Proceedings

European Metallurgical Conference
Emc 2019
June 23 - 26
Düsseldorf, Germany

Volume 1

I Resources / Metals
Light Metals
Copper / Lead / Zinc
Precious Metals
Nickel / Cobalt / Vanadium
Minor Metals (Rare Earths, Indium)

II Materials Processing
Raw Material Handling
Process Control

The European Metallurgical Conference is organized by
Structure of the Proceedings

- Volume 1:
  - I Resources / Metals
    - Light Metals
    - Copper
    - Lead
    - Zinc
    - Precious Metals
    - Nickel / Cobalt / Vanadium
    - Minor Metals
  - II Materials Processing
    - Raw Material Handling
    - Process Control

- Volume 2:
  - II Materials Processing
    - Process Fundamentals, Modelling and Simulations
    - Upgrading processes and handling of Impurities
    - General Pyrometallurgy
    - General Hydrometallurgy
    - New Processes
  - III Sustainable Production
    - Recycling / Waste
    - Strategic Resource Saving and Metals Recovery Technologies
    - Secondary Metallurgy
    - By-product Treatment
    - Slag
• Volume 4:

• III Sustainable Production
  Developments in Environmental Protection
  Quality Assurance
  Analytics

• IV Themes of current issues / Best Practices
  Improving of Alloys
  Powder Metallurgy and 3D Print
  Foundry – Casting
  Refractory Materials
  Economic Prospects and Trading
  HSE practices and Legal Aspects
  Industry 4.0

• V Poster
• VI Authors Index
• VII Keywords Index
Table of Contents – Volume 1

I Resources / Metals

Light Metals

Data Reconciliation for Vanadium Balance in an Alumina Refinery 5
Swagatika Dash, Rahul K. Soni, Swati Mohanty

Smelting Reduction of Bauxite Residue and Beneficiation By-product in View of a Leachable Slag and Pig Iron Production 17
Adamantia Lazou, Casper Van der Eijk, Efthymios Balomenos, Jafar Safarian

A Quick Sampling Method for Mapping Particle Distribution in Al-melt 35
M.Sc. Cong Li, M.Sc. Xiaoxin Zhang, Dr. -Ing. Mertol Gökelma, Dr. -Ing. Wolfram Stets, Prof. Dr.-Ing. Dr. h.c. Bernd Friedrich

Primary evaluation of the use and refining of Al scrap recovered from a landfill in Belgium 51

Evaluating Alternative Methods of Producing Flame Retardant-grade Magnesium Hydroxide 65
Dr. James M. Mwase, Dipl.-Ing. Mario Stein, Dr. David Konlechner, M.Sc. Min Eduard Stefanescu, Prof. Stoyan Gaydardzhiev, Dipl.-Ing. Egon Sehner

Investigation of Process Parameters in a Vacuum Distillation Setup to produce High Purity Magnesium 73
M.Sc. Seifeldin Raslan Mohamed, Dr.-Ing. Semiramis Friedrich, Prof. Dr.-Ing. Dr. h.c. Bernd Friedrich
Copper

Scaling up novel heap leach processes: A black schist case study 85
MSc. Antti Arpalahti

Plant-wide optimization of a copper smelter: how to do it in practice? 95
M. Korpi, J. Jansson, J. Pihlasalo, O. Suominen, M. Vilkko

Influence of temperature and agitation on reduction rate of converter slag from CuFePb alloy fining process 107
Piotr Madej, Ph.D., Łukasz Kortyka, MSc, Tomasz Sak, Ph.D., Grzegorz Krawiec, MSc

Analysis of the flotation behavior of complex copper ore 125
H. Matsuoka, K. Mitsuhashi, M. Kawata, G. Granata, C. Tokoro

Anodic Dissolution of Low Grade Copper Alloys in Sulfamic Acid Electrolyte 135
Hidehiro Sekimoto, Tomohiro Sugawara, Kazuhisa Fuku, Nina Iwabuchi

Green revolution at KGHM – next stage 147
Zbigniew Śmieszek, Grzegorz Krawiec, Tomasz Sak, Piotr Madej
Marcin Gut, Zbigniew Przebindowski, Leszek Garycki, Arkadiusz Drapiński

Concentrate Burner Development on Copper and Lead Flash Furnaces 161
Matthew White, Thomas Gonzales, Wesley Taylor

Lead

Slag-Coke Interactions in the Lead Blast Furnace 181
Robin Vanparys, Geoff Brooks, Akbar Rhamdhani, Tijl Crivits
Zinc

Research and Development of Pyrohydro-metallurgical Technology of Ferrous Dust Treatment with Zinc Powder Production
P.A. Kozlov, A.M. Panshin, S.A. Yakornov

Secondary oxide materials processing in ISP process in HC Miasteczko Śląskie
Ryszard Prajsnar, Piotr Bednarek, Krzysztof Wilk, Tadeusz Szysler, Zbigniew Szołomicki, Jan Mrozowski, Andrzej Uliszak

Research on recovery of zinc and lead from waste raw materials after enrichment of Zn-Pb ore and after metallurgical processes
Prof. Dr. inż. Z. Śmieszek, Mgr inż. K. Cichy, Mgr inż. B. Ochab, Mgr inż. C. Reguła, Mgr inż. Ł. Skrzypiec

Zinc recovery of low grade concentrate from Vazante mine by the Waelz Process

Precious Metals

Cyanide alternative leaching reagents for gold recovery from electronic waste: Potential and limitations of thiosulfate
Alexander Birich, Bernd Friedrich

Silver recovery from oxygen depolarized cathodes in methane sulfonic acid
Jil Schosseler, Anna Trentmann, Prof. Dr. Ing. Dr. h.c. Bernd Friedrich

Nickel / Cobalt / Vanadium

Column leaching of saprolitic laterites with sulphuric acid
Prof. Konstantinos Komnitsas, Evangelos Petrakis, Olga Pantelaki, Anna Kritikaki
Recovery of nickel from Polish lateritic nickel ore
Grzegorz Pietek, Andrzej Chmielarz, Zbigniew Szolomiczki, Katarzyna Leszczyńska-Sejda, Patrycja Kowalik

Minor Metals

Hydrometallurgical method for recovery of Ge and In concentrates from ISP by-products
Michał Drzazga, Andrzej Chmielarz, Ryszard Prajnar, Grzegorz Benke, Mateusz Ciszewski, Katarzyna Leszczyńska-Sejda, Zbigniew Szolomiczki, Grzegorz Krawiec

Effect of planetary ball milling and solid sodium hydroxide on dissolution of rare earth elements from weathered residual rare earth ores
Tatsuya Kato, Granata Giuseppe, Mariusz Grabda, Chiharu Tokoro, Yuki Tsunazawa, Tetsuichii Takagi

Rhenium recovery from recycling-based materials
Katarzyna Leszczyńska-Sejda, Grzegorz Benke, Józef Śmieszek, Tadeusz Grabowski, Dorota Kopyto, Mateusz Ciszewski, Joanna Malarz, Andrzej Domagała, Alicja Skoczylas, Michał Drzazga, Patrycja Kowalik, Jędrzej Piątek Józef Deryło

Recovery of Zr from a leach solution of eudialyte residue using basic sulfate precipitation
Yiqian Ma, Akashy Toradmal, Srecko Stopic, Bernd Friedrich

Cost comparison between two different two-liquid flotation methods
Dr. Akira Otsuki, Dr. Gjergj Dodbiba, Prof. Toyohisa Fujita

Extraction of Indium and Silver aside of Zinc from Jarosite residue
Priv.-Doz. Dipl.-Ing. Dr. mont. Stefan Steinlechner

Proceedings of EMC 2019
XX
Influence of C-feeding on a pyrometallurgical Ta and Nb recycling process and the formation of carbides

M. Sc. Mareike C. Taube, Dr.-Ing. Christian Adam, Dr. rer. nat. Burkart Adamczyk,
M. Eng. Tobias Beckmann, Prof. Dr. Dr. h.c. Markus Reuter, Prof. Dr.-Ing. Michael Stelter

A new Approach of Gallium Recycling from Etching Solutions in GaAs Production by Dialysis

A. Weigelt, M. Stelter

II Materials Processing
Raw Material Handling

Process equipment for Zinc Ox new plant in Vietnam

M. E. Coleman, Lisa Thomas

Upgrade of Flash Furnace Dust Handling Systems at Philippine Associated Smelting and Refining

M. E. Coleman, Lisa Thomas

Process Control

Automating decision making needs integration of data management with metallurgical insight

Dr. S. Arnout, Dr. E. Nagels, M. Bridy, C. Landaas, P. Hellinckx

Temperature control in a local network for directional solidification in a mould

Thomas Heinrich

Training Simulators in Fluidized Bed Processing Applications