Lithium Process Chemistry: Resources, Extraction, Batteries, and Recycling

Lithium Process Chemistry: Resources, Extraction, Batteries and Recycling presents, for the first time, the most recent developments and state-of-the-art of lithium production, lithium-ion batteries, and their recycling. The book provides fundamental and theoretical knowledge on hydrometallurgy and electrochemistry in lithium-ion batteries, including terminology related to these two fields. It is of particular interest to electrochemists who usually have no knowledge in hydrometallurgy and hydrometallurgists not familiar with electrochemistry applied to Li-ion batteries. It is also useful for both teachers and students, presenting an overview on Li production, Li-ion battery technologies, and lithium battery recycling processes that is accompanied by numerous graphical presentations of different battery systems and their electrochemical performances. The book represents the first time that hydrometallurgy and electrochemistry on lithium-ion batteries are assembled in one unique source.

Environmental Implications of Recycling and Recycled Products

This book includes details on the environmental implications of recycling, modeling of recycling, processing of recycled materials, recycling potential of materials, characterisation of recycled materials, reverse logistics, case studies of recycling various materials etc.

Recycling Our Future

Every day, every one of us contributes to the waste problem but, despite being a part of our lives, waste is poorly understood, even by those who should know better. We live in a throw-away society and yet what is discarded is a vital raw material and its recovery from bauxite, the various process steps and procedures, melting and casting plants, metal treatment facilities, provisions and equipment for environmental control and workforce safety, cold and hot recycling of aluminium including scrap preparation and remelting, operation and plant management. Due to more and more stringent regulations for environmental control and fuel efficiency as well as quality requirements sections about salt slag recycling, oxygen-fuel heating and heat treatment processes are now incorporated in the new edition.

Handbook of Aluminium Recycling

This Handbook has proven to be helpful to plant designers and operators for engineering and production of aluminium recycling plants. The book deals with aluminium as material and its recovery from bauxite, the various process steps and procedures, melting and casting plants, metal treatment facilities, provisions and equipment for environmental control and workforce safety, cold and hot recycling of aluminium including scrap preparation and remelting, operation and plant management. Due to more and more stringent regulations for environmental control and fuel efficiency as well as quality requirements sections about salt slag recycling, oxy-fuel heating and heat treatment processes are now incorporated in the new edition.

The reader is thus provided with a detailed overview of the technology of aluminium recycling.
Recycling and Extended Producer Responsibility

An overriding value of European legislation on waste management is the Extended Producer Responsibility (EPR) principle. For example, all economic operators placing packaging onto the EU market are responsible for its proper management and recovery. However, in general, the collection and treatment of urban waste is the responsibility of local authorities. It has therefore been necessary to establish a system of financial compensations between producers and waste management operators.

To completely round out the picture of recycling, the book considers policy and institutional schemes of several member states and accounting for all the costs and benefits to their local authorities due to selective collection and sorting, this book provides an accurate illustration of how the EPR principle has been translated into practice. Firstly the authors examine whether the industry is paying for the net financial cost of 'preparation for recycling' activities or if the extra-costs of recycling are being recovered via the sale of sorted materials, by the consumer through higher prices or by citizens in general through higher taxes.

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Secondly, by monetizing the net environmental benefits attained with the recycling system, the book discusses the success and Value-for-Money (VfM) of the EU’s recycling policy. In other words: what is the economic rate of return of the enhanced environmental protection achieved due to the fullfillment of recovery and recycling targets?

Industrial Wastewater Treatment, Recycling and Reuse

Industrial Wastewater Treatment, Recycling and Reuse is an accessible reference to assist you when handling wastewater treatment and recycling. It features an instructive compilation of methodologies, including advanced physico-chemical methods and biological methods of treatment. It focuses on recent industry practices and preferences, along with newer methodologies for energy generation through waste.

The book is based on a workshop run by the Indus MAGIC program of CSR, India. It covers advanced processes in industrial wastewater treatment, applications, and feasibility analysis, and explores the process intensification approach as well as implications for industrial applications. Techno-economic feasibility evaluation is addressed, along with a comparison of different approaches illustrated by specific case studies.

Industrial Wastewater Treatment, Recycling and Reuse introduces you to the subject with specific reference to problems currently being experienced in different industry sectors, including the petroleum industry, the fine chemical industry, and the specialty chemicals manufacturing sector. * Provides practical solutions for the treatment and recycling of industrial wastewater via case studies* Instructive articles from expert authors give a concise overview of different physio-chemical and biological methods of treatment, cost-to-benefit analysis, and process comparison* Supplies you with the relevant information to make quick process decisions

Handbook of Recycling

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.

Electronic Waste: Recycling Techniques

This book presents an overview of the characterization of electronic waste. In addition, processing techniques for the recovery of metals, polymers and ceramics are described. This book serves as a source of information and as an educational technical reference for practicing scientists and engineers, as well as for students.
As the popularity of sustainability grows and climate change becomes an accepted reality, experts point to trash and waste as the link between environmental and public health. This detailed reference—one of the most comprehensive resources available on the subject—examines garbage disposal on a global level, from the history of waste management, to the rise of green movements and recycling programs, to the environmental problems caused by incineration and overflowing landfills. According to urban planning scholar Robert William Collin, accounting for waste will improve the chances for environmental protection, public health, and sustainability.

This country-by-country guide studies waste management practices and related topics from around the world, including garbage strikes in Italy, successful recycling programs in Switzerland, trash in the streets of India, and the garbage patch floating in the Pacific Ocean. Country entries cover a brief history of garbage disposal, current methods of removal, recycling, and waste management problems specific to the region. Additional content addresses air and water pollution, greenhouse gas emissions, E-waste, and hazardous and nuclear wastes.