnological methods, which is the distinguishing feature of this book. It includes wood-based products and chemicals, production of dissolving pulp, hexenuronic acid removal, alternative chemical recovery processes, forest products biorefinery. The most significant changes in the areas of raw material preparation and handling, pulping and recycled fiber have been included. A total of 11 new chapters have been added. This handbook is essential reading for all chemists and engineers in the paper and pulp industry. Provides

comprehensive coverage on all aspects of pulp making Covers the latest science and technology in pulp making Includes traditional and biotechnological methods, a unique feature of this book Presents the environmental impact of pulp and papermaking industries Sets itself apart as a valuable reference that every pulp and papermaker/engineer/chemist will find extremely useful

Paper Products Physics and Technology

Specifically dedicated to polymer and biopolymer systems, Polymer Adhesion, Friction, and Lubrication guides readers to the scratch, wear, and lubrication properties of polymers and the engineering applications, from biomedical research to automotive engineering. Author Hongbo Zeng details different experimental and theoretical methods used to probe static and dynamic properties of polymer materials and biomacromolecular systems. Topics include the use of atomic force microscopy (AFM) to analyze nanotribology, polymer thin films and brushes, nanoparticles, rubber and tire technology, synovial joint lubrication, adhesion in paper products, bioMEMS, and electrorheological fluids.

Pulp Production and Processing

This book is a companion volume of A Textbook of Chemical Technology Volume-I, written by the same author. The two books cover the complete syllabi of Chemical Engineering and Chemical Technology programmes leading to the B.Tech. degree. The book explains the basic principles of chemical engineering and operating conditions of chemical plants in India. It discusses all major organic chemical industries including petroleum technology, petro-chemicals, polymer science, pulp and paper technology. It also deals with pesticides, coal and coal chemicals and the pharmaceutical industry. Keeping the importance of environmental protection and prevention and control of hazards in mind, a few chapters on planned industrial development, environmental impact assessment and prevention of hazards in chemical industries have also been included. This book will also serve as a reference for practicing engineers and technologists.

Some Books about Wood

Providing an overview of the making of paper from a chemical perspective, this book is an informative and entertaining overview for students and general readers.

Report

Unsurpassed in its coverage, usability, and authority since its first publication in 1969, the three-volume Instrument Engineers' Handbook continues to be the premier reference for instrument engineers around the world. It helps users select and implement hundreds of measurement and control instruments and analytical devices and design the most cost-effective process control systems that optimize production and maximize safety. Now entering its fourth edition, Volume 1: Process Measurement and Analysis is fully updated with increased emphasis on installation and maintenance consideration. Its coverage is now fully globalized with product descriptions from manufacturers around the world. Béla G. Lipták speaks on Post-Oil Energy Technology on the AT&T Tech Channel.

Lignocellulose Biotechnology

One of the most significant challenges facing mankind in the twenty-first century is the development of a sustainable global economy. Within the scientific community, this calls for the development of processes and technologies that will allow the sustainable production of materials from renewable natural resources. Plant material, in particular lignin, is one such resource. During the annual production of about 100 million metric tons of chemical wood pulps worldwide, approximately 45 and 2 million metric tons/year of kraft lignin and lignosulfonates, respectively, are also generated. Although lignosulfonates have found many applications outside the pulp and paper industry, the majority of kraft lignin is being used internally as a low-grade fuel for the kraft pulping operation. A surplus of kraft lignin will become available as kraft mills increase their pulp production without expanding the capacity of their recovery boilers that utilize lignin as a fuel. There is a tremendous opportunity and an enormous economic incentive to find better uses of kraft lignin, lignosulfonates and other industriallignins. The pulp and paper industry not only produces an enormous amount of lignins as by products of chemical wood pulps, but it also utilizes about 10 million metric tons of lignin per year as a component of mechanical wood pulps and papers. Mechanical wood pulps, produced in a yield of 90-98% with the retention of

lignin, are mainly used to make low-quality, non-permanent papers such as newsprint and telephone directories because of the light-induced photooxidation of lignin and the yellowing of the papers.

Biermann's Handbook of Pulp and Paper

Designed to serve as a new educational tool for pulp and paper science courses and as an extensive resource for industry professionals. Rather than focus on the many types of equipment in use, this book emphasizes the principles of pulp and paper processes.

Polymer Adhesion, Friction, and Lubrication

th The technology of froth flotation, invented in the early 20 century was first used for the concentration of sulfide minerals. Since then it has been applied for the processing of many nonsulfide ores as weII, including oxides, carbonates, silicates, soluble minerals like halite and sylvite and energy minerals like coal and bitumen. In recent years it has been used for several nonrnineral applications, such as waste water treatment, deinking of paper for recycling and resource recovery from industrial wastes he technology continues to grow with new applications reported every year. Flotation is based on chemical phenomena occurring at the interfaces, solid/water and air/water. Surface Chemistry principles have played a significant role in the development of flotation technology. Knowledge of aqueous solution chemistry and electrochemistry has added to our understanding of the reactions in flotation systems. Professor Jan Leja's book has weII served researchers and students as they tried to understand the chemistry of flotation, and it is a significant contribution to the advancement of knowledge. However, since the book was first published, new research techniques and ever growing information have made an update necessary. The revised edition compiled by Dr. S. R. Rao has brought together fundamental aspects of the chemistry of flotation and how they apply to practical systems. It should serve all who are working in the area of flotation and interested in exploring new applications of flotation technology.

Textbook of Chemical Technology Volume-II, 2nd Edition

"This book is about sustainability and green polymer chemistry products and processes"--

The Chemistry of Paper

This is the first book to examine comprehensively the chlorine industry and its effects on the environment. It covers not only the history of chlorine production, but also looks at its products, their effects on the global environment, and the international legislation which controls their use, release, and disposal. Individual chapters are dedicated to subjects such as releases of organochlorines into the environment, and the environmental impact of ozone depletion, providing simple explanations of these complex issues. These are backed up with case studies of landmark events in the history of the chlorine industry - for example the Seveso explosion or the Yusho and Yu-Cheng mass poisonings. With a clear, concise text and numerous compilations of critical data, this book will prove an invaluable source reference for environmental scientists, students, and policy makers with an interest in this subject.

Proceedings

Paper and cardboard as sustainable building materials are currently the subject of research and testing. They can be produced inexpensively, are made from renewable raw materials and are completely recyclable. The focus of their application is on temporary uses, such as for transitional schools, emergency shelters or "microhomes". Properly protected from moisture and fire, the material proves to be durable. Design and aesthetic qualities are by no means neglected, as case studies by Pritzker Prize winner Shigeru Ban demonstrate: the Chengdu Elementary School, the Paper Concert Hall in Aquila or the Cardboard Cathedral in Christchurch all provided a sign of hope after devastating earthquakes. This introduction explains the technology of building with cardboard and paper and shows a wide range of examples.

Instrument Engineers' Handbook, Volume One

This book provides the most up-to-date and comprehensive information on the state-of-the-art techniques and aspects involved in environment-friendly pulping technologies. Traditional chemical and semi-chemical pulping processes are not environmentally friendly. Therefore, it has become important to look for alternative approaches to mitigate wastewater emissions in the paper industry, by making more stringent regulations to improve environmental conservation. In response to this problem, new

raw materials need to be explored to replace traditional choices and also new pulping processes need to be developed based on less polluting, more easily recovered reagents. This book presents new and emerging deep eutectic solvents for lignocellulosic biomass pretreatment, and discusses the effects of deep eutectic solvents on biomass pretreatment and the production of value-added products. It also introduces biotechnological methods of pulping. Biotechnological processes help to make manufacturing processes cleaner and more efficient by reducing toxic chemical pollution and greenhouse gas emissions. Given its scope, this book is of interest to applied chemists, foresters, chemical engineers, wood scientists, along with engineers and researchers involved in the pulp and paper industry as a valuable reference.

Chemical Modification, Properties, and Usage of Lignin

Essentials of Pulping and Papermaking

Pulp and Paper

An in-depth look at the chemistry and chemical technology involved in the manufacture of pulp and paper, the properties of paper, and the uses for paper. This new edition contains contributions by forty recognized authorities in the field. Emphasizes the underlying science and technology and reviews, in detail, chemical and engineering principles. Includes numerous tables, illustrations, and a complete bibliography.

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Paper Products Physics and Technology

Biermann's Handbook of Pulp and Paper: Paper and Board Making, Third Edition provides a thorough introduction to paper and board making, providing paper technologists recent information. The book emphasizes principles and concepts behind papermaking, detailing both the physical and chemical processes. It has been updated, revised and extended. Several new chapters have been added. Papermaking chemistry has found an adequate scope covering this important area by basics and practical application. Scientific and technical advances in refining, including the latest developments have been presented. The process of stock preparation describes the unit processes. An exhaustive overview of Chemical additives in Pulp and Paper Industry is included. Paper and pulp processing and additive chemicals are an integral part of the total papermaking process from pulp slurry, through sheet formation, to effluent disposal. Water circuits with loop designs and circuit closure are presented. The chapter on paper and board manufacture covers the different sections in the paper machine and also fabrics, rolls and roll covers, and describes the different types of machines producing the various paper and board grades. Coating is dealt with in a separate chapter covering color formulation and preparation and also coating application. Paper finishing gives an insight into what happens at roll slitting and handling. The chapter on environmental impact includes waste water treatment and handling, air emissions, utilization and solid residue generation and mitigation . The major paper and board grades and their properties, are described. Biotechnological methods for paper processing are also presented. This handbook is essential reading for Applied Chemists, Foresters, Chemical Engineers, Wood Scientists, and Pulp and Paper technologist/ Engineers, and anyone else interested or involved in the pulp and paper industry. Provides comprehensive coverage on all aspects of papermaking Covers the latest science and technology in papermaking Includes traditional and biotechnological methods, a unique feature of this book Presents the environmental impact of papermaking industries Sets itself apart as a valuable reference that every pulp and papermaker/engineer/chemist will find extremely useful

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Pulp and Paper Chemistry and Technology

This four volume set covers the entire spectrum of pulp and paper chemistry and technology from starting material to processes and products including market demands. This work is essential for all students of wood science and a useful reference for those working in the pulp and paper industry or on the chemistry of renewable resources. This volume examines the physical properties of paper and modern demands on this versatile material. The book presents fundamental definitions of fibre networks and their structure, physical properties of the paper and their development during pressing and drying, interactions with moisture and its affect on mechanical properties, interactions between light and fibrous materials and the determination of optical properties of the paper, physical action of dry-strength and wet-strength chemicals, physical properties of the paper surface with special emphasis on printing and print quality, overview of packaging materials and the demands on paper from a packaging materials perspective, laminate theories for papermakers and theoretical models of paper for converting and end-uses.

Pulp and Paper Chemistry and Technology. 4 Vols

The fifth edition of the Kirk-Othmer Encyclopedia of Chemical Technology builds upon the solid foundation of the previous editions, which have proven to be a mainstay for chemists, biochemists, and engineers at academic, industrial, and government institutions since publication of the first edition in 1949. The new edition includes necessary adjustments and modernisation of the content to reflect changes and developments in chemical technology. Presenting a wide scope of articles on chemical substances, properties, manufacturing, and uses; on industrial processes, unit operations in chemical engineering; and on fundamentals and scientific subjects related to the field. The Encyclopedia describes established technology along with cutting edge topics of interest in the wide field of chemical technology, whilst uniquely providing the necessary perspective and insight into pertinent aspects, rather than merely presenting information. * Set begins publication in March 2004 * Over 1000 articles in 27 volumes * More than 600 new or updated articles Reviews from the previous edition: "The most indispensable reference in the English language on all aspects of chemical technology...the best reference of its kind". Chemical Engineering News, 1992 "Overall, ECT is well written and cleanly edited, and no library claiming to be a useful resource for chemical engineering professionals should be without it." Nicholas Basta, Chemical Engineering, December 1992

Handbook of Pulping and Papermaking

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Textbook of Chemical Technology Volume-II, 2nd Edition

This text of applied chemistry considers the interface between chemistry and chemical engineering, using examples of some of the important process in dustries. Integrated with this is detailed consid- eration of measures which may be taken for avoidance or control of potential emissions. This new emphasis in applied chemistry has been developed through eight years of experience gained from working in industry in research, development and environment al control fields, plus twelve years of teaching here using this approach. It is aimed primarily towards science and engineering students as well as to envi ronmentalists and practising professionals with responsibilities or an interest in this interface. By providing the appropriate process information back to back with emis sions and control data, the potential for process fine-tuning is improved for both raw material efficiency and emission control objectives. This approach also emphasizes integral process changes rather than add-on units for emis sion control. Add-on units have their place, when rapid action on an urgent emission problem is required, or when control simply is not feasible by pro cess integral changes alone. Obviously fundamental process changes for emission containment are best conceived at the design stage. However, at whatever stage process modifications are installed, this approach to control should appeal to the industrialist in particular, in that something more sub stantial than decreased emissions may be gained.

Paper Products Physics and Technology

Handbook of Chemical Technology and Pollution Control integrates industrial chemistry with pollution control and environmental chemistry. This unified approach provides practicing professionals and consultants with a concise yet authoritative handbook covering the Key Features, relative importance, and environmental impact of currently operating chemical processes. It also meets the critical needs of students training for industrial careers. Handbook of Chemical Technology and Pollution Control considers community, municipal, power generation, industrial, and transportation components of environmental impact. The book covers the major inorganic and organic commodity chemicals; aluminum, iron and steel, and copper prodution; pulp and paper; fermentation; petroleum production and refining. It also includes key topics and process details for major peterochemicals and large-scale consumer and engineering polymers. This single, convenient volume describes aspects of recycling at the industrial and post-consumer levels, and emphasizes a quantitative approach as used in the author's well-known lifecycle work with disposable and reusable cups. 0-12-350811-8Key Features * Covers historical background and new developments in a single, authoritative handbook * Presents integrated treatment of chemical technology with emission control chemistry * Includes tables throughout that give current and trend data * Considers community, municipal, power generation, industrial, and transportation components of environmental impact * Provides many references to further reading * Contains review questions that offer working experience with the information and concepts

Kirk-Othmer Encyclopedia of Chemical Technology, Volume 1

The two-volume reference work Chemical Technology and the Environment provides readers with knowledge on contemporary issues in environmental pollution, prevention and control, as well as regulatory, health and safety issues as related to chemical technology. It introduces and expands the knowledge on emerging "green" materials and processes and "greener" energy technology, as well as more general concepts and methodology including sustainable development and chemistry and green chemistry. Based on Wiley's renowned, Kirk-Othmer Encyclopedia of Chemical Technology, this compact reference features the same breadth and quality of coverage and clarity of presentation found in the original.

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Pulping Chemistry and Technology

Volume 2 of The Handbook of Colorant Chemistry focuses on paints, painting and drawing systems used by the painter and craftsman. From presenting molecular compositions of common paints and inks to a historical look at color chemistry, the author offers an in-depth look at the world of color.

Pulp and Paper

This book provides the most up-to-date and comprehensive information on the state-of-the-art techniques and aspects involved in environment-friendly pulping technologies. Traditional chemical and semi-chemical pulping processes are not environmentally friendly. Therefore, it has become important to look for alternative approaches to mitigate wastewater emissions in the paper industry, by making more stringent regulations to improve environmental conservation. In response to this problem, new raw materials need to be explored to replace traditional choices and also new pulping processes need to be developed based on less polluting, more easily recovered reagents. This book presents new and emerging deep eutectic solvents for lignocellulosic biomass pretreatment, and discusses the effects of deep eutectic solvents on biomass pretreatment and the production of value-added products. It also introduces biotechnological methods of pulping. Biotechnological processes help to

make manufacturing processes cleaner and more efficient by reducing toxic chemical pollution and greenhouse gas emissions. Given its scope, this book is of interest to applied chemists, foresters, chemical engineers, wood scientists, along with engineers and researchers involved in the pulp and paper industry as a valuable reference.

Modern Chemical Technology and Emission Control

Implementing Cleaner Production in the pulp and paper industry The large—and still growing—pulp and paper industry is a capital- and resource-intensive industry that contributes to many environmental problems, including global warming, human toxicity, ecotoxicity, photochemical oxidation, acidification, nutrification, and solid wastes. This important reference for professionals in the pulp and paper industry details how to improve manufacturing processes that not only cut down on the emission of pollutants but also increase productivity and decrease costs. Environmentally Friendly Production of Pulp and Paper guides professionals in the pulp and paper industry to implement the internationally recognized process of Cleaner Production (CP). It provides updated information on CP measures in: Raw material storage and preparation Pulping processes (Kraft, Sulphite, and Mechanical) Bleaching, recovery, and papermaking Emission treatment and recycled fiber processing In addition, the book includes a discussion on recent cleaner technologies and their implementation status and benefits in the pulp and paper industry. Covering every aspect of pulping and papermaking essential to the subject of reducing pollution, this is a must-have for paper and bioprocess engineers, environmental engineers, and corporations in the forest products industry.

Handbook of Chemical Technology and Pollution Control

The production of forestry products is based on a complex chain of knowledge in which the biological material wood with all its natural variability is converted into a variety of fiber-based products, each one with its detailed and specific quality requirements. This four volume set covers the entire spectrum of pulp and paper chemistry and technology from starting material to processes and products including market demands. Supported by a grant from the Ljungberg Foundation, the Editors at the Royal Institute of Technology, Stockholm, Sweden coordinated over 30 authors from university and industry to create this comprehensive overview. This work is essential for all students of wood science and a useful reference for those working in the pulp and paper industry or on the chemistry of renewable resources.

Kirk-Othmer Chemical Technology and the Environment, 2 Volume Set

This book features in-depth and thorough coverage of Minimum Impact Mill Technologies which can meet the environmental challenges of the pulp and paper industry and also discusses Mills and Fiberlines that encompass “State-of-the-Art” technology and management practices. The minimum impact mill does not mean "zero effluent\

Pulp and Paper

Much interest has been directed to the versatile possibilities of using lignocellulosic biomass resources (i.e., “renewable raw materials”) for the full-scale production of various chemicals and other bioproducts together with solid, liquid, and gaseous fuels. Introduces modern aspects and various technologies of lignocellulosic biomass conversion for producing chemicals, biofuels, and other products in a reader friendly way. Starting with fundamentals of biorefi nery, the author further describes chemical, biochemical, and thermal conversion approaches. In addition, the properties and biorefining principles of non-wood biomass feedstock

Paper Chemistry and Technology

Forests and Forest Plants is a component of Encyclopedia of Food and Agricultural Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. Forests are an essential part of Earth's life support systems. Forest resources are essential for humankind. They provide both vital goods and services. They provide food, fuel, shelter, soil and water protection, and filter the air we breathe. This publication on Forest and Forest Plants provides the user with such information as to create an awareness of the value of our forestlands and the products and environmental services they provide. The three volumes on Forests and Forest Plants are organized starting with first the necessity of : the World's Forest Resources – including classification and distribution of forest, urban forestry

and agroforestry; Important Tree Species including trees in reclamation and arid zone forestry; Forests and Forest Products including wood and non word products; the Role of Forests in the Biosphere – preserving biological diversity, functions in the hydrological cycle, etc.; and Conservation and Breeding of Forest Trees – what is being done to improve our forest resources - silviculture, tree nurseries, and forest protection. The theme Forest and Forest Plants has led to the conclusion that there are substantial difficulties in matching environmental concerns and sustainability with an ever-increasing world population. Thus there is a tension between maximizing for food, wood and production on the one hand and implementing sustainable development and environmental protection on the other. These three volumes are aimed at the following five major target audiences: University and College Students Educators, Professional Practitioners, Research Personnel and Policy Analysts, Managers, and Decision Makers, NGOs and GOs.

Handbook of Colorants Chemistry

Cellulose represents the most widely spread organic polymer found in nature and it was used for a long time as a raw material for paper, textiles, film and flexible packing material. Due to its accessibility in huge amounts by photosynthesis process as a renewable material, cellulose is considered at present the answer to many problems connected with sustainable development. This explains the great scientific interest for this compound along with a lot of preoccupations to systematize the accumulated information in reviews and books. This book will present the aspects of cellulose obtaining in the correleation with its integration in a new concept of biorefining. Thus usual technological steps of pulp manufacture (pulping, bleaching) will be continued with chemistry charactersitics of by-products and their utilization, fiber characterization for paper obtaining, cellulose derivatives and special products resulted in cellulose processing (beads and microspheres, micro-and nano-structures, fibers production, their antibacterial properties, optical functional film, and hydrogen). This extensive book should prove to be a very useful tool for scientists, students and postgraduates working in the field of pulp, paper and cellulose derivatives aiming at opening a new era for renewable resources processed by biorefining.

Environmentally Benign Pulping

Providing an overview of the making of paper from a chemical perspective, this book is an informative and entertaining overview for students and general readers.

Environmentally Friendly Production of Pulp and Paper

The aim of this textbook is to provide, in a book of manageable length, an easily comprehensible introduction to the very broad subject of what papermakers are in the habit of calling wet end chemistry, spanning as it does several disciplines.

Paper Chemistry and Technology

This book presents a state-of-the-art report on the treatment of pulp and paper industry effluents using anaerobic technology. It covers a comprehensive range of topics, including the basic reasons for anaerobic treatment, comparison between anaerobic and aerobic treatment, effluent types suitable for anaerobic treatment, design considerations for anaerobic treatment, anaerobic reactor configurations applied for treatment of pulp and paper industry effluents, present status of anaerobic treatment in pulp and paper industry, economic aspects, examples of full scale installations and future trends.

Green Chemistry and Sustainability in Pulp and Paper Industry

The book provides the most up-to-date information available on various biotechnological processes useful in the pulp and paper industry. The first edition was published in 2011, covering a specific biotechnological process or technique, discussing the advantages, limitations, and prospects of the most important and popular processes used in the industry. Many new developments have taken place in the last five years, warranting a second edition on this topic. The new edition contains about 35% new material covering topics in Laccase application in fibreboard; biotechnology in forestry; pectinases in papermaking; stickies control with pectinase; products from hemicelluloses; value added products from biorefinery lignin; use of enzymes in mechanical pulping.

Chemistry for Biomass Utilization

Although the title of this book is Paper Chemistry, it should be considered as a text about the chemistry of the formation of paper from aqueous suspensions of fibre and other additives, rather than as a book about the chemistry of the raw material itself. It is the subject of what papermakers call wet-end chemistry. There are many other excellent texts on the chemistry of cellulose and apart from one chapter on the accessibility of cellulose, the subject is not addressed here. Neither does the book deal with the chemistry of pulp preparation (from wood, from other plant sources or from recycled fibres), for there are also many excellent texts on this subject. The first edition of this book was a great success and soon became established as one of the Bibles of the industry. Its achievement then was to collect the considerable advances in understanding which had been made in the chemistry of papermaking in previous years, and provide, for the first time, a sound physico chemical basis of the subject. This new edition has been thoroughly updated with much new material added. The formation of paper is a continuous filtration process in which cellulosic fibres are formed into a network which is then pressed and dried. The important chemistry involved in this process is firstly the retention of col loidal material during filtration and secondly the modification of fibre and sheet properties so as to widen the scope for the use of paper and board products.

Forests And Forest Plants - Volume II

Pulp Production and Processing

Phosphorus

This text deals with all aspects of phosphorus chemistry: organic; inorganic; biochemical; physical; environmental; and technical. While much of the text is of a basic and introductory nature, modern theories and recent developments are covered.

Phosphorus

Hardbound. Phosphorus 2000 gives a unique coverage of the whole field of phosphorus chemistry and endeavours to summarise the subject at the start of the twenty-first century. Phosphorus chemistry is very wide ranging, reaching into many other branches of science including biochemistry and numerous industrial technologies. The present book has been adapted from the fifth edition of Phosphorus: An Outline of its Chemistry, Biochemistry & Technology (1995), to which corrections, major rearrangements of text, and many additions have been made.Phosphorus chemistry is treated here as a major branch of science in its own right - displacing the outmoded and frequently inappropriate concepts of 'organic' and 'inorganic' branches of chemistry which have been inherited from earlier centuries. Fundamental aspects are covered, a broad survey is carried out, and some of the very recent advances are also included. Adequate coverage of the simp

Phosphorus

Over two decades have passed since the fifth edition of Phosphorus: Chemistry, Biochemistry and Technology. Major advances in chemistry, materials science, electronics, and medicine have expanded and clarified the role of phosphorus in both our everyday appliances and groundbreaking research. Significantly expanded, updated, and reorganized, this s

Phosphorus 2000

Die organische Chemie des Phosphors - ein großes, äußerst lebendiges Forschungsfeld - umfaßt sowohl Verbindungen mit Kohlenstoff-Phosphor-Bindungen als auch organische Ester anorganischer Phosphorsäuren. Dieser Band behandelt die meisten phosphorhaltigen funktionellen Gruppen und daneben aktuelle Fragen wie z.B. ungewöhnliche Koordinationszustände, Heterocyclen, Anwendungen der 31P-NMR und andere spektroskopische Verfahren. Soweit bekannt, werden auch elektronische Reaktionsmechanismen und reaktive Intermediate diskutiert. Mit zahlreichen Literaturhinweisen! (03/00)

Phosphorus

The Novartis Foundation Series is a popular collection of the proceedings from Novartis Foundation Symposia, in which groups of leading scientists from a range of topics across biology, chemistry and

medicine assembled to present papers and discuss results. The Novartis Foundation, originally known as the Ciba Foundation, is well known to scientists and clinicians around the world.

Phosphorus

The book is the first thorough study of the role of phosphorus chemistry in the origin of life. This book starts with depiction of the phosphorus role in life creation and evolution. Then it outlines in vital processes how different phosphorus-containing compounds participate as biomarker in life evolution. Written by renowned scientists, it is suitable for researchers and students in organic phosphorus chemistry, biochemistry and etc.

Phosphorous

Alexander Todd, the 1957 Nobel laureate in chemistry is credited with the statement: "where there is life, there is phosphorus". Phosphorus chemical biology underlies most of life's reactions and processes, from the covalent bonds that hold RNA and DNA together, to the making and spending 75 kg of ATP every day, required to run almost all metabolic and mechanical events in cells. Authored by a renowned biochemist, The Chemical Biology of Phosphorus provides an in-depth, unifying chemical approach to the logic and reactivity of inorganic phosphate and its three major derivatives (anhydrides, mono- and diesters) throughout biology to examine why life depends on phosphorus. Covering the breadth of phosphorus chemistry in biology, this book is ideal for biochemistry students, postgraduates and researchers interested in the chemical logic of phosphate metabolites, energy generation, biopolymer accumulation and phosphoproteomics.

Phosphorus

This 1981 introduction to the chemistry of a single element, phosphorus, covers many of the major themes of chemistry. Important in inorganic and organic chemistry and in biochemistry, phosphorus is also of considerable economic significance and plays a vital role in the biosphere. By presenting a detailed treatment of selected topics, this book provides a concise account of phosphorus chemistry suitable for anyone with an interest in the field. The book provides a survey of phosphorus compounds by structural and bond types, a review of physical methods in phosphorus chemistry, a review of basicity and co-ordination chemistry of phosphorus donors, a discussion of phosphorus in its group, and a chapter on reagents containing phosphorus in general chemistry. A critical bibliography introduces the reader to the advanced literature. S. I. Units are used throughout, but c.g.s units are also given when appropriate.

Phosphorus World [electronic Resource]

Pergamon Texts in Inorganic Chemistry, Volume 3: The Chemistry of Phosphorus focuses on the physical and chemical properties of phosphorus. This book discusses phosphorus compounds, such as phosphorus hydrides and phosphonium compounds; phosphorus halides and phosphorus pseudohalides; thiophosphoryl halides and thiophosphoryl pseudohalides; phosphorus oxides; and phosphorus-nitrogen compounds. The pyrophosphates, tripolyphosphates, polyphosphates, cyclic metaphosphates, and ultraphosphates are also covered in this text. This publication is intended for chemical engineering students and chemists researching on the characteristics of phosphorus.

A Guide to Organophosphorus Chemistry

With contributions by numerous experts

Phosphorus in the Enviroment

Phosphorus chemistry is a diverse field and this volume focuses on new developments of "old themes" with different approaches and ideas, state of the art for two topics of general interest, and the emerging fields of research. This volume only describes in part the huge number of original papers on phosphorus-related topics.

Phosphorus Chemistry

Provides a high level reference source for scientists engaged in any aspect of plant research chemistry, biochemistry or physiology with primary focus on the chemistry of phosphorus-containing compounds

that occur naturally in the plant kingdom, and specifically in the higher plants (Plantae). The book is comprehensive with respect to nomenclature, physical properties, and distribution worldwide. There are many tables of actual data on phosphorus compounds occurring in whole plants and parts of plants. The tables provide detailed data that is needed by the food industry, agriculture, etc as many of the phosphorus compounds are common to both plants and animals. Two appendices cover other aspects including changes in phosphorus-containing compounds during germination and their accumulation during growth and senescence. The final sections of the book comprise separate indexes of plants, compounds and authors. Comprehensive examination of phosphorus compounds found in plants Extensive tables listing types of compounds and their occurrence in plants including: Nomenclature; Occurrence; Physical Properties; Synthesis; Hydrolysis; Phosphorylation; Extraction; Separation and Analysis Easy to use indexes of plants, compounds and authors

The Chemical Biology of Phosphorus

Phosphorus Chemistry Directed Towards Biology presents an understanding of reaction mechanisms of organophosphorus compounds. This book discusses the development of analytical tools for the study of the chemistry of phosphorus, which promoted research in nucleic acid chemistry. Organized into 22 chapters, this book begins with an overview of the importance of the bacterial cell wall in maintaining the integrity of the cell in various environments. This text then examines the chemical problems concerning hypermodification and deprotection steps. Other chapters consider the reactive phosphorylating intermediates used in the oligonucleotide chemistry. This book discusses as well the possible role of phosphodiester triazolides and tetrazolides in the phosphotriester formation with arenesulfonyltriazolides and tetrazolides. The final chapter deals with the isolation of proteins involved in the synthesis and recognition of mRNA caps. This book is a valuable resource for phosphorus chemists, biologists, scientists, research workers, teachers, and students.

Introduction to Phosphorous Chemistry

Contemporary Aspects of Boron: Chemistry and Biological Applications highlights the biological activity and applications of boron containing compounds. The authors' specific approach surveys general features of the subject, while exploring new and novel strategies for preparing certain chemical and natural boron products that are of significant substance in medicinal chemistry. For example, cancer treatment is one of the most important issues related to such products. In addition to contributing to the development of new drugs by addressing biological applications in medicinal and industrial fields, the book provides a comprehensive review of the most relevant components that comprise the pharmaceutical, medicinal and environmental applications of boron containing compounds. * Timely and comprehensive * Provides new insights to active researchers in the field * Presents concepts and methods in simple scientific terms

The Chemistry of Phosphorus

The apatites and related calcium phosphates have been of considerable interest to biologists, mineralogists, and inorganic and industrial chemists for many years. This book contains a detailed description of the structures and structural interrelationships of the calcium orthophosphates, including the apatites. Their preparation, crystal growth and dissolution, chemical reactions including thermal decomposition, IR, Raman and NMR spectra and various physical properties are discussed. Apatites other than those containing calcium and phosphorus are included. Synthetic, mineral and biological carbonate apatites are also considered. A wide, but critical coverage of the literature is given, which includes a substantial amount not written in English. Research from many disciplines is included which results in a comprehensive compilation of recent work.

New Aspects in Phosphorus Chemistry I

Molybdenum is an element with an extremely rich and interesting chemistry having very versatile applications in various fields of human activity. It is used extensively in metallurgical applications. Because of their anti-wear properties, molybdenum compounds find wide applications as lubricants - particularly in extreme or hostile environmental situations. Many molybdates and heteropolymolybdates are white and therefore used as pigments. In addition, they are non-toxic and act as efficient corrosion inhibitors and smoke suppressants. Hydroprocessing of petroleum is one of the largest industries employing heterogeneous catalysts. Molybdenum catalysts have shown great promise in the liquefaction of coal and this may develop into one of its most important catalytic uses. The use of molybdenum

compounds in homogeneous catalysis is also significant. Three important classes of molybdenum compounds in the solid state are reviewed, viz., oxides, sulphides and halides. The role of molybdenum in inorganic catalysis and enzymes receives prominent mention because of their impact on the progress of science and technology. Further biochemical and enzymic factors are discussed in separate chapters and their reaction to agriculture and animal husbandry. A new classification of covalent compounds which abandons the traditional oxidation state concept allows a powerful approach to the organisation of the complex and rich chemistry of molybdenum. Dramatic colour diagrams of abundances of molybdenum compounds provide broad insights into the important features and trends in the chemistry of molybdenum including reactivity and mechanism. The book is intended for use mainly as a research monograph by the many workers who may encounter molybdenum chemistry or who are looking for its application and potential uses in different technological fields. However, it will also serve as an advanced text for university lecturers and postgraduate students interested in inorganic, physical and industrial chemistry, chemical technology or biochemistry and biotechnology.

New Aspects in Phosphorus Chemistry V

The present volume considers the most recent developments in the chemistry of cyclic inorganic and organoelement compounds. Nineteen of the 22 chapters are based on invited and other lectures presented at the 6th International Symposium on Inorganic Ring Systems held in Berlin on August 18-22, 1991. Main group compounds dominate the content from boron via carbon, silicon, germanium, tin, nitrogen, phosphorus and arsenic, to sulfur and selenium. The book is organized by element, moving from left to right in the main groups of the Periodic Table, followed by one chapter each on bonding and nomenclature of ring molecules. The list of contributors comprises distinguished scientists from 8 countries.

Chemistry of Plant Phosphorus Compounds

Since the discovery of the transistor in 1948, the study of the solid state has been burgeoning. Recently, cold fusion and the ceramic superconductor have given cause for excitement. There are two approaches possible to this area of science, namely, that of solid state physics and solid state chemistry, although both overlap extensively. The former is more concerned with electronic states in solids (including electromagnetics) whereas the latter is more concerned with interactions of atoms in solids. The area of solid state physics is well documented, however, there are very few texts which deal with solid state chemistry. Luminescence and the Solid State has been written to fulfil this need. The concepts regarding luminescence and phosphors are unique and have been covered extensively providing a useful reference source for anyone requiring such knowledge as a basis for further study. The discussion on the defect state, which is handled in chapter two, can be applied to many other systems, e.g. ceramic superconductors. The book has extensive, useful equations and figures, the derivations of which are simple and easy to follow. This useful, comprehensive text can be used for self-study and should also prove invaluable in a graduate study as an introduction to the solid state and luminescence.

Phosphorus Chemistry Directed Towards Biology

Electron paramagnetic resonance (epr) spectroscopy is a sensitive and versatile method of studying paramagnets, which is finding increasing use in chemistry, biochemistry, earth and materials sciences. The technique is treated both qualitatively and quantitatively, with a progressive increase in sophistication in each succeeding chapter. Following a general introductory chapter, the first half of the book deals with single unpaired electron systems and considers both metal and ligand Zeeman, hyperfine and quadrupole interactions. The simulation of these spectra is discussed, followed by the relationship between spin-Hamiltonian parameters and models of the electronic structures of paramagnets. The second half of the book treats multiple unpaired electron systems using the same philosophy. An introduction to the epr properties of cluster compounds and of extended exchanging systems is also given. There is a chapter on linewidths and lineshapes, and an extensive appendix containing much additional information. A wide-ranging library of simulated and experimental spectra is given, as well as graphical data which should aid spectrum interpretation. Each chapter contains key references and there is a substantial subject and keyword index. This book is designed to teach epr spectroscopy to students without any previous knowledge of the technique. However, it will also be extremely useful to researchers dealing with paramagnetic d transition metals.

Contemporary Aspects of Boron: Chemistry and Biological Applications

The author describes a novel method of preparing hydrolysis-stable non-silicate glasses which is based on experimental work accomplished over the past twenty years. As such, the method is the beginning of a new approach to glass-making by the use of a molecularly-polymerizable precursor. The book elucidates the technical details required to produce such molecularly-polymerized glasses from carefully prepared inorganic molecular monomers. Essentially, only silicate-based glasses have been known to be stable, whereas non-silicate glasses could not be attributed with such properties. Such glasses have, therefore, not found widespread usage in industry. The new phosphate glasses described here exhibit stabilities superior to many of the silicate glasses. For example, the nuclear-waste glass shows no measurable loss at all in boiling water, something entirely foreign to the zinc borosilicate glasses developed for nuclear waste encapsulation in the U.S. by Battelle-Northwest. The exceptional stability of the new glasses is achieved by selecting an inorganic compound capable of being polymerized, and then causing it to polymerize in a proper manner, in the absence of chain-stoppers. To obtain glasses equal or superior in hydrolysis stability to silicate-based systems it is imperative to employ molecular polymerization in situ, starting from carefully prepared precursors of exact stoichiometric proportion. Researchers in glass and glass properties will find this volume extremely useful and those involved in organic polymers will be intrigued by the similarities and disparities of the two systems.

Structure and Chemistry of the Apatites and Other Calcium Orthophosphates

Organophosphorus Chemistry provides a comprehensive annual review of the literature. Coverage includes phosphines and their chalcogenides, phosphonium salts, low coordination number phosphorus compounds, penta- and hexa-coordinated compounds, tervalent phosphorus acids, nucleotides and nucleic acids, ylides and related compounds, and phosphazenes. The series will be of value to research workers in universities, government and industrial research organisations, whose work involves the use of organophosphorus compounds. It provides a concise but comprehensive survey of a vast field of study with a wide variety of applications, enabling the reader to rapidly keep abreast of the latest developments in their specialist areas. Specialist Periodical Reports provide systematic and detailed review coverage of progress in the major areas of chemical research. Written by experts in their specialist fields the series creates a unique service for the active research chemist, supplying regular critical in-depth accounts of progress in particular areas of chemistry. For over 80 years the Royal Society of Chemistry and its predecessor, the Chemical Society, have been publishing reports charting developments in chemistry, which originally took the form of Annual Reports. However, by 1967 the whole spectrum of chemistry could no longer be contained within one volume and the series Specialist Periodical Reports was born. The Annual Reports themselves still existed but were divided into two, and subsequently three, volumes covering Inorganic, Organic and Physical Chemistry. For more general coverage of the highlights in chemistry they remain a 'must'. Since that time the SPR series has altered according to the fluctuating degree of activity in various fields of chemistry. Some titles have remained unchanged, while others have altered their emphasis along with their titles; some have been combined under a new name whereas others have had to be discontinued. The current list of Specialist Periodical Reports can be seen on the inside flap of this volume.

Molybdenum

DigiCat Publishing presents to you this special edition of "History of Phosphorus" by Eduard Farber. DigiCat Publishing considers every written word to be a legacy of humankind. Every DigiCat book has been carefully reproduced for republishing in a new modern format. The books are available in print, as well as ebooks. DigiCat hopes you will treat this work with the acknowledgment and passion it deserves as a classic of world literature.

The Chemistry of Inorganic Ring Systems

For the first time the discipline of modern inorganic chemistry has been systematized according to a plan constructed by a council of editorial advisors and consultants, among them three Nobel laureates (E.O. Fischer, H. Taube and G. Wilkinson). Rather than producing a collection of unrelated review articles, the series creates a framework which reflects the creative potential of this scientific discipline. Thus, it stimulates future development by identifying areas which are fruitful for further research. The work is indexed in a unique way by a structured system which maximizes its usefulness to the reader. It augments the organization of the work by providing additional routes of access for specific compounds, reactions and other topics.

Luminescence and the Solid State

When this innovative textbook first appeared in 1984 it rapidly became a great success throughout the world and has already been translated into several European and Asian languages. Now the authors have completely revised and updated the text, including more than 2000 new literature references to work published since the first edition. No page has been left unaltered but the novel features which proved so attractive have been retained. The book presents a balanced, coherent and comprehensive account of the chemistry of the elements for both undergraduate and postgraduate students. This crucial central area of chemistry is full of ingenious experiments, intriguing compounds and exciting new discoveries. The authors specifically avoid the term `inorganic chemistry' since this evokes an outmoded view of chemistry which is no longer appropriate in the final decade of the 20th century. Accordingly, the book covers not only the 'inorganic' chemistry of the elements, but also analytical, theoretical, industrial, organometallic, bio-inorganic and other cognate areas of chemistry. The authors have broken with recent tradition in the teaching of their subject and adopted a new and highly successful approach based on descriptive chemistry. The chemistry of the elements is still discussed within the context of an underlying theoretical framework, giving cohesion and structure to the text, but at all times the chemical facts are emphasized. Students are invited to enter the exciting world of chemical phenomena with a sound knowledge and understanding of the subject, to approach experimentation with an open mind, and to assess observations reliably. This is a book that students will not only value during their formal education, but will keep and refer to throughout their careers as chemists. Completely revised and updated Unique approach to the subject More comprehensive than competing titles

New Aspects in Phosphorus Chemistry IV

Each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed. The coverage is not intended to be an exhaustive summary of the field or include large quantities of data, but should rather be conceptual, concentrating on the methodological thinking that will allow the non-specialist reader to understand the information presented. Contributions also offer an outlook on potential future developments in the field.

Electron Paramagnetic Resonance of d Transition Metal Compounds

This book aims to open new fields of interest in phosphate chemistry and to suggest a new system of classification for phosphates. Due to the very rapid development of this branch of chemistry during the last thirty years and the very confusing nomenclature often used in chemical literature, this first attempt seems not only justified but necessary. The suggested classification is not revolutionary, with respect to condensed phosphates for instance, but establishes clear boundaries between some categories of compounds such as adducts and heteropolyanion-compounds. The first chapters cover the present state of phosphate chemistry in a general way and could serve as an introduction to phosphates for some categories of students or teachers. The next few chapters are devoted to more specialized topics which would be of interest to chemists, crystallographers or solid-state specialists. Some specific aspects of the crystal chemistry of phosphates, such as the geometry of the networks built by acidic phosphoric anions, for instance, are covered for the first time. The final chapter suggests some improvements for the present system of classification for phosphates. In addition, presented for the first time are the results recently obtained for the replacement of asbestos by harmless biodegradable phosphate fibers. Contents:Elemental PhosphorusPhosphorus OxidesPhosphoric AcidsDefinition, Classification and NomenclatureThe Present State of Phosphate ChemistryThe Networks of Acidic Phosphate AnionsOn

the Nomenclature and Classification of Phosphates Readership: Chemists, crystallographers and solid state scientists. keywords:Phosphorus;Phosphate Chemistry;Structural Chemistry;Condensed Anions;Phosphate Classification;Chemical Processes

Inorganic Polymeric Glasses

The properties of materials at high temperature play a vital role in their processing and practical use. The real properties of materials at elevated temperatures are very often governed by defects in their structure. Lattice defects may consist of point defects like vacancies, interstitial atoms or substituted atoms. These classes are discussed in general and specifically for oxides, nitrides, carbides and sulfides. Defect aggregates, shear structures and adaptive structures are also described. Special attention is paid to hydrogen defects which seem to play an important role in several materials. Defects in solids lead to transport properties such as diffusion and conductivity. These themes are thoroughly treated in this book, with examples from various materials being provided. Special attention is paid to the transport properties of grain boundaries. In high temperature corrosion and other types of oxidation, the diffusion of atoms through the reaction products is often the rate limiting step of the reaction. This book takes the reader from the theoretical treatment of defects to applications in high temperature corrosion. Reactions between metals and pure oxygen lead to the formation of oxides on the surface, and the reaction rates may often be related to the diffusion coefficients of the oxide. However, in practical use alloys are subjected to other severe gaseous atmospheres which may often lead to accelerated attack on the material. The severest condition, namely where a salt deposit is combined with oxidizing gases, is called hot corrosion. This and other types of corrosion are also covered. Finally, a chapter is devoted to the prevention of corrosive attack on materials by the addition of rare earth metals. The book has been published in honour of Professor Per Kofstad on the occasion of his 60th birthday. Professor Kofstad has for many years been active in the field of high temperature chemistry in all its aspects, from basic and theoretical work to its application in high temperature corrosion of metals and alloys. The various chapters have been contributed by his friends and colleagues, all of whom are international experts in the field.

Organophosphorus Chemistry

"Written by engineers for engineers (with over 150 International Editorial Advisory Board members),this highly lauded resource provides up-to-the-minute information on the chemical processes, methods, practices, products, and standards in the chemical, and related, industries. "

History of Phosphorus

This volume reviews the preparation, structures, physicochemical properties and applications of graphite fluorides, mainly based on the results obtained by the authors. Their interest in graphite fluorides stemmed from research on the ``anode effect'', in electrolytic production of fluorine gas in KF.2HF melt using carbon electrodes. The formation of a thin graphite fluoride film on carbon anodes made it difficult to continue the electrolysis of KF.2HF at a high current density. To elucidate this phenomenon studies on graphite fluoride were initiated. In the course of these systematic studies, the use of graphite fluoride in high-energy batteries became successful: a new graphite fluoride (C2F)n was found; and another fluorineographite intercalation compound with ionic bonding, CxF, was synthesized. During this research it was established that CxF is closely associated with the ``anode effect''. The book will be of interest to all those involved in the study and research of graphite fluorides, particularly fluorine chemists, electrochemists, and fluorine and battery companies.

Inorganic Reactions and Methods, The Formation of Bonds to Group VIB (O, S, Se, Te, Po) Elements (Part 1)

Presents short topics tied to numerical or conceptual ideas, reinforced with worked examples and questions Retaining the user-friendly style of the first edition, this text is designed to eliminate the knowledge gap for those life sciences students who have not studied chemistry at an advanced level. It contains new chapters on -

New Aspects in Phosphorus Chemistry III

Explains the basics of inorganic chemistry with a primary emphasis on facts; then uses the student's growing factual knowledge as a foundation for discussing the important principles of periodicity in

structure, bonding and reactivity. New to this updated edition: improved treatment of atomic orbitals and properties such as electronegativity, novel approaches to the depiction of ionic structures, nomenclature for transition metal compounds, quantitative approaches to acid-base chemistry, Wade's rules for boranes and carboranes, the chemistry of major new classes of substances including fullerenes and silenes plus a chapter on the inorganic solid state.

Chemistry of the Elements

Proceedings of the 11th International Conference on Phosphorus Chemistry