The Group 13 Metals Aluminium, Gallium, Indium and Thallium: Simon Aldridge 2011-02-10 The last two decades have seen a renaissance in interest in the chemistry of the main group elements. In particular research on the metals of group 13 (aluminium, gallium, indium and thallium) has led to the synthesis and isolation of some very novel and unusual molecules, with implications for organometallic synthesis, new materials development, and with biological, medical and, environmental relevance. The Group 13 Metals Aluminium, Gallium, Indium and Thallium aims to cover new facts, developments and applications in the context of more general patterns of physical and chemical behaviour. Particular attention is paid to the main growth areas, including the chemistry of lower formal oxidation states, cluster chemistry, the investigation of solid oxides and hydroxides, advances in the formation of III-V and related compounds, the biological significance of Group 13 metal complexes, and the growing importance of the metals and their compounds in the mediation of organic reactions. Chapters cover: general features of the group 13 elements group 13 metals in the +3 oxidation state: simple inorganic compounds formal oxidation state +3: organometallic chemistry formal oxidation state +2: metal-metal bonded vs. mononuclear derivatives group 13 metals in the +1 oxidation state mixed or intermediate valence group 13 metal compounds aluminium and gallium clusters: metallicoid clusters and their relation to the bulk phases, to naked clusters, and to nanoscaled materials simple and mixed metal oxides and hydroxides: solids with extended structures of different dimensionality and porosities coordination and solution chemistry of the metals: biological, medical and, environmental relevance III-V and related semiconductor materials group 13 metal-mediated organic reactions The Group 13 Metals Aluminium, Gallium, Indium and Thallium provides a detailed, wide-ranging, and up-to-date review of the chemistry of this important group of metals. It will find a place on the bookshelves of practitioners, researchers and students working in inorganic, organometallic, and materials chemistry.

Handbook of Chlor-Alkali Technology: Thomas F. O'Brien 2007-12-31 Concentrated treatment of all aspects of technology and handling directly related to the products of electrolysis. Thoroughly up to date and should become the standard reference in its field.

Chemistry of Hypervalent Compounds: Kin-ya Akiba 1998-12-18 Broad, comparative coverage of hypervalent compounds - a much-needed foundation in a rapidly growing field of chemistry. Although hypervalency is already a mature field in chemistry, it has seen a new surge of interest in recent years due to the discovery of compounds useful in organic synthesis, as well as others with significant applications for materials science. Now, this comprehensive book-written by a group of twenty leading experts in the field-provides an authoritative blueprint on the subject. Instead of focusing on compounds specific to one element, it presents a review of structure and reactivity among an extensive array of main group, organic, and organometallic hypervalent compounds. In so doing, the book offers essential information on underlying principles that unify seemingly unrelated families of main group element compounds. An invaluable resource for both organic and inorganic chemists, Chemistry of Hypervalent Compounds includes: An overview of general aspects of structure and reactivity common among hypervalent compounds Information on such recently characterized organic compounds as silicon, phosphorus, sulfur, iodine, and xenon A review of new organometallic compounds with synthetic applications Solid background material on compounds important in advanced materials science, such as semiconductors A systematic approach using the N-X-L designation, where N represents the valence electrons of the central atom X, and L the ligands that bond the compound.

Basic Organometallic Chemistry: Ionel Haiduc 1985-01-01

Kirk-Othmer Concise Encyclopedia of Chemical Technology, 2 Volume Set: Kirk-Othmer 2007-07-16 This is an easily-accessible two-volume encyclopedia summarizing all the articles in the main volumes Kirk-Othmer Encyclopedia of Chemical Technology, Fifth Edition organized alphabetically. Written by prominent scholars from industry, academia, and research institutions, the Encyclopedia presents 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.

New Scientist: 1963-04-25 New Scientist magazine was launched in 1956 “for all those men and women who are interested in scientific discovery, and in its industrial, commercial and social consequences”. The brand’s mission is no different today - for its consumers, New Scientist reports, explores and interprets the results of human endeavour set in the context of society and culture.

Best Synthetic Methods: Chris Timperley 2014-12-01 Best Synthetic Methods: Organophosphorus (V) Chemistry provides systematic coverage of the most common classes of pentavalent organophosphorus compounds and reagents (including phosphoryl, phosphoryl, and organophosphates), and allows researchers an easy point of entry into this complex and economically important field. The book follows the Best Synthetic Methods format,
Advances in Inorganic Chemistry- 1994-09-29 Advances in Inorganic Chemistry presents timely and informative summaries of the current state in a variety of subject areas within inorganic chemistry ranging from bio-inorganic to solid state studies. This acclaimed serial features reviews written by experts in the area and is an indispensable reference for advanced researchers. Each volume of Advances in Inorganic Chemistry contains an index, and each chapter is fully referenced.

Chemistry of Aluminium, Gallium, Indium and Thallium-A.J. Downs 1993-05-31 Boron has all the tunes. That may well be the first impression of the Group 13 elements. The chemical literature fosters the impression not only in the primary journals, but also in astringent outflowbooks focussing more or less closely on boron and its compounds. The same preoccupation with boron is apparent in the coverage received by the Group 13 elements in the comprehensive and regularly updated volume of the Gmelin Handbook. Yet such an imbalance cannot be explained by any inherent lack of variety, interest or consequence in the heavier elements. Aluminium is the most abundant metal in the earth's crust; in the industrialised world the metal is second only to iron in its usage, and its compounds can justifiably be said to touch our lives daily - to the potential detriment of those and other lives, some would argue. From being chemical curios, gallium and indium have now gained considerably prominence as sources of compound semiconductors like gallium arsenide and indium antimonide. Nor is there any want of research on aluminium, gallium and indium and their derivatives in chemistry of the Group 13 elements.

Supplement to Mellor's Comprehensive Treatise on Inorganic and Theoretical Chemistry- 1967

Materials Handbook-François Cardarelli 2018-07-09 The unique and practical Materials Handbook (third edition) provides quick and easy access to the physical and chemical properties of very many classes of materials. Its coverage has been expanded to include whole new families of materials such as minor metals, ferroalloys, nuclear materials, food, natural oils, fats, resins, and waxes. Many of the existing families—notably the metals, gases, liquids, minerals, rocks, soils, polymers, and fuels—are broadened and refined with new material and up-to-date information. Several of the larger tables of data are expanded and new ones added. Particular emphasis is placed on the properties of common industrial materials in each class. After a chapter introducing some general properties of materials, each of twenty-four classes of materials receives attention in its own chapter. The health and safety issues connected with the use and handling of industrial materials are included. Detailed appendices provide additional information on subjects as diverse as crystallography, spectroscopy, thermochemical data, analytical chemistry, corrosion resistance, and economic data for industrial and hazardous materials. Specific further reading sections and a general bibliography round out this comprehensive guide. The index and tabular format of the book makes light work of extracting what the reader needs to know from the wealth of factual information within these covers. Dr. François Cardarelli has spent many years compiling and editing materials data. His professional expertise and experience combine to make this handbook an indispensable reference tool for scientists and engineers working in numerous fields ranging from chemical to nuclear engineering. Particular emphasis is placed on the properties of common industrial materials in each class. After a chapter introducing some general properties of materials, materials are classified as follows. Ferrous metals and their alloys; non-ferrous metals; common nonferrous metals; less common metals; semiconductors and superconductors; magnetic materials; insulators and dielectrics; miscellaneous electrical materials; ceramics, refractories and glasses; polymers and elastomers; minerals, ores and gemstones; rocks and meteorites; soils and fertilizers; construction materials; timbers and woods; fuels, propellants and explosives; composite materials; gases; liquids; food, oils, resin and waxes; nuclear materials. food materials

Physical Chemistry-An Advanced Treatise- Wilhem Jost 2012-12-02 Physical Chemistry: An Advanced Treatise, Volume 1: Thermodynamics deals with the applications of thermodynamics to mixtures, fluids, and solid systems at high pressures and temperatures, critical phenomena, practical handling of coupled gas equilibrium, and matter in electric, magnetic, and gravitational fields. This book contains a survey of basic laws, followed by discussions on questions of stability, irreversible processes, surfaces, the third law, and a short introduction to Carnot's axiomatic foundation. The zeroth law of thermodynamics, gaseous mixtures, internal equilibrium in solids, thermodynamic properties of the mixture, and theory of linear differential forms are also elaborated. This publication presents a comprehensive treatment of physical chemistry for advanced students and researchers.

Proceedings of the Symposium on Exploratory Research and Development of Batteries for Electric and Hybrid Vehicles-Albert R. Landgrebe 1996

Modern Aspects of Electrochemistry- Brian E. Conway 2013-11-09 This volume of Modern Aspects of Electrochemistry contains six chapters. The first four chapters are about phenomena of interest at the microscopic level and the last two are on phenomena at the macroscopic level. In the first chapter, Uosaki and Kita review various theoretical models that have been presented to describe the phenomena that occur at an electrode/solid interface under illumination. In the second chapter, Orazem and Newman discuss the same phenomena from a different point of view. In Chapter 3, Boguslavsky presents state-of-the-art considerations of transmembrane potentials and other aspects of active transport in biological systems. Next, Burke and Lyons present a survey of both the theoretical and the experimental work that has been done on hydrogen evolution and utilization. The last two chapters cover the topics of the production of chlorine, bromine, and caustic and the phenomena of electrolytic gas evolution. In Chapter 5, Hine et al. describe the engineering aspects of the three processes used in the chlor-alkali industry, and in Chapter 6, Sides reviews the macroscopic phenomena of nucleation, growth, and detachment of bubbles, and the effect of bubbles on the conductive properties of mass transfer in electrolytes.


Metal-slag-gas Reactions and Processes-Electrochemical Society. Electrothermics and Metallurgy Division 1975


The Chemistry of Chlorine, Bromine, Iodine and Astatine-A. J. Downs 2017-05-04 The Chemistry of Chlorine, Bromine, Iodine and Astatine is a special edition that contains selected sections and addresses the needs of specialists in their respective fields. The text describes the general atomic properties of non-metals, particularly the halogens, as being the perfect series to study, both in physical and chemical terms. The book explains that the combination of the atomic properties implies excellent electronegativity values for the halogen atoms. The text also cites some behavior characteristics of halogens that are irregular, such as chlorine and bromine are similar but differ from fluorine on one side and iodine on the other. The book also compares the general methods of producing chlorine, bromine, or iodine by 1) oxidation of halide derivatives or 2) reduction of compounds of the
polymers containing transition metal atoms in the polymer backbone is a challenge to inorganic chemistry. This book describes the rapid development which has taken place in this field.

Inorganic Reactions and Methods, The Formation of Bonds to Halogens-A. P. Hagen 2009-09-17 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.

Marine Bioprocess Engineering J.G. Burgess 1999-11-19 This book contains full papers of both oral and poster presentations of the international symposium 'Marine Bioprocess Engineering' which was held in Noordwijkerhout, The Netherlands, 1998. The symposium focused on the bioprocessing of marine natural products. Bioprocess engineering has been the key to success in the commercialization of biotechnology, especially with respect to biopharmaceuticals. In marine biotechnology, both new and existing biotechnological techniques are developed and applied to organisms from marine sources. For marine biotechnology, bioprocess engineering represents the link between discovery and commercialization. The diversity of marine life points to a myriad of new bioproducts waiting to be discovered and developed commercially. The volume begins to bridge the gap between the isolation of products from marine organisms in the laboratory and industrial applications by focusing on the bioprocess-engineering aspects. Reviews and recent developments in product discovery, bioenergy production, cultivation of marine organisms, scale up and product recovery are presented. This publication should ensure that the engineering aspects of marine biotechnology will receive further attention in the future. Exploration of new bioproducts from the ocean should be followed up by a sustainable exploitation of these valuable resources.

British Book News- 1967

Molten Salt Technology- David G. Lovering 2014-11-14

Journal of the Chemical Society- 1964


Chemical Demonstrations- Bassam Z. Shakhashiri 1983 The demonstrations capture interest, teach, inform, fascinate, amaze, and perhaps, most importantly, involve students in chemistry. Nowhere else will you find books that answer, "How come it happens? . . . Is it safe? . . . What do I do with all the stuff when the demo is over?" Shakhashiri and his collaborators offer 282 chemical demonstrations arranged in 11 chapters. Each demonstration includes seven sections: a brief summary, a materials list, a step-by-step account of procedures to be used, an explanation of the hazards involved, information on how to store or dispose of the chemicals used, a discussion of the phenomena displayed and principles illustrated by the demonstration, and a list of references.

Encyclopedia of Explosives and Related Items- Basil Timothy Fedoroff 1960

Annual Reports on the Progress of Chemistry-Chemical Society (Great Britain) 1965