

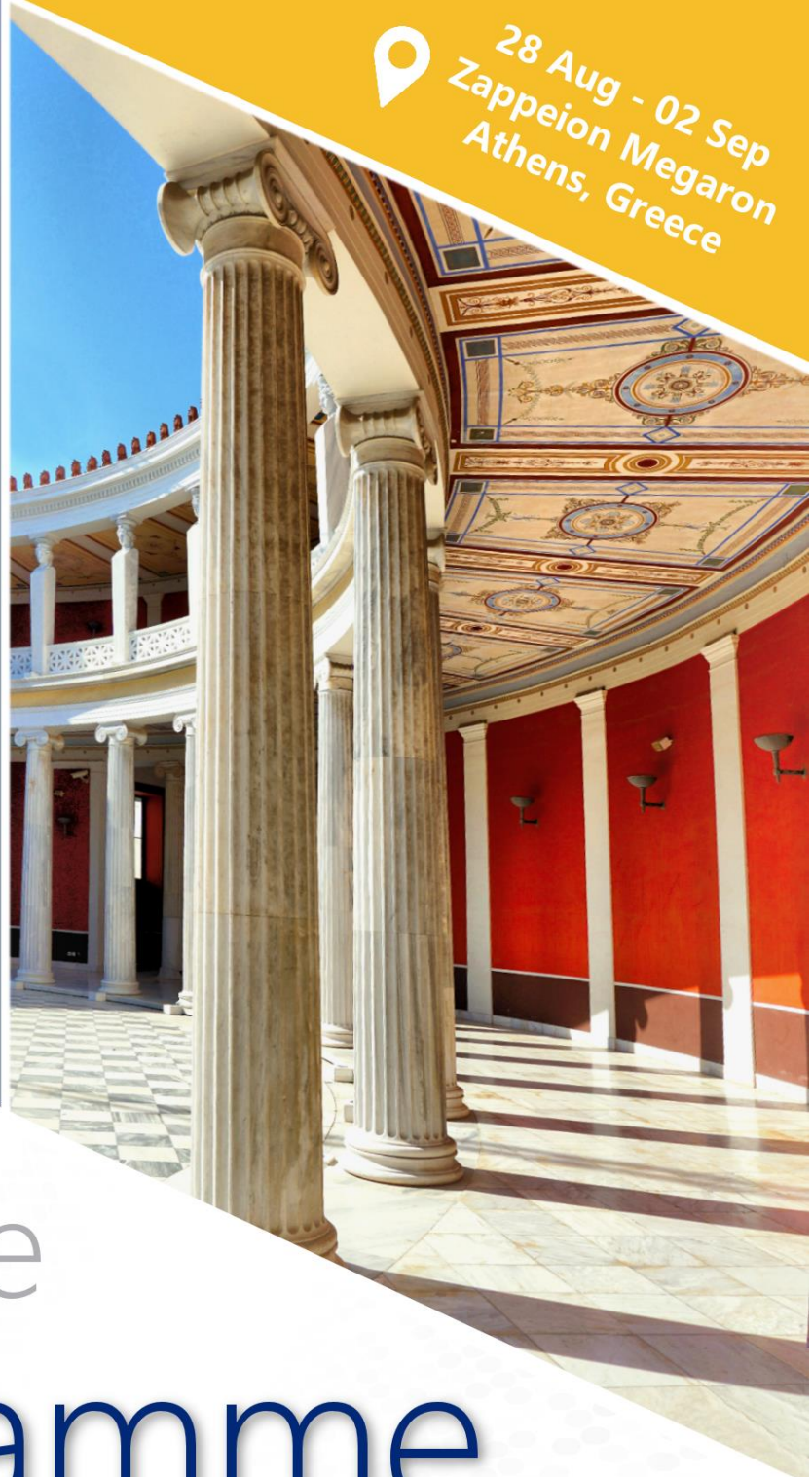
Mat RaW2023

2nd International Conference
on Raw Materials and
Circular Economy



*Raw Materials:
Setting the foundations for
the Green Transition*

28 Aug - 02 Sep
Zappeion Megaron
Athens, Greece



conference programme

Organized by



National Technical
University of Athens

Contact us:

✉ info@rawmat2023.ntua.gr

🌐 www.rawmat2023.ntua.gr



Technical Chamber
of Greece

Organized by



National
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Ελληνική Γεωλογική Εταιρεία
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HELLENIC REPUBLIC
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AND GEOENVIRONMENT



ΚΕΝΤΡΟ ΑΝΑΝΕΩΣΙΜΩΝ ΠΗΓΩΝ ΚΑΙ ΕΞΟΙΚΟΝΟΜΗΣΗΣ ΕΝΕΡΓΕΙΑΣ
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PREFACE

RawMat2023

2nd International Conf. on Raw Materials and Circular Economy

“Raw Materials: setting the foundation for the Green Transition”

Raw materials are strongly connected to human development and the prosperity of Earth’s population and therefore, they are crucial to every country’s economy. Raw materials form a strong industrial base, producing a broad range of goods and applications used not only in everyday life but also in new strategic and green technologies. The global population growth, the rise in the standard of living and the drive for clean energy technologies are increasing the demand of mineral resources. According to the International Energy Agency (IEA), there could be a 20-fold increase in demand for nickel and cobalt by 2040 to meet the needs of an increasingly electrified world, and the total copper demand will nearly double by 2035. Other raw materials, such as lithium, rare earth elements, vanadium, etc. are critically important for the transition to green energy, higher mobility and the digital world. At the same time, raw materials must be sourced in a sustainable and responsible way, achieving high-level environmental standards and social acceptance. All the above present both an opportunity and a challenge for the raw materials industry.

Reliable and unhindered access to certain raw materials is a growing concern across the globe. To ensure the sustainable supply of raw materials, it is crucial that the minerals sector, apart from exploring new regions and opening new projects, can also embrace the concept of a circular economy and identify opportunities for the rational use of raw materials, such as reducing and optimizing the use of materials, industrial symbiosis, recycling, reuse, remanufacturing, etc. By conserving materials embodied in high-value products, or returning waste to the economy as high-quality secondary raw materials, a circular economy could increase the efficiency of primary resource consumption. The transition from linear to circular economy is essential in achieving a resource-efficient and sustainable society.

In that respect, the 1st international conference entitled “Raw Materials and Circular Economy - Technological Developments and Future Challenges” (RawMat2021), was organized on September 2021 in Athens, Greece, which was embraced by stakeholders involved in all steps of the materials value chain. The 2nd international conference entitled “**Raw Materials and Circular Economy - Raw Materials: setting the foundation for the Green Transition**” (RawMat2023) is **organized** again in Athens, Greece, by the School of Mining and Metallurgical Engineering, **National Technical University of Athens** and the **Technical Chamber of Greece** under the auspices of Hellenic Ministry of Environment and Energy, Association of Mining Enterprises and Association of Marble Enterprises of

Macedonia and Thrace. It is also **co-organized** by the *Hellenic Survey of Geology and Mineral Exploration, Geotechnical Chamber of Greece, Geological Society of Greece, School of Mineral Resources Engineering, Technical University of Crete, Department of Mineral Resources Engineering, University of Western Macedonia, Department of Geology and Department of Chemistry, Aristotle University of Thessaloniki, Department of Geology and Geo-environment, National and Kapodistrian University of Athens, Department of Geology, University of Patras, Centre for Renewable Energy Sources and Saving and EBETAM SA - Company of Industrial Research, Technological Development and Laboratory Testing, Certification and Quality*. In addition, it is **supported** by The Metallurgy and Materials Society of Canadian Institute of Mining and Petroleum (*MetSoc/CIM*), The Minerals, Metals & Materials Society (*TMS USA*) and the Australasian Institute of Mining and Metallurgy (*AusIMM*).

RawMat2023 topics cover a wide range of raw materials related activities, including strategies on raw materials supply, exploration, mining, mineral processing, metallurgy, energy, waste valorisation, recycling, Industry 4.0 transformation with emphasis on Green Transition issues. RawMat2023 brings together industry executives and engineers, junior and senior scientists, stakeholders and policy makers, professionals and academics from the whole raw materials value chain, for a comprehensive, cross-discipline exchange of knowledge. New tools, methods, research findings, methodological frameworks and hypotheses as well as innovative ideas are going to be presented in its scientific and technical sessions.

We are looking forward to your participation and attendance at the RawMat2021 Conference!

Prof. Anthimos Xenidis

Chair RawMat2023

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C. Saroglou , Geol. Society / NTU Athens, Greece	

CONFERENCE DETAILS

RawMat2023 is organized by the **Technical Chamber of Greece**, the **School of Mining and Metallurgical Engineering of the National Technical University of Athens** under the auspices of Hellenic Ministry of Environment and Energy, Association of Mining Enterprises and Association of Marble Enterprises of Macedonia and Thrace.

It is also **co-organized** by the *Hellenic Survey of Geology and Mineral Exploration*, *Geotechnical Chamber of Greece*, *Geological Society of Greece*, *School of Mineral Resources Engineering*, *Technical University of Crete*, *Department of Mineral Resources Engineering*, *University of Western Macedonia*, *Department of Geology* and *Department of Chemistry*, *Aristotle University of Thessaloniki*, *Department of Geology and Geo-environment*, *National and Kapodistrian University of Athens*, *Department of Geology*, *University of Patras*, *Centre for Renewable Energy Sources and Saving* and *EBETAM SA - company of Industrial Research, Technological Development and Laboratory Testing, Certification and Quality*.

In addition, it is **supported** by The Metallurgy and Materials Society of Canadian Institute of Mining and Petroleum (*MetSoc/CIM*), The Minerals, Metals & Materials Society (*TMS USA*) and the Australasian Institute of Mining and Metallurgy (*AusIMM*). Finally, RawMat2023 is co-funded by the Greek Green Fund “Extrovertial Actions, Natural Environment and Innovative Actions”

TOPICS

RawMat2023 covers a broad list of topics as follows

- EU Industrial Strategy / Circular and Resource Efficient Economy
- Minerals Exploration and Resource Characterization: securing critical and strategic raw materials supply
- Mining: Trends and Perspectives
- Advances in Mineral Processing Technologies
- Sustainable Metallurgy
- Industrial Minerals
- Environment, Energy and Sustainability
- Reuse - Recycling and Valorisation
- Education
- Occupational Health and Safety (OHS)
- Greece - Specific Issues

PRESENTATION GUIDELINES

Oral contributions

Regular oral presentations will last 15 minutes which include a 12 min speech by the presenting author and another 3 min for questions by the audience. Plenary and keynote presentations will last 30 min (25 min speech and 5 min for discussion) unless otherwise indicated in the final program. In order to keep the program on time, all authors are requested to be accurate in their timetable

Poster presentations

The presenting authors should hang their printed posters in the morning of their presentation and remove them at the end of the poster session. The preferable dimensions for posters should be 80 cm x 120 cm (width x height). All posters are required to conform to portrait orientation. Type size should be sufficiently large to allow people to read from 2-3 meters. There is no template to hold you back, so feel free to explore your artistic prowess and create a stunning poster that truly stands out.

All presentations should be prepared in English language (official language of the Conference).

AWARDS

The most outstanding presentations during RawMat2021 will receive one of the awards from the following categories:

- **Best Oral Presentation Award.** Most distinguished paper combining high scientific quality and presentation significance. The award is sponsored by the journal Minerals MDPI.
- **Best Poster Award.** Dedicated to the best presentation during the poster sessions of the conference.
- **Young Researcher Award.** For the best presentation by a young scientist.

Selected high-impact presentations will get a waiver for full paper submission in the peer-review journals collaborating with RawMat2023.

Presented papers will be evaluated by the Award Committee according to the following criteria: Significance of the paper, Originality, Presentation impact, Young researcher. The winners of RawMat2023 awards will be announced during the closing ceremony of the conference.

PROCEEDINGS

Conference participants may submit a full paper which is oriented to be published in the RawMat2023 Proceedings Volume hosted in Materials Proceedings journal. Publication in the Proceedings is free of charge for all registered participants and the paper will be available as an open access document.

PUBLICATION IN JOURNALS

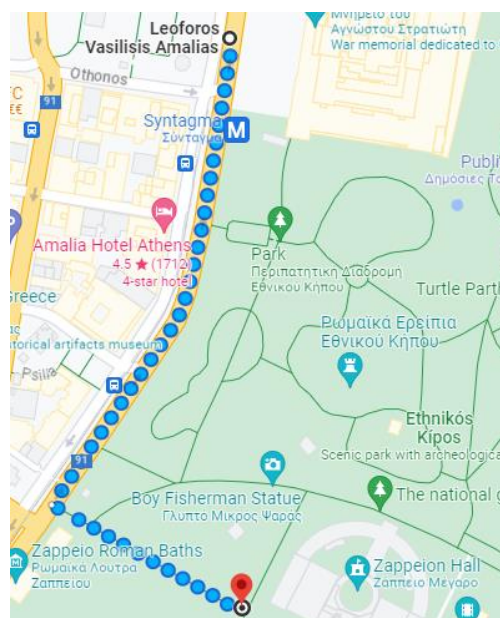
For selected papers presented RawMat2023, the opportunity to publish a full paper in one of the collaborating peer-review journals will be offered after the end of the conference. Some of the mentioned journals are open access requiring an Article processing charge from the side of the authors. RawMat2023 provides a significant discount of this amount for all participant and a number Papers related to metallurgical processes and research aiming at improving the sustainability of metals production, with an emphasis on materials recovery, reuse, and recycling, energy and environmental impacts minimization will be invited to submit in a Special Issue of the **Journal of Sustainable Metallurgy** (Springer, Impact factor 3.068 (2021)).

Papers related to minerals, minerals processing, mining and environment will have an opportunity to be submitted in the Special Issue entitled “**Exploration, Mining, and Processing of Minerals: Enabling the Clean Energy Transition**” of the journal **Minerals** (MDPI, open access, impact factor 2.818 (2021)).

Selected papers in the area of Raw Materials and Circular Economy will be also published in a Special Issue of the Open Access e-**Technical Annals** Journal. It is a relatively new international journal, formerly a national one having published engineering articles for decades, that recently started publishing high-quality original research articles, reviews, and technical notes in various fields of engineering and technology. The journal is edited by the Technical Chamber of Greece through the e-Publishing Platform.

VENUE

RawMat2023 shall take place in Athens, the historical heart of Greece known as the birthplace of democracy and home to some of the most significant philosophers. The **Zappeion Exhibition Hall** or **Zappeion Megaron**, located in the Athens city center, is the conference venue. It has been an active part of Greece's history and that of Hellenism, for the last 130 years, surrounded by some of the most important buildings in Athens, such as the Parliament building, the Tomb of the Unknown Soldier, the Maximou Palace, which is the official residence of the Prime Minister, the Foreign Ministry, and other public buildings. Nearby are the National Gardens and, opposite, on the side of the Ardittos Hill, the Panathinaic Stadium, Hadrian's Arch and the ancient Temple of the ROOM 13n Zeus. Athens International Airport Eleftherios Venizelos is about 35 km away from the venue (about 50 minutes trip by public transportation or 30 minutes' drive) and easily accessible. The Zappeion Megaron is served by a metro station (Syntagma: red and blue lines) located within walking distance (6 minutes-500m). Website: <https://www.zappeion.gr/en/>



EXHIBITION

In the framework of the RawMat2023, a parallel exhibition will be organized where supporting companies and organizations dealing with the raw materials sector are going to provide detailed information on their activities and future plans to the conference participants. The exhibition area is located in Room 3.

SOCIAL EVENTS / FIELD TRIPS

Opening ceremony	28-8-2023	📍 Zappeion / Room 13	09:00
Welcome reception	28-8-2023	📍 Zappeion / Peristilio	20:00
Gala dinner	29-8-2023	📍 Royal Olympic Hotel-Ioannis Roof Garden	20:00
Field Trip 1 to AoG / Mytilineos and Delphi	31-8-2023	📍 Aluminium of Greece - Delphi archeological site	Departure: 08:00 Return: 19:00
Field Trip 2 to Lavrion and Sounion	1-9-2023	📍 Lavrion Historical Mine Sounion archeological site	Departure: 08:00 Return: 18:15

PARALLEL EVENTS

- | | | |
|--------------------------------|-----------|-------------|
| • Greek specific issues | 29-8-2023 | 09:00-13:00 |
|--------------------------------|-----------|-------------|

Presentations by companies and government bodies discussing current situation, problems, challenges and future trends in the field of raw materials in Greece. Event language will be Greek.

- | | | |
|------------------|-----------|-------------|
| • ERA MIN | 29-8-2023 | 09:00-16:30 |
|------------------|-----------|-------------|

ERA-MIN3 is a global, innovative and flexible pan-European network of 25 European and non-European research funding organisations, aiming to continue strengthening the mineral raw materials community through the coordination of research and innovation programmes on non-fuel and non-food raw materials (metallic, construction, and industrial minerals).

Attracting and promoting innovations for increased raw material efficiency and circular economy is crucial for the transition to a climate-neutral and digital economy. ERA-MIN3 organizes three sessions which address recent research results and future challenges and research needs for raw materials and the circular economy.

The first two ERA-MIN sessions (Session B2 ***“Sustainable Mining, Processing and Production Processes”*** and Session B5 ***“Recycling of EoL products and immovable assets, e.g. batteries, magnets”***) will highlight the results of the 22 out of 24 transnational research projects that have ended recently or will end soon. The transnational projects target R&I innovations that cover the entire raw materials value chain (exploration, mining, processing, production and recycling of EoL products, including batteries and magnets). Within a systemic view, research the transnational R&I projects address both technological and non-technological aspects, e.g. circular economy business models. By joining these sessions, you will learn from Europe’s leading players in the research sector who will share insights into their recent research results and their plans for future exploitation. To discuss challenges and the future research and innovation needs towards a sustainable raw materials supply which should be addressed by a partnership of funding programmes is the aim of the 3rd session (Session B8 ***“ERA-MIN SRIA workshop”***).

- | | | |
|--|-----------|-------------|
| • Critical metals sourcing - Experts Panel Discussion | 30-8-2023 | 17:00-19:00 |
|--|-----------|-------------|

This session will give delegates the opportunity to learn about and discuss with industrial experts. Five experts from SME, large and small enterprises, and consultancies are invited. They represent important economic sectors, scandium and related alloys, gallium, aluminium (bauxite), titanium dioxide, and magnesium. Each metal has its specific supply and market issues, driven by the choice of technologies, related economic and financial matters.

The important titanium and aluminium industries may unlock by-products from residual waste streams or secondary products. Magnesium, and other critical metals can be recovered with innovative extraction processes reducing energy consumption, and C-footprint. Critical raw materials can and will thus be available in Europe for refiners and end-users.

What are the challenges, strength, opportunities, and threats for a European metal transformation and production? What are European solutions to be competitive with Asian produced critical metals.

PROGRAM STRUCTURE

	Monday 28 Aug. 2023	Tuesday 29 Aug. 2023	Wednesday 30 Aug. 2023
08 ⁰⁰ -09 ⁰⁰	Registration	Registration	Registration
09 ⁰⁰ -10 ³⁰	Opening speeches PLENARY LECTURES	B1 GREECE-SPECIFIC ISSUES B2 ERA-MIN3 at RawMat2023 B3 ENERGY AND CO ₂ STORAGE	PLENARY LECTURES
10 ³⁰ -11 ⁰⁰	Coffee break - Poster session I	Coffee break - Poster session II	Coffee break - Poster session III
11 ⁰⁰ -13 ⁰⁰	PLENARY LECTURES Sponsors presentations	B4 GREECE-SPECIFIC ISSUES B5 ERA-MIN3 at RawMat2023 B6 ENVIRONMENT AND SUSTAINABILITY I	C1 CRITICAL METALS RECOVERY FROM WASTE C2 SUBSTITUTION & RECYCLING IN THE AUTOMOTIVE SECTOR C3 INDUSTRIAL MINERALS & WASTE REUSE - VALORIZATION I
13 ⁰⁰ -14 ³⁰	Lunch break - Poster session I	Lunch break - Poster session II	Lunch break - Poster session III
14 ³⁰ -16 ³⁰	A1 EU STRATEGY-CIRCULAR ECONOMY A2 MINERALS EXPLORATION - RESOURCE CHAR. I A3 CRITICAL ELEMENTS REC. FROM EoL PRODUCTS	B7 MINING: TRENDS AND PERSPECTIVES I B8 ERA-MIN SRIA WORKSHOP B9 ENVIRONMENT AND SUSTAINABILITY II	C4 MAGNETS AND REES C5 ENERGY TRANSITION METALS - ENICON & EXCEED C6 REUSE-RECYCLING AND VALORISATION II
16 ³⁰ -17 ⁰⁰	Coffee break - Poster session I	Coffee break - Poster session II	Coffee break - Poster session III
17 ⁰⁰ -18 ³⁰	A4 ADVANCES IN MINERAL PROCESSING A5 MINERALS EXPLORATION - RESOURCE CHAR. II A6 LI-ion BATTERIES RECYCLING	B10 MINING: TRENDS AND PERSPECTIVES II B11 HYDROMETALLURGICAL PROCESSES B12 OSH and EPD REPORTING	C7 ADVANCED METALLURGICAL PROCESSES C8 CRITICAL METALS SOURCING - EXPERTS PANEL DISCUSSION C9 EDUCATION
18 ³⁰ -19 ⁰⁰	PLENARY LECTURES		19 ⁰⁰ Closing ceremony
19 ⁰⁰ -19 ³⁰			Awards
20 ⁰⁰ -22 ³⁰	20 ⁰⁰ Welcome reception	20 ⁰⁰ Gala Dinner	

PROGRAM AT A GLANCE

Monday 28 August 2023

📍 ROOM 13	09:00-09:30	Welcome and brief introduction by the organizers
	09:30-10:00	Welcome speeches
	10:00-10:30	Plenary lectures
📍 ROOM 3, 16	10:30-11:00	Coffee break – Poster session I
📍 ROOM 13	11:00-12:00	Plenary lectures
	12:00-12:50	Sponsors presentations
	12:50-13:00	Honorary Award to Dr. Nikolaos Arvanitidis
📍 ROOM 2, 3 Peristilio	13:00-14:30	Lunch break
📍 ROOM 3, 16	Poster Session I – Exhibition	
	14:30-16:30	Parallel sessions
📍 ROOM 13	A1. EU Strategy-Circular economy	
📍 ROOM 5	A2. Minerals Exploration and Resource Characterisation I	
📍 ROOM 6	A3. Critical elements recovery from End-of-Life products	
ROOM 3, 16	16:30-17:00	Coffee break – Poster session I
	17:00-18:45	Parallel sessions
📍 ROOM 13	A4. Advances in mineral processing technologies	
📍 ROOM 5	A5. Minerals Exploration and Resource Characterisation II	
📍 ROOM 6	A6. Li-ion Batteries recycling	
📍 ROOM 3, 16	18:30-18:45	Coffee break – Poster session I
📍 ROOM 13	18:45-19:45	Plenary lectures
📍 PERISTILIO (Zappeio)	20:00	Welcome reception

PROGRAM AT A GLANCE

Tuesday 29 August 2023

	09:00-10:30	Parallel sessions
📍 ROOM 13	B1. Greek specific issues (in Greek)	
📍 ROOM 5	B2. ERA-MIN3 at RawMat2023 (<i>starts at 08:30</i>)	
📍 ROOM 6	B3. Energy and CO ₂ storage	
📍 ROOM 3, 16	10:30-11:00	Coffee break – Poster session II
	11:00-13:00	Parallel sessions
📍 ROOM 13	B4. Greek specific issues (in Greek)	
📍 ROOM 5	B5. ERA-MIN3 at RawMat2023	
📍 ROOM 6	B6. Environment and Sustainability I	
📍 ROOM 1, 2, 3	13:00-14:30	Lunch break
	Poster Session II – Exhibition	
	14:30-16:30	Parallel sessions
📍 ROOM 13	B7. Mining: Trends and perspectives I	
📍 ROOM 5	B8. ERA-MIN SRIA workshop	
📍 ROOM 6	B9. Environment and Sustainability II	
📍 ROOM 3, 16	16:30-17:00	Coffee break – Poster session II
	17:00-19:00	Parallel sessions
📍 ROOM 13	B10. Mining: Trends and perspectives II	
📍 ROOM 5	B11. Hydrometallurgical processes for metals recovery from EoL and ores	
📍 ROOM 6	B12. OSH and EPD Reporting	
📍 Royal Olympic Hotel	20:00	Gala dinner

PROGRAM AT A GLANCE

Wednesday 30 August 2023

📍 ROOM 13	09:30-10:30	Plenary lectures
📍 ROOM 3, 16	10:30-11:00	Coffee break – Poster session III
	11:00-13:00	Parallel sessions
📍 ROOM 13		C1. Critical metals recovery from mining/metallurgical waste
📍 ROOM 5		C2. Substitution and Recycling of Critical Raw Materials in the Automotive Sector - The Industrial Perspective
📍 ROOM 6		C3. Industrial minerals & Waste reuse - valorisation I
📍 ROOM 1, 2, 3	13:00-14:30	Lunch break
		Poster Session III – Exhibition
	14:30-16:30	Parallel sessions
📍 ROOM 13		C4. Magnets and REEs
📍 ROOM 5		C5. Energy transition metals - ENICON & EXCEED HE projects
📍 ROOM 6		C6. Reuse-Recycling and Valorisation II
📍 ROOM 3, 16	16:30-17:00	Coffee break – Poster session III
	17:00-19:00	Parallel sessions
📍 ROOM 13		C7. Advanced metallurgical processes
📍 ROOM 5		C8. Critical metals sourcing - Experts Panel Discussion
📍 ROOM 6		C9. Education
📍 ROOM 13	19:00	Closing ceremony - Awards

Thursday 31 August 2023

	08:00-19:00	Field trip 1
📍 Aluminium of Greece / Mytilineos SA and Delphi		Tour of Aluminium of Greece/Mytilineos plant, Visit of Bauxite Residues valorisation pilots, Visit of BR disposal site and the “House of Bauxite” – the environmental awareness pavilion in Aspra Spitia, Visit of Delphi Archaeological Site and Museum

Friday 1 September 2023

	08:00-18:15	Field trip 2
📍 Lavrion Historical Mine Site and Sounion		Visit to Lavrion Technological and Cultural Park (Mineral processing and Metallurgical plants), Mineralogical Museum, Archaeological Sites of Thorikos, Souriza and Poseidon Temple

Monday 28 August 2023

Monday 28 August 2023

08⁰⁰- 09⁰⁰ Registration

OPENING SESSION

📍 ROOM 13

Chair: Anthimos Xenidis, Konstantinos Komnitsas, Dimitris Kaliampakos

09⁰⁰-09³⁰ Welcome and brief introduction by the organizers

Anthimos Xenidis, Conference Chair

Georgios Stasinou, President, Technical Chamber of Greece

Dimitris Kaliampakos, Dean, School of Mining and Metallurgical Eng., NTUA

Andreas Boudouvis, Rector, National Technical University of Athens

09³⁰-10⁰⁰ Welcome speeches

Maximos Senetakis, Deputy Minister of Development

10⁰⁰-10¹⁵ Plenary lecture 1

PL-01 Konstantinos Yazitzoglou, President of Greek Mining Enterprises Association, CEO, GEOHELLAS SA
NON-critical raw materials. Can we afford to ignore them?

10¹⁵-10³⁵ Plenary lecture 2

PL-02 Maria Nyberg, European Commission, DG for Internal Market, Industry, Entrepreneurship and SMEs, unit 'Energy Intensive Industries, Raw Materials, Hydrogen'
European Critical Raw Materials Act Proposal for a Regulation-establishing a framework for ensuring a secure and sustainable supply of critical raw materials

10³⁵-11⁰⁰ Coffee Break – Poster session 1

📍 ROOM 13

Chair: Anthimos Xenidis, Nikolaos Arvanitidis, Mark Rachovides

11⁰⁰-11¹⁵ Plenary lecture 3

PL-03 Anna-Michelle Asimakopoulou, Member of European Parliament
How Europe can win the race to secure its Critical Raw Material Needs

11¹⁵-11³⁰ Plenary lecture 4

PL-04 Mark Rachovides, President Emeritus Euromines
Opportunities, challenges and paradoxes in Raw Materials for Europe today

11³⁰-12⁰⁰ Plenary lecture 5

PL-05 Antje Wittenberg, Bundesanstalt für Geowissenschaften und Rohstoffe, Daniel Oliveira, LNEG, Chair of EuroGeoSurveys Mineral Resources Expert Group, Critical raw materials in Europe
Critical Raw Materials resource potential in Europe

12⁰⁰-12⁵⁰ Sponsors presentations

12⁰⁰-12¹⁵ Filio Lanara, Communication & Marketing Director, Corporate Affairs & Communication General Division MYTILINEOS Energy & Metals Representative of MYTILINEOS Energy & Metals

12¹⁵-12³⁵ Panos Tserolas, Sustainability Senior Manager of ElvalHalcor's Aluminium Rolling Division
George Georgiadis, Operational Excellence Manager of ElvalHalcor's Copper and Alloys Extrusion Division
Aluminium and Copper solutions tailored for sustainable growth

12³⁵-12⁵⁰ **Michalis Papasotiriou**, Deputy General Manager of Operations, Hellas Gold

12⁵⁰-13⁰⁰ **Honorary Award to Dr. Nikolaos Arvanitidis for his pioneer work in the Development of Mineral Raw Materials in Europe**
Award presented by Mark Rachovides, President Emeritus Euromines, with testaments by friends and colleagues of Dr. Arvanitidis

13⁰⁰-14³⁰ **Lunch – Poster Session 1**

PARALLEL SESSIONS

SESSION A1

EU Strategy-Circular economy

📍 **ROOM 13**

Chair: Antje Wittenberg, Ioannis Paspaliaris

14³⁰-15⁰⁰ **Keynote presentation**

Mining wastes as potential sources for critical raw materials

KN-01 **Kaj Lax**, Geological Survey of Sweden

15⁰⁰-15¹⁵ **The Jevons Paradox and Vernon's Theory of Product Life Cycle: A Study of Copper and Aluminum Markets**

O-01 Antonio Alonso-Jimenez, Manuel Regueiro y González-Barros, Enrique Álvarez Areces

15¹⁵-15³⁰ **Characterization of waste from the dicalcium phosphate industry as a potential secondary source of YREEs**

O-02 Marcin Plachciak, Fidel Grandia, Vladimir Roddatis, Marcin Syczewski

15³⁰-15⁴⁵ **CO₂ utilization in Added-Value Construction Products from Magnesia Production**

O-03 Guilherme Rubio, David Konlechner

15⁴⁵-16⁰⁰ **A Proposal for the use of recycled aggregates in concrete in Greece**

O-04 Maria Nomikou, Charalampos Kouris, Thalassis Karkaletsis, Vasileios Kaloidas, Efstratios Badogiannis

16⁰⁰-16¹⁵ **Mining Wastes - An integrated thermochemical process for the conversion of multi-layer packaging waste into coal, hydrogen, and chemical flocculating agent**

O-05 Andrea Salimbeni, Marta Di Bianca, Andrea Maria Rizzo, David Chiaramonti

16¹⁵-16³⁰ **Benefits from the incorporation of ICME in the metallurgical industry**

O-06 Vasileios Loukadakis, Spyros Papaefthymiou

SESSION A2

Minerals Exploration and Resource Characterisation I

📍 **ROOM 5**

Chair: Stefanos Kilias, Konstantinos Laskaridis

14³⁰-15⁰⁰ **Keynote presentation**

Seabed mining and blue growth: Exploring the potential of marine mineral deposits as a sustainable source of strategic and critical raw materials

KN-02 **Francisco Javier Gonzalez**, Geological Survey of Spain

Monday 28 August 2023

- 15⁰⁰-15¹⁵ Magnetite-hematite characterization at micron scale with implications for metallurgical processing and decarbonisation**
O-07 Beate Orberger, Christiane Wagner Raffin, Omar Boudouma, Nicolas Rividi, Christine Bauer, Rebecca Wagner, Ghassem Nabatian, Maryam Honarmand, Iman Monsef
- 15¹⁵-15³⁰ Battery Mineral commodities characterisation – A case study for Nickel reference material**
O-08 Lorenza Sardisco, Nikolaos Apeiranthitis, Sari Lukkari, Ester Jolis, Pasi Heikkila, Jesal Hirani, Johanna Tepsell, Tim Pearce, Alan Butcher
- 15³⁰-15⁴⁵ Application of portable spectroscopic tools in the exploration of manganese oxide minerals: the case study of Drama Mn-oxide deposits, Northern Greece**
O-09 George Soulamidis, Marjolene Jatteau, Christina Stouraiti, Panagiotis Voudouris, Constantinos Mavrogonatos, Konstantinos Soukis, Cécile Fabre, Marie-Camille Caumon, Jean Cauzid, Alexandre Tarantola
- 15⁴⁵-16⁰⁰ Fast and cost-effective quantitative assessment of the chemical and mineral composition of heavy mineral sands ores: an application to the Grande Cote Operation Ti-Zr mine of the new SOLSA combined XRF-XRD analytical solution.**
O-10 Maud Herbelin, Sylvain Delchini, Henry Pilliere, Luca Lutterotti, Marion Nicco, Moctar Dia, Monique Le Guen, Thomas Riegler
- 16⁰⁰-16¹⁵ Exploration potential of Cu isotope fractionation in magmatic-hydrothermal Au-rich deposits in the Cyclades continental back-arc: insights from the Aegean Kolumbo submarine arc-volcano**
O-11 Nikolaos Zegkinoglou, Stephanos Kilias, Ryan Mathur, Linda Godfrey, Vasilios Pletsas, Paraskevi Nomikou, Nina Zaronikola
- 16¹⁵-16³⁰ Assessing CRM's content of abandoned mine sites of Greece.**
O-12 Vassiliki Angelatou, Athanasios Exikis, Adamantia Hatzia Apostolou

SESSION A3

Critical elements recovery from End-of-Life products

📍 ROOM 6

Chair: Helena Soares, Paschalis Oustadakis

- 14³⁰-14⁴⁵ End-of-life mobile phones: re-thinking its recycling based on pillars of circularity and economic and environmental sustainability**
O-13 Liliana Martelo, Márcia Silva, Cátia Graça, Marta Azevedo, Adrian Silva, Margarida Bastos, Helena Soares
- 14⁴⁵-15⁰⁰ Advances in the bioleaching of copper from end-of-life printed circuit boards**
O-14 Alessandro Becci, Alessia Amato, Giulia Merli, José Miguel Rodríguez Maroto, Francesca Beolchini
- 15⁰⁰-15¹⁵ Integrated production and recycling of silicon for pv application**
O-15 Gabriella Tranell, Maria Wallin, Nishan Simkhada, Mathilde Meling, Elif Emil Kaya
- 15¹⁵-15³⁰ Indium recovery from solar cell waste by means of layer-by-layer membrane filtration**
O-16 Meret Amrein, Michael Thomann, Frank Nüesch, Markus Lenz
- 15³⁰-15⁴⁵ LCDs screens from smartphones wastes: towards a nearly circular and zero-waste process for recycling Indium plus other raw materials**
O-17 Liliana Martelo, Márcia Silva, Hugo Bacelo, Margarida Bastos, Helena Soares

- 15⁴⁵-16⁰⁰ Beneficiation of Critical Metals from fine fraction of End-of-Life printed circuit boards, with the use of Column Flotation Process**
O-18 Kyriakos Syrmakelis, Kostas Tsakalakis
- 16⁰⁰-16¹⁵ Impact of Extractant Type and pH on Yttrium Recycling from End of Life Fluorescent Lamp**
O-19 Tülay Koç Delice, Gülşah Türker, Hüseyin Eren Obuz; Belma Soydas
- 16¹⁵-16³⁰ Hydrometallurgical recovery of tin from waste Printed Circuit Boards**
O-20 Dimitrios Vlasopoulos, Paschalis Oustadakis, Emmanouella Remountaki, Styliani Agatzini -Leonardou
- 16³⁰-17⁰⁰ Coffee Break - Poster session 1**

SESSION A4

Advances in mineral processing technologies

📍 ROOM 13

Chair: Kostas Tsakalakis, Konstantinos Betsis

- 17⁰⁰-17³⁰ Keynote presentation**
Evaluation of the processing routes for the “hard lithium” European deposits
KN-03 Lev Filippov, Inna Filippova
- 17³⁰-17⁴⁵ Investigation of industrial residues and waste materials to expand the raw material base for the production of lightweight aggregates**
O-21 Jacob Fenner, Andrej Zeller, Steffen Liebezeit, Manuela Knorr, Alexander Schnell, Luka Mettke, Daniel Goldmann
- 17⁴⁵-18⁰⁰ METALLICO EU PROJECT**
O-22 María González-Moya, Ana Lara
- 18⁰⁰-18¹⁵ The applicability of screening and ore sorting to the beneficiation of low-grade gold ore from Western Australia**
O-23 Bogale Tadesse, Laurence Dyer
- 18¹⁵-18³⁰ On the flotation of sulphide minerals using organosolv lignin as collector**
O-24 Panagiotis Angelopoulos, Nikolaos Kountouris, Georgios Anastasakis, Maria Taxiarchou

SESSION A5

Minerals Exploration and Resource Characterisation II

📍 ROOM 5

Chair: Kaj Lax, Francisco Javier Gonzalez

- 17⁰⁰-17³⁰ Keynote presentation**
The environmental, social and governance challenges in the Lithium Triangle supply chain
KN-04 Evi Petavratzi, Andrew Hughes, Jonathan Ford
- 17³⁰-17⁴⁵ Bauxite Residue deposition in Corinth Gulf, Greece: a potential REE resource**
O-25 Efthymios Douros, Margarita Iatrou, Nikolaos Sofis, Maria Elli Damoulidou, Georgios Papatheodorou, Stavros Kalaitzidis
- 17⁴⁵-18⁰⁰ Rare earth and trace element behaviour in different size fraction in an old uranium mine (centre-north of Portugal)**
O-26 Andres Cardenas Nino, Maria Dias, Rosa Marques, Dulce Russo, Catarina Diamantino, Edgar Carvalho, Fernando Rocha, Maria Cristina Sequeira

18⁰⁰-18¹⁵ Mineral exploration at the Kimmeria Fe-skarn deposit, N. Greece: Reassessment and new perspectives focusing on the CRMs

O-27 Michalis Fitros, Constantinos Mavrogonatos, Marianthi Anastasatou, Adamantia Chatziapostolou, Konstantinos Laskaridis, Petros Karmis, Magdalini Aggeli, Dimitrios Tsouvalas, Alexandros Liakopoulos, Dimitrios Tarenidis and Vasiliki Angelatou

18¹⁵-18³⁰ Mine and mineral exploration projects within the Natura 2000 areas: Case studies from northern Finland

O-28 Toni Eerola, Nike Luodes, Hannu Panttila

SESSION A6

Li-ion Batteries recycling

📍 ROOM 6

Chair: Panagiotis Xanthopoulos

17⁰⁰-17³⁰ Keynote presentation

The COOL-Process – a holistic recycling approach for lithium recovery

KN-05 Sandra Pavon Regana, Alexander Nickol, Sebastian Hippmann, Mareike Partsch, Alexander Michaelis

17³⁰-17⁴⁵ Development of a process for low-cost LFP batteries treatment

O-29 Rafaella - Aikaterini Megaloudi, Alexandros Galanes, Paschalis Oustadakis, Anthimos Xenidis

17⁴⁵-18⁰⁰ Closed-loop Recycling of Li, Ni, Co, and Mn From Spent NMC Batteries

O-30 Firat Tekmanlı, Hüseyin Eren Obuz, Bengi Yağmurlu

18⁰⁰-18¹⁵ Removal of metal contaminants from LFP black mass leachates

O-31 Ilias Lampropoulos, Daniel Reyes Martinez, Alexandra Thiere, Panagiotis Xanthopoulos, Anthimos Xenidis, Alexandros Charitos

18¹⁵-18³⁰ Investigation of recycling behaviour of lithium iron phosphate battery batteries with different thermal pre-treatments

O-32 Hüseyin Eren Obuz, Firat Tekmanlı, Luka Nils Mettke, Marius Müller, Bengi Yagmurlu

18³⁰-18⁴⁵ Coffee Break - Poster session 1

PLENARY LECTURES – Funding Opportunities for Research and Innovation Projects

📍 ROOM 13

Chair: Maria Taxiarchou, Vitor Correia

18⁴⁵-19⁰⁵ Plenary lecture 6

PL-06 **Dimitrios Biliouris**, Project Adviser for the Health and Digital Executive Agency (HaDEA), European Commission

Horizon Europe raw materials funding opportunities

19⁰⁵-19²⁰ Plenary lecture 7

PL-07 **Antonis Politis**, EIT Raw Materials

EIT RawMaterials. World largest innovation community in the Raw Materials sector

19²⁵-19⁴⁵ Plenary lecture 8

PL-08 **Dina Carrilho**, Senior Science Officer, ERA-MIN3 Project Coordinator

Advances and contributions to the EU Raw Materials policies via Pan-European coordinated funding

20⁰⁰

Welcome reception – Zappeion (Peristilio)

Tuesday 29 August 2023

PARALLEL EVENT - Greece specific issues (in Greek)

Greece-specific issues (in Greek)

SESSION B1

New raw materials/energy projects in Greece I

ROOM 13

Chair: Anthimos Xenidis, Peter Tzeferis

09⁰⁰-09¹⁵ Αλεξάνδρα Σδούκου, Υφυπουργός Περιβάλλοντος και Ενέργειας
Κρίσιμες πρώτες ύλες: Η στρατηγική αυτονομία της χώρας

09¹⁵-09³⁰ Λάμπρος Μπίσαλας, Διευθύνων Σύμβουλος της Sunlight Group Energy Storage Systems
Παραγωγή και ανακύκλωση μπαταριών LFP

09³⁰-09⁵⁰ Μιχάλης Παπασωτηρίου, Αναπληρωτής Γενικός Διευθυντής Λειτουργιών, Ελληνικός Χρυσός
Υπό εξέλιξη μεταλλευτικά έργα της Ελληνικός Χρυσός

09⁵⁰-10¹⁰ Δημήτριος Κούτρας, Βασίλειος Λάμπρος, ΕΛΛΗΜΕΤ ΑΕ
Μονάδα παραγωγής μεταλλουργικού πυριτίου
Μονάδα παραγωγής σιδηροχρωμίου υψηλής περιεκτικότητας άνθρακα

10¹⁰-10³⁰ Κώστας Γάτος, Διευθυντής QHSE και R&D, ΤΕΡΝΑ ΛΕΥΚΟΛΙΘΟΙ Α.Ε.
Εξόρυξη και βιομηχανική επεξεργασία μαγνησίτη στη Βόρεια Εύβοια)

10³⁰-11⁰⁰ Coffee Break – Poster session 2

SESSION B4

New raw materials/energy projects in Greece II

ROOM 13

Chair: Anthimos Xenidis, Peter Tzeferis

11⁰⁰-11¹⁵ Παναγιώτης Δάβρης, ΜΥΤΙΛΗΝΑΙΟΣ SA /Αλουμίνιο της Ελλάδος
Δυνατότητες για παραγωγή γαλλίου στην Ελλάδα

11¹⁵-11³⁰ Χρήστος Σκεύας, Διευθυντής Ελλάδος, ΕΛΛΗΝΙΚΑ ΟΡΥΚΤΑ ΑΕ
Το Νέο Έργο μεταλλευτικής έρευνας και εκμετάλλευσης βασικών και κρίσιμων μετάλλων
Μολάων Λακωνίας

11³⁰-11⁴⁵ Κωνσταντίνο Λασκαρίδη, Διευθ. Ορυκτών Πόρων και Μεταλλευτικής-Εθνικό Εκπρόσωπο της
Ε.Α.Γ.Μ.Ε. στα EuroGeoSurveys
Η συμβολή της Ε.Α.Γ.Μ.Ε. στην έρευνα των στρατηγικών και κρίσιμων Ορυκτών Πρώτων Υλών και
την εφαρμογή της κυκλικής οικονομίας

11⁴⁵-12⁰⁰ Ηλιόπουλος Παναγιώτης, Αντιπρόεδρος ΣΕΜΜΘ, Γεν. Διευθυντής ΜΑΡΜΥΚ ΗΛΙΟΠΟΥΛΟΣ ΑΕ
Το ελληνικό μάρμαρο στο μέλλον

12⁰⁰-12¹⁵ Πελοπίδας Καλλίρης, Διοικητής της Ειδικής Υπηρεσίας Δίκαιης Αναπτυξιακής Μετάβασης
Πορεία σχεδίου δίκαιης αναπτυξιακής μετάβασης για τη Δ. Μακεδονία και Μεγαλόπολη

12¹⁵-12³⁰ Γεώργιος Τσιφουτίδης, Διεύθ. Ορυκτών Πρώτων Υλών, Υπουργείο Περιβάλλοντος και Ενέργειας,
Νέος διεθνής διαγωνισμός εκμίσθωσης δικαιωμάτων έρευνας γεωθερμικού δυναμικού

12³⁰-13⁰⁰ Ερωτήσεις -- Συζήτηση13⁰⁰-14³⁰ Lunch – Poster Session 2

Tuesday 29 August 2023

PARALLEL SESSIONS

SESSION B2

ERA-MIN3 at RawMat2023

ROOM 5

Chair: Francesca Beolchini

08³⁰-10³⁰ Sustainable Mining, Processing & Production Processes

Exploration

Critical metals and environmental risks: better understanding to better predict

- O-33 Eric Gloaguen, Giada Iacono-Marziano, Pablo Higuera, Alexandre Lima, Fabienne Battaglia, Charles Gumiaux, Axel Aurouet, Daniel Pierre, Romain Augier, Laurent Guillou-Frottier, Johann Tuduri, Anthony Pochon

Multi-scale and interdisciplinary approaches to the granite-related ore-forming systems in the Segura-Argemela-Panasqueira-Góis belt (Portugal); insights for innovative exploration surveys

- O-34 Antonio Mateus, Michel Cathelineau, Colombo Tassinari, Marie-Christine Boiron, Maria Helena Hollanda, Rute Salgueiro, Alexandra Guedes, Patrícia Moita, Alcides Pereira (online)

Regional to Deposit scale exploration (D-Rex) project

- O-35 Maxim Smirnov, Jochen Kamm, Graham Hill, Jan Vozar

Sustainable Mining Operations

The cuttability of carbonate rocks using a new microwave-assisted laboratory cutting machine

- O-36 Sair Kahraman, Ramazan Çomakli, Masoud Rostami

Use of nanobubble technology in the development of next-gen sustainable liquid mining and phytoextraction processes for the recovery critical and strategic metals

- O-37 Georgios Kolliopoulos, Nicolas Kalogerakis, Kostas Komnitsas, Quartus Paulus Botha

Project REVIVING – Bio- Remining mine tailings to the production of critical metals

- O-38 Paula Morais, Rita Branco (online)

Ore Processing

The MiCCuR project for improved copper recovery from chalcopyrite

- O-39 Mark Dopson

RETECH - Recovery of rare earth elements from complex ores in Turkey and their potential use in high tech industrial applications

- O-40 Belma Soydaş Sözer, Gülşah Türker, Tülay Koç Delic, Arda Temizkalb, Fazlı Cabbar Metin, Halil Yalcın Elerman, Radu-Robert Piticescu, Marius Zlagnean

Electro-electrodialysis technology on the copper electrorefining operation for the recovery of antimony and recycling of the solution media

- O-41 Manuel César Martí-Calatayud, Lorena Hernández-Pérez, Andréa Bernardes, Marco Antonio Rodrigues, Gerardo Cifuentes, Gabriel Riveros, Valentín Pérez-Herranz

Closing cycles in mining and production

MINECO – New eco-innovative materials for mining infrastructures

- O-42 Tiago Miranda, Nuno Cristelo

REEScure-An Integrated process for the recovery of Rare Earth Elements and Scandium from Bauxite Residues

O-43 Paschalis Oustadakis, Panagiotis Angelopoulos, Maria Georgiou, Ioannis Paspaliaris, Murat Kabataş, Tuğba Selcen Atalay Kalsen, Hakan Burak Karadağ, Yasin Ramazan Eke, Bayram Ünal, Meral Baygöl, Gökhan Demir, Sedat Arslan, Panagiotis Davris, Efthymios Balomenos, Gheorghe Dobra, Alina Boianiu

SMART Geopolymers

O-44 Dinos Sakkas, Silviana Onisei, Hubert Rahier

SESSION B3

Energy and CO₂ storage

ROOM 6

Chair: Vassilis Gaganis, Charis Vasilatos

09⁰⁰-09¹⁵ Carbon dioxide storage in depleted oil fields

O-45 Georgios Avraam, Konstantinos Vatalis

09¹⁵-09³⁰ A unified approach to describe flow dynamics in geothermal energy production systems

O-46 Stefanos Lempesis, Sofianos Panagiotis Fotias, Vassilis Gaganis

09³⁰-09⁴⁵ Energy Transition and Evaporitic formations utilization as potential subsurface storage for H₂ and CO₂

O-47 Spyridon Bellas, Emmanuel Stamatakis, Ioannis Vakalas

09⁴⁵-10⁰⁰ Sensitivity of CO₂ flow in production/injection wells in CPG (CO₂ Plume Geothermal) systems

O-48 Sofianos Panagiotis Fotias, Sofia Stamataki, Vassilis Gaganis

10⁰⁰-10¹⁵ Optimizing Geothermal Energy Extraction in CPG (CO₂ Plume Geothermal) systems

O-49 Sofianos Panagiotis Fotias, Spyridon Bellas, Vassilis Gaganis

10¹⁵-10³⁰ Well Control Strategies for Effective CO₂ Subsurface Storage: Optimization & Policies

O-50 Ismail Ismail, Vassilis Gaganis

10³⁰-11⁰⁰ Coffee Break – Poster session 2

PARALLEL SESSIONS

SESSION B5

ERA-MIN3 at RawMat2023

ROOM 5

Chair: Francesca Beolchini

11⁰⁰-13⁰⁰ Recycling of EoL products and immovable assets e.g. batteries, magnets

Battery recycling

Challenges and opportunities for recycling of spent lithium ion batteries – a summary of results of the NEXT-LIB project

O-51 Guozhu Ye

Biotechnological recycling and recovery of metals from waste printed circuit boards & spent Li ion batteries- ERAMIN EU BaCLEM Project

O-53 Sandeep Panda, Ata Akcil, Stoyan Gaydardzhiev, Eric van Hullebusch (online)

Magnets and E-Waste

Recovery of valuable metals from Nd-Fe-B magnet leach liquor using antisolvent crystallization and non-aqueous ion exchange

O-54 Brecht Dewulf, Dženita Avdibegović, Kerstin Forsberg, Srečo Škapin, Koen Binnemans

Siderophores assisted recovery of Ga, In from the end-of-the life product

O-56 Rohan Jain, Christian Hintersatz, Kun Zheng, Katrin Pollmann, Eric van Hullebusch, Luis Rojas

Minerals Material Cycles

Evaluation of EOL Materials as SCMs for OPC

O-57 Mehmet Ali GULGUN, Mirijam Vrabec, Saso Sturm, Bogdan Stefan VASILE, Cleva Ow-Yang, Zeynep Başaran Bundur, Adrian Ionut NICOARA, Sorour Samsari Parapari, Yasemin Akyol, Kosar Hassan Nezhad, Otilia Ruxandra VASILE

ReFina - Novel methods for enhanced recovery of metals and minerals from fine incineration ash

O-58 Héctor Muñiz Sierra, Michal Šyc

PROPER: New sustainability metrics to improve refractories recycling performances regarding resource use, environmental impacts and economic benefits

O-59 Stephanie Muller, Frédéric Lai, Antoine Beylot, Ambroise Lachat, Tom Huppertz, Elisabeth van Overbeke, Quentin Ricoux

Enabling circular economy

RedOx Recycling - A new approach for the recovery of gold from E-waste

O-60 Claudio Baldizzone

LiCoBAT - Lithium and Cobalt recovery from batteries coming from the reverse logistics chain of WEEE

O-61 José Rocha Andrade da Silva

End-of-life Li-ion Battery Management Integration and Technology Evaluation

O-62 Rudolph van Schalkwyk, Ersin Yazici, Jan Ots, Erik Emilsson, Martina Petranikova, Esra Eken Torunoglu, Alexandra Wu, Hacı Deveci, Guven Akdogan, Louis Louw, Nilay Elginöz Kanat, Roelof Maritz, Dominic Vooght, Theuns Kuhn, Ayse Nur Ozturk, Henric Lassesson, Christie Dorfling

SESSION B6

Environment and Sustainability I

📍 ROOM 6

Chair: Ariadne Argyraki, Vasilis Loukadakis

11⁰⁰-11¹⁵ Immobilization of Rare Earth Elements and Yttrium (REY) by iron (bio)precipitation in sulphated acid waters from El Bierzo (Spain)

O-63 Blanca Rincón-Tomás, Francisco Javier Gonzalez, Enrique López-Pamo, Esther Santofimia

11¹⁵-11³⁰ First study of microbial diversity living at Nisyros volcano extreme environment - Future applications

O-64 Vassiliki Angelatou, Stefano Fazi, Franco Tassi, Orlando Vaselli, Georges Vougioukalakis

11³⁰-11⁴⁵ Grain size distribution of rare earth elements in a passive treatment system installed in a legacy polymetallic sulfide mine in Portugal

O-65 Cynthia Obregón Castro, Isabel Prudêncio, João Carlos Waerenborgh, Bruno Vieira, Dulce Russo, Catarina Diamantino, Edgar Carvalho, Rosa Marques

- 11⁴⁵-12⁰⁰ Long-term assessment of surface cover geochemical characteristics of a treated sulfidic mining waste pile in Lavrion, Greece**
O-66 Ariadne Argyraki, Zacharenia Kypridou, Khaled Imbrahim
- 12⁰⁰-12¹⁵ Risk assessment of Metal transportation mechanism from mining source by rainfall runoff as a contribution to the bioaccumulation in seafood**
O-67 Rafi Ullah, Shaikh Mohiuddin
- 12¹⁵-12³⁰ Environmental assessment of replacing fossil fuels with hydrogen for motorized equipment in the mining sector**
O-68 Antonis Peppas, Sotiris Kottaridis, Chrysa Politi, Paschalis Oustadakis
- 12³⁰-12⁴⁵ A scenario-based analysis for the selection of post-mining land uses applying a cellular automata model**
O-69 Konstantinos Karalidis, Christos Roumpos, Aikaterini Servou, Nikolaos Paraskevis, Francis Pavloudakis
- 12⁴⁵-13⁰⁰ Towards the exploitation of unconventional heavy oils: Electrostatic technologies for the minimization of dehydration cost**
O-70 Christina Argyropoulou, Vassilis Gaganis, Dimitris Marinakis

13⁰⁰-14³⁰ Lunch – Poster Session 2

PARALLEL SESSIONS

SESSION B7

Mining: Trends and perspectives I

📍 ROOM 13

Chair: Ioannis Kapageridis, Christos Roumpos

- 14³⁰-15⁰⁰ Keynote presentation**
Mining and Challenges for the Transformation in Energy Sector
KN-06 Carsten Drebenstedt
- 15⁰⁰-15¹⁵ Evaluation methodology of open pit mine overall slope failure risks**
O-71 Natalija Pavlovic, Branko Petrovic, Tomislav Subaranovic
- 15¹⁵-15³⁰ A Glimpse to a Holistic Approach to Environmental Monitoring of the Kolumbo Submarine Volcano with Implications for Deep Seafloor Mining, Ocean Governance and Policy**
O-72 Stephanos Kiliass, Vasilios Pletsas, Nikolaos Zegkinoglou, Paraskevi Nomikou, Theodoros Mertzikis, Paraskevi Polymenakou, Andreas Gondikas
- 15³⁰-15⁴⁵ Narrow Reef Mining (NRE) – innovative mining technology for narrow, sub-horizontal PGE ore bodies**
O-73 Vječislav Bohanek, Luka Petro, Sibila Borojević Šoštarić
- 15⁴⁵-16⁰⁰ Using force field analysis for examining and managing the stakeholders' perceptions in mining projects**
O-74 Francis Pavloudakis, Philip-Mark Spanidis, Christos Roumpos

Tuesday 29 August 2023

16⁰⁰-16¹⁵ Application of International Standards to Evaluate the Potential of Sustainable Secondary Production of Tin and Tungsten in Portugal

O-75 Md Ariful Islam, José Brito Iria, Georg Meißner, George Barakos, Helmut Mischo

16¹⁵-16³⁰ Machine Learning Techniques to model and predict airflow requirements in underground mining

O-76 Maria Karagianni, Andreas Benardos

SESSION B8 ERA-MIN3 at RawMat2023

📍 ROOM 5

Chair: Pontus Westrin

14³⁰-16³⁰ ERA-MIN SRIA workshop

This workshop aims to collect feedback and expert opinions on the new Strategic Research and Innovation Agenda (SRIA) on raw materials supply for the green and digital transition. The SRIA will serve as a basis for a future international research and innovation partnership within the field of non-energy, non-food raw materials. The workshop discussion will be based on the current draft agenda structure, and focus on identifying technological and structural challenges, as well as research and innovation needs, in six thematic areas:

- Resilient primary and secondary raw materials supply
- Efficient use of raw materials in design and production
- Sustainable use and reuse of products
- Effective policy development and governance
- Maximizing societal benefits
- World-class innovation capacity

See the ERA-MIN website (<https://www.era-min.eu/sria>) for more information.

SESSION B9 Environment and Sustainability II

📍 ROOM 6

Chair: Toni Eerola, Antonis Peppas

14³⁰-14⁴⁵ Reconciliation conflicting societal objectives: Nature protection vs. raw materials supply resilience

O-77 Vitor Correia, Eberhard Falck

14⁴⁵-15⁰⁰ Assessment of the environmental behavior of phosphogypsum with the application of lab-scale experimentation

O-78 Georgios Gaidajis, Maria Pliaka

15⁰⁰-15¹⁵ Can We Alleviate the NIMBY Effect?

O-79 Demetrios Constantinides

15¹⁵-15³⁰ Remote Sensing Analysis for Flood Detection in Complex Surface Mining Areas Using Satellite Data

O-80 Konstantinos Karalidis, Georgios Louloudis, Christos Roumpos, Eleni Mertiri, Francis Pavloudakis

15³⁰-15⁴⁵ Durability of red-mud concrete pavement slabs

O-81 Aggeliki Skaropoulou, Konstantinos Tsvolas, Ioanna Angelou, Konstantinos Sakkas, Christos Georgopoulos, Maria Taxiarchou, Efstratios Badogiannis

15⁴⁵-16⁰⁰ Investigation of thermal behavior of cementitious pastes, mortars and concrete- Effect of Closed Structured Expanded Perlite addition

O-82 Chrysanthi Panagiotopoulou, Maria Taxiarchou, Iliana Douni, Katerina Maliachova, Aggeliki Skaropoulou, Ioanna Angelou, Stratis Badogiannis

16⁰⁰-16¹⁵ Integrated mine water management system in mixed sulphide mines – case study: Kassandra mines

O-83 Vithleem Gazea

16³⁰-17⁰⁰ Coffee Break – Poster session 2

SESSION B10

Mining: Trends and perspectives II

📍 ROOM 13

Chair: Michail Galetakis, Ioannis Kapageridis

17⁰⁰-17¹⁵ Artificial Intelligence Engineering System for a Tailings Storage Facility

O-84 Bartłomiej Bursa, Paweł Stefanek, Paweł Stefaniak, Bartosz Świdorski

17¹⁵-17³⁰ Onsite characterisation of magnesite and laterite mining blocks by using novel sensing technologies – An experimental approach

O-85 Basileios Deligiorgis, Declan Vogt, Ferenc Mádaí, Michail Galetakis

17³⁰-17⁴⁵ Risk analysis in underground marble quarries using geotechnical data from monitoring equipment

O-86 Christos Gravalos, Lampros Lamprinidis, Ioannis Kapageridis

17⁴⁵-18⁰⁰ Applying Model-Based Systems Engineering to Tailings Storage Facility Structures

O-87 Bartłomiej Bursa, Paweł Stefaniak, Ioannis Kakogiannis

18⁰⁰-18¹⁵ Industry 4.0 roadmap for the mining industry

O-88 Doris Skenderas, Chrysa Politi

18¹⁵-18³⁰ Machine Learning Based Domaining of a Porphyry Copper-Gold Deposit

O-89 Ioannis Kapageridis, Agni Patra, Argyro Asvesta, Ioannis Sinatkas

18³⁰-18⁴⁵ Transforming decommissioned mines to gravity energy storage system

O-90 Michail Galetakis, Georgios Biotakis, Basileios Deligiorgis, Emmanouil Varouchakis

18⁴⁵-19⁰⁰ Multi-risk assessment in post-mining lignite areas

O-91 Dafni Nalmpant-Sarikaki, Alexandros Theocharis, Nikolaos Koukouzas, Andreas Benardos, Ioannis Zevgolis

SESSION B11

Hydrometallurgical processes for metals recovery from EoL and ores

📍 ROOM 5

Chair: Panagiotis Davris

17⁰⁰-17¹⁵ Recycling platinum and palladium from autocatalysts: searching for alternative processes combining efficiency with environmental sustainability

O-92 Hugo Bacelo, Michiel de Brauwier, Liliana Martelo, Helena Soares

17¹⁵-17³⁰ Gold recovery from integrated circuits: proposal of an innovative and greener hybrid process

O-93 Márcia Silva, Liliana Martelo, Margarida Bastos, Helena Soares

- 17³⁰-17⁴⁵ Leaching and recovery of gold from ores using alternative lixiviants to cyanide**
O-94 Maria Taxiarchou, Ioannis Paspaliaris, Nymphodora Papassiopi, Katerina Adam
- 17⁴⁵-18⁰⁰ Solvent extraction for iron removal and HCl recovery from Ni/Co pregnant leach solutions: flowsheet optimization and thermodynamic modelling**
O-95 Brecht Dewulf, Rayco Lommelen, Koen Binnemans, Sofía Riaño
- 18⁰⁰-18¹⁵ Gold recovery from refractory auriferous sulphides applying the Platsol Process**
O-96 Nymphodora Papassiopi, Paschalis Oustadakis, Panagiota Georgopoulou, Evangelia Mylona, Maria Taxiarchou, Ioannis Paspaliaris, Katerina Adam
- 18¹⁵-18³⁰ An innovative approach for the crystallization of battery grade cobalt sulfate**
O-97 Luka Nils Mettke, Marius Müller, Bengi Yağmurlu
- 18³⁰-18⁴⁵ Recovery of antimony from alkaline sulphide leaching solutions**
O-98 Marianna Stathogianni, Rafaella - Aikaterini Megaloudi, Paschalis Oustadakis, Anthimos Xenidis

SESSION B12 OSH and EPD Reporting

📍 ROOM 6

Chair: George Barakos, Katerina Adam

- 17⁰⁰-17³⁰ Keynote presentation**
Occupational Health and Safety in industry-improvements and perspectives
KN-07 Rena Bardani
- 17³⁰-17⁴⁵ The experience on the implementation of Risk Management in OSH and environmental issues in the extractive companies**
O-99 Petros Maraboutis, Niki Iliana Poulimenou, Elena Nikolaou
- 17⁴⁵-18⁰⁰ Piloting the establishment of soil geochemical baselines for Potentially Toxic Elements (PTEs) in Greece- Preliminary results from Attica and Boeotia**
O-100 Artemis Kontomichalou, Alexandros Liakopoulos, Ariadne Argyraki, Zacharenia Kypritidou, Fotini Botsou, Antonis Vlastos
- 18⁰⁰-18¹⁵ Evaluation of occupational health and safety issues in coal mining Industry**
O-101 Petkani Zoi, Vatalis Konstantinos
- 18¹⁵-18³⁰ Understanding the Social License to Operate from a Cultural Perspective: The case studies of Australia, Greece, and India**
O-102 Chrysanthi Rodolaki, George Barakos
- 18³⁰-18⁴⁵ EPD reporting in the metal and mineral sector**
O-103 Maria Vastardi, Eugenia Filtikaki, George Mavraganis, Katerina Adam
- 18⁴⁵-19⁰⁰ Sustainability Reporting in the Raw Materials Industry**
O-104 Eugenia Filtikaki, Maria Vastardi, Katerina Adam

20⁰⁰ Gala dinner

PLENARY LECTURES

📍 ROOM 13

Chair: Anthimos Xenidis, Petros Koutsovitis, Stavros Kalaitzidis

09³⁰-10⁰⁰

Plenary lecture 9

Gian Andrea Blengini, Politecnico di Torino

PL-09

From List of Critical Raw Materials to List of critical projects

10⁰⁰-10³⁰

Plenary lecture 10

Slavko Solar, United Nations Economic Commission for Europe (UNECE) Sustainable Energy Division

PL-10

The Application of United Nations Framework Classification for Resources (UNFC) to European Mineral Deposits

10³⁰-11⁰⁰

Coffee Break – Poster session 3

PARALLEL SESSIONS

SESSION C1

Critical metals recovery from mining/metallurgical waste

📍 ROOM 13

Chair: Angel Lopez-Buendia, Dimitris Panias

11⁰⁰-11⁰⁵

PROMETIA: innovation and sustainability in mineral processing, extractive metallurgy & recycling

Patrick d'Hugues, PROMETIA chairman & Director of the Mineral Resources and Circular Economy Programme at BRGM

11⁰⁵-11³⁰

Keynote presentation

Holistic valorisation of bauxite residue: Results from pilots demonstrations

KN-08

Efthymios Balomenos, Mytilineos SA

11³⁰-11⁴⁵

Efficient Use of Sulfuric Acid in Bauxite Residue Leaching

O-105 Aikaterini Toli, Danai Marinos, Maria Psoma, Dimitrios Kotsanis, Panagiotis Davris, Efthymios Balomenos, Dimitrios Panias

11⁴⁵-12⁰⁰

HCl- based leaching method for extracting Ni/Co from ore deposits and tailings

O-106 Seyedehmaryam Sadeghi, Sofía Riaño, Koen Binnemans, Stylianos Tampouris, Vitalis Chipakwe

12⁰⁰-12¹⁵

Microwave roasting of bauxite residues

O-107 Angel Lopez-Buendia, Eduardo Brau, Efthymios Balomenos

12¹⁵-12³⁰

Alumina and iron recovery from the BR-Ca reduced pellets by simultaneous magnetic separation and alkali leaching

O-108 Manish Kumar Kar, Jafar Safarian, Casper van der Eijk

12³⁰-12⁴⁵

Recovery of copper and zinc from ash from incinerated municipal waste

O-109 Ragnhild Dirdal, Aslak Skåra, Erik Nedkvitne, Jon Omtvedt, Dag Ø Eriksen

12⁴⁵-13⁰⁰

Unlocking the Potential of Bauxite Residue: A Comparative Exergy Analysis of Emerging Valorisation Techniques

O-110 Eleni Mikeli, Efthymios Balomenos, Dimitrios Panias

SESSION C2

Substitution and Recycling of Critical Raw Materials in the Automotive Sector - The Industrial Perspective

ROOM 5

Chair: Iakovos Yakoumis

- 11⁰⁰-11¹⁵ Raw Materials Act - opportunities in recycling and substitution for Industry, from Innosup Mine The Gap, to I3 and Regional Innovation Valleys**
O-111 Santiago Cuesta Lopez, Icamcyl, Spain
- 11¹⁵-11³⁰ Promoting Sustainable Value Chains: Ford Otosan's Approach to Critical Raw Materials Recovery**
O-112 Mehmet Celik, Ford Otosan, Turkey
- 11³⁰-11⁴⁵ Recycling of lithium ferrophosphate (LFP) batteries in Greece**
O-113 Panagiotis Xanthopoulos, Sunlight Energy Group, Greece
- 11⁴⁵-12⁰⁰ Recovering and Substituting of Noble Metals from Fuel Cells and Electrolyzers**
O-114 Christos Chochos, Advent Technologies, Greece
- 12⁰⁰-12¹⁵ Recovering and Substituting of Rare Earth Elements from Permanent Magnets**
O-115 Milana Karajic, Magneti, Slovenia
- 12¹⁵-12³⁰ Recovering of Critical Raw Materials from Electric and Electronic Devices**
O-116 Teresa Sessa, TREEE, Italy
- 12³⁰-12⁴⁵ Universal Hydrometallurgical Up-Scaled Process for Recovering Critical and Strategic Materials from Automotive EoL Streams**
O-117 Anastasia-Maria Moschovi, Monolithos Catalysts & Recycling Ltd., Greece
- 12⁴⁵-13⁰⁰ Roundtable discussion**

SESSION C3

Industrial minerals and Waste reuse - valorisation I

ROOM 6

Chair: Charis Vasilatos, Kostas Komnitsas

- 11⁰⁰-11³⁰ Keynote presentation**
Pathways towards Sustainability and Decarbonisation in the Construction Industry: The Role of Industrial Minerals and Geopolymers
KN-09 Maria Taxiarchou, National Technical University of Athens
- 11³⁰-11⁴⁵ Factors affecting the properties of slag-based alkali activated materials**
O-118 Kostas Komnitsas, Vasiliki Karmali, Dimitra Vathi, Lefteris Kaklamanos
- 11⁴⁵-12⁰⁰ Composite lightweight materials with upgraded physicochemical functionality and improved economic feasibility**
O-119 Antonia Ekonomakou, Xenofon Simos, Ioanna Kitsou, Michaela Papageorgiou, Maria Eleni Mamassi, Theodoros Gikarakis, Achilleas Amanatidis, Georgios Anastasakis, Athena Tsetsekou
- 12⁰⁰-12¹⁵ Creating public acceptance in building products made from metallurgical wastes**
O-120 Efthymios Balomenos, Nikolaos Patsavos, Alexandros Peteinarelis, Panagiotis Davris, Grigorios Paschalis
- 12¹⁵-12³⁰ Li extraction from a-spodumene concentrate by carbonizing calcination**
O-121 Katerina Maliachova, Nikos Doukas, Danai Tsakiri, Michail Samouhos, Lefkothea Sakellariou, Iliana Douni, Maria Taxiarchou, Ioannis Paspaliaris

- 12³⁰-12⁴⁵ Crystalline and Amorphous Phases in Fe-Rich Slags: Implications for As and Sb leaching Behaviour**
 O-122 Konstantina Koukouza, Glenn Beersaerts, Valérie Cappuyns, Yiannis Pontikes
- 12⁴⁵-13⁰⁰ Eco-friendly composites – environmental assessment of mine tailings based geopolymers**
 O-123 Kinga Korniejeko, Beata Figiela, Michał Łach, Barbara Kozub

13⁰⁰-14³⁰ Lunch – Poster Session 3

PARALLEL SESSIONS

SESSION C4 Magnets and REEs

📍 ROOM 13

Chair: Efthymios Balomenos, Stavros Kalaitzidis

- 14³⁰-14⁴⁵ High-performance solid phase extraction chromatography for recycling of NdFeB magnet waste.**
 O-124 Tiaan Punt, Kerstin Forsberg, Michael Svärd
- 14⁴⁵-15⁰⁰ Advancing sustainable magnets for electric mobility and renewable energy: Innovating processing and recycling routes for Nd-Fe-B permanent magnets**
 O-125 Kristina Žužek, Tomaž Tomše, Mihaela Rebernik, Sina Khoshsima, Amit Mishra, Sorour Semsari Parapari, Spomenka Kobe, Laurence Schieren, Carlo Burkhardt, Sašo Šturm
- 15⁰⁰-15¹⁵ Process mineralogy applied to mineral processing for the development of REE deposits**
 O-126 Tassos Grammatikopoulos, Stavros Kalaitzidis
- 15¹⁵-15³⁰ Investigation and Optimization of the Chemical and Operational Parameters of the Stripping Process Using Oxalic Acid to Recycle REEs from Permanent Magnets**
 O-127 Soroush Rahmati, Ionela Birloaga, Francesco Vegliò
- 15³⁰-15⁴⁵ Potential application of modified diglycolamide resin For Rare Earth Element extraction**
 O-128 Junnile Romero, Carlito Tabelin, Ilhwan Park, Richard Alorro, Leaniel Silva, Joshua Zoleta, Takunda Mandu, Kosei Aikawa, Mayumi Ito, Steffen Happel, Naoki Hiroyoshi, Vannie Joy Resabal
- 15⁴⁵-16⁰⁰ Recovery of Scandium from industrial acidic solutions through ion-exchange**
 O-129 Eleni Mikeli, Aikaterini Toli, Danai Marinos, Efthymios Balomenos, Dimitrios Panias
- 16⁰⁰-16¹⁵ Utilization of graphite industrial wastes for the sustainable production of silicon carbide**
 O-130 Charikleia Vourgidi, Ioanna Giannopoulou, Apostolos Kourtis, Maria Magganiari, Anthimos Xenidis
- 16¹⁵-16³⁰ Securing the supply chain for rare earth polymer-bonded magnets by recycling**
 O-131 Iliya Radulov, Eva Brouwer, Jan Leitloff, Jürgen Gassmann, Cyril Aymonier, Guido Sonnemann, Benjamin Balke, Anke Weidenkaf

Wednesday 30 August 2023

SESSION C5

Energy transition metals - ENICON & EXCEED HE projects

📍 ROOM 5

Chair: Kostas Komnitsas

- 14³⁰-14⁴⁰ Energy transition metals: Future demand and low carbon processing technologies**
O-132 Kostas A Komnitsas, Ilias Lazos, Toni Eerola
- 14⁴⁰-14⁵⁵ Challenges in Li minerals recovery from different deposits**
O-133 Lev Filippov
- 14⁵⁵-15¹⁰ Exploring barriers to the implementation of circular economy processes for batteries**
O-134 Vasileios Rizos, Patricia Urban
- 15¹⁰-15²⁵ Preliminary assessment of the social license to operate in four European lithium projects**
O-135 Toni Eerola, Kostas Komnitsas
- 15²⁵-15⁴⁰ Strategic and critical raw materials in the battery supply chain - skills, education and training**
O-136 Kulczycka Joanna
- 15⁴⁰-15⁵⁰ Round table discussion including representatives from Larco, Euronickel and Sunlight**
15⁵⁰-16⁰⁰ Q and A

SESSION C6

Reuse-Recycling and Valorisation II

📍 ROOM 6

Chair: Clive Mitchell, Vasilis Melfos

- 14³⁰-14⁴⁵ Fuelling the Foundation Industries: discovering the hidden value of mineral waste in the UK**
O-137 Clive Mitchell
- 14⁴⁵-15⁰⁰ EcoGlassFab: Eco-Glass-Fabrication from the assembly of secondary precursors**
O-138 Sophie Schuller, Kahina Hamadache, Frédéric Angeli, Frederic Goettmann, Benoit Darboret, Frédéric Boismureau
- 15⁰⁰-15¹⁵ Valorizing mineral wool ash as a supplementary cementitious materials**
O-139 Tolga Aydin, Zeynep Başaran Bundur, Kaan Aksoy, Turker Ince, Ezgi Perin, Baris Karabiyik, Mihriban Sari
- 15¹⁵-15³⁰ Microwave chemistry for enhanced carbon capture by serpentine quarry waste**
O-140 Marcello Campione
- 15³⁰-15⁴⁵ Effect of by-pass filter dust on durability of self-compacting concrete**
O-141 Andreas Kounadis, Konstantinos Tsivolas, Efstratios Badogiannis
- 15⁴⁵-16⁰⁰ How to convert your waste into a resource?**
O-142 Duane Runciman, Matt Dey
- 16⁰⁰-16¹⁵ Valorisation of aplite in alkali-activated materials**
O-143 Georgia Maria Tsaousi, Georgia Flessoura, Dimitrios Panias
- 16¹⁵-16³⁰ Optimization of the demolition waste incorporation to cement mortar by response surface methodology**
O-144 Ikbel Bejaoui, Halim Hammi, Khaoula Mkadmini, Rym Abidi

16³⁰-17⁰⁰ Coffee Break – Poster session 3

PARALLEL SESSIONS

SESSION C7

Advanced metallurgical processes

📍 ROOM 13

Chair: Casper van der Eijk, Dimitris Panias

17⁰⁰-17³⁰ Keynote presentation

The possibilities and limitations of the use of hydrogen in different metallurgical sectors

KN-10 Casper van der Eijk, Jafar Safarian, Halvor Dalaker

17³⁰-17⁴⁵ Isothermal Pre-reduction behaviour of Nchwaning Manganese Ore in H₂ atmosphere

O-145 Alok Sarkar, Trygve Lindahl Schanche, Jafar Safarian

17⁴⁵-18⁰⁰ Optimization of Fe, Al, and Na recovery from H₂ Reduced Bauxite Residue (Red mud) using Response surface methodology (RSM)

O-146 Ganesh Pilla, Tobias Hertel, Bart Blanpain, Yiannis Pontikes

18⁰⁰-18¹⁵ Contribution to the optimization of the smelting reduction of nickeliferous laterites, based on the recent industrial experience.

O-147 Charalabos Zografidis, Konstantinos Betsis

18¹⁵-18³⁰ Exploring the leaching potential of lemonitic laterites with nitrate solutions

O-148 Iraklis Varsamos, Paschalis Oustadakis, Konstantinos Betsis, Anthimos Xenidis

18³⁰-18⁴⁵ Aluminothermic reduction of iron and titanium from metallurgical wastes

O-149 Dimitris Sparis, Efthymios Balomenos, Dimitrios Panias

18⁴⁵-19⁰⁰ Wastes from olive oil production as a perspective component for biocoke production

O-150 Małgorzata Wojtaszek-Kalaitzidi, Michał Rejdak, Michał Książek, Sten Yngve Larsen, Stavros Kalaitzidis

SESSION C8

Critical metals sourcing - Experts Panel Discussion

📍 ROOM 5

Moderators: Thymis Balomenos, Beate Orberger

17⁰⁰-19⁰⁰ How can EU Critical Raw Materials extraction from waste or low-grade ore compete with Asian production?

Industrial Minerals: The sleeping giant of European CRM resources?

O-152 Anastasios Kladis, AdMiRIS

Waste to resource - secondary resourcing from waste

O-153 Duane Runciman, Mures Magnesium Srl.

Gallium Supply Chain - EU Resilience

O-154 Stefan Eichler, Freiburger Compound Materials

A European Stockpile Organization is a must have for Europe to reduce its supply disruptions for Critical Materials

O-155 Henk Van der Laan, VIC

Wednesday 30 August 2023

SESSION C9

Education

📍 ROOM 6

Chair: George Barakos, Maria Menegaki

17⁰⁰-17³⁰ Keynote presentation

European Universities and New Tools in the Raw Materials Education

KN-11 **Katerina Adam**, National Technical University of Athens

17³⁰-17⁴⁵ TIMREX – an EIT labelled master programme in innovative mineral exploration

O-156 Sibila Borojević Šoštarić, Ferenc Madai, Gabriela Paszkowska, Nils Jansson

17⁴⁵-18⁰⁰ Integrated Mine Planning Education for the Modern Engineer

O-157 Ioannis Kapageridis, Kyros Koios

18⁰⁰-18¹⁵ The interactive advancement of the Australian Mining Industry and Academia toward the sustainable supply of critical raw materials

O-158 George Barakos, Danielle Thompson, Michael Hitch

18¹⁵-18³⁰ Program for achieving progress in transfer the science to business developed within teaching project for staff at Eastern and Southeastern European universities

O-159 Malwina Kobylańska, Agnieszka Urbańska-Ciszek

18³⁰-18⁴⁵ Discussion on Knowledge Gaps in Mining Operations: Empirical Evidence from the Greek Mining Industry

O-160 Philip-Mark Spanidis, Francis Pavloudakis, Christos Roumpos

18⁴⁵-19⁰⁰ EIT Deep Tech Talent Initiative

O-161 Francesca Barisani, Cross-KIC Outreach and Stakeholder Manager, EIT RawMaterials

19⁰⁰ Closing ceremony-Awards

POSTER SESSION 1

EU Strategy on Circular economy / Mineral exploration and characterization / Mineral Processing / EoL products / LiBs

Monday 28 August 2023

9 ROOM 16

- | | |
|--------------|---|
| P1-01 | Effect of thermal treatment on flotation and leaching in EV lithium-ion battery recycling
Marius Müller, Luka Nils Mettke, Bengi Yagmurlu |
| P1-02 | Effect of freeze-thaw cycles on the flexural strength of Greek natural stones
Konstantinos N Laskaridis, Angeliki Arapakou |
| P1-03 | Structural and electrochemical characterization of Natural Manganese Oxides from Drama Mn-oxide Deposits of Greece
George Soulamidis, Christina Stouraiti, Harilaos Tsikos, Maria Kourmoussi, Eleni Charalampous, Christiana Mitsopoulou |
| P1-04 | Mineralogical and geochemical constrains of the critical and rare metals in the vein-type mineralization at the Vertiskos unit, northern Greece
Christos Stergiou, Grigorios Aarne Sakellaris, Vasilios Melfos, Panagiotis Voudouris |
| P1-05 | Sustainable blue economy as a supplier of Strategic and Critical Raw Materials
Fani Sakellariadou, Francisco Javier Gonzalez, James Hein, Blanca Rincón-Tomás, Nikolaos Arvanitidis, Thomas Kuhn |
| P1-06 | The suitability of mafic volcanics from the island of Patmos for acidic water purification applications: Report on initial experimental results
Efi Kosti, Natalia Aggelopoulou, Petros Koutsovitis, Christina Lazaratou, Alkiviadis Sideridis, Petros Petrounias, Dimitrios Papoulis |
| P1-07 | The Hydrogeological Conditions as a Crucial Factor for Creating Pit Lakes. The Case of Kyparissia Mine in Megalopolis, Greece.
Georgios Louloudis, Christos Roumpos, Eleni Mertiri, Georgios Kasfikis, Eleni Vasileiou |
| P1-09 | Magmatic controls on Zr-Ti-U-Th-REE enrichment in potassic mafic-intermediate rocks and evaluation of their economic significance
Charalampos Vasilatos, Angeliki Papoutsas |
| P1-10 | Application of magnetic geophysical survey for the identification of buried bauxite deposits in Fokis, Central Greece.
Panagiotis Zachariadis, Armand Dubus, Emmanuel Pizzo |
| P1-11 | Application of MCDM methods in mineral processing – a review
Zoran Štirbanović, Dragiša Stanujkić, Jovica Sokolovic, Ivana Ilić |
| P1-12 | Mineral characterization of Ni-Co sulphide ores and tailings from Kevitsa Mine, Finland
Nivea Magalhaes, Hannah Hughes, Jens Andersen, Richard Crane, Fernando Prado Araújo, Philippe Muchez |
| P1-13 | Mapping the soil chemical properties of the Sarigkiol Basin, Western Macedonia, Greece, in the view of the transition to the post-lignite era
Despoina Psarraki, Panagiotis Papazotos, Eleni Vasileiou, Maria Perraki |

- P1-14** **The Controlled-source Audio-frequency Magnetotellurics (CSAMT/AMT) method tested in the search for deep Fe-Skarn mineralization at Kimmeria, Xanthi, N. Greece**
Petros Karmis, Magdalini Angeli, Dimitrios Tsouvalas, Constantinos Mavrogonatos, Michalis Fitros, Marianthi Anastasatou, Adamantia Chatziapostolou, Konstantinos Laskaridis
- P1-15** **Recycling concrete to aggregates. Implications on CO₂ footprint**
Ioannis Bampanis, Charalampos Vasilatos
- P1-16** **Circular Economy for Critical Raw Materials in India**
Anjali Singh
- P1-17** **Investigating the recovery of noble metals from single-use medical technology specific waste streams**
Kokkinos Evgenios, Merachtsaki Domna, Lampou Angeliki, Prochaska Charikleia, Peleka Efrosyni, Konstantinos Simeonidis, George Vourlias, Zouboulis Anastasios
- P1-18** **Granulometric, chemical, and mineralogical evaluation of Greek lignite bottom ash for potential utilization in the concrete manufacturing**
Argyro Asvesta, Ioannis Kapageridis, Agapi Vasileiadou, Kyros Koios, Nikolaos Kantiranis
- P1-19** **A comparative study on the properties of volcanic rocks from Aegean islands, Greece, for utilization as pozzolanic additives in cement**
Theodoros Sainis, Glikeria Kakali, Panagiotis Pomonis, Charalampos Vasilatos
- P1-20** **Hydrometallurgical pilot plant reconfiguration for the recycling of automotive waste for the recovery of precious and critical metals: H2020 Treasure project**
Nicolò Maria Ippolito, Soroush Rahmati, Pietro Romano*, Marco Passadoro, Valentina Innocenzi, Hossein Shalchian, Giorgio Pellei, Ionela P. Birloaga, Francesco Ferella, Svetlana B. Zueva, Francesco Vegliò
- P1-21** **SEMACRET-Geophysical exploration of magmatic ore deposits**
Isla Fernández, Andrea Viezzoli, Elena Kozlovskaya, Shenghong Yang, Vojtěch Wertich, Ana Patricia Jesus, Olga Rosowiecka

POSTER SESSION 2

Mining, Energy Environment and Sustainability, Hydrometallurgical Processes

Tuesday 29 August 2023

📍 **ROOM 16**

- P2-01** **Geochemical and limnological characterization of the Corta Atalaya pit lake (Riotinto mines, Spain)**
Esther Santofimia, Blanca Rincón-Tomás, Enrique López-Pamo, Francisco Javier Gonzalez, Ricardo Amils
- P2-02** **Preliminary Environmental Assessment of Carbonated Slags as a CCUS in Agricultural Applications**
Ponnapat Watjanatepin, Laura Steinwider, Anthony de Schutter, Giuseppe Granata, Sara Vicca, Tom Van Gerven, Karel Van Acker
- P2-03** **Evolution of alluvial gold mining technologies**
Spyridon Mathioudakis, George Xiroudakis, Evangelos Petrakis, Emmanouil Manoutsoglou

P2-04	Capacity of Nerium oleander to phytoremediate mining spoils assisted by air nanobubbles and biochar Petroura Seridou, Vasiliki Karmali, Evdokia Syranidou, Anna Kritikaki, Kostas Komnitsas, Georgios Kolliopoulos, <u>Nicolas Kalogerakis</u>
P2-05	Extractive waste management in coal surface mining projects - A circular economy approach Ariadni Sokratidou, Christos Roumpos, Nikolaos Paraskevis, Aikaterini Servou, Francis Pavloudakis
P2-06	Dynamic adsorption of Pb by Fe-Mg clay-quartz beds using micro-columns Zacharenia Kypritidou, Maria-Anna Gatou, Ariadne Argyraki, Vasileios Zotiadis
P2-07	Potential use of leaching gravel as a raw material to the preparation of geopolymeric material as an alternative to conventional cement materials Arturo Reyes Roman, Francisca Balarezo Olivares, Daniza Castillo, Francisco Arriagada, Miguel Maulen Tapia
P2-08	Alluvial gold mining from Argonauts to Agricola Spyridon Mathioudakis, George Xiroudakis, Evangelos Petrakis, Emmanouil Manoutsoglou
P2-09	A Review about the methods and techniques for evaluating the waters and soils in mining regions. Ioanna Petropoulou, Maria-Sotiria Frousiou, Eleni Vasileiou
P2-10	Groundwater monitoring system based on Arduino platform and IIoT platform Marcin Paterek
P2-11	Face Mapping in Open Pit Mines-A new approach Agni Patra, Konstantinos Pilalidis, Francis Pavloudakis, Ioannis Kapageridis
P2-12	Potential benefits from Carbon Capture Utilisation and methanol production in magnesite processing line Antonis Peppas, Doris Skenderas, Chrysa Politi, Dimitris Sparis
P2-13	Potential application of RES and underground H₂ storage in abandoned mines Antonis Peppas, Sotiris Kottaridis, Chrysa Politi
P2-14	Prediction of hydrate dissociation conditions in natural/acid/flue gas streams in the presence and absence of inhibitors Ismail Ismail, Vassilis Gaganis
P2-15	Evaluation of an iron nanocomposite material for heavy metals removal under flow conditions Christiana Mystrioti, Nymphodora Papassiopi, Anthimos Xenidis
P2-16	Manganese Recovery from Nickel and Cobalt Production Facility MHP Leach Waste Firat Tekmanlı, Bengi Yağmurlu, Hüseyin Eren Obuz
P2-17	An innovative approach for the recovery of cobalt sulfate from battery leach solutions by anti solvent crystallization Luka Nils Mettke, Marius Müller, Bengi Yagmurlu
P2-18	Raw materials and circular economy: bioelectrochemical copper removal and recovery from wastewater Hyusein Yemendzhiev, Valentin Nenov
P2-19	Evaluation of thiosulphate for gold recovery from pressure oxidation residues Christiana Mystrioti, Konstantina Kousta, Nymphodora Papassiopi, Katerina Adam, Maria

Taxiarchou, Ioannis Paspaliaris

- P2-20 Hydrometallurgical recovery of EoL LFP batteries using oxalic acid as lixivient**
Rafaella - Aikaterini Megaloudi, Nikos Konsolas, Paschalis Oustadakis, Anthimos Xenidis
- P2-21 Leaching of Bauxite Residues from Turkish, Greek and Romanian Plants Using Concentrated Sulphuric and Hydrochloric Acids for Potential Application in an Industrial Recovery Plant**
Murat Kabataş, Tuğba Selcen Atalay Kalsen, Hakan Burak Karadağ, Yasin Ramazan Eker, Bayram Ünal, Panagiotis Angelopoulos, Paschalis Oustadakis, Ioannis Paspaliaris, Meral Baygül, Gökhan Demir, Sedat Arslan, Panagiotis Davris, Efthymios Balomenos, Gheorghe Dobra, Alina Boiangiu
- P2-22 Unlocking the potential of intermediate type C2 laterites through nitrate leaching: Investigating leaching behavior for efficient metal recovery**
Ioannis Varsamos, Paschalis Oustadakis, Rafaella - Aikaterini Megaloudi, Anthimos Xenidis
- P2-23 Acid Leaching of Cu/Fe polymetallic alloy: Process alternatives & Challenges**
Michail Vafeias, Amalia Bempelou, Dimitrios Panias
- P2-24 Novel GO/ceramic composite membranes for environmental applications**
Evdokia Galata, Mohammed Subrati, George Petrou, Petros Magkaniaris, George Romanos, Zili Sideratou, Fotis Katsaros

POSTER SESSION 3

Industrial Minerals, Reuse and Valorisation, Advances in Metallurgy, Education

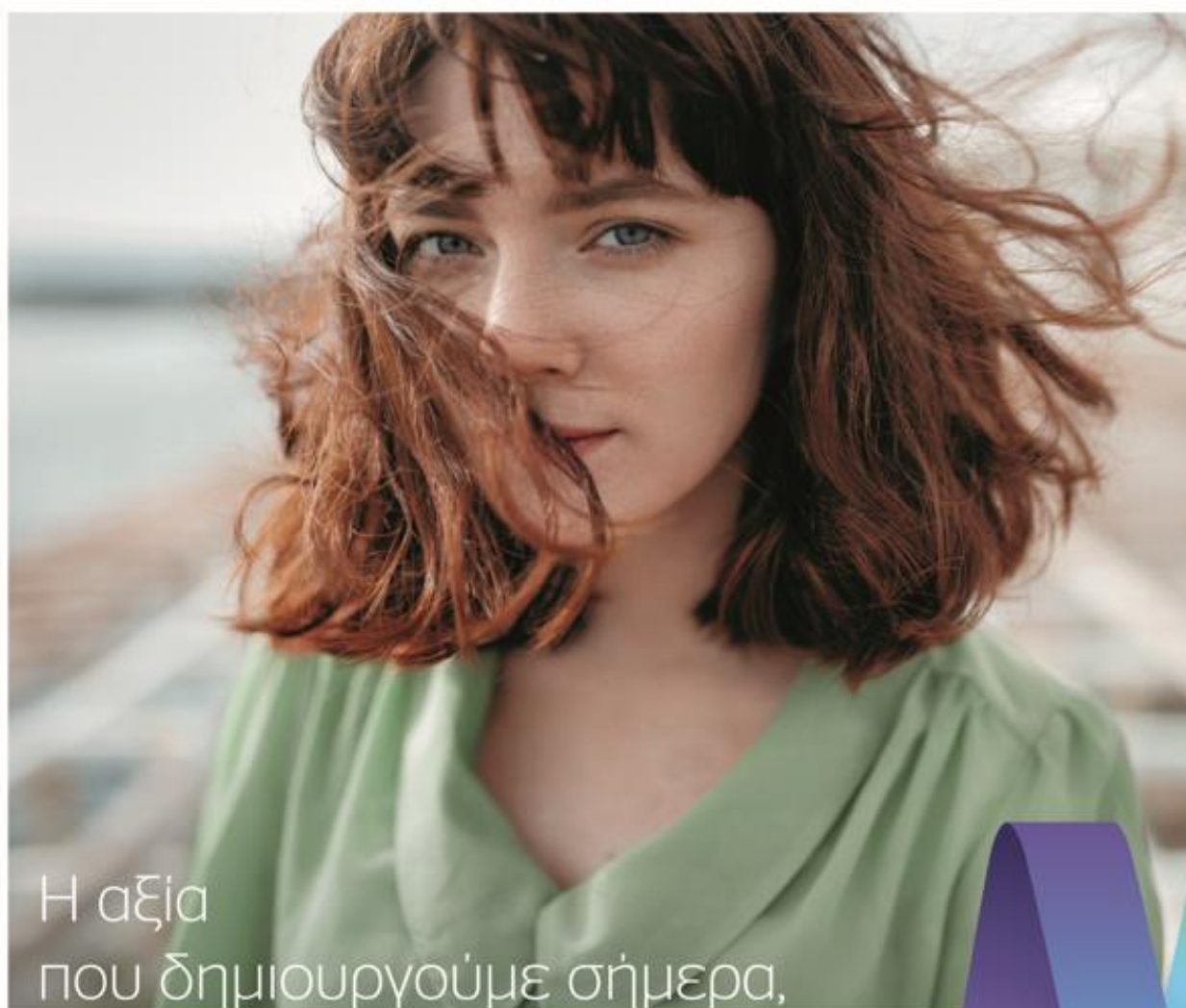
Wednesday 30 August 2023

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- P3-01 RIS Internship – sustainable and structured internship programme for RawMaterials master students and organization from RIS regions**
Sibila Borojević Šoštarić, Kristina Koret, Vječislav Bohanek, Ferenc Madai
- P3-02 Thermal treatment of serpentinized olivine wastes, obtained from chromite mineral enrichment operations, as an example of circular economy in the mining sector**
Evgenios Kokkinos, Peleka Efrosyni, Zouboulis Anastasios
- P3-03 Recovery of Critical Raw Materials from abandoned mine waste, some potential case studies in North-Western Italy**
Gabriele Baldassarre, Adriano Fiorucci Paola Marini
- P3-04 Electric Arc Furnace Dust vitrification via soda-lime recycled glass**
Andronikos Maris, Dimitra Ioannidou, Ilias Sammas, Stavros Deligiannis, Petros Tsakiridis
- P3-05 Using natural and synthetic zeolites for polluted soils clean-up**
Charalampos Vasilatos, Maria Roulia
- P3-06 Optimization of the demolition waste incorporation to cement mortar by response surface methodology**
Ikbel Bejaoui, Halim Hammi, Khaoula Mkadmini, Rym Abidi
- P3-07 Recovery of stainless steel from end-of-use dishwashers**
Eirini Evangelou, Georgios Anastassakis, Spyridon Karamoutsos, Athanasios Stergiou
- P3-08 ARTeMIS – A European training-through-research program for exploration geologists**
Alexandre Tarantola, Jean Cauzid, Marie-Camille Caumon, Cécile Fabre, Rasool Mehdizadeh,

Panagiotis Voudouris, Christina Stouraiti, Konstantinos Soukis, Constantinos Mavrogonatos, Karsten Haase, Manuel Keith, Vasilios Melfos, Alexandros Chatzipetros, Grigorios-Aaarne Sakellaris, Janja Mihajlovic, Tim Baker, Olivier Dossmann, Cedric Gavier

P3-09	Utilization of an industrial waste for the development of fire resistant geopolymers Konstantinos Sakkas, Christos Georgopoulos, Yiannis Makrigiannis, Efthymios Balomenos, Panagiotis Davris
P3-10	Empowering Students for the Future: Enhancing Soft Skills through non-formal educational paths Vasileios Loukadakis, Doris Skenderas, Nicolas Antoniadis, Eva Stachouli, Magdalini Mylona
P3-11	Preliminary study of low cost raw materials for new syntheses of geopolymers targeting environmental applications. Marina Christopoulou, Paraskevi Lampropoulou, Petros Petrounias, Aikaterini Rogkala, Panagiota Giannakopoulou, Petros Koutsovitis, Dionisios Panagiotaras, Nikolaos Koukouzas
P3-12	Sustainable Valorisation of Quarry Waste from Granite Ornamental Rocks for Extracting Critical Raw Materials Antonello Aquilano, Valeria Indelicato, Elena Marrocchino, Rosalda Punturo, Carmela Vaccaro
P3-13	Techno-environmental assessment of novel pathways of red mud waste use to improve extraction efficiency of valuable metals Monika Vitvarova, David Novacek, Shareq Nazir, Frederico Marques Penha, Onuralp Yucel, Pedro Cabral De Souza, Efthymios Kantarelis, Filiz Sahin, Kağan Benzeşik, Adela Svobodova, Rafael Rodriguez Trias, Arif Karaca, İlayda Ozbag, Ahmet Turan, Sergei Preis, Selçuk Kan, Camila Barreneche Guerisoli, Umay Çınarlı
P3-14	Environmental Footprints of Bauxite alternatives for Alumina production - regional characteristics in Central Europe and Turkey, Monika Vitvarova, Kamila Milnerova, David Novacek, Ahmet Turan, Selcuk Kan, Frantisek Pticen, Stanislav Kapr, Dita Cerna, Umay Çınarlı, Camila Barreneche Guerisoli, İlayda Özbağ, Onuralp Yucel, Kagan Benzesik, Hasan Guney, Filiz Sahin, Arif Karaca, Adela Svobodova
P3-15	Re-use of historical thermal plant ash deposits as supplementary cementing materials Bogdan Vasile, Adrian Nicoara, Arian Surdu, Ovidiu Oprea, Roxana Trusca, Mehmet Gulgun, Zeynep Başaran Bundur, Saso Sturm, Sorour Parapari, Otilia Vasile, Mirijam Vrabec
P3-16	BR valorisation with enhanced Al extraction by hydrothermal conversion of hematite to magnetite Paschalis Oustadakis, Panagiotis Angelopoulos, Maria Georgiou, Georgios Anastasakis, Ioannis Paspaliaris, Michael Pissas
P3-17	Limonitic laterite reduction with hydrogen Evangelos Palavos, Michail Samouhos, Dimitrios Kotsanis, Eamonn Devlin, Georgios Pillatos, Antonis Peppas, Anthimos Xenidis
P3-18	Use of aluminium scrap for the production of high-quality recycled aluminum products. Design and production control criteria -The project DeReAL Vasileios Akrivos, Ilias Georgiopoulos, Anastasios Triantafyllou, Grigorios Paschalis, Constantina-Dia Andreouli
P3-19	Assessment of hand-held XRF analyser performance for the characterization of aluminium scrap Michail Galetakis, Angeliki Ntourntourea, Basileios Deligiorgis



Η αξία
που δημιουργούμε σήμερα,
είναι η κληρονομιά
που αφήνουμε στο μέλλον.

Αυτός είναι ο δρόμος που επιλέξαμε στην MYTILINEOS.
Ο δρόμος της επένδυσης στις πιο εξελιγμένες τεχνολογίες,
ο δρόμος της εξωστρέφειας, ο δρόμος της προόδου
για τους εργαζόμενους και τους συνεργάτες μας.
Είναι ο δρόμος που μας οδήγησε στον μετασχηματισμό μας
σε έναν ολοκληρωμένο οργανισμό πράσινης, φιλικής ενέργειας
και μας έκανε να εστιάσουμε στην πράσινη μεταλλουργία,
φέροντάς μας πιο κοντά στην ενεργειακή μετάβαση.

**Σε αυτόν τον δρόμο συνεχίζουμε κοιτώντας προς το μέλλον.
Και το μέλλον, είναι ο μόνος δρόμος που δεν τελειώνει ποτέ.**



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Aluminium and Copper solutions tailored for sustainable growth.

ElvalHalcor advances on an increasingly dynamic business model of sustainable growth and extroversion, having established a leading position in the manufacturing industry internationally and a solid, global presence in over 90 countries. The company develops innovative, high value-added products and solutions, highlighting the sustainable nature of aluminium and copper in contemporary product applications, tailored to align with the global megatrends of circular economy, the transition to climate neutrality, and the rapid technological advancements. ElvalHalcor moves forward its responsible journey, strengthening the future of the Greek manufacturing industry by achieving a significantly positive impact on the country's economy, society, and the environment.

ELVALHALCOR HAS A SIGNIFICANT FINANCIAL AND SOCIAL FOOTPRINT IN GREECE



€2.66 billion
aluminium and copper
exports value in 2022
(vs €1.91 billion in 2021)



€1.34 billion
annual total impact
of ElvalHalcor's activity
on GDP (0.7% of GDP)



8.3%
of total Greek exports
of industrial products
(vs 7.8% in 2021)



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