

Kindle File Format Handbook Of Advanced Radioactive Waste Conditioning Technologies

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Handbook of Advanced Radioactive Waste Conditioning Technologies-Michael I Ojovan 2011-01-24

Radioactive wastes are generated from a wide range of sources, including the power industry, and medical and scientific research institutions, presenting a range of challenges in dealing with a diverse set of radionuclides of varying concentrations. Conditioning technologies are essential for the encapsulation and immobilisation of these radioactive wastes, forming the initial engineered barrier required for their transportation, storage and disposal. The need to ensure the long term performance of radioactive waste forms is a key driver of the development of advanced conditioning technologies. The Handbook of advanced radioactive waste conditioning technologies provides a comprehensive and systematic reference on the various options available and under development for the treatment and immobilisation of radioactive wastes. The book opens with an introductory chapter on radioactive waste characterisation and selection of conditioning technologies. Part one reviews the main radioactive waste treatment processes and conditioning technologies, including volume reduction techniques such as compaction, incineration and plasma treatment, as well as encapsulation methods such as cementation, calcination and vitrification. This coverage is extended in part two, with in-depth reviews of the development of advanced materials for radioactive waste conditioning, including geopolymers, glass and ceramic matrices for nuclear waste immobilisation, and waste packages and containers for disposal. Finally, part three reviews the long-term performance assessment and knowledge management techniques applicable to both spent nuclear fuels and solid radioactive waste forms. With its distinguished international team of contributors, the Handbook of advanced radioactive waste conditioning technologies is a standard reference for all radioactive waste management professionals, radiochemists, academics and researchers involved in the development of the nuclear fuel cycle. Provides a comprehensive and systematic reference on the various options available and under development for the treatment and immobilisation of radioactive wastes Explores radioactive waste characterisation and selection of conditioning technologies including the development of advanced materials for radioactive waste conditioning Assesses the main radioactive waste treatment processes and conditioning technologies, including volume reduction techniques such as compaction

An Introduction to Nuclear Waste Immobilisation-Michael I Ojovan 2013-12-03 Drawing on the authors' extensive experience in the processing and disposal of waste, An Introduction to Nuclear Waste Immobilisation, Second Edition examines the gamut of nuclear waste issues from the natural level of radionuclides in the environment to geological disposal of waste-forms and their long-term behavior. It covers all-important aspects of processing and immobilization, including nuclear decay, regulations, new technologies and methods. Significant focus is given to the analysis of the various matrices used, especially cement and glass, with further discussion of other matrices such as bitumen. The final chapter concentrates on the performance assessment of immobilizing materials and safety of disposal, providing a

full range of the resources needed to understand and correctly immobilize nuclear waste. The fully revised second edition focuses on core technologies and has an integrated approach to immobilization and hazards. Each chapter focuses on a different matrix used in nuclear waste immobilization: cement, bitumen, glass and new materials. Keeps the most important issues surrounding nuclear waste - such as treatment schemes and technologies and disposal - at the forefront.

Advanced Separation Techniques for Nuclear Fuel Reprocessing and Radioactive Waste Treatment- Kenneth L Nash 2011-03-15 Advanced separations technology is key to closing the nuclear fuel cycle and relieving future generations from the burden of radioactive waste produced by the nuclear power industry. Nuclear fuel reprocessing techniques not only allow for recycling of useful fuel components for further power generation, but by also separating out the actinides, lanthanides and other fission products produced by the nuclear reaction, the residual radioactive waste can be minimised. Indeed, the future of the industry relies on the advancement of separation and transmutation technology to ensure environmental protection, criticality-safety and non-proliferation (i.e., security) of radioactive materials by reducing their long-term radiological hazard. Advanced separation techniques for nuclear fuel reprocessing and radioactive waste treatment provides a comprehensive and timely reference on nuclear fuel reprocessing and radioactive waste treatment. Part one covers the fundamental chemistry, engineering and safety of radioactive materials separations processes in the nuclear fuel cycle, including coverage of advanced aqueous separations engineering, as well as on-line monitoring for process control and safeguards technology. Part two critically reviews the development and application of separation and extraction processes for nuclear fuel reprocessing and radioactive waste treatment. The section includes discussions of advanced PUREX processes, the UREX+ concept, fission product separations, and combined systems for simultaneous radionuclide extraction. Part three details emerging and innovative treatment techniques, initially reviewing pyrochemical processes and engineering, highly selective compounds for solvent extraction, and developments in partitioning and transmutation processes that aim to close the nuclear fuel cycle. The book concludes with other advanced techniques such as solid phase extraction, supercritical fluid and ionic liquid extraction, and biological treatment processes. With its distinguished international team of contributors, Advanced separation techniques for nuclear fuel reprocessing and radioactive waste treatment is a standard reference for all nuclear waste management and nuclear safety professionals, radiochemists, academics and researchers in this field. A comprehensive and timely reference on nuclear fuel reprocessing and radioactive waste treatment. Details emerging and innovative treatment techniques, reviewing pyrochemical processes and engineering, as well as highly selective compounds for solvent extraction. Discusses the development and application of separation and extraction processes for nuclear fuel reprocessing and radioactive waste treatment.

Radioactive Waste Management and Contaminated Site Clean-Up- William E Lee 2013-10-31 Radioactive waste management and contaminated site clean-up reviews radioactive waste management processes, technologies, and international experiences. Part one explores the fundamentals of radioactive waste including sources, characterisation, and processing strategies. International safety standards, risk assessment of radioactive wastes and remediation of contaminated sites and irradiated nuclear fuel management are also reviewed. Part two highlights the current international situation across Africa, Asia, Europe, and North America. The experience in Japan, with a specific chapter on Fukushima, is also covered. Finally, part three explores the clean-up of sites contaminated by weapons programmes including the USA and former USSR. Radioactive waste management and contaminated site clean-up is a comprehensive resource for professionals, researchers, scientists and academics in radioactive waste management, governmental and other regulatory bodies and the nuclear power industry. Explores the fundamentals of radioactive waste including sources, characterisation, and processing strategies. Reviews international safety standards, risk assessment of radioactive wastes and remediation of contaminated sites and irradiated nuclear fuel management. Highlights the current international situation across Africa, Asia, Europe, and North America specifically including a chapter on the experience in Fukushima, Japan.

An Introduction to Nuclear Waste Immobilisation- Michael I Ojovan 2013-12-03 Drawing on the authors' extensive experience in the processing and disposal of waste, An Introduction to Nuclear Waste Immobilisation, Second Edition examines the gamut of nuclear waste issues from the natural level of radionuclides in the environment to geological disposal of waste-forms and their long-term behavior. It covers all-important aspects of processing and immobilization, including nuclear decay, regulations, new technologies and methods. Significant focus is given to the analysis of the various matrices used, especially cement and glass, with further discussion of other matrices such as bitumen. The final chapter concentrates on the performance assessment of immobilizing materials and safety of disposal, providing a

full range of the resources needed to understand and correctly immobilize nuclear waste. The fully revised second edition focuses on core technologies and has an integrated approach to immobilization and hazards. Each chapter focuses on a different matrix used in nuclear waste immobilization: cement, bitumen, glass and new materials. Keeps the most important issues surrounding nuclear waste - such as treatment schemes and technologies and disposal - at the forefront.

Advances in Materials Science for Environmental and Energy Technologies III-Tatsuki Ohji 2014-10-20

This proceedings contains a collection of 26 papers from the following six 2013 Materials Science and Technology (MS&T'13) symposia: Green Technologies for Materials Manufacturing and Processing V Materials Development and Degradation Management in Nuclear Applications Materials Issues in Nuclear Waste Management in the 21st Century Energy Storage III: Materials, Systems and Applications Nanotechnology for Energy, Healthcare and Industry Hybrid Organic - Inorganic Materials for Alternative Energy

Handbook of Advanced Industrial and Hazardous Wastes Treatment-Lawrence K. Wang 2009-11-04 Most industrial and hazardous waste management resources cover the major industries and provide conventional in-plant pollution control strategies. Until now however, no book or series of books has provided coverage that includes the latest developments in innovative and alternative environmental technology, design criteria, managerial decision met

Cementitious Materials for Nuclear Waste Immobilization-Rehab O. Abdel Rahman 2014-08-28

Cementitious materials are an essential part in any radioactive waste disposal facility. Conditioning processes such as cementation are used to convert waste into a stable solid form that is insoluble and will prevent dispersion to the surrounding environment. It is incredibly important to understand the long-term behavior of these materials. This book summarises approaches and current practices in use of cementitious materials for nuclear waste immobilisation. It gives a unique description of the most important aspects of cements as nuclear waste forms: starting with a description of wastes, analyzing the cementitious systems used for immobilization and describing the technologies used, and ending with analysis of cementitious waste forms and their long term behavior in an envisaged disposal environment. Extensive research has been devoted to study the feasibility of using cement or cement based materials in immobilizing and solidifying different radioactive wastes. However, these research results are scattered. This work provides the reader with both the science and technology of the immobilization process, and the cementitious materials used to immobilize nuclear waste. It summarizes current knowledge in the field, and highlights important areas that need more investigation. The chapters include: Introduction, Portland cement, Alternative cements, Cement characterization and testing, Radioactive waste cementation, Waste cementation technology, Cementitious wasteform durability and performance assessment.

Handbook of Generation IV Nuclear Reactors-Igor Pioro 2016-06-09 Handbook of Generation IV Nuclear Reactors presents information on the current fleet of Nuclear Power Plants (NPPs) with water-cooled reactors (Generation III and III+) (96% of 430 power reactors in the world) that have relatively low thermal efficiencies (within the range of 32-36%) compared to those of modern advanced thermal power plants (combined cycle gas-fired power plants - up to 62% and supercritical pressure coal-fired power plants - up to 55%). Moreover, thermal efficiency of the current fleet of NPPs with water-cooled reactors cannot be increased significantly without completely different innovative designs, which are Generation IV reactors. Nuclear power is vital for generating electrical energy without carbon emissions. Complete with the latest research, development, and design, and written by an international team of experts, this handbook is completely dedicated to Generation IV reactors. Presents the first comprehensive handbook dedicated entirely to generation IV nuclear reactors Reviews the latest trends and developments Complete with the latest research, development, and design information in generation IV nuclear reactors Written by an international team of experts in the field

Environmental Remediation and Restoration of Contaminated Nuclear and NORM Sites-L van Velzen

2015-02-02 Nuclear sites become contaminated with radionuclides due to accidents and activities carried out without due consideration for the environment. Naturally-occurring radioactive materials (NORM) released by industrial processes such as coal power production and fertilizer manufacture may also require clean-up. Environmental remediation and restoration aim to reduce exposure to radiation from contaminated soil or groundwater. This book provides a comprehensive overview of this area. Part 1 provides an introduction to the different types of contaminated site and their characteristics. Part 2 addresses environmental restoration frameworks and processes. Part 3 then reviews different remediation techniques and methods of waste disposal. Explores types and characteristics of contaminated nuclear and NORM sites Provides an in depth guide to environmental restoration frameworks and processes including

stakeholder involvement, risk assessment and cost-benefit analysis in the remediation and restoration of contaminated nuclear and NORM sites Offers coverage of remediation techniques and waste disposal from electrokinetic remediation to in situ and ex situ bioremediation of radionuclides contaminated soils Handbook of Advanced Approaches Towards Pollution Prevention and Control-Rehab O Abdel Rahman 2021-01-01 Handbook of Advanced Approaches Towards Pollution Prevention and Control, Volume One: Conventional and Innovative Technology, and Assessment Techniques for Pollution Prevention and Control condenses all relevant information on pollution prevention and control in a single source. This handbook (Volume One of Two) covers the principles of pollution prevention and control technologies, recent advances in pollution prevention, control technologies and their sustainability, modernization in pollution prevention, and control technologies for future and next generation pollution prevention. This book is an indispensable resource for researchers and academic staff in chemical and process engineering, safety engineering, environmental engineering, biotechnology and materials engineering. Provides in-depth information on the principles and advances in pollution prevention and control practices Discusses emerging technologies and processes for advanced pollution prevention and control Presents developments on the use of the assessment models as tools to support the research and applications of different technologies and processes Provides history, fundamentals, state-of-the-art, and future trends Edited by expert team of world-class editors

Gasification for Synthetic Fuel Production-R Luque 2014-08-29 Gasification involves the conversion of carbon sources without combustion to syngas, which can be used as a fuel itself or further processed to synthetic fuels. The technology provides a potentially more efficient means of energy generation than direct combustion. This book provides an overview of gasification science and engineering and the production of synthetic fuels by gasification from a variety of feedstocks. Part one introduces gasification, reviewing the scientific basis of the process and gasification engineering. Part two then addresses gasification and synthetic fuel production processes. Finally, chapters in part three outline the different applications of gasification, with chapters on the conversion of different types of feedstock. Examines the design of gasifiers, the preparation of feedstocks, and the economic, environmental and policy issues related to gasification Reviews gasification processes for liquid fuel production Outlines the different applications of gasification technology

Membrane Reactors for Energy Applications and Basic Chemical Production-Angelo Basile 2015-02-10 Membrane Reactors for Energy Applications and Basic Chemical Production presents a discussion of the increasing interest in membrane reactors that has emerged in recent years from both the scientific and industrial communities, in particular their usage for energy applications and basic chemical production. Part One of the text investigates membrane reactors for syngas and hydrogen production, while Part Two examines membrane reactors for other energy applications, including biodiesel and bioethanol production. The final section of the book reviews the use of membrane reactors in basic chemical production, including discussions of the use of MRs in ammonia production and the dehydrogenation of alkanes to alkenes. Provides comprehensive coverage of membrane reactors as presented by a world-renowned team of experts Includes discussions of the use of membrane reactors in ammonia production and the dehydrogenation of alkanes to alkenes Tackles the use of membrane reactors in syngas, hydrogen, and basic chemical production Keen focus placed on the industry, particularly in the use of membrane reactor technologies in energy

Radioactive Waste Engineering and Management-Shinya Nagasaki 2015-04-07 This book describes essential and effective management for reliably ensuring public safety from radioactive wastes in Japan. This is the first book to cover many aspects of wastes from the nuclear fuel cycle to research and medical use, allowing readers to understand the characterization, treatment and final disposal of generated wastes, performance assessment, institutional systems, and social issues such as intergenerational ethics. Exercises at the end of each chapter help to understand radioactive waste management in context. Radioactive Waste Management-James Saling 2018-04-27 This reviews sources of radioactive waste and introduces radioactive decay and radiation shielding calculations. It covers technical and regulatory aspects of waste management with discussion questions at the end of each chapter to provide an opportunity to explore the many facets of waste management issues. An extensive reference list at the end of each chapter retains the references from the first edition of the book and incorporates references used in preparing this revised text, giving readers an opportunity to look at historical records as well as current information.

Handbook of Advanced Approaches Towards Pollution Prevention and Control-Rehab O Abdel Rahman 2021-01-15 This 2-volume handbook set condenses all relevant information on pollution prevention and

control in a single source. It is an amalgamation of the latest trends in this field. The handbook set covers the principals of pollution prevention and control technologies, recent advances in pollution prevention and control technologies and their sustainability, modernization in pollution prevention and control technologies for future, and next generation of pollution prevention and control technologies. The books are an indispensable resource for researchers and academic staff in chemical and process engineering, safety engineering, environmental engineering, biotechnology, and materials engineering, specifically working on adsorption of pollutants, control of radioactive wastes, nanotechnological applications in addressing environmental problems. Volume 2 cover issues related to the measures for pollution prevention and control and the sustainability of the technological measures. It addresses modernization in pollution prevention and control technologies for future generations. Provides in-depth information on principals and advances of pollution prevention and control practices Discusses emerging technologies and processes for advanced pollution prevention and control Presents the development in the use of the assessment models as tool to support the research and applications of different technologies and processes Provides the history, fundamentals, state of the art, and future trends Edited by expert team of world-class editors

Handbook of Radioembolization-Alexander S. Pasciak, PhD. 2016-11-03 Radioembolization is a widely used treatment for non-resectable primary and secondary liver cancer. This handbook addresses the radiation biology, physics, nuclear medicine, and imaging for radioembolization using Yttrium-90 (90Y) microspheres, in addition to discussing aspects related to interventional radiology. The contents reflect on and off-label treatment indications, dose-response relationships, treatment-planning, therapy optimization, radiation safety, imaging follow-up and many other facets of this therapy necessary for both novice and advanced users alike.

Waste-Trevor M. Letcher 2011-01-20 Waste: A Handbook for Management gives the broadest, most complete coverage of waste in our society. The book examines a wide range of waste streams, including: Household waste (compostable material, paper, glass, textiles, household chemicals, plastic, water, and e-waste) Industrial waste (metals, building materials, tires, medical, batteries, hazardous mining, and nuclear) Societal waste (ocean, military, and space) The future of landfills and incinerators Covering all the issues related to waste in one volume helps lead to comparisons, synergistic solutions, and a more informed society. In addition, the book offers the best ways of managing waste problems through recycling, incineration, landfill and other processes. Co-author Daniel Vallero interviewed on NBC's Today show for a segment on recycling Scientific and non-biased overviews will assist scientists, technicians, engineers, and government leaders Covers all main types of waste, including household, industrial, and societal Strong focus on management and recycling provides solutions

Hazardous and Radioactive Waste Treatment Technologies Handbook-Chang H. Oh 2001-06-27 Many books have been written on hazardous waste and nuclear waste separately, but none have combined the two subjects into one single-volume resource. Hazardous and Radioactive Waste Treatment Technologies Handbook covers the technologies, characteristics, and regulation of both hazardous chemical wastes and radioactive wastes. It provides an overview of recent waste technologies. A reference for scientists and engineers, the handbook focuses on waste-related thermal and non-thermal technologies, separation techniques, and stabilization technologies. It includes information on the DOE and DOD waste matrix located at various sites. It reveals current R&D activities in each technology and what improvements can be made in the future. A detailed schematic diagram illustrates each technology so that the process can be explicitly understood. In addition, the handbook covers relative life-cycle cost estimates for treatment systems using various technologies. With contributions from an international panel and extensively peer-reviewed, Hazardous and Radioactive Waste Treatment Technologies Handbook provides the latest information on waste remediation technologies and related regulations. Often in the field you will encounter more than one type of hazardous waste. This handbook gives you the design information you need to decide which technology to use and how to design the equipment for your particular needs. You can then incorporate appropriate technologies into a mixed waste treatment system.

Nuclear Decommissioning, Waste Management, and Environmental Site Remediation-Colin Bayliss 2003-10-10 Decommissioning nuclear facilities is a relatively new field, which has developed rapidly in the last ten years. It involves materials that may be highly radioactive and therefore require sophisticated methods of containment and remote handling. The wastes arising from decommissioning are hazardous and have to be stored or disposed of safely in order to protect the environment and future generations. Nuclear decommissioning work must be carried out to the highest possible standards to protect workers, the general public and the environment. This book describes the techniques used for dismantling

redundant nuclear facilities, the safe storage of radioactive wastes and the restoration of nuclear licensed sites. * Describes the techniques used for dismantling nuclear facilities, safe storage of radioactive wastes, and the restoration of nuclear licensed facilities. * Provides the reader with decommissioning experience accumulated over 15 years by UKAEA. * Contains valuable information to personnel new to decommissioning and waste management.

An Introduction to Nuclear Waste Immobilisation-Michael I Ojovan 2010-07-07 Safety and environmental impact is of uppermost concern when dealing with the movement and storage of nuclear waste. The 20 chapters in 'An Introduction to Nuclear Waste Immobilisation' cover all important aspects of immobilisation, from nuclear decay, to regulations, to new technologies and methods. Significant focus is given to the analysis of the various matrices used in transport: cement, bitumen and glass, with the greatest attention being given to glass. The last chapter concentrates on the performance assessment of each matrix, and on new developments of ceramics and glass composite materials, thermochemical methods and in-situ metal matrix immobilisation. The book thoroughly covers all issues surrounding nuclear waste: from where to locate nuclear waste in the environment, through nuclear waste generation and sources, treatment schemes and technologies, immobilisation technologies and waste forms, disposal and long term behaviour. Particular attention is paid to internationally approved and worldwide-applied approaches and technologies. * Each chapter focuses on a different matrix used in nuclear waste immobilisation: Cement, bitumen, glass and new materials. * Keeps the most important issues surrounding nuclear waste - such as treatment schemes and technologies, and disposal - at the forefront.

Handbook of Nuclear Chemistry-Attila Vértes 2003 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.

Nuclear Engineering Handbook-Kenneth D. Kok 2009-06-09 Nuclear power has, in recent years, undergone a major transformation, resulting in major technical developments and a new generation of nuclear scientists and engineers. A comprehensive book that reflects the latest nuclear technologies has been lacking—until now. The Nuclear Engineering Handbook is a response to this global resurgence of interest in commercial nuclear power. A broad overview of nuclear power and engineering and their limitless potential, this basic introduction to the field provides an in-depth discussion of power plants and extensive coverage of the nuclear fuel cycle, waste disposal, and related engineering technologies. Organized into three sections—Nuclear Power Reactors, Nuclear Fuel Cycle Processes and Facilities, and Engineering and Analytical Applications—this book addresses the entire nuclear fuel cycle and process. Topics include everything from the mining, milling, and enrichment of uranium and thorium fuel resources, to fuel fabrication, nuclear materials transportation, fuel reprocessing, and safe waste disposal. This all-encompassing volume discusses current analytical techniques related to nuclear engineering, addressing safety, heat transfer, shielding, thermo-hydraulics, and heat physics. Covering reactor operation and radiation protection, it also outlines the economic considerations involved in building new nuclear power stations instead of large fossil-fueled plants, and elaborates on concerns regarding the control of emissions from the latter. A review of past and current nuclear engineering capabilities, this valuable resource covers the gamut of crucial topics, including historical perspectives, a detailed technological review, and an assessment of the field's future direction. It is an exceptional tool that will help readers to foster optimal understanding and use of nuclear power for electricity generation now and in the future.

A Field Guide to Radiation-Wayne Biddle 2012-07-31 A comprehensive and accessible guide to understanding how radiation affects our everyday lives Nuclear energy, X-rays, radon, cell phones . . . radiation is part of the way we live on a daily basis, and yet the sources and repercussions of our exposure to it remain mysterious. Now Pulitzer Prize-winning journalist Wayne Biddle offers a first-of-its-kind guide

to understanding this fundamental aspect of the universe. From fallout to radiation poisoning, alpha particles to cosmic rays, Biddle illuminates the history, meaning, and health implications of one hundred scientific terms in succinct, witty essays. A Field Guide to Radiation is an essential, engaging handbook that offers wisdom and common sense for today's increasingly nuclear world.

Handbook of nuclear chemistry-Attila Vértes 2003

Environmental Risk Assessment of Soil Contamination-Maria C. Hernandez Soriano 2014-03-26 Soil is an irreplaceable resource that sustains life on the planet, challenged by food and energy demands of an increasing population. Therefore, soil contamination constitutes a critical issue to be addressed if we are to secure the life quality of present and future generations. Integrated efforts from researchers and policy makers are required to develop sound risk assessment procedures, remediation strategies and sustainable soil management policies. Environmental Risk Assessment of Soil Contamination provides a wide depiction of current research in soil contamination and risk assessment, encompassing reviews and case studies on soil pollution by heavy metals and organic pollutants. The book introduces several innovative approaches for soil remediation and risk assessment, including advances in phytoremediation and implementation of metabolomics in soil sciences.

Handbook of Globalization and the Environment-Khi V. Thai 2017-09-25 Proponents of globalization argue that it protects the global environment from degradation and promotes worldwide sustainable economic growth while opponents argue the exact opposite. Examining the local, national, and international impacts of globalization, the Handbook of Globalization and the Environment explores strategies and solutions that support healthy economic growth, protect the environment, and create a more equitable world. The book sets the stage with coverage of global environmental issues and policies. It explores international sustainable development, the evolution of global warming policy, transborder air pollution, desertification, space and the global environment, and human right to water. Building on this foundation, the editors discuss global environmental organizations and institutions with coverage of the UN's role in globalization, the trade-environment nexus, the emergence of NGOs, and an analysis of the state of global environmental knowledge and awareness from an international and comparative perspective. Emphasizing the effects of increasingly integrated global economy on the environment and society, the book examines environmental management and accountability. It addresses green procurement, provides an overview of U.S. environmental regulation and the current range of voluntary and mandatory pollution prevention mechanisms in use, explores a two-pronged approach to establishing a sustainable procurement model, and examines a collaborative community-based approach to environmental regulatory compliance. The book concludes with an analysis of controversial issues, such as eco-terrorism, North-South disputes, environmental justice, the promotion of economic growth through globalization in less developed countries, and the ability of scientists to communicate ideas so that policy makers can use science in decision making.

Comprehensive Nuclear Materials-Todd R Allen 2011-05-12 Comprehensive Nuclear Materials discusses the major classes of materials suitable for usage in nuclear fission, fusion reactors and high power accelerators, and for diverse functions in fuels, cladding, moderator and control materials, structural, functional, and waste materials. The work addresses the full panorama of contemporary international research in nuclear materials, from Actinides to Zirconium alloys, from the worlds' leading scientists and engineers. Critically reviews the major classes and functions of materials, supporting the selection, assessment, validation and engineering of materials in extreme nuclear environment Fully integrated with F-elements.net, a proprietary database containing useful cross-referenced property data on the lanthanides and actinides Details contemporary developments in numerical simulation, modelling, experimentation, and computational analysis, for effective implementation in labs and plants

Handbook of Environment and Waste Management-Yung-Tse Hung 2012 The Handbook of Environment and Waste Management, Volume 1, Air and Water Pollution Control, is a comprehensive compilation of topics that are at the forefront of many technical advances and practices in air and water pollution control. These include air pollution control, water pollution control, water treatment, wastewater treatment, industrial waste treatment and small scale wastewater treatment. Internationally recognized authorities in the field of environment and waste management contribute chapters in their areas of expertise. This handbook is an essential source of reference for professionals and researchers in the areas of air, water, and waste management, and as a text for advanced undergraduate and graduate courses in these fields.

Handbook of Environmental Radiation-Alfred W. Klement The primary aim of the handbook series will be to include as much useful data as possible for the specialist needing ready access for the solution of

problems most likely to arise in the radiation protection professions. However, some selected review of fundamental concepts is also included to enable persons with a basic science or engineering background to acquire the necessary knowledge to solve a majority of problems in especially important aspects of radiation protection. Also since the profession is broad in discipline, an attempt has been made to fulfil the frequent need of professionals for a refresher course in some of the more important fundamentals needed to utilize data included in the handbook. Principles of management, organization, and procedures related to radiation safety will also be summarized in later volumes, with attention to presentation of methods for establishing new radiation safety programs based on the accumulated experience of others.

Handbook of Nuclear Engineering-Dan Gabriel Cacuci 2010-09-14 This is an authoritative compilation of information regarding methods and data used in all phases of nuclear engineering. Addressing nuclear engineers and scientists at all levels, this book provides a condensed reference on nuclear engineering since 1958.

The Handbook of Radiopharmaceuticals-Azuwuike Owunwanne 2012-12-06 One Radiobiopharmaceutics.- 1 Preparation of radiopharmaceuticals.- Production of radionuclides.- Synthesis of the non-radioactive compound.- Reaction of the radionuclide with the non-radioactive compound.- References.- 2 Ideal characteristics of radiopharmaceuticals.- Availability and cost.- Preparation.- Biologic behavior.- Radionuclidic characteristics.- Hematology.- 3 Quality control of radiopharmaceuticals.- Biologic tests.- Physicochemical tests.- References.- 4 Design of radiopharmaceuticals.- Radionuclide.- Chemistry.- Biology.- Human studies.- Registration.- References.- 5 The fate of.

Handbook of Environmental Materials Management-Chaudhery Mustansar Hussain 2019-06-03 This reference work analyzes and assesses global environmental management techniques for environmental materials with a focus on their performance and economic benefits, proposing eco-friendly solutions and designating policies that will sustain the environment for future generations. It addresses management of environmental materials as not only a complex anthropogenic problem, but also as an expensive problem that needs to be managed sustainably. Simultaneously, it considers the environmental and economic benefits involved in the high levels of investment and operation costs required to develop effective materials collection and management systems in modern society.

Standard Handbook of Hazardous Waste Treatment and Disposal-Harry Freeman 1998 This edition includes chapters on storage and transportation of hazardous wastes, hazardous waste spills and spill clean-ups, and low level red waste management. Industry experts discuss innovative waste treatment technologies and land disposal

Handbook of Advanced Electronic and Photonic Materials and Devices: Nanostructured materials-Hari Singh Nalwa 2001 Electronic and photonic materials discussed in this handbook are the key elements of continued scientific and technological advances in the 21st century. The electronic and photonic materials comprising this handbook include semiconductors, superconductors, ferroelectrics, liquid crystals, conducting polymers, organic and superconductors, conductors, nonlinear optical and optoelectronic materials, electrochromic materials, laser materials, photoconductors, photovoltaic and electroluminescent materials, dielectric materials, nanostructured materials, supramolecular and self-assemblies, silicon and glasses, photosynthetic and respiratory proteins, etc, etc. Some of these materials have already been used and will be the most important components of the semiconductor and photonic industries, computers, internet, information processing and storage, telecommunications, satellite communications, integrated circuits, photocopiers, solar cells, batteries, light-emitting diodes, liquid crystal displays, magneto-optic memories, audio and video systems, recordable compact discs, video cameras, X-ray technology, color imaging, printing, flat-panel displays, optical waveguides, cable televisions, computer chips, molecular-sized transistors and switches, as well as other emerging cutting edge technologies. Electronic and photonic materials are expected to grow to a trillion-dollar industry in the new millennium and will be the most dominating forces in the emerging new technologies in the fields of science and engineering. This handbook is a unique source of the in-depth knowledge of synthesis, processing, fabrication, spectroscopy, physical properties and applications of electronic and photonic materials covering everything for today's and developing future technologies. This handbook consists of over one hundred state-of-the-art review chapters written by more than 200 world leading experts from 25 different countries. With more than 23,000 bibliographic citations and several thousands of figures, tables, photographs, chemical structures and equations, this handbook is an invaluable major reference source for scientists and students working in the field of materials science, solid-state physics, chemistry, electrical and optical engineering, polymer science, device engineering and computational engineering, photophysics, data storage and information technology and technocrats, everyone who is involved in

science and engineering of electronic and photonic materials. Key Features * This is the first handbook ever published on electronic and photonic materials * 10 volumes summarize the advances in electronic and photonic materials made over past the two decades * This handbook is a unique source of the in-depth knowledge of synthesis, processing, spectroscopy, physical properties and applications of electronic and photonic materials * Over 100 state-of-the-art review chapters written by more than 200 leading experts from 25 different countries * About 25,000 bibliographic citations and several thousand figures, tables, photographs, chemical structures and equations * Easy access to electronic and photonic materials from a single reference * Each chapter is self-contained with cross references * Single reference having all inorganic, organic and biological materials * Witten in very clear and concise fashion for easy understanding of structure property relationships in electronic and photonic materials

Low-Level Radioactive Waste Management and Disposition-National Academies of Sciences, Engineering, and Medicine 2017-07-05 The Department of Energy's Office of Environmental Management (DOE) is responsible for the safe cleanup of sites used for nuclear weapons development and government-sponsored nuclear energy research. Low-level radioactive waste (LLW) is the most volumetrically significant waste stream generated by the DOE cleanup program. LLW is also generated through commercial activities such as nuclear power plant operations and medical treatments. The laws and regulations related to the disposal of LLW in the United States have evolved over time and across agencies and states, resulting in a complex regulatory structure. DOE asked the National Academies of Sciences, Engineering, and Medicine to organize a workshop to discuss approaches for the management and disposition of LLW. Participants explored the key physical, chemical, and radiological characteristics of low-level waste that govern its safe and secure management and disposal in aggregate and in individual waste streams, and how key characteristics of low level waste are incorporated into standards, orders, and regulations that govern the management and disposal of LLW in the United States and in other major waste-producing countries. This publication summarizes the presentations and discussions from the workshop.

Multifunctional Nanocomposites for Energy and Environmental Applications-Zhanhu Guo 2018-01-02 Focusing on real applications of nanocomposites and nanotechnologies for sustainable development, this book shows how nanocomposites can help to solve energy and environmental problems, including a broad overview of energy-related applications and a unique selection of environmental topics. Clearly structured, the first part covers such energy-related applications as lithium ion batteries, solar cells, catalysis, thermoelectric waste heat harvesting and water splitting, while the second part provides unique perspectives on environmental fields, including nuclear waste management and carbon dioxide capture and storage. The result is a successful combination of fundamentals for newcomers to the field and the latest results for experienced scientists, engineers, and industry researchers.

The CRC Handbook of Mechanical Engineering, Second Edition- 1998-03-24 During the past 20 years, the field of mechanical engineering has undergone enormous changes. These changes have been driven by many factors, including: the development of computer technology worldwide competition in industry improvements in the flow of information satellite communication real time monitoring increased energy efficiency robotics automatic control increased sensitivity to environmental impacts of human activities advances in design and manufacturing methods These developments have put more stress on mechanical engineering education, making it increasingly difficult to cover all the topics that a professional engineer will need in his or her career. As a result of these developments, there has been a growing need for a handbook that can serve the professional community by providing relevant background and current information in the field of mechanical engineering. The CRC Handbook of Mechanical Engineering serves the needs of the professional engineer as a resource of information into the next century.

Handbook of Membrane Separations-Anil Kumar Pabby 2015-04-09 The Handbook of Membrane Separations: Chemical, Pharmaceutical, Food, and Biotechnological Applications, Second Edition provides detailed information on membrane separation technologies from an international team of experts. The handbook fills an important gap in the current literature by providing a comprehensive discussion of membrane application

Nuclear Wastelands-Howard Hu 2000 A handbook for scholars, students, policy makers, journalists, and peace and environmental activists. A handbook for scholars, students, policy makers, journalists, and peace and environmental activists, Nuclear Wastelands provides concise histories of the development of nuclear weapons programs of every declared and de facto nuclear weapons power, as well as detailed surveys of the health and environmental effects of this development both in these countries and in non-nuclear nations involved in nuclear weapons testing and uranium mining. Among the more obvious but largely

deferred costs of the Cold War are those related to the management of radioactive waste. The world is burdened with thousands of unwanted nuclear devices and mounting surpluses of weapons-grade plutonium and enriched uranium. In addition, the process of weapons production and testing has left many lands, aquifers, rivers, lakes, and seas contaminated by a multitude of weapons-related poisons. This book follows the production process step by step and country by country from uranium mining to the final assembly and storage of weapons, analyzing the potential hazards of each step and compiling the most complete information available on the actual health and environmental effects, in each country involved. Nuclear Wastelands includes a wealth of information that has only recently come to light, particularly on the nuclear weapons program of the former Soviet Union. It also features critical analyses of official public communications concerning the health and environmental consequences of nuclear weapons production, bringing to light governmental secrecy and outright deception that have led to the subversion of democratic principles, and have camouflaged the damage done to the very people and lands the weapons were meant to safeguard.

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