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Nota di contenuto	Part 1. Energy Technologies and CO2 Management Symposium -- Gas Hydrate-based CO2 Separation Process: Quantitative Assessment of the Effectiveness of Various Chemical Additives Involved in the Process -- Tar Removal from Hot Coke Oven Gas for H2 Amplification with In Situ CO2 Capture -- An Evaluation Method for Material and Energy Conversion Effect with Steel Manufacturing Process Data -- Preparation and Characterization of Activated Carbon from Waste Ion-exchange Resin for CO2 Adsorption -- Evaluation of Variation in the Life Cycle Based Environmental Impacts for Copper Concentrate Production -- Direct Reduction of Copper Slag Composite Pellets within Lignite Using Biomass as Binder -- Thermodynamic Analysis of Incineration Treatment of Waste Disposable Syringes in an EAF Steel-making Process -- The Reduction Kinetic of the Combined Cu-based Oxygen

Carrier Used for Chemical Looping Gasification Technology -- Synergistic Effect Between Fat Coal and Poplar During Co-pyrolysis with Thermal Behavior and ATR-FTIR Analysis -- Flow Characteristic of Two-phase Bubble Reactor for Slag Waste Heat Recovery -- Improving Energy Efficiency in Direct Method for Continuous Casting of Lead Sheets -- Research on High Efficiency Energy Conversion Technology for Modern Hot Blast Stove -- An Exergy Study of Cowper Stove Operations with an Iron Blast Furnace -- Waste Heat Recovery from Aluminum Production -- Leaching and Carbonation of Electric Arc Furnace(EAF) Slag under a Microwave Field for Mineral Carbonation -- A Novel Preparation of Bi2O3 and Their Potent Photocatalytic Activity under Visible-light Irradiation -- Energy Conservation in Sintering Ignition Process Based on Comprehensive Ignition Intensity -- Part 2. Deriving Value from Challenging Waste Streams: Recycling and Sustainability Joint Session -- Behavior of Co, Ni and Precious Metals in Copper Converting Process: Experimental Study -- Recycling of EAF Dust through Source Separation -- A Sustainable Methodology for Recycling Electric Arc Furnace Dust -- Thermal Separation and Leaching of Valuable Elements from Waste-derived Ashes -- Different Methods for the Characterization of Ash Compositions in Co-firing Boilers -- Utilization CFA-derived Tobermorite Fiber as Crystallization Revulsive in Autoclaved Concrete Block Production -- An Electrochemical Procedure for Copper Removal from Regenerated Pickling Solutions of Steel Plants -- Upgrading the Copper Value in a Waste Copper Smelter Dust Using the Falcon Concentrator -- Towards Commercialization of Indium Recovery from Waste Liquid Crystal Display Screens -- Engineering, Scientific, and Policy Inputs for Developing a Levelized Cost of Energy Storage Model -- Recovery of Gallium and Arsenic from Gallium Arsenide Semiconductor Scraps -- Rapid Removal of Pb(II) from Acid Wastewater using Vanadium Titanium-bearing Magnetite Particles Coated by Humic Acidcoated by humic acid(VTM-HA) Magnetic Particles -- Study on the Technology of Synthesizing MgAl2O4 Spinel Refractory Material from Waste Chromium Slag of a Certain Chrome Plant in China -- Effect of Ferrosilicon on Reduction of Cr2O3 in Steelmaking Slags -- Bacterial Degradation of Free Cyanide in Alkaline Medium Using Bacillus Licheniformis Strain -- Determination of Limiting Current Density of a Solution with Copper, Zinc and EDTA from the Effluent of Brass Electrodeposition -- Effect of the PH on the Recovery of Al3+, Co2+, Cr3+, Cu2+, Fe3+, Mg2+, Mn2+, Ni2+ and Zn2+ by Purolite S950 -- Evaluation of the Occurrence of Fouling and Scaling on the Membrane HDX 200 for the Treatment of the Effluent of Brass Electrodeposition with EDTA as Complexing Agent -- High Temperature Crystallization Kinetics of MgSO4.H2O -- Preparation of Glass-ceramic from Titanium-bearing Blast Furnace Slag by “Petrurgic” Method -- Recovery of Copper from Nickel Laterite Leach Waste by Chemical Reduction Using Sodium Dithionite -- Recovery of Nickel and Cobalt from a Waste Zone of Nickel Laterite Ore Using a Mixture of Extractants in Solvent Extraction Technique -- White Ordinary Portland Cement Paste with Iron Oxide Powders Containing Arsenic Contents -- Part 3. Solar Cell Silicon -- Three-Dimensional Crystal-Plasticity based Model for Intrinsic Stresses in Multi-Junction Photovoltaic -- A Review of Solar Silicon Recycling -- Thermo-Calc of the Phase Diagram of the Fe-Si System -- Crystal Growth Mechanism of Si in Hypereutectic Al-Si Melt during the Electromagnetic Directional Solidification -- Thermo-Calc of the Phase Diagram of Calcium Silicon (Ca-Si) System -- Leaching of Indium from ITO Present in Amorphous Silicon Photovoltaic Modules -- Part 4. Materials for Energy Conversion and Storage -- Direct Performance Simulation Based on the Microstructure of SOFC

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Sommario/riassunto

This collection focuses on energy efficient technologies including innovative ore beneficiation, smelting technologies, recycling and waste heat recovery. The volume also covers various technological aspects of sustainable energy ecosystems, processes that improve energy efficiency, reduce thermal emissions, and reduce carbon dioxide and other greenhouse emissions. Papers addressing renewable energy resources for metals and materials production, waste heat recovery and other industrial energy efficient technologies, new concepts or devices for energy generation and conversion, energy efficiency improvement in process engineering, sustainability and life cycle assessment of energy systems, as well as the thermodynamics and modeling for sustainable metallurgical processes are included. This volume also includes topics on CO2 sequestration and reduction in greenhouse gas emissions from process engineering, sustainable technologies in extractive metallurgy, as well as the materials processing and manufacturing industries with reduced energy consumption and CO2 emission. Contributions from all areas of non-nuclear and non-traditional energy sources, such as solar, wind, and biomass are also included in this volume. Papers from the following symposia are presented in the book: Energy Technologies and CO2 Management Advanced Materials for Energy Conversion and Storage Deriving Value from Challenging Waste Streams: Recycling and Sustainability Joint Session Solar Cell Silicon Stored Renewable Energy in Coal.