

# Resource Recovery And Recycling From Metallurgical Wastes Volume 7 Waste Management

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Resource Recovery and Recycling from Metallurgical Wastes - S.R.

Ramachandra Rao 2011-08-29

Resource recovery and recycling from millions of tons of wastes produced from industrial activities is a continuing challenge for environmental engineers and researchers. Demand for conservation of resources, reduction in the quantity of waste and sustainable development with environmental control has been growing in every part of the world. Resource Recovery and Recycling from Metallurgical Wastes brings together the currently used techniques of waste processing and recycling, their applications with practical examples and economic potentials of the processes. Emphasis is on resource recovery by appropriate treatment and techniques.

Material on the subject is scattered in waste management and environmental related journals, conference volumes and government departmental technical reports. This work serves as a source book of information and as an educational technical reference for practicing scientists and engineers, as well as for students. Describes the currently used and potential techniques for the recovery of valuable resources from mineral and metallurgical wastes Discusses the applications to specific kinds of wastes with examples from current practices, as well as the economics of the processes Presents recent and emerging technologies of potentials in metal recycling and by-product utilization

*Proceedings of the International Conference on Environmental*

*Management in Metallurgical Industries (EMMI-2000) - 2000*

*Selected Water Resources Abstracts - 1990*

Plant Responses to Xenobiotics -  
Anita Singh 2016-12-28

This book is compilation of studies related with the xenobiotics i.e. chemical or other substance that is not normally found in the ecosystems and get accumulated at higher concentration in the biological system due to rampant industrialisation and urbanisation activities. This book has tried to give information on various issues to give comprehensive and concise knowledge of the recent advancement in the field of environmental xenobiotics and how it disturbs the

plants metabolism. Other key features of the book are related to xenobiotic toxicity and detoxification mechanism, biochemical tools toward its remediation processes, molecular mechanism for xenobiotics detoxification and effect on metallomics. It also focuses on recent development in the field of waste water remediation concerned with the xenobiotics involvement. This book is different in such a way that it includes all the initial information along with the new researches. It includes the description of problem along with its solution. This volume describe the effects of xenobiotics at different levels i.e. biochemical, physiological and molecular, giving the details on signaling pathways to modify the responses of xenobiotics

in plant system. Thus, it gives confirming crosstalk between xenobiotic effects and signalling pathways. This book includes description about both the organic contaminants such as pesticides, solvents and petroleum products as well as inorganic xenobiotics that include heavy metals, non-metals, metalloids, and simple soluble salts. Here the plant is main objective and that have to deal with these kinds of compounds either by avoiding accumulation of these compounds or by exhibiting several enzymatic reactions for detoxification including oxidation, reduction, and conjugation reactions. Affected plants exhibit several enzymatic and non-enzymatic antioxidant and other reactions for detoxification of ROS including oxidation, reduction,

hydrolysis and conjugation reactions. The book focuses on different forms and sources of xenobiotics including organic and inorganic xenobiotics. The matter of this book will definitely increase the knowledge about the impacts of xenobiotics on plants system. There must be potentially broad readership who could find this fruitful for their study as well as for their research. As this book has balance between basic plant physiology and toxicity caused by the xenobiotics so it can be widely used in several disciplines. Overall, the book will bring deep knowledge in the field of xenobiotics toxicity in plants during recent years and it is definitely a compilation of interesting information which isn't fully covered elsewhere in the current market.

**Handbook of Advanced Industrial and Hazardous Wastes Management** -

Lawrence K. Wang 2017-10-30

This volume provides in-depth coverage of environmental pollution sources, waste characteristics, control technologies, management strategies, facility innovations, process alternatives, costs, case histories, effluent standards, and future trends in waste treatment processes. It delineates methodologies, technologies, and the regional and global effects of important pollution control practices. It focuses on specific industrial and manufacturing wastes and their remediation. Topics include: heavy metals, electronics, chemical, and textile manufacturing.

**Metallurgical Slags** - Nadine M.

Piatak 2021-08-13

This book is a definitive reference on the environmental geochemistry and resource potential of metallurgical slags

*Pollution Control and Resource Recovery* - Zhao Youcai 2016-11-09

Pollution Control and Resource Recovery: Industrial Construction and Demolition Wastes provides engineers with the techniques and technologies to cope with the common pollutants that are persistent in C&D waste. Dedicated to pollution control and resource reuse of C&D wastes, this book fully describes sampling methods and equipment, pre-treatment and analysis, and the generation and pollution characteristics of hazardous C&D wastes. Migration potential and patterns of pollutants during random stacking, landfilling, and pollution controlling approaches

are also included. Other topics included in this reference include source identification, classified separation and enrichment, site monitoring and evaluation, heavy metal stabilization and solidification, organic matter degradation, dust controlling, clean and high value utilization of recycled aggregate, and reuse and risk assessment. Covers industrial C&D waste contaminated by heavy metals, organic pollutants, and those generated in earthquakes and explosion accidents Includes treatment process for persistent organic pollutants, such as heavy metals Provides sampling methods and equipment, pre-treatment and analysis, generation, and pollution characteristics of common hazardous C&D waste materials

Compost Science and Technology - L.F. Diaz 2011-07-29

Composting is a widely used biological process for the management of some wastes produced in communities and agricultural activities, which have experienced substantial growth during the last few years. Because this and the knowledge of composting has increased, the number of composting facilities has increased tremendously, especially in some European countries. Interest has also increased in several countries in other regions of the world. Compost Science and Technology attempts to summarize some of the most important work conducted during the last few years under one cover. The contributions to the publication are made by some of the most qualified

professionals in the world and present the information in a clear and objective manner. The readers will find the information very useful and will be helpful in the design of new facilities and organic recycling programs. The manager or interested member of the community does not have to have a rigorous training in science or technology. Up-to-date contributions by some of the most knowledgeable and respected leaders in the field Clear and objective presentations, which are arranged in such a way that it is not necessary to read the entire book Information is supported by data, tables and references Covers most important aspects of the process including a brief historical review May be used by teachers as well as practitioners in the field

Waste Production and Utilization in the Metal Extraction Industry -  
Sehliselo Ndlovu 2017-06-27  
Increasingly stringent environmental regulations and industry adoption of waste minimization guidelines have thus, stimulated the need for the development of recycling and reuse options for metal related waste. This book, therefore, gives an overview of the waste generation, recycle and reuse along the mining, beneficiation, extraction, manufacturing and post-consumer value chain. This book reviews current status and future trends in the recycling and reuse of mineral and metal waste and also details the policy and legislation regarding the waste management, health and environmental impacts in the mining, beneficiation, metal extraction and

manufacturing processes. This book is a useful reference for engineers and researchers in industry, policymakers and legislators in governance, and academics on the current status and future trends in the recycling and reuse of mineral and metal waste. Some of the key features of the book are as follows: Holistic approach to waste generation, recycling and reuse along the minerals and metals extraction. Detailed overview of metallurgical waste generation. Practical examples with complete flow sheets, techniques and interventions on waste management. Integrates the technical issues related to efficient resources utilization with the policy and regulatory framework. Novel approach to addressing future commodity shortages.

SPS2022 - A.H.C. Ng 2022-05-17

The realization of a successful product requires collaboration between developers and producers, taking account of stakeholder value, reinforcing the contribution of industry to society and enhancing the wellbeing of workers while respecting planetary boundaries. Founded in 2006, the Swedish Production Academy (SPA) aims to drive and develop production research and education and to increase cooperation within the production area. This book presents the proceedings of the 10th Swedish Production Symposium (SPS2022), held in Skövde, Sweden, from 26-29 April 2022. The overall theme of the symposium was 'Industry 5.0 Transformation – Towards a Sustainable, Human-Centric, and Resilient Production'. Since its inception in 2007, the purpose of SPS



has been to facilitate an event at which members and interested participants from industry and academia can meet to exchange ideas. The 69 papers accepted for presentation here are grouped into ten sections: resource-efficient production; flexible production; humans in the production system; circular production systems and maintenance; integrated product and production development; industrial optimization and decision-making; cyber-physical production systems and digital twins; innovative production processes and additive manufacturing; smart and resilient supply chains; and linking research and education. Also included are three sections covering the Special Sessions at SPS2022: artificial intelligence and industrial analytics in industry 4.0;

development of resilient and sustainable production systems; and boundary crossing and boundary objects in product and production development. The book will be of interest to all those involved in the development and production of future products.

**Recovery and Utilization of Metallurgical Solid Waste** - Yingyi Zhang 2019-02-20

At present, a lot of metallurgical solid wastes have not been timely and effectively recycled, resulting in serious problems of environmental pollution and waste of resources. As a result, large-scale comprehensive utilization technologies have been initiated, including slag dry granulation technology, steel slag cement technology, slag wool technology, slag waste heat recovery

technology, etc. The comprehensive utilization of metallurgical solid waste has attracted worldwide attention. It is an effective way to improve the utilization efficiency of resources and the added value of products by using scientific metallurgical solid waste recycling methods. This book intends to provide the reader with a comprehensive overview of metallurgical solid wastes comprehensive utilization technology. The comprehensive utilization methods of four representative metallurgical solid wastes are emphatically described, such as blast furnace slag, steel slag, tailings and metallurgical dust.

**EPD Congress 2012** - Lifeng Zhang  
2012-05-09

Proceedings symposia sponsored by the

Extraction & Processing Division (EPD) of The Minerals, Metals & Materials Society (TMS) Held during the TMS 2012 Annual Meeting & Exhibition Orlando, Florida, USA, March 11-15,2012

**Current Developments in Biotechnology and Bioengineering** - Sunita Varjani  
2020-01-23

Current Developments in Biotechnology and Bioengineering: Resource Recovery from Wastes includes the latest and innovative research and technological developments in the biotechnology and bioengineering pertaining to various resource(s) recovery from wastes. The contents are organized into two broader sections covering resource recovery from industrial wastewater and resource recovery from solid wastes. Sections cover energy, bioproducts, nutrients, municipal

food wastes, electronic wastes, agricultural waste and others. The state-of-the-art situation, potential advantages and limitations are also provided, along with strategies to overcome limitations. This book is a useful guide into research demands in solid and liquid waste treatment and management for environmental/economic sustainability. Provides state-of-art information and applications on microbiological and biotechnological interventions for resource recovery Covers municipal food wastes, electronic wastes and agricultural wastes Reviews current information relating to bioremediation Contains recent information, clearly illustrated with tables, figures and pictures Outlines different technological and biological aspects of resource recovery from industrial

waste and effluents

Environmental Contamination - Jatin Srivastava 2012-02-29

Nature minimizes the hazards, while man maximizes them. This is not an assumption, but a basic idea of the findings of scientists from all over the world. The last two centuries have witnessed the indiscriminate development and overexploitation of natural resources by man causing alterations and impairment of our own environment. Environmental contamination is the result of the irrational use of resources at the wrong place and at the wrong time. Environmental contamination has changed the lifestyle of people virtually all over the world, and has reduced the extent of life on earth. Today, we are bound to compromises with such environmental conditions,

which was not anticipated for the sustenance of humanity and other life forms. Let us find out the problem and its management within this book.

Electronic Waste Management and Treatment Technology - Majeti

Narasimha Vara Prasad 2019-03-14

Electronic Waste Management and Treatment Technology applies the latest research for designing waste treatment and disposal strategies. Written for researchers who are exploring this emerging topic, the book begins with a short, but rigorous, discussion of electric waste management that outlines common hazardous materials. such as mercury, lead, silver and flame-retardants. The book also discusses the fate of metals contained in waste electrical and electronic equipment in municipal waste treatment. Materials and

methods for the remediation, recycling and treatment of plastic waste collected from waste electrical and electronic equipment (WEEE) are also covered. Finally, the book covers the depollution benchmarks for capacitors, batteries and printed circuit boards from waste electrical and electronic equipment (WEEE) and the recovery of waste printed circuit boards through pyrometallurgy.

Describes depollution benchmarks for capacitors, batteries and printed wiring boards from waste electronics Covers metals contained in waste electrical and electronic equipment in municipal waste Provides tactics for the recycling of mixed plastic waste from electrical and electronic equipment

**Integrated Waste Management** - Sunil Kumar 2011-08-23

This book reports research on policy and legal issues, anaerobic digestion of solid waste under processing aspects, industrial waste, application of GIS and LCA in waste management, and a couple of research papers relating to leachate and odour management.

**ERDA Energy Research Abstracts** - United States. Energy Research and Development Administration. Technical Information Center 1977

*Energy Recovery from Municipal Solid Waste by Thermal Conversion Technologies* - P. Jayarama Reddy  
2016-03-30

This book presents an overview of the technology that allows millions and millions of tons of municipal solid waste generated globally to be perceived as an asset which, after

materials recovery for recycling, can be used to generate clean power, transport fuels that can substitute fossil fuels, and value-based chemicals with minimal environmental impact. It also explains how hazardous wastes and sewage sludge can be treated and disposed of without affecting human and environmental health. It does so by providing a full discussion of established thermal conversion technologies generating heat, electricity, liquid fuels and useful chemicals from solid waste. Featuring case studies describing worldwide waste-to-energy plants in successful operation, it offers highly suited supporting material for an introductory course on waste thermal conversion processes.

Selected Water Resources Abstracts -

1991

**Sustainable Heavy Metal Remediation** -  
Eldon R. Rene 2017-10-13

This book presents an assortment of case-studies pertaining to the use of sustainable technologies for heavy metal removal and recovery from mining and metallurgical wastes, construction and demolition wastes, spent catalysts and electronic wastes. Wastewaters from diverse industrial and mining activities have caused pollution problems, but these sectors also serve as a hotspot for metal recovery. Several metal removal technologies based on physical, chemical and biological processes have been successfully implemented in full-scale operation, while metal recovery, which is beneficial for economic and environmental reasons,

is still limited due to challenges arising from downstream processing. For instance, microbial recovery (bioleaching) of metals from their ores is an established technology with a number of full-scale applications. Bioleaching of electronic wastes to recover metals is also a highly promising technology with low environmental impact and high cost-effectiveness; yet, this technology is still at its infancy. As the individual chapters of this book focuses on the applications and limitations of different technologies, this book will serve as an excellent resource for chemical engineers, environmental engineers, mining engineers, biotechnologists, graduate students and researchers in these areas.

Second International Symposium,

Recycling of Metals and Engineered Materials - Jan H. L. Van Linden 1990

**Sustainable and Economic Waste Management** - Hossain Md Anwar  
2019-11-25

This book compiles research findings directly related to sustainable and economic waste management and resource recovery. Mining wastes and municipal, urban, domestic, industrial and agricultural wastes and effluents—which contain persistent organic contaminants, nanoparticle organic chemicals, nutrients, energy, organic materials, heavy metal, rare earth elements, iron, steel, bauxite, coal and other valuable materials—are significantly responsible for environmental contamination. These low-tenor raw materials, if recycled, can

significantly address the demand–supply chain mismatch and process sustainability as a whole while simultaneously decreasing their impacts on human life and biodiversity. This book summarises the large volume of current research in the realm of waste management and resource recovery, which has led to innovation and commercialisation of sustainable and economic waste management for improved environmental safety and improved economics. Key Features: Reviews the key research findings related to sustainable and economic resource recovery and waste management techniques Discusses minimizing waste materials and environmental contaminants with a focus on recovering valuable resources from wastes Examines the potential uses of mining waste in the

re-extraction of metals, provision of fuel for power plants, and as a supply of other valuable materials for utilisation/processing Presents research on recycling of municipal, urban, domestic, industrial and agricultural wastes and wastewater in the production and recovery of energy, biogas, fertilizers, organic materials and nutrients Outlines topical research interests resulting in patents and inventions for sustainable and economic waste management techniques and environmental safety

*Environmental Mechanochemistry* -

Matej Baláž 2021-10-22

This book provides a comprehensive overview on mechanochemistry including its history, high-energy ball milling process, equipment used and fundamentals behind the observed

scientific phenomena. It also shows that mechanochemistry is highly applicable in the field of waste treatment. The text reviews 1017 studies utilizing mostly high-energy ball milling for the treatment of various types of consumer, technogenic and agricultural waste. The text is divided into chapters based on individual waste types. The book presents an Appendix compiling all studies arranged according to the application that the recycled waste is meant for. In this way, readers from both academia and companies interested either in the treatment of a particular waste, or particular application might easily locate sections of interest.

*ERDA Energy Research Abstracts* -  
United States. Energy Research and  
Development Administration 1977



## **Metal Recovery from Industrial Waste**

- Clyde S. Brooks 2018-01-18

This book is offered as a practical primer on the hydrometallurgy of nonferrous metal reclamation from industrial wastes, as well as a brief discussion of pyrometallurgy, biological, and other separation processes. The objectives are to acquaint nontechnical readers with the subject as well as providing a detailed survey of current research and industrial practice to technical readers concerned with the management of industrial waste.

## Critical and Rare Earth Elements -

Abhilash 2019-11-11

This book is aimed to compile the distribution of rare earth elements in various resources with their processing from secondary resources. It includes details of various

processes developed for extraction of rare earth elements from varied raw materials ranging from e-wastes, tailings, process wastes and residues. It emphasizes importance of processing of the secondary resources to assist environmental remediation of such untreated wastes and get finished products. It covers all aspects of rare metals and rare earth metals in one volume covering extraction, separation and recycling of secondary resources for extraction of these metals along with relevant case studies.

## *Environmental Materials and Waste* -

M.N.V Prasad 2016-04-19

*Environmental Materials and Waste: Resource Recovery and Pollution Prevention* contains the latest information on environmental sustainability as a wide variety of

natural resources are increasingly being exploited to meet the demands of a worldwide growing population and economy. These raw materials cannot, or can only partially, be substituted by renewable resources within the next few decades. As such, the efficient recovery and processing of mineral and energy resources, as well as recycling such resources, is now of significant importance. The book takes a multidisciplinary approach to fully realize the number of by-products which can be remanufactured, providing the foundation needed across disciplines to tackle this issue. As awareness and opportunities to recover valuable resources from process and bleed streams is gaining interest, sustainable recovery of environmental materials, including wastewater, offers tremendous

opportunity to combine profitable and sustainable production. Presents a state-of-the-art guide to environmental sustainability Provides an overview of the field highlighting recent and emerging issues in environmental resource recovery that cover a wide array of by-products for remanufacture potential Details a multidisciplinary approach to fully realize the number of by-products which can be remanufactured, providing the foundation needed across disciplines to tackle these global issues

### **Wills' Mineral Processing Technology**

- Barry A. Wills 2015-09-01

Wills' Mineral Processing Technology: An Introduction to the Practical Aspects of Ore Treatment and Mineral Recovery has been the definitive reference for the mineral processing

industry for over thirty years. This industry standard reference provides practicing engineers and students of mineral processing, metallurgy, and mining with practical information on all the common techniques used in modern processing installations. Each chapter is dedicated to a major processing procedure—from underlying principles and technologies to the latest developments in strategies and equipment for processing increasingly complex refractory ores. The eighth edition of this classic reference enhances coverage of practical applications via the inclusion of new material focused on meeting the pressing demand for ever greater operational efficiency, while addressing the pivotal challenges of waste disposal and environmental remediation. Advances in automated

mineralogy and analysis and high-pressure grinding rolls are given dedicated coverage. The new edition also contains more detailed discussions of comminution efficiency, classification, modeling, flocculation, reagents, liquid-solid separations, and beneficiation of phosphate, and industrial materials. Finally, the addition of new examples and solved problems further facilitates the book's pedagogical role in the classroom. Connects fundamentals with practical applications to benefit students and practitioners alike Ensures relevance internationally with new material and updates from renowned authorities in the UK, Australia, and Canada Introduces the latest technologies and incorporates environmental issues to place the subject of mineral

processing in a contemporary context, addressing concerns of sustainability and cost effectiveness Provides new case studies, examples, and figures to bring a fresh perspective to the field

Innovative Process Development in Metallurgical Industry - Vaikuntam Iyer Lakshmanan 2015-10-26

This book describes the phases for innovative metallurgical process development, from concept to commercialization. Key features of the book include:

- Need for process innovation
- Selection and optimization of process steps
- Determination of the commercial feasibility of a process including engineering and equipment selection
- Determination of the environmental footprint of a process
- Case-study examples of innovative process

development

Recent Researches in Metallurgical Engineering - Mohammad Nusheh 2012-03-23

Metallurgical Engineering is the science and technology of producing, processing and giving proper shape to metals and alloys and other Engineering Materials having desired properties through economically viable process. Metallurgical Engineering has played a crucial role in the development of human civilization beginning with bronze-age some 3000 years ago when tools and weapons were mostly produced from the metals and alloys. This science has matured over millennia and still plays crucial role by supplying materials having suitable properties. As the title, "Recent Researches in Metallurgical Engineering, From

Extraction to Forming" implies, this text blends new theories with practices covering a broad field that deals with all sorts of metal-related areas including mineral processing, extractive metallurgy, heat treatment and casting.

**Microbial Rejuvenation of Polluted Environment** - Deepak G. Panpatte

2021-01-18

Pollution is one of the most serious issues facing mankind and other life forms on earth. Environmental pollution leads to the degradation of ecosystems, loss of services, economic losses, and various other problems. The eco-friendliest approach to rejuvenating polluted ecosystems is with the help of microorganism-based bioremediation. Microorganisms are characterized by great biodiversity, genetic and

metabolic machinery, and by their ability to survive, even in extremely polluted environments. As such, they are and will remain the most important tools for restoring polluted ecosystems / habitats. This three-volume book sheds light on the utilization of microorganisms and the latest technologies for cleaning up polluted sites. It also discusses the remediation or degradation of various important pollutants such as pesticides, wastewater, plastics, PAHs, oil spills etc. The book also explains the latest technologies used for the degradation of pollutants in several niche ecosystems. Given its scope, the book will be of interest to teachers, researchers, bioremediation scientists, capacity builders and policymakers. It also offers valuable additional reading

material for undergraduate and graduate students of microbiology, ecology, soil science, and the environmental sciences.

Waste Production and Utilization in the Metal Extraction Industry -

Sehliselo Ndlovu 2017-06-27

Increasingly stringent environmental regulations and industry adoption of waste minimization guidelines have thus, stimulated the need for the development of recycling and reuse options for metal related waste. This book, therefore, gives an overview of the waste generation, recycle and reuse along the mining, beneficiation, extraction, manufacturing and post-consumer value chain. This book reviews current status and future trends in the recycling and reuse of mineral and metal waste and also details the

policy and legislation regarding the waste management, health and environmental impacts in the mining, beneficiation, metal extraction and manufacturing processes. This book is a useful reference for engineers and researchers in industry, policymakers and legislators in governance, and academics on the current status and future trends in the recycling and reuse of mineral and metal waste. Some of the key features of the book are as follows: Holistic approach to waste generation, recycling and reuse along the minerals and metals extraction. Detailed overview of metallurgical waste generation. Practical examples with complete flow sheets, techniques and interventions on waste management. Integrates the technical issues related to efficient resources utilization with the policy

and regulatory framework. Novel approach to addressing future commodity shortages.

**Advanced and Emerging Technologies for Resource Recovery from Wastes -**

Laleh Nazari 2021-04-01

This book introduces advanced or emerging technologies for conversion of wastes into a variety of high-value chemicals and materials. Energy and resources can be recovered from various residential, industrial and commercial wastes, such as municipal wastewater and sludge, e-waste, waste plastics and resins, crop residues, forestry residues and lignin.

Advanced waste-to-resource and energy technologies like pyrolysis, hydrothermal liquefaction, fractionation, de-polymerization, gasification and carbonization are also introduced. The book serves as

an essential guide to dealing with various types of wastes and the methods of disposal, recovery, recycling and re-use. As such it is a valuable resource for a wide readership, including graduate students, academic researchers, industrial researchers and practitioners in chemical engineering, waste management, waste to energy and resources conversion and biorefinery.

**Electronic Waste -** Maria E. Holuszko  
2021-11-19

Discover the latest technologies in the pursuit of zero-waste solutions in the electronics industry In *Electronic Waste: Recycling and Reprocessing for a Sustainable Future*, a team of expert sustainability researchers delivers a collection of resources that

thoroughly examine methods for extracting value from electronic waste while aiming for a zero-waste scenario in industrial production. The book discusses the manufacturing and use of materials in electronic devices while presenting an overview of separation methods for industrial materials. Readers will also benefit from a global overview of various national and international regulations related to the topic of electronic and electrical waste. A must-read resource for scientists and engineers working in the production and development of electronic devices, the authors provide comprehensive overviews of the benefits of achieving a zero-waste solution in electronic and electrical waste, as well as the risks posed by incorrectly disposed of electronic

waste. Readers will enjoy: An introduction to electronic waste, including the opportunities presented by zero-waste technologies and solutions Explorations of e-waste management and practices in developed and developing countries and e-waste transboundary movement regulations in a variety of jurisdictions Practical discussions of approaches for estimating e-waste generation and the materials used in electronic equipment and manufacturing perspectives In-depth treatments of various recycling technologies, including physical separation, pyrometallurgy, hydrometallurgy, and biohydrometallurgy Perfect for materials scientists, electronic engineers, and metal processing professionals, *Electronic Waste: Recycling and Reprocessing* for a



Sustainable Future will also earn a place in the libraries of industrial chemists and professionals working in organizations that use large amounts of chemicals or produce electronic waste.

Handbook of Environmental Engineering  
- Myer Kutz 2018-10-16

A comprehensive guide for both fundamentals and real-world applications of environmental engineering. Written by noted experts, Handbook of Environmental Engineering offers a comprehensive guide to environmental engineers who desire to contribute to mitigating problems, such as flooding, caused by extreme weather events, protecting populations in coastal areas threatened by rising sea levels, reducing illnesses caused by polluted air, soil, and water from improperly

regulated industrial and transportation activities, promoting the safety of the food supply. Contributors not only cover such timely environmental topics related to soils, water, and air, minimizing pollution created by industrial plants and processes, and managing wastewater, hazardous, solid, and other industrial wastes, but also treat such vital topics as porous pavement design, aerosol measurements, noise pollution control, and industrial waste auditing. This important handbook: Enables environmental engineers to treat problems in systematic ways. Discusses climate issues in ways useful for environmental engineers. Covers up-to-date measurement techniques important in environmental engineering. Reviews current

developments in environmental law for environmental engineers Includes information on water quality and wastewater engineering Informs environmental engineers about methods of dealing with industrial and municipal waste, including hazardous waste Designed for use by practitioners, students, and researchers, Handbook of Environmental Engineering contains the most recent information to enable a clear understanding of major environmental issues.

**Handbook of Recycling** - Ernst Worrell  
2014-04-28

Winner of the International Solid Waste Association's 2014 Publication Award, Handbook of Recycling is an authoritative review of the current state-of-the-art of recycling, reuse and reclamation processes commonly

implemented today and how they interact with one another. The book addresses several material flows, including iron, steel, aluminum and other metals, pulp and paper, plastics, glass, construction materials, industrial by-products, and more. It also details various recycling technologies as well as recovery and collection techniques. To completely round out the picture of recycling, the book considers policy and economic implications, including the impact of recycling on energy use, sustainable development, and the environment. With contemporary recycling literature scattered across disparate, unconnected articles, this book is a crucial aid to students and researchers in a range of disciplines, from materials and

environmental science to public policy studies. Portrays recent and emerging technologies in metal recycling, by-product utilization and management of post-consumer waste Uses life cycle analysis to show how to reclaim valuable resources from mineral and metallurgical wastes Uses examples from current professional and industrial practice, with policy and economic implications

*Metallurgical Slags* - Nadine M. Piatak 2021-08-13

Metallurgical slags are generated as a by-product of smelting during ironmaking, steelmaking, and the production of ferroalloys and non-ferrous metals. The formation conditions result in complex chemical and mineralogical characteristics unique to slags alone. Historically slags have been discarded as a waste

product and, through release of potentially toxic trace elements, represent a hazard to the environment and human health. However, increasingly we are realizing the resource potential of what was previously thought of as waste, thus reducing the environmental impact and taking a step closer to a circular economy. This book is a definitive reference on the environmental geochemistry and resource potential of metallurgical slags by summarizing processes for the generation of slags, describing their chemical and mineralogical characteristics, outlining the fundamental geochemistry that propels slag weathering, and illustrating the utilization of slags. Particular attention is given to the value of slags in modern society as they are

widely used as construction materials in civil engineering, and as an irreplaceable filter in sequestering excess nutrients, pathogens, metal and/or organic contaminants, and even greenhouse gases. The latest developments on recovering residual valuable metals in slags, including new techniques for extracting by-product elements needed for green and frontier technologies, are revealed. This book is essential reading for environmental geochemists, geologists, metallurgists, mining and civil engineers, waste and resource managers, and all those interested and inspired by a circular economy and minimizing our environmental footprint on planet Earth.

**Biohydrometallurgical Recycling of Metals from Industrial Wastes** - Hong Hocheng 2017-09-11

Although many available metal recycling methods are simple and fast, they are also expensive and cause environmental pollution. Biohydrometallurgical processing of metals offers an alternative to overcome these issues, as the use of biological means not only helps to conserve dwindling ore resources but also fulfills the need for the unambiguous need to extract metals in nonpolluting, low-energy, and low-cost way. This book covers biohydrometallurgy and its application in the recovery of metals from secondary sources like wastes. It aims to provide readers with a comprehensive overview of different wastes for metal recovery and biological treatment methods that are both environmentally friendly and economically viable.

Canadian Metallurgical Quarterly -  
2008

Energy Abstracts for Policy Analysis  
- 1976