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MOHAMMED GUERRA

Phosphorus Recovery and Recycling John Wiley & Sons

A comprehensive book that explores nitrogen fixation by using transition metal-dinitrogen complexes. Nitrogen fixation is one of the most prominent fields of research in chemistry. This book puts the focus on the development of catalytic ammonia formation from nitrogen gas under ambient reaction conditions that has been recently repowered by some research groups. With contributions from noted experts in the field, *Transition Metal-Dinitrogen Complexes* offers an important guide and comprehensive resource to the most recent research and developments on the topic of nitrogen fixation by using transition metal-dinitrogen. The book is filled with the information needed to understand the synthesis of transition metal-dinitrogen complexes and their reactivity. This important book: -Offers a resource

for understanding nitrogen fixation chemistry that is essential for explosives, pharmaceuticals, dyes, and all forms of life - Includes the information needed for anyone interested in the field of nitrogen fixation by using transition metal-dinitrogen complexes - Contains state-of-the-art research on synthesis of transition metal-dinitrogen complexes and their reactivity in nitrogen fixation -Incorporates contributions from well-known specialists and experts with an editor who is an innovator in the field of dinitrogen chemistry Written for chemists and scientists with an interest in nitrogen fixation, *Transition Metal-Dinitrogen Complexes* is a must-have resource to the burgeoning field of nitrogen fixation by using transition metal-dinitrogen complexes.

ROUTLEDGE HANDBOOK OF SUSTAINABLE AND RESILIENT INFRASTRUCTURE

Springer Nature
Cryogen-free cryogenics is leading a revolution in research and industry by its significant advantages

over traditional liquid helium systems. This is the first overview for the field, covering the key technologies, conceptual design, fabrication, operation, performance, and applications of these systems. The contents cover important topics such as the operating principles of 4K cryocoolers, enabling technologies (including vibration reduction) for cryogen free systems, the cryogen-free superconducting magnet, and cryogen-free systems that reach mK. It highlights the wide range of applications in materials science, quantum physics, astronomy and space science, medical sciences and etc. Key features: Introduce technologies and practical know-how employed for cryogen-free systems of using 4 K cryocoolers to replace liquid helium; Address state of the arts of cryogen-free superconducting magnets, sub-kelvin refrigeration systems of He-3 sorption cooler, adiabatic demagnetization refrigerator (ADR) and dilution refrigerators (DR). Discuss applications of cryogen-free systems in modern instruments and equipment.

BUILDING INDUSTRIES AT SEA - 'BLUE GROWTH' AND THE NEW MARITIME ECONOMY

Government Printing Office

Bridging the gap between traditional books on quantum and statistical physics, this series is an ideal introductory course for students who are looking for an alternative approach to the traditional academic treatment. This pedagogical approach relies heavily on scientific or technological applications from a wide range of fields. For every new concept introduced, an application is given to connect the theoretical results to a real-life situation. Each volume features in-text exercises and detailed solutions, with easy-to-understand applications. Building on the principles introduced in Volume 1, this second volume explains the structure of atoms, the vibration and rotation of molecules. It describes how this is related to thermodynamics through statistical physics. It is shown that these fundamental achievements help to understand how

explosives and CO₂ can be detected, what makes a gecko stick to the ceiling, why old stars do not necessarily collapse, where nuclear energy comes from, and more.

MINERAL COMMODITY SUMMARIES, 2015

Springer Nature

This book provides the multidisciplinary reading audience with a comprehensive state-of-the-art overview of research and innovations in the relationship between iron ores and iron ore materials. The book covers industrial sectors dealing with exploration and processing of iron ores as well as with advanced applications for iron ore materials and therefore entails a wide range of research fields including geology, exploration, beneficiation, agglomeration, reduction, smelting, and so on, thus encouraging life cycle thinking across the entire production chain. Iron remains the basis of modern civilization, and our sustainable future deeply depends upon our ability to satisfy the growing demand for iron and steel while decoupling hazardous emissions from economic growth. Therefore,

environmental sustainability aspects are also broadly addressed. In response to socioeconomic and climatic challenges, the iron ore sector faces, this book delivers a vision for the new opportunities linked to deployment of the best available, innovative and breakthrough technologies as well as to advanced material applications.

Mammals and Birds as Bioindicators of Trace Element Contaminations in Terrestrial Environments Springer
America needs better options for resolving potential crises In recent years, the Pentagon has elevated its concerns about Russia and China as potential military threats to the United States and its allies. But what issues could provoke actual conflict between the United States and either country? And how could such a conflict be contained before it took the world to the brink of thermonuclear catastrophe, as was feared during the cold war? Defense expert Michael O'Hanlon wrestles with these questions in this insightful book, setting them within the broader context of

hegemonic change and today's version of great-power competition. The book examines how a local crisis could escalate into a broader and much more dangerous threat to peace. What if, for example, Russia's "little green men" seized control of a community, like Narva or an even smaller town in Estonia, now a NATO ally? Or, what if China seized one of the uninhabited Senkaku islands now claimed and administered by Japan, or imposed a partial blockade of Taiwan? Such threats are not necessarily imminent, but they are far from inconceivable. Washington could be forced to choose, in these and similar cases, between risking major war to reverse the aggression, and appeasing China or Russia in ways that could jeopardize the broader global order. O'Hanlon argues that the United States needs a better range of options for dealing with such risks to peace. He advocates "integrated deterrence," which combines military elements with economic warfare. The military components would feature strengthened forward defenses as well as, possibly, limited

military options against Russian or Chinese assets in other theaters. Economic warfare would include offensive elements, notably sanctions, as well as measures to ensure the resilience of the United States and allies against possible enemy reprisal. The goal is to deter war through a credible set of responses that are more commensurate than existing policy with the stakes involved in such scenarios. Periodico di Mineralogia Vol. 86, 2 settembre 2017 Oxford University Press This book focuses on the engineering aspects of phosphorus (P) recovery and recycling, presenting recent research advances and applications of technologies in this important and challenging area of engineering. It highlights full-scale applications to illustrate the performance and effectiveness of the new technologies. As an essential element for all living organisms, P cannot be replaced by any other element in biochemical processes, humans ultimately rely its availability. Today, P is mostly obtained from mined rock phosphate (Pi). However, natural reserves of high-grade

rock Pi are limited and dwindling on a global scale. As such, there have been increased efforts to recycle P from secondary sources, including sewage sludge, animal manure, food waste, and steelmaking slag, and so close the anthropogenic P cycle. In addition to various aspects of phosphorus covered by other literature, including chemistry, biochemistry, ecology, soil-plant systems and sustainable management, this book is a valuable and comprehensive source of information on the rapidly evolving field of P recovery and recycling engineering for students, researchers, and professionals responsible for sustainable use of phosphorus. *Developments in the Formulation and Reinforcement of Concrete* Berghahn Books This collection presents papers from a symposium on extraction of rare metals as well as rare extraction processing techniques used in metal production. Topics include the extraction and processing of elements such as antimony, arsenic, gold, indium, palladium, platinum, rare earth metals including yttrium and neodymium,

titanium, tungsten, and vanadium. Rare processing techniques are covered, including direct extraction processes for rare-earth recovery, biosorption of precious metals, fluorination behavior of uranium and zirconium mixture of fuel debris treatment, and recovery of valuable components of commodity metals such as zinc, nickel, and metals from slag.

Model Rules of Professional Conduct

Springer Nature

Rare Earth

ChemistryWalter de

Gruyter GmbH & Co KG

Rare Earth Chemistry CRC Press

Energy Storage and Conversion Materials

describes the application of inorganic materials in the storage and conversion of energy.

Energy Technology 2018 Springer

This book examines the electronic structure of earth-abundant and environmentally friendly materials for use as absorber layers within photovoltaic cells. The corroboration between high-quality photoemission measurements and density of states calculations yields valuable insights into why

these materials have demonstrated poor device efficiencies in the vast literature cited. The book shows how the materials' underlying electronic structures affect their properties, and how the band positions make them unsuitable for use with established solar cell technologies. After explaining these poor efficiencies, the book offers alternative window layer materials to improve the use of these absorbers. The power of photoemission and interpretation of the data in terms of factors generally overlooked in the literature, such as the materials' oxidation and phase impurity, is demonstrated.

Representing a unique reference guide, the book will be of considerable interest and value to members of the photoemission community engaged in solar cell research, and to a wider materials science audience as well.

THE ART OF WAR IN AN AGE OF PEACE

BoD - Books on Demand

As the importance and dependence of specific mineral commodities increase, so does concern about their supply. The United States is currently

100 percent reliant on foreign sources for 20 mineral commodities and imports the majority of its supply of more than 50 mineral commodities.

Mineral commodities that have important uses and face potential supply disruption are critical to American economic and national security.

However, a mineral commodity's importance and the nature of its supply chain can change with time; a mineral commodity that may not have been considered critical 25 years ago may be critical today, and one considered critical today may not be so in the future. The U.S.

Geological Survey has produced this volume to describe a select group of mineral commodities currently critical to our economy and security. For each mineral commodity covered, the authors provide a comprehensive look at (1) the commodity's use; (2) the geology and global distribution of the mineral deposit types that account for the present and possible future supply of the commodity; (3) the current status of production, reserves, and resources in the United States and globally; and (4) environmental

considerations related to the commodity's production from different types of mineral deposits. The volume describes U.S. critical mineral resources in a global context, for no country can be self-sufficient for all its mineral commodity needs, and the United States will always rely on global mineral commodity supply chains. This volume provides the scientific understanding of critical mineral resources required for informed decisionmaking by those responsible for ensuring that the United States has a secure and sustainable supply of mineral commodities.

Gold Woodhead Publishing

A fully updated edition of a popular textbook covering the four disciplines of chemical technology?featuring new developments in the field Clear and thorough throughout, this textbook covers the major sub-disciplines of modern chemical technology?chemistry, thermal and mechanical unit operations, chemical reaction engineering, and general chemical technology?alongside raw materials, energy sources and detailed descriptions of 24 important industrial

processes and products. It brings information on energy and raw material consumption and production data of chemicals up to date and offers not just improved and extended chapters, but completely new ones as well. This new edition of *Chemical Technology: From Principles to Products* features a new chapter illustrating the global economic map and its development from the 15th century until today, and another on energy consumption in human history. Chemical key technologies for a future sustainable energy system such as power-to-X and hydrogen storage are now also examined. Chapters on inorganic products, material reserves, and water consumption and resources have been extended, while another presents environmental aspects of plastic pollution and handling of plastic waste. The book also adds four important processes to its pages: production of titanium dioxide, silicon, production and chemical recycling of polytetrafluoroethylene, and fermentative synthesis of amino acids. - Provides comprehensive coverage of chemical

technology?from the fundamentals to 24 of the most important processes -Intertwines the four disciplines of chemical technology: chemistry, thermal and mechanical unit operations, chemical reaction engineering and general chemical technology -Fully updated with new content on: power-to-X and hydrogen storage; inorganic products, including metals, glass, and ceramics; water consumption and pollution; and additional industrial processes - Written by authors with extensive experience in teaching the topic and helping students understand the complex concepts *Chemical Technology: From Principles to Products, Second Edition* is an ideal textbook for advanced students of chemical technology and will appeal to anyone in chemical engineering.

APPRAISAL OF METAL(LOIDS) IN THE ECOSYSTEM

Springer

This book is a printed edition of the Special Issue "Criticality of the Rare Earth Elements: Current and Future Sources and Recycling"

that was published in Resources Mineral Commodity Summaries 2020 Routledge

To best serve current and future generations, infrastructure needs to be resilient to the changing world while using limited resources in a sustainable manner. Research on and funding towards sustainability and resilience are growing rapidly, and significant research is being carried out at a number of institutions and centers worldwide. This handbook brings together current research on sustainable and resilient infrastructure and, in particular, stresses the fundamental nexus between sustainability and resilience. It aims to coalesce work from a large and diverse group of contributors across a wide range of disciplines including engineering, technology and informatics, urban planning, public policy, economics, and finance. Not only does it present a theoretical formulation of sustainability and resilience but it also demonstrates how these ideals can be realized in practice. This work will provide a reference text to students and scholars

of a number of disciplines.

ELECTRONIC CHARACTERISATION OF EARTH-ABUNDANT SULPHIDES FOR SOLAR PHOTOVOLTAICS

IGI Global

Cadmium Toxicity and Tolerance in Plants: Agronomic, Genetic, Molecular and Omic Approaches presents research and latest developments on mechanisms of cadmium tolerance covering both lab and field conditions. This book contains important insights and options for minimizing Cd accumulation in plants and mitigating Cd toxicity. Topics covered include using various omics approaches to understanding plant responses to Cd, novel technologies for developing Cd tolerance and integrated breeding approaches to mitigate Cd stress in crops. Cadmium Toxicity and Tolerance in Plants: Agronomic, Genetic, Molecular and Omic Approaches is a valuable resource for both researchers and students working on cadmium pollution and plant responses as well as related fields of environmental contamination and

toxicology. Provides data on mechanisms of cadmium tolerance at the cell, organ and whole plant level Covers several major approaches, molecular and agronomic, in addressing cadmium toxicity in plants and soil Offers real-world, application focused techniques

RARE METAL TECHNOLOGY 2018

Elsevier

This book is a compass for resource rich-developing countries, taking Mongolia as a case study. Policy aspects of the development of the mining sector in developing countries such as Mongolia and its impact on the economy and society are reviewed. The book deals with specific industry policies and challenges identified by policy makers, its characteristics and policy recommendations moving forward with an emphasis on the importance of evidence-based policy making (EBPM). It begins with the country's development strategy and the role of the mining industry, highlighting the fact that major strategic and policy documents still suffer from ambiguity and clear guidance as well as gaps in policy directions.

The book also highlights the need for policy makers to improve transparency initiatives. Authors emphasize transparency or lack thereof in mining contracts, taxation, trading, and marketing and provide specific policy recommendations and alternative policy actions. The macroeconomic and social impact of the mining sector and the role of foreign direct investment is also discussed. Particularly, utilizing in-house economic analytical tools, the role and impact of resource revenue management policy in Mongolia is evaluated. Further, the impact of mining projects on the livelihood of local households as well as the importance of obtaining a social license to operate is discussed. This monograph is recommended for readers who want an in-depth comprehensive understanding of the mining sector, EBPM, and key lessons learned in managing natural resources in Mongolia. [Economic Dependence of Mongolia on Minerals](#) Enslow Publishing, LLC Monika Huraiová, Patrik Konečný, Ivan Holický, Stanislava

Milovská, Ondrej Nemec, Vratislav Hurai - Mineralogy and origin of peralkaline granite-syenite nodules ejected in Pleistocene basalt from Bulhary, southern Slovakia Laura Medeghini and Lorenzo Nigro - Khirbet al-Batrawy ceramics: a systematic mineralogical and petrographic study for investigating the material culture Liam A. Bullock, Ralf Gertisser, Brian O'Driscoll - Spherulite formation in obsidian lavas in the Aeolian Islands, Italy Simone Pollastri, Natale Perchiazzi, Lara Gigli, Paolo Ferretti, Alessandro Cavallo, Nicola Bursi Gandolfi, Kilian Pollok, Alessandro F. Gualtieri - The crystal structure of mineral fibres. 2. Amosite and fibrous anthophyllite Nima Nezafati and Morteza Hessari - Tappeh Shoghali; A significant early silver production site in North Central Iran Shanke Liu, Jiaju Li, Jianming Liu - An updated model of Rietveld structure refinement of Na-feldspar **Globalography: Our Interconnected World revealed in 50 Maps** Edizioni Nuova Cultura 50 stunning maps reveal our globalized world like never before Explore how

cities are expanding beyond the reach of their nations, uncover the ways bananas, cobalt and water bottles link the most unlikely of places, and discover how modern phenomena such as messenger apps and sharing platforms are changing not just our interactions, but how we interconnect. Globalography uncovers the myriad ways we can now connect with one another and in doing so, showcases the radical way globalization is transforming our world. *Dust Inside Geological Survey* Developments in the Formulation and Reinforcement of Concrete, Second Edition, presents the latest developments on topics covered in the first edition. In addition, it includes new chapters on supplementary cementitious materials, mass concrete, the sustainability of concrete, service life prediction, limestone cements, the corrosion of steel in concrete, alkali-aggregate reactions, and concrete as a multiscale material. The book's chapters introduce the reader to some of the most important issues facing today's concrete industry. With its

distinguished editor and international team of contributors, users will find this to be a must-have reference for civil and structural engineers. Summarizes a wealth of recent research on structural concrete, including material microstructure, concrete types, and variation and construction techniques. Emphasizes concrete mixture design and applications in civil and structural engineering. Reviews modern concrete materials and novel construction systems, such as the precast industry and structures requiring high-performance concrete. Space Infrastructures:

From Risk to Resilience Governance Edizioni Nuova Cultura
In this important new primer, Dustin Mulvaney makes a passionate case for the significance of solar power energy and offers a vision for a more sustainable and just solar industry for the future. The solar energy industry has grown immensely over the past several years and now provides up to a fifth of California's power. But despite its deservedly green reputation, solar development and deployment have potential social and environmental consequences, from poor

factory labor standards to landscape impacts on wildlife. Using a wide variety of case studies and examples to trace the life cycle of photovoltaics, Mulvaney expertly outlines the state of the solar industry, exploring the ongoing conflicts between ecological concerns and climate mitigation strategies, as well as current trade disputes and the fate of toxins in solar waste products. This exceptional overview will outline the industry's current challenges and possible future for students in environmental studies, energy policy, environmental sociology, and other aligned fields.

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