

Carbon Dioxide Management and Other Technologies: The Minerals, Metals & Materials Imperative

As global efforts to address climate change intensify, the urgent need for effective solutions to reduce greenhouse gas emissions becomes increasingly apparent. Amidst various strategies, carbon dioxide (CO₂) management and other cutting-edge technologies hold immense promise in mitigating the impacts of carbon pollution.

Carbon Dioxide Management and Other Technologies: The Minerals, Metals & Materials Imperative, a comprehensive publication from The Minerals, Metals & Materials Society (TMS), delves into the latest technological advancements and their pivotal role in managing CO₂ emissions.



Energy Technology 2024: Carbon Dioxide Management and Other Technologies (The Minerals, Metals & Materials Series)

★★★★★ 5 out of 5

Language : English
File size : 31456 KB
Text-to-Speech : Enabled
Screen Reader : Supported
Enhanced typesetting : Enabled
Print length : 280 pages



Minerals, Metals, and Materials: The Cornerstone of CO₂ Management

Minerals, metals, and materials play a critical role in the decarbonization process. From advanced materials for carbon capture and utilization (CCU) to high-performance alloys for renewable energy systems, these resources form the foundation of emerging technologies.

The book explores the intricate relationship between minerals, metals, and CO₂ management. It examines the challenges and opportunities presented by the need for sustainable production, utilization, and recycling of these materials.

Cutting-Edge Technologies for CO₂ Reduction

Carbon Dioxide Management and Other Technologies showcases a wide range of innovative technologies that offer promising solutions for reducing CO₂ emissions.

Carbon Capture and Utilization (CCU)

CCU technologies capture CO₂ from industrial processes or directly from the atmosphere and convert it into valuable products, such as fuels, chemicals, or building materials. The book discusses various CCU pathways, including:

- Post-combustion capture
- Pre-combustion capture
- Oxyfuel combustion

Carbon Capture and Storage (CCS)

CCS involves capturing CO₂ and permanently storing it underground, preventing its release into the atmosphere. The book explores different

CCS methods, including:

- Geological storage
- Ocean storage
- Mineral carbonation

Renewable Energy and Energy Efficiency

Renewable energy sources, such as solar, wind, and geothermal, play a crucial role in reducing CO₂ emissions from energy production. The book highlights the importance of energy efficiency measures and smart grid technologies in maximizing renewable energy utilization.

Industry Case Studies and Best Practices

Carbon Dioxide Management and Other Technologies features real-world case studies that demonstrate the successful implementation of CO₂ management technologies. These case studies provide valuable insights into:

- Feasibility and cost-effectiveness of different technologies
- Technical challenges and solutions
- Environmental and economic benefits

Policy and Regulatory Considerations

Effective CO₂ management requires supportive policy frameworks and regulations. The book discusses the evolving policy landscape, including:

- Carbon pricing mechanisms

- Government incentives and subsidies
- International agreements

The Path to a Sustainable Future

Carbon Dioxide Management and Other Technologies concludes by emphasizing the urgent need for collaboration and innovation to accelerate the adoption of CO2 management technologies.

The book calls for:

- Increased investment in research and development
- Strengthened partnerships between industry, academia, and government
- Public awareness and engagement

Carbon Dioxide Management and Other Technologies is an indispensable resource for anyone seeking to understand the critical role of minerals, metals, and materials in mitigating climate change. It provides a comprehensive overview of the latest technologies, case studies, and policy considerations, empowering readers to contribute to a more sustainable future.

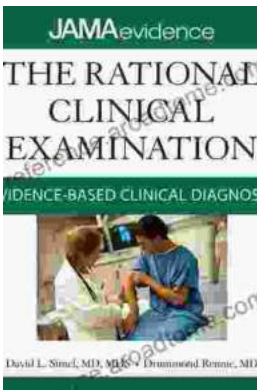
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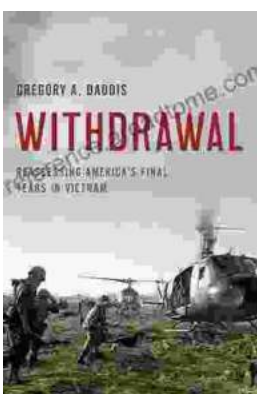


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