

Handbook Of Nuclear Chemistry Vol 1 Basics Of Nuclear Science Vol 2 Elements And Isotopes Formation Transformation Distribution Vol 3 Nuclear Energy Production And Safety Issues

Introduction to Nuclear Science
 Handbook of Generation IV Nuclear Reactors
 Radiochemistry and Nuclear Chemistry
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 Radioanalytical Chemistry
 Nuclear Engineering Handbook, Second Edition
 Handbook of Radioactivity Analysis
 Radiochemistry and Nuclear Chemistry - Volume II
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SHEPARD RODGERS

Introduction to Nuclear Science Longman Group United Kingdom
 The second edition of "The Chemistry of the Superheavy Elements" provides a complete coverage of the chemistry of a series of elements beginning with atomic number 104 - the transactinides or superheavy elements - including their nuclear properties and production in nuclear reactions at heavy-ion accelerators. The contributors to this work include many renowned scientists who, during the last decades, have made vast contributions towards understanding the physics and chemistry of these elusive elements, both experimentally and theoretically. The main emphasis here is on demonstrating the fascinating studies involved in probing the architecture of the

Periodic Table at its uppermost end, where relativistic effects drastically influence chemical properties. All known chemical properties of these elements are described together with the experimental techniques applied to study these short-lived man-made elements one atom-at-a-time. The status of theoretical chemistry and of empirical models is presented as well as aspects of nuclear physics. In addition, one chapter outlines the meanderings in this field from a historical perspective and the search for superheavy elements in Nature.

Handbook of Generation IV Nuclear Reactors CRC Press

Written to provide students who have limited backgrounds in the physical sciences and math with an accessible textbook on nuclear science, this edition continues to provide a clear and complete introduction to nuclear chemistry and physics, from basic concepts to nuclear power and medical applications. Incorporating suggestions from adopting profes

Radiochemistry and Nuclear Chemistry Handbook of Nuclear Chemistry Vol. 1: Basics of Nuclear Science; Vol. 2: Elements and Isotopes: Formation, Transformation, Distribution; Vol. 3: Chemical Applications of Nuclear Reactions and Radiation; Vol. 4: Radiochemistry and

Radiopharmaceutical Chemistry in Life Sciences; Vol. 5: Instrumentation, Separation Techniques, Environmental Issues; Vol. 6: Nuclear Energy Production and Safety Issues.

Substantially revising and updating the classic reference in the field, this handbook offers a valuable overview and myriad details on current chemical processes, products, and practices. No other source offers as much data on the chemistry, engineering, economics, and infrastructure of the industry. The Handbook serves a spectrum of individuals, from those who are directly involved in the chemical industry to others in related industries and activities. It provides not only the underlying science and technology for important industry sectors, but also broad coverage of critical supporting topics. Industrial processes and products can be much enhanced through observing the tenets and applying the methodologies found in chapters on Green Engineering and Chemistry (specifically, biomass conversion), Practical Catalysis, and Environmental Measurements; as well as expanded treatment of Safety, chemistry plant security, and Emergency Preparedness. Understanding these factors allows them to be part of the total process and helps achieve optimum results in, for example, process development, review, and modification.

Important topics in the energy field, namely nuclear, coal, natural gas, and petroleum, are covered in individual chapters. Other new chapters include energy conversion, energy storage, emerging nanoscience and technology. Updated sections include more material on biomass conversion, as well as three chapters covering biotechnology topics, namely, Industrial Biotechnology, Industrial Enzymes, and Industrial Production of Therapeutic Proteins.

Fundamentals and Applications John Wiley & Sons

This Springer Handbook of Metrology and Testing presents the principles of Metrology – the science of measurement – and the methods and techniques of Testing – determining the characteristics of a given product – as they apply to chemical and microstructural analysis, and to the measurement and testing of materials properties and performance, including modelling and simulation. The principal motivation for this Handbook stems from the increasing demands of technology for measurement results that can be used globally. Measurements within a local laboratory or manufacturing facility must be able to be reproduced accurately anywhere in the world. The book integrates knowledge from basic sciences and engineering disciplines, compiled by experts from internationally known metrology and testing institutions, and academe, as well as from industry, and conformity-assessment and accreditation bodies. The Commission of the European Union has expressed this as there is no science without measurements, no quality without testing, and no global markets without standards.

Radioanalytical Chemistry Springer Science & Business Media

This state-of-the-art handbook, the first in a series that provides medical physicists with a comprehensive overview into the field of nuclear medicine, is dedicated to instrumentation and imaging procedures in nuclear medicine. It provides a thorough treatment on the cutting-edge technologies being used within the field, in addition to touching upon the history of their use, their development, and looking ahead to future prospects. This text will be an invaluable resource for libraries, institutions, and clinical and academic medical physicists searching for a complete account of what defines nuclear medicine. The most comprehensive reference available providing a state-of-the-art overview of the field of nuclear medicine Edited by a leader in the field, with contributions from a team of experienced medical physicists Includes the latest practical research in the field, in addition to explaining fundamental theory and the field's history

Nuclear Engineering Handbook, Second Edition Academic Press

Radiochemistry or Nuclear Chemistry is the study of radiation from an atomic or molecular perspective, including elemental transformation and reaction effects, as well as physical, health and medical properties. This revised edition of one of the earliest and best known books on the subject has been updated to bring into teaching the latest developments in research and the current hot topics in the field. In order to further enhance the functionality of this text, the authors have added numerous teaching aids that include an interactive website that features testing, examples in MathCAD with variable quantities and options, hotlinks to relevant text sections from the book, and online self-grading texts. As in the previous edition, readers can closely follow the structure of the chapters from the broad introduction through the more in depth descriptions of radiochemistry then nuclear radiation chemistry and finally the guide to nuclear energy (including energy production, fuel cycle, and waste management). New edition of a well-known, respected text in the specialized field of nuclear/radiochemistry Includes an interactive website with testing and evaluation modules based on exercises in the book Suitable for both radiochemistry and nuclear chemistry courses

Springer Science & Business Media

Materials in a nuclear environment are exposed to extreme conditions of radiation, temperature and/or corrosion, and in many cases the combination of these makes the material behavior very different from conventional materials. This is evident for the four major technological challenges the nuclear technology domain is facing currently: (i) long-term operation of existing Generation II nuclear power plants, (ii) the design of the next generation reactors (Generation IV), (iii) the construction of the ITER fusion reactor in Cadarache (France), (iv) and the intermediate and final disposal of nuclear waste. In order to address these challenges, engineers and designers need to know the properties of a wide variety of materials under these conditions and to understand the underlying processes affecting changes in their behavior, in order to assess their performance and to determine the limits of operation. Comprehensive Nuclear Materials 2e provides broad ranging, validated summaries of all the major topics in the field of nuclear material research for fission as well as fusion reactor systems. Attention is given to the fundamental scientific aspects of nuclear materials: fuel and structural materials for fission reactors, waste materials, and materials for

fusion reactors. The articles are written at a level that allows undergraduate students to understand the material, while providing active researchers with a ready reference resource of information. Most of the chapters from the first Edition have been revised and updated and a significant number of new topics are covered in completely new material. During the ten years between the two editions, the challenge for applications of nuclear materials has been significantly impacted by world events, public awareness, and technological innovation. Materials play a key role as enablers of new technologies, and we trust that this new edition of Comprehensive Nuclear Materials has captured the key recent developments. Critically reviews the major classes and functions of materials, supporting the selection, assessment, validation and engineering of materials in extreme nuclear environments Comprehensive resource for up-to-date and authoritative information which is not always available elsewhere, even in journals Provides an in-depth treatment of materials modeling and simulation, with a specific focus on nuclear issues Serves as an excellent entry point for students and researchers new to the field

Handbook of Radioactivity Analysis Walter de Gruyter GmbH & Co KG

This handbook provides a straightforward introduction to spectroscopy, showing what it can do and how it does it, together with a clear, integrated and objective account of the wealth of information that can be derived from spectra. The sequence of chapters covers a wide range of the electromagnetic spectrum, and the physical processes involved, from nuclear phenomena to molecular rotation processes. - A day-by-day laboratory guide: its design based on practical knowledge of spectroscopists at universities, industries and research institutes - A well-structured information source containing methods and applications sections framed by sections on general topics - Guides users to a decision about which spectroscopic method and which instrumentation will be the most appropriate to solve their own practical problem - Rapid access to essential information - Correct analysis of a huge number of measured spectra data and smart use of such information sources as databases and spectra libraries

Radiochemistry and Nuclear Chemistry - Volume II EOLSS Publications

Impressive in its overall size and scope, this five-volume reference work provides researchers with the tools to push them into the forefront of the latest research. The Handbook covers all of the chemical aspects of nuclear science starting from the physical basics and including such diverse areas as the chemistry of transactinides and exotic atoms as well as radioactive waste management and radiopharmaceutical chemistry relevant to nuclear medicine. The nuclear methods of the investigation of chemical structure also receive ample space and attention. The international team of authors consists of 77 world-renowned experts - nuclear chemists, radiopharmaceutical chemists and physicists - from Austria, Belgium, Germany, Great Britain, Hungary, Holland, Japan, Russia, Sweden, Switzerland and the United States. The Handbook is an invaluable reference for nuclear scientists, biologists, chemists, physicists, physicians practicing nuclear medicine, graduate students and teachers - virtually all who are involved in the chemical and radiopharmaceutical aspects of nuclear science. The Handbook also provides for further reading through its rich selection of references.

Handbook of Radiopharmaceuticals Springer Science & Business Media

Radiochemistry and Nuclear Chemistry theme is a component of Encyclopedia of Chemical Sciences, Engineering and Technology Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. The content of the Theme on Radiochemistry and Nuclear Chemistry provides the essential aspects and a myriad of issues of great relevance to our world such as: Isotope Effects, Isotope Separation and Isotope Fractionation; Radiometric Dating and Tracing; Radiochemical Techniques; Radionuclides in Chemical Research; Nuclear Methods in Material Research; Radiation Chemistry; Radiation Biology and Radiation Protection; Radiochemistry and Radiopharmaceutical Chemistry for Medicine; Chemistry of the Actinide Elements; Production And Chemistry Of Transactinide Elements; Nuclear Waste Management and the Nuclear Fuel Cycle; High-intensity Lasers in Nuclear Science; Nuclear Forensics; Nuclear Processes in Nature; Subatomic Particles, Nuclear Structure and Stability. These two 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 and NGOs.

Science and Technology CRC Press

This handbook is a practical aid to legislative drafting that brings together, for the first time, model texts of provisions covering all aspects of nuclear law in a consolidated form. Organised along the same lines as the Handbook on Nuclear Law, published by the IAEA in 2003, and containing

updated material on new legal developments, this publication represents an important companion resource for the development of new or revised nuclear legislation, as well as for instruction in the fundamentals of nuclear law. It will be particularly useful for those Member States embarking on new or expanding existing nuclear programmes.

with Neutron Beams Woodhead Publishing

Handbook of Radioactivity Analysis is written by experts in the measurement of radioactivity. The book describes the broad scope of analytical methods available and instructs the reader on how to select the proper technique. It is intended as a practical manual for research which requires the accurate measurement of radioactivity at all levels, from the low levels encountered in the environment to the high levels measured in radioisotope research. This book contains sample preparation procedures, recommendations on steps to follow, necessary calculations, computer controlled analysis, and high sample throughput techniques. Each chapter includes practical techniques for application to nuclear safety, nuclear safeguards, environmental analysis, weapons disarmament, and assays required for research in biomedicine and agriculture. The fundamentals of radioactivity properties, radionuclide decay, and methods of detection are included to provide the basis for a thorough understanding of the analytical procedures described in the book. Therefore, the Handbook can also be used as a teaching text. Key Features * Includes sample preparation techniques for matrices such as soil, air, plant, water, animal tissue, and surface swipes * Provides procedures and guidelines for the analysis of commonly encountered na

Handbook on Nuclear Law CRC Press

This book aims to explore basic principles, concepts and applications of geochemistry. Topics include chemical weathering, impacts on living beings and water, geochemical cycles, oxidation and redox reactions in geochemistry, isotopes, analytical techniques, medicinal, inorganic, marine, atmospheric, and environmental applications, as well as case studies. This book helps in understanding the chemical composition of the earth and its applications. It also includes beneficial effects, bottlenecks, solutions, and future directions in geochemistry.

Handbook of Nuclear Proliferation Springer

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

Handbook of Terpenoids Springer Science & Business Media

This revised and extended 6 volume handbook set is the most comprehensive and voluminous reference work of its kind in the field of nuclear chemistry. The Handbook set covers all of the chemical aspects of nuclear science starting from the physical basics and including such diverse areas as the chemistry of transactinides and exotic atoms as well as radioactive waste management and radiopharmaceutical chemistry relevant to nuclear medicine. The nuclear methods of the investigation of chemical structure also receive ample space and attention. The international team of authors consists of scores of world-renowned experts - nuclear chemists, radiopharmaceutical chemists and physicists - from Europe, USA, and Asia. The Handbook set is an invaluable reference for nuclear scientists, biologists, chemists, physicists, physicians practicing nuclear medicine, graduate students and teachers - virtually all who are involved in the chemical and radiopharmaceutical aspects of nuclear science. The Handbook set also provides further reading via the rich selection of references.

Springer Science & Business Media

This work is a comprehensive and much-needed tool for the teaching and practice of radioanalytical chemistry. It encompasses a concise theoretical background, laboratory work, and data interpretation. It also contains chapters on the most current and visible applications of radioanalytical techniques. Its emphasis on the practical aspects on laboratory setup and operation make it a valuable tool for training professionals and students alike.

Geochemistry Springer Science & Business Media

This new Handbook is a comprehensive examination of the rich and complex issues of nuclear proliferation in the early 21st century. The future of the decades-long effort to prevent the further spread of weapons of mass destruction is at a crossroads today. If international nonproliferation efforts are to be successful, an integrated, multi-tiered response will almost certainly be necessary. A serious, thorough, and clear-eyed examination of the range of threats, challenges, and opportunities facing the international community is a necessary first step. This Handbook, which presents the most up-to-date analysis and policy recommendations on these critical issues by recognized, leading scholars in the field, intends to provide such an examination. The volume is divided into three major parts: Part I presents detailed threat assessments of proliferation risks across the globe, including specific regions and countries. Part II explains the various tools developed by the international community to address these proliferation threats. Part III addresses the proliferation risks and political challenges arising from nuclear energy production, including potential proliferation by aspiring states and nonstate groups. This Handbook will be of great interest to students and practitioners of nuclear proliferation, arms control, global governance, diplomacy, and global security and IR general.

Handbook of Nuclear Chemistry EOLSS Publications

Mathematical modelling is an important part of nuclear medicine. Therefore, several chapters of this book have been dedicated towards describing this topic. In these chapters, an emphasis has been put on describing the mathematical modelling of the radiation transport of photons and electrons, as well as on the transportation of radiopharmaceuticals between different organs and

compartments. It also includes computer models of patient dosimetry. Two chapters of this book are devoted towards introducing the concept of biostatistics and radiobiology. These chapters are followed by chapters detailing dosimetry procedures commonly used in the context of diagnostic imaging, as well as patient-specific dosimetry for radiotherapy treatments. For safety reasons, many of the methods used in nuclear medicine and molecular imaging are tightly regulated. Therefore, this volume also highlights the basic principles for radiation protection. It discusses the process of how guidelines and regulations aimed at minimizing radiation exposure are determined and implemented by international organisations. Finally, this book describes how different dosimetry methods may be utilized depending on the intended target, including whole-body or organ-specific imaging, as well as small-scale to cellular dosimetry. This text will be an invaluable resource for libraries, institutions, and clinical and academic medical physicists searching for a complete account of what defines nuclear medicine. The most comprehensive reference available providing a state-of-the-art overview of the field of nuclear medicine Edited by a leader in the field, with contributions from a team of experienced medical physicists, chemists, engineers, scientists, and clinical medical personnel Includes the latest practical research in the field, in addition to explaining fundamental theory and the field's history

Implementing Legislation Springer Science & Business Media

Prompt gamma activation analysis (PGAA) is a unique, non-destructive nuclear analytical method with multi-element capabilities. It is most effective if intense neutron beams (especially cold beams) of nuclear reactors are used to induce the prompt gamma radiation. Based largely on the

authors' pioneering research in cold neutron PGAA, the handbook describes the methodology in self-contained manner and reviews recent applications. The library of prompt gamma ray data and spectra for all natural elements is a unique aid to the practitioner. The level is understandable by a broad audience, which facilitates teaching and training. The Handbook of Prompt Gamma Activation Analysis is a comprehensive handbook written for those practising the method, wanting to implement it at a reactor facility, or just looking for a powerful non-destructive method of element analysis. The book is also useful for nuclear physics, chemistry and engineering scientists, scholars and graduate students interested in neutron-induced gamma ray spectroscopy and nuclear analytical methods.

Handbook on Radiation Probing, Gauging, Imaging and Analysis Springer Science & Business Media

The recent revolution in molecular biology offers exciting new opportunities for targeted radionuclide therapy. This up-to-date, comprehensive book, written by world-renowned experts, discusses the basic principles of radionuclide therapy, explores in detail the available treatments, explains the regulatory requirements, and examines likely future developments. The full range of clinical applications is considered, including thyroid cancer, hematological malignancies, brain tumors, liver cancer, bone and joint disease, and neuroendocrine tumors. The combination of theoretical background and practical information will provide the reader with all the knowledge required to administer radionuclide therapy safely and effectively in the individual patient. Careful attention is also paid to the role of the therapeutic nuclear physician in coordinating a diverse multidisciplinary team, which is central to the safe provision of treatment.

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