



**MINING AND METALLURGY INSTITUTE BOR**  
**TECHNICAL FACULTY IN BOR, UNIVERSITY OF BELGRADE**



**55<sup>th</sup> INTERNATIONAL OCTOBER CONFERENCE  
on Mining and Metallurgy**



**FINAL PROGRAM**



**15 – 17 October 2024**

**Hotel “Đerdap” Kladovo, Serbia**

**Financially supported by:**

**Ministry of Science, Technological Development and Innovation  
of the Republic of Serbia**

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Conference is financially supported by the  
Ministry of Science, Technological Development and  
Innovation of the Republic of Serbia,  
*Contract No. 451-03-4405/2024-03 from 08.07.2024.*

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## SCIENTIFIC COMMITTEE

### 55<sup>th</sup> International October Conference on Mining and Metallurgy

Dr Mile Bugarin, Mining and Metallurgy Institute Bor (*Serbia*) – *President*  
Dr Ana Kostov, Mining and Metallurgy Institute Bor (*Serbia*) – *Vice President*

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Dr Walter Valery, University of Queensland, Sustainable Minerals Institute, Brisbane

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Dr Boško Vuković, University of Banja Luka, Faculty of Mining, Banja Luka, Republic of Srpska

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#### **Canada**

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#### **China**

Prof. Dr Kaikun Wang, University of Science and Technology Beijing, School of Materials  
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Dr Zhongmei Sun, Zijin Mining and Metallurgy Design and Research Institute, Xiamen City

Prof. Dr Xuewei Lv, Chongqing University, College of Materials Science and Engineering,  
Shapingba, Chongqing

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Prof. Dr Zdenka Zovko Brodarac, University of Zagreb, Faculty of Metallurgy, Sisak

#### **Germany**

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Dr Srećko Stopić, RWTH Aachen University, Faculty of Georesources and Materials  
Engineering, Aachen

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Prof. Dr Dimitris Panias, National Technical University of Athens, School of Mining and Metallurgy Engineering, Athens

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Prof. Dr Žarko Radović, University of Montenegro, Faculty of Metallurgy and Technology Podgorica

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Prof. Dr Aleksandar Dimitrov, Ss. Cyril and Methodius University in Skopje, Faculty of Technology and Metallurgy, Skopje

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Prof. Dr Adam Grajcar, Silesian University of Technology, Faculty of Mechanical Engineering, Gliwice

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Prof. Dr Petrica Vizureanu, Gheorghe Asachi Technical University of Iasi, Faculty of Materials Science and Engineering, Iași

### **Russia**

Prof. Dr Sergey Krasikov, Institute of Metallurgy of Ural Branch of the Russian Academy of Sciences, Yekaterinburg

Prof. Dr Tatiana N. Aleksandrova, Saint Petersburg Mining University, Department of Mineral Processing, Saint Petersburg

### **Slovakia**

Prof. Dr Dušan Oráč, Technical University of Kosice, Faculty of Materials, Metallurgy and Recycling, Institute of Recycling Technologies, Košice

Prof. Dr Iveta Vasková, Technical University of Kosice, Faculty of Materials, Metallurgy and Recycling, Košice

Dr Slavomír Hredzák, Institute of Geotechnics of the Slovak Academy of Sciences, Košice

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Prof. Dr Boštjan Markoli, University of Ljubljana, Faculty of Natural Science and Engineering, Ljubljana

Prof. Dr Jožef Medved, University of Ljubljana, Faculty of Natural Science and Engineering, Ljubljana

### **South Africa**

Prof. Dr Daniel Ogochukwu Okanigbe, Tshwane University of Technology, Department of Extractive Metallurgy and Mineral Processing, Johannesburg

### **Turkey**

Prof. Dr Onuralp Yücel, Istanbul Technical University, Faculty of Metallurgical Engineering, Istanbul

Prof. Dr Ridvan Yamanoğlu, Kocaeli University, Faculty of Engineering, Metallurgical and Materials Engineering, Kocaeli

### **USA**

Prof. Emeritus Batrić Pešić, University of Idaho, College of Engineering, Moscow

Prof. Dr Vladislav Keckojević, West Virginia University, College of Engineering and Mineral Resources, Morgantown

### **Serbia**

Dr Aleksandra Ivanović, Mining and Metallurgy Institute Bor

Dr Aleksandra Milosavljević, Mining and Metallurgy Institute Bor

Dr Biserka Trumić, Mining and Metallurgy Institute Bor

Dr Branislav Marković, Institute for Technology of Nuclear and other Mineral Raw Materials Belgrade

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Prof. Dr Časlav Lačnjevac, Engineering Academy of Serbia

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Dr Daniela Urošević, Mining and Metallurgy Institute Bor

Dr Dejan Bugarin, Mining and Metallurgy Institute Bor

Prof. Dr Dejan Ivezić, University of Belgrade, Faculty of Mining and Geology Belgrade

Prof. Dr Dejan Tanikić, University of Belgrade, Technical Faculty Bor

Prof. Dr Dragan Manasijević, University of Belgrade, Technical Faculty Bor

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Dr Dragana Božić, Mining and Metallurgy Institute Bor

Prof. Dr Dragoslav Rakić, University of Belgrade, Faculty of Mining and Geology Belgrade

Prof. Dr Duško Minić, University of Priština, Faculty of Technical Sciences Kosovska Mitrovica

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Dr Emina Požega, Mining and Metallurgy Institute Bor  
Prof. Dr Ivan Mihajlović, University of Belgrade, Faculty of Mechanical Engineering Belgrade  
Dr Ivana Jovanović, Mining and Metallurgy Institute Bor  
Dr Jasmina Stevanović, University of Belgrade, Institute of Chemistry, Technology and Metallurgy Belgrade  
Dr Jasna Stajić Trošić, University of Belgrade, Institute of Chemistry, Technology and Metallurgy Belgrade  
Dr Jelena Petrović, Mining and Metallurgy Institute Bor  
Dr Ljiljana Avramović, Mining and Metallurgy Institute Bor  
Prof. Dr Nada Štrbac, University of Belgrade, Technical Faculty Bor  
Dr Milan Radivojević, Mining and Metallurgy Institute Bor  
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Prof. Dr Miloš Rajković, Engineering Academy of Serbia  
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Dr Vesna Krstić, Mining and Metallurgy Institute Bor  
Dr Vesna Marjanović, Mining and Metallurgy Institute Bor  
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Dr Vladan Čosović, University of Belgrade, Institute of Chemistry, Technology and Metallurgy Belgrade  
Dr Vojislav Bogdanović, Engineering Academy of Serbia  
Dr Zoran Stevanović, Mining and Metallurgy Institute Bor  
Prof. Dr Željko Kamberović, University of Belgrade, Faculty of Technology and Metallurgy Belgrade

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**ORGANIZING COMMITTEE**

**55<sup>th</sup> International October Conference on Mining and Metallurgy**

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Dr Ana Kostov, Mining and Metallurgy Institute Bor – *President*

Prof. Dr Milan Radovanović, University of Belgrade, Technical Faculty in Bor – *Vice President*

Dr Dragana Božić, Mining and Metallurgy Institute Bor – *Vice President*

Suzana Cvetković, Mining and Metallurgy Institute Bor – *secretary*

Dr Aleksandra Milosavljević, Mining and Metallurgy Institute Bor – *member*

Dr Vesna Marjanović, Mining and Metallurgy Institute Bor – *member*

Dr Marijana Pavlov Kagadejev, Mining and Metallurgy Institute Bor – *member*

Nevenka Vukašinović, Mining and Metallurgy Institute Bor – *member*

Vesna Simić, Mining and Metallurgy Institute Bor – *member*

Saša Stojanov, Mining and Metallurgy Institute Bor – *member*

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## WELCOMING ADDRESS

The 55<sup>th</sup> International October Conference on Mining and Metallurgy, organized annually, aims at providing a forum for presentation and discussion the scientific research, technological development and practice on the subjects of geology, mining, metallurgy, materials science, technology, environmental protection, energy efficiency, mechanical, civil and related engineering topics.

The Conference is organized jointly by the Mining and Metallurgy Institute Bor and the Technical Faculty in Bor, the University of Belgrade. Firstly, it was a national conference, then a conference with the international participation and, since 2002, it has been organized as an international conference.

The Conference work will be organized in sessions, including the plenary lectures, session lectures, oral and poster presentations.

The Conference will provide a good opportunity for meeting the old friends, making the new contacts and exchanging the useful information as well.

## TIME AND VENUE

55<sup>th</sup> IOC will be held from 15 to 17 October 2024 at Hotel “Đerdap”, Bor, Serbia, about 250 km south-east of Belgrade.

The Conference office will be opened on: 15 October.

## LANGUAGE

The Conference language will be English.

## PRESENTATIONS

Plenary Lecture – 20 min

Oral presentation – 10 min

Poster presentation on space max of 70 cm x 100 cm

Electronic form of presentation will be possible only in MS Power Point due to its widespread use. For oral presentation, personal computer and LCD Projector will be at author’s disposal.

## PUBLISHING

The Conference Proceedings will be published only the papers accepted by the Scientific Committee.

The authors can prepare their papers in extended form and submit them as full-length research papers in:

- *Journal Mining and Metallurgy Engineering Bor* (<https://irmbor.co.rs/izdavastvo/>)
- *Bakar / Copper* (<https://irmbor.co.rs/izdavastvo/>)
- *Journal of Mining and Metallurgy*, Section A: *Mining* ([www.jmma.tfbor.bg.ac.rs](http://www.jmma.tfbor.bg.ac.rs)) and Section B: *Metallurgy* ([www.jmmab.com](http://www.jmmab.com)),
- *Recycling and Sustainable Development* (<http://www.rsd.tfbor.bg.ac.rs/>)

after reviewing and appropriate revisions.



## CONFERENCE FEE

The Conference fee is € 150 or 18000 RSD, VAT included. It includes admission to the Conference sessions, Conference Proceedings and the accompanying materials, conference dinner, and refreshments during the Conference.

The Conference fee for the accompanying person is € 120 or 15000 RSD, VAT included. It includes all items specified for the participants except the Conference Proceedings and accompanying materials.

The Conference fee for publishing the accepted papers is € 70 or 9000 RSD, VAT included.

### a) Domestic participants in RSD:

Institut za rudarstvo i metalurgiju Bor

Br. računa: 160-42434-38

Naznaka: 55IOC

### b) Foreign participants:

Instruction for customer transfer in EUR:

56: Intermediary:

BCITITMM

INTESA SANPAOLO SPA MILANO, ITALY

57: Account with institution:

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BEOGRAD, REPUBLIKA SRBIJA

59: Beneficiary:

/RS35160005080000503252

INSTITUT ZA RUDARSTVO I METALURGIJU

ALBERTA AJNŠTAJNA 1, BOR, Republic of Serbia

With remarks: 55IOC

The participants, who do not pay the Conference fee in advance, may pay it during the registration at the Conference desk.

## HOTEL ACCOMMODATION

Accommodation will be provided for the participants at Hotel "Đerdap" Kladovo. For all hotel information and reservations, please use:

- Website <https://www.hoteldjerdap.com/>

- E-mail: [agencija@djerdapturist.co.rs](mailto:agencija@djerdapturist.co.rs), [repcija@djerdapturist.co.rs](mailto:repcija@djerdapturist.co.rs)

- Phone: +381 (0) 19 80 10 10, +381 (0) 19 80 82 34

- Fax: +381 (0) 19 80 14 75

Payment of the hotel bill can be made upon arrival at the reception desk or in advance.

## WEATHER CONDITIONS

Weather conditions are very changeable in October and temperature could vary from 10° to 25°C, so you should take some clothes for warm and cold weather.

## PERSONAL INSURANCE

The organizers cannot be held responsible for any accidents involving the Conference participants or the accompanying persons, for damage, or loss of their personal property or for cancellation expenses, regardless of cause. Participants should, therefore, make their own insurance arrangements and are advised to consult their local insurance agents regarding coverage.

## CORRESPONDENCE

Correspondence related to the Conference should be addressed to the President of the Organizing Committee,

**Dr Ana Kostov:**

E-mail: [ioc@irmbor.co.rs](mailto:ioc@irmbor.co.rs)

Phone: +381 (0) 30 454 108

Web site: <https://ioc.irmbor.co.rs/>

## TIME TABLE OF THE CONFERENCE

	<b>Hall/Session</b>	<b>Tuesday 15 October</b>	<b>Wednesday 16 October</b>	<b>Thursday 17 October</b>
<b>Conference Office</b>	Hotel Lobby	16:00 - 18:00	08.00 – 18.00	08.00-10.00
<i>Dinner</i>		18.00 – 20.00		
<i>Breakfast</i>			07.00 – 10.00	
<b>Opening Ceremony</b>	Conference room		10:00 - 10:30	
<b>Presentation of the Institute</b>	Conference room		10:30 - 10:45	
<b>Plenary Lectures 1</b>	Conference room		10:45 - 11:15	
<i>Welcome Cocktail</i>	<i>Hotel terrace with a view of the Danube</i>		11:15 - 12:00	
<b>Plenary Lectures 2</b>	Conference room		12:00 - 12:20	
<b>Plenary Lectures 3</b>	Conference room		12:20 - 12:40	
<b>Plenary Lectures 4</b>	Conference room		12:40 - 13:00	
<i>Lunch</i>			13:00 - 15:00	
<b>Plenary Lectures 5</b>	Conference room		15:00 - 15:20	
<b>Oral Session</b>	Conference room		15:20 - 16:30	
<i>Coffee Break</i>	<i>Hotel Lobby</i>		16:30 - 17:00	
<b>Poster Session</b>	Conference room		16:30 - 18:00	
<b>Conference Diner</b>	Restaurant		20:00	
<i>Breakfast</i>				07:00 - 09:00
<b>Oral / Poster Session</b>	Conference room			09:00 - 10:00
<i>Danube cruise</i>				10:00 - 13:00
<b>Closing of the Conference</b>				13:00

Plenary Lectures - limited to 20 min, Oral presentations - limited to 10 min.

## SCIENTIFIC PROGRAM

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### PLENARY LECTURES

Wednesday, 16 October 2024, 10:45 - 11:15

Chairperson: Igor Svrkota

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*Daniel Villa*

PARAMETRIC MINE DESIGN APPLIED TO BLOCK CAVING & OPTIMIZATION  
FOR OPEN PIT TO BLOCK CAVE TRANSITION

### PLENARY LECTURES

Wednesday, 16 October 2024, 12:00 - 13:00

Chairperson: Dragan Milanović, Dragana Božić

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*Carlos Frias*

HYDROMETALLURGY FOR THE MINE-TO-METAL PRODUCTION

*Yousef Ghorbani*

FORGING A SUSTAINABLE PATH: SHAPING THE FUTURE SUPPLY  
OF ENERGY MATERIALS/METALS FOR THE GREEN ENERGY TRANSITION

*Diana-Larisa Roman, Bianca-Vanesa Boros, Mariana Adina Matica,  
Constantina-Bianca Vulpe, Adriana Isvoran*

EFFECTS OF TRIAZOLE FUNGICIDES ON THE SOIL HEALTH TOWARDS  
A SUSTAINABLE AGRICULTURE

*Vesna Conić, Dragan Milanović, Ivana Jovanović*

VALORIZATION OF USEFUL COMPONENTS FROM THE SEDEX TYPE  
ORE THROUGH THE HORIZON 2020 "INTMET" PROJECT

### SECTION LECTURES

Wednesday, 16 October 2024, 15:20 - 16:30

Chairperson: Ana Kostov, Vesna Marjanović

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*Zita Takacova, Tomáš Vindt, Jakub Klimko, Andrea Miskufova, Dušan Oráč*

INDUSTRIAL PROCESSING OF SPENT PORTABLE LITHIUM BATTERIES – A BRIEF OVERVIEW

*Aleksandar Čitić, Tamara Radetić, Miljana Popović*

THE EFFECT OF HOMOGENIZATION AND ANNEALING ON IGC SUSCEPTIBILITY  
OF HOT-ROLLED AA5182 ALUMINUM ALLOY

*Stefano Utili, Andrea Agosti, Nelson Morales, Cristobal Valderrama, Robert Pell, G. Albornoz*

OPTIMAL PITWALL SHAPES TO INCREASE THE FINANCIAL RETURN AND DECREASE  
THE CARBON FOOTPRINT OF THE OPEN PIT MINES

*Aleksandar Jankovic, Walter Valery, Cameron Gargaro, Kristy Duffy, Thi Nguyen*

MODIFIED BOND AND RITTINGER ENERGY-SIZE MODELS FOR THE LABORATORY ISAMILL

## POSTER SESSION

Wednesday, 16 October 2024, 16:30 - 18:00

Thursday, 17 October 2024, 09:00 – 10:00

Chairpersons: Aleksandra Milosavljević, Marijana Pavlov-Kagadejev

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*Radmilo Rajković, Daniel Kržanović, Miomir Mikić, Milenko Jovanović, Emina Požega*

FORMATION OF A REACTIVE MATERIAL DUMP FROM THE "ČUKARU PEKI" MINE NEAR BOR

*Daniel Kržanović, Milenko Jovanović, Radmilo Rajković, Nikola Stanić, Miljan Gomilanović*

ANALYSIS OF THE IMPACT OF LANDSLIDE REHABILITATION IN THE EASTERN PART OF THE OPEN PIT JUŽNI REVIR ON THE ECONOMY OF THE MAJDANPEK COPPER MINE

*Daniel Kržanović, Nikola Stanić, Miljan Gomilanović, Aleksandar Doderović, Saša Stepanović*

EVALUATION OF EXPLOITABLE LEAD AND ZINC ORE RESERVES AT THE RIBNIK DEPOSIT, REPUBLIC OF MONTENEGRO

*Miomir Mikić, Sandra Milutinović, Radmilo Rajković, Milenko Jovanović*

IMPACT ON THE ENVIRONMENT AND RECLAMATION OF THE LANDFILL SARAKA, VELIKI KRIVELJ

*Radmilo Rajković, Miljan Gomilanović, Daniel Kržanović, Saša Stepanović,*

*Miomir Mikić, Milenko Jovanović*

PROTECTION AGAINST FLYING PIECES DURING BLASTING AT THE OPEN PIT SEVERNI REVIR OF THE MAJDANPEK COPPER MINE

*Slavica Mihajlović, Nataša Đorđević, Vladan Kašić, Srđan Matijašević*

STRUCTURAL STABILITY OF CALCITE MINERAL AFTER SURFACE MODIFICATION

*Jelena Ivaz, Milan Stajić, Dragan Zlatanović, Dejan Petrović, Mladen Radovanović, Milivoje Zlatić*

STUDY OF APPLICATION THE ANOVA TEST FOR INDICATORS OF SAFETY AND HEALTH AT WORK IN THE MINING INDUSTRY

*Ivan Jovanović, Dušan Tašić, Novica Staletović*

RISKS AND PROTECTIVE MEASURES FOR MINING OPERATION WITH A BALL MILL

*Milenko Jovanović, Daniel Kržanović, Radmilo Rajković, Miomir Mikić, Miroslava Maksimović*

APPLICATION OF GEOMATERIALS FOR SECURING AND PROTECTING THE LANDFILLS

*Aleksandra Ilić, Jovica Sokolović, Vladimir Nikolić*

A SHORT REVIEW OF APPLICATION THE UAV REMOTE SENSING TECHNOLOGY IN THE SURFACE COAL MINE RECLAMATION

*Stefan Milanović, Nikola Simić, Lazar Kričak, Milanka Negovanović, Nikola Đokić, Miljan Gomilanović*

FRAGMENTATION SIZE PREDICTION OF BLASTED MATERIAL USING A SPECIALIZED SOFTWARE FOR DRILLING AND BLASTING

*Dušan Tašić, Dragan Ignjatović, Vanja Đurđevac, Dragana Savić*

GEOPHYSICAL TESTS OF THE SMELTER SLAG DEPOSITS AT THE CONSTRUCTION SITE OF FACILITIES IN BOR

*Miljan Gomilanović, Stefan Milanović, Nikola Stanić, Miloš Živanović,*

*Saša Stepanović, Aleksandar Doderović, Tanja Stanković*

PROTECTIVE CHANNELS TO PREVENT A POTENTIAL ROCKFALL DURING BLASTING

*Saša Stepanović, Nikola Stanić, Aleksandar Doderović, Miljan Gomilanović, Jelena Stefanović, Ivan Jelić*

TECHNICAL SOLUTION FOR SLOPE STABILIZATION IN THE ZONE OF THE DURUTOVIĆI CEMETERY AND THE NEW ČEHOTINA RIVER BED

*Vladan Marinković, Miroslava Maksimović, Željana Novaković, Milutin Strahinjić, Milenko Jovanović*  
INTERPRETATION AND CREATION OF THE BLOCK MODEL OF THE Zn, Pb DEPOSIT  
RIBNIK-ŠUPLJA STIJENA

*Snežana Ignjatović, Ivana Vasiljević, Branislav Sretković*  
DETECTING THE BOUNDARIES OF GRAVITY ANOMALY SOURCES USING  
THE VERTICAL AND TILT DERIVATIVE

*Ivana Jelić, Jovica Stojanović, Aleksandar Pačevski, Nikola Vuković,  
Alena Zdravković, Ana Radosavljević-Mihajlović, Vladan Kašić*  
OXIDATION PRODUCTS OF ARSENOPYRITE AND OTHER SULFIDES  
FROM THE ORE DEPOSIT SASTAVCI, SERBIA

*Aleksandar Doderović, Miljan Gomilanović, Saša Stepanović, Nikola Stanić,  
Daniel Kržanović, Petar Marković, Tanja Stanković*  
CONSTRUCTING DEWATERING FACILITIES TO STABILISE THE SLOPE OF  
AN UNSTABLE OPENCAST MINE

*Stefan Trujić, Milenko Jovanović, Daniel Kržanović, Radmilo Rajković, Vladan Marinković, Emina Požega*  
ENVIRONMENTAL BENEFITS OF APPLYING THE NATURAL MATERIALS IN GEOGRIDS

*Dragan Zlatanović, Jelena Ivaz, Dejan Petrović, Mladen Radovanović, Milan Stajić*  
SERBIAN MINING AT THE CROSSROADS: SOCIAL ACCEPTANCE OF MINING PROJECTS

*Ivica Vojinović, Miloš Stojanović, Dragan Šabaz*  
IIOT IN MINING - POTENTIAL APPLICATION OF "LOW-COST" SENSORS AND  
THE ARDUINO PLATFORM

*Ivana Jovanović, Dragan Milanović, Vesna Conić, Tanja Stanković, Miloš Janošević*  
THE ROLE OF BANANA SCREEN IN DMS PROCESS – CASE STUDY

*Oliver Dimitrijević, Ivana Jovanović, Dragan Milanović, Vesna Conić, Daniela Urošević*  
THE ROLE OF DEWATERING SCREEN FOR FINE FRACTIONS  
SIEVING IN DMS PROCESS – A CASE STUDY

*Sanja Petrović, Srdana Magdalinović, Ljubiša Obradović, Sandra Milutinović,  
Nenad Magdalinović, Emina Požega, Slađana Krstić*  
CERAMIC FILTRATION IN THE IN MINERAL PROCESSING OPERATIONS

*Katarina Milivojević, Dušan Tašić, Tanja Stanković*  
DETERMINATION OF THE SHEAR STRENGTH PARAMETERS OF CLAY FOR  
THE HIGH-SPEED TRAFFIC LINE NOVI SAD-RUMA

*Nikola Stanić, Miljan Gomilanović, Saša Stepanović, Ivan Jelić, Daniel Kržanović, Dejan Bugarin*  
CONSTRUCTION OF THE CEHOTINA RIVER BYPASS AND RELIEF IN THE WESTERN  
AND SOUTHWESTERN PARTS OF THE POTRILICA OPEN PIT WITH THE FUNCTION  
OF LANDSLIDE REHABILITATION AND CREATION SAFE COAL EXPLOITATION CONDITIONS IN 2024

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Aleksandar Doderović, Dejan Bugarin*  
IMPROVING MINERS' SAFETY TRAINING BY UTILIZING 360 DEGREES CONTENT

*Mladen Radovanović, Ivana Radovanović, Dragan Zlatanović, Milivoje Zlatić,  
Dejan Petrović, Jelena Ivaz*  
POSSIBILITY OF STOCHASTIC METHODS APPLICATION ON  
ORE DRAWING FOR BLOCK CAVING MINING METHOD

*Vanja Đurđević, Snežana Ignjatović, Dragan Ignjatović*  
TERM AND TYPES OF SOIL STABILIZATION

*Dragan Ignjatović, Snežana Ignjatović, Vanja Đurđević, Lidija Đurđević Ignjatović, Dušan Tašić*  
SUBSOIL STABILIZATION WITH LIME

*Dragan Šabaz, Miloš Stojanović, Ivica Vojinović*  
TECHNOLOGIES FOR THE DEVELOPMENT OF SLOT RAISE DURING  
THE FORMATION FREE SURFACE

*Ljubiša Obradović, Sandra Milutinović, Srdana Magdalinović, Sanja Petrović*  
DETERMINATION A DIAMETER OF THE SEDIMENTAL LAKE OF THE NEW FIELD  
OF THE LEAD AND ZINC FLOTATION TAILING DUMP IN LEPOSAVIĆ

*Nenad Vušović, Milica Vlahović*  
GIS-BASED STOCHASTIC METHOD FOR PREDICTING MINE SUBSIDENCE

*Zoran Karastojković, Ana Kostov, Radiša Perić*  
REASONS FOR BRAZING WITH COPPER FILLER METAL ALLOYED WITH  
THE COPPER (I) AND IRON (III) OXIDES

*Emina Požega, Dragana Božić, Vera Požega, Vesna Marjanović,  
Danijela Simonović, Tomica Mančić, Dragan Sokolov*  
CHECKING THE LABORATORY OVERALL WORK

*Uroš Stamenković, Ivana Marković, Vladan Čosović, Boštjan Markoli*  
IMPACT OF AGING PARAMETERS ON DIFFERENT PROPERTIES OF  
THE EN AW-6082 ALUMINUM ALLOY

*Nebojša Tadić, Mitar Mišović, Žarko Radović*  
ANALYSIS OF STRUCTURAL AND MECHANICAL CHARACTERISTICS OF  
THE EN AW-4043 ALLOY INGOTS

*Ana Radosavljević-Mihajlović, Srdan Matijašević, Jelena Nikolić*  
METHOD OF A HIGH TEMPERATURE THERMAL INDUCED PHASE  
TRANSFORMATION OF ZEOLITE IN THE PROCESS OF OBTAINING  
THE DIFFERENT MATERIALS OF FELDSPAR TOPOLOGY

*Vladan Kašić, Ana Radosavljević Mihajlović, Jovica Stojanović, Slavica Mihajlović,  
Melina Vukadinović, Nataša Đorđević, Ivana Jelić*  
PROCEDURES FOR OBTAINING THE PRODUCTS BASED ON ZEOLITE MINERALS

*Biljana Zlatičanin, Branislav Radonjić*  
COOLING CURVE ANALYSIS IN THE Al-Cu-Mg-Ti ALLOY

*Ana Petrović, Stefan Đorđević, Miloš Đukić, Emina Požega, Dragana Adamović*  
STRUCTURE AND MORPHOLOGY OF THE COPPER METAL FOAM

*Silvana Dimitrijević, Aleksandra Ivanović, Stevan Dimitrijević*  
A MINI-REVIEW ON OPTIMAL LEACHING PARAMETERS IN  
THE HYDROMETALLURGY RECYCLING OF Ni-Cd BATTERIES

*Dragana Božić, Ljiljana Avramović, Vanja Trifunović, Radmila Marković,  
Zoran Stevanović, Emina Požega, Vesna Marjanović*  
PILOT PLANT FOR AGITATION LEACHING OF THE FLOTATION TAILINGS

*Vanja Trifunović, Snežana Milić, Ljiljana Avramović, Dragana Božić*  
VALORIZATION OF ZINC FROM THE EAF DUST USING THE HYDROMETALLURGICAL PROCESS

*Ljiljana Avramović, Vanja Trifunović, Dragana Božić, Vojka Gardić,  
Jelena Petrović, Vesna Conić, Dejan Bugarin*

STABILIZATION OF THE SOLID RESIDUE FORMED AFTER  
THE ACID LEACHING OF COPPER FROM FLOTATION TAILINGS

*Vesna Krstić, Biserka Trumić, Milijana Mitrović, Nemanja Latas, Mirjana Novaković*

PHYSICO-CHEMICAL CHARACTERISTICS OF THE Cu-Fe-P ALLOY  
WITH EMPHASIS ON THE DIFFRACTION ANALYSIS

*Sonja Milićević, Sanja Martinović, Dejan Todorović, Vladimir Jovanović, Dragan Radulović, Vladan Milošević*

COPPER REMOVAL FROM WASTEWATER VIA CLINOPTILOLITE:  
THE DIFFUSION KINETIC ANALYSIS

*Ivana Marković, Nemanja Marić, Uroš Stamenković, Dragan Manasijević,  
Ljubiša Balanović, Jasmina Petrović*

CHANGES IN THE MARTENSITIC  $\beta'$  PHASE IN THE NICKEL ALUMINUM  
BRONZE DURING AGING

*Ana Kostov, Aleksandra Milosavljević, Ivan Jovanović*

DETERMINING THE ACTIVITY AND COEFFICIENT OF ACTIVITY FOR  
COMPONENTS IN THE COPPER-BASED SHAPE MEMORY ALLOYS

*Miloš Đukic, Stefan Đorđević, Dragana Adamović, Sanela Vasiljević,  
Ana Petrović, Emina Požega, Vesna Stankov Jovanović*

VALIDATION OF THE ICP-MS METHOD FOR DETERMINATION  
THE HEAVY METALS IN WATER

*Milan Nedeljković, Srba Mladenović, Jasmina Petrović, Uroš Stamenković, Milijana Mitrović*

IMPACT OF THE GNS PARTICLES ON MICROSTRUCTURE AND  
THERMAL PROPERTIES OF THE Sn-0.7Cu SOLDER ALLOYS

*Marina Jovanović, Adnan Mujkanović, Nadira Bušatlić, Ilhan Bušatlić,  
Amel Zahirović, Nevzet Merdić, Edin Spahić, Lamija Sušić*

PROPERTIES OF CONCRETE WITH THE CALCINED LOW-KAOLINITE  
CLAY AS A PARTIAL CEMENT REPLACEMENT

*Aleksandra Milosavljević, Ana Kostov, Predrag Stolić*

LIQUID METAL ALLOYS BASED ON GALLIUM

*Vladimir Jovanović, Sonja Milićević, Dejan Todorović, Branislav Ivošević, Dragan Radulović*

SOIL CONDITIONERS AND AMENDMENTS ARE KEY FOR  
SOIL RESTORATION - TYPES AND METHODS OF PRODUCTION

*Milijana Mitrović, Saša Marjanović, Biserka Trumić, Milan Nedeljković,  
Jasmina Petrović, Vesna Krstić*

INFLUENCE OF THE EXTRUSION PROCESS ON THE GRAIN SIZE OF  
COPPER MICRO-ALLOYED WITH IRON AND PHOSPHORUS

*Ljubiša Balanović, Dragan Manasijević, Ivana Marković, Uroš Stamenković, Kristina Božinović*

CALCULATION OF THERMODYNAMIC PROPERTIES Al-Ga-Sn TERNARY  
ALLOY USING MUGGIANU AND TOOP MODEL

*Dragana Marilović, Grozdanka Bogdanović*

LEACHING OF FLOTATION TAILINGS WITH A SULFURIC ACID AND AN  
IONIC LIQUID IN THE PRESENCE OF HYDROGEN PEROXIDE

*Petra Delimanová, Ondrej Kožej, Iveta Vasková*

THE IMPACT OF COMMON ADDITIVES ON CASTING SURFACE QUALITY

*Jakub Klimko, Jarmila Trpčevská, Kristína Talianová, Petra Růžičková, Dušan Oráč*  
RECYCLING OF THE SLAG FROM LITHIUM BATTERY RECYCLING

*Biserka Trumić, Slavica Miletić*

PROCEDURE FOR QUANTIFICATION THE MEASUREMENT UNCERTAINTY IN DETERMINING PROCESS OF TENSILE STRENGTH

*Viša Tasić, Vladan Kamenović, Bojan Radović, Tatjana Apostolovski-Trujić, Tamara Urošević, Zvonko Damnjanović, Milan Protić*

YEAR-LONG MEASUREMENTS OF THE PM<sub>10</sub> AND PM<sub>2.5</sub> IN AN APARTMENT IN BOR (SERBIA)

*Bianca-Vanesa Boros, Renata Kovacevic, Mariana Adina Matica, Constantina-Bianca Vulpe, Gheorghita Menghiu, Diana-Larisa Roman, Adriana Isvoran*

HYDROCHEMICAL ANALYSIS OF POTENTIALLY POLLUTED SURFACE WATER AND GROUNDWATER SAMPLES BY THE FORMER MINING ACTIVITIES FROM THE MOLDOVA NOUA AREA

*Jelena Stefanović, Jelena Đorđević, Sandra Guševac, Miloš Živanović, Tanja Stanković*

LONG-TERM PREDICTIONS OF CORROSION RATE IN THE INDUSTRIAL AGGRESSIVE ENVIRONMENT IN BOR

*Dušan Milojkov, Vukosava Živković-Radovanović, Biljana Dojčinović, Miroslav Sokić, Gvozden Jovanović, Ivana Mikavica, Marija Simić*

HAIR TRACE ELEMENTS ANALYSIS: A BIOMONITORING TOOL FOR THE ENVIRONMENTAL EXPOSURES AND HEALTH RISKS

*Vesna Marjanović, Radmila Marković, Zoran Stevanović, Adriana Isvoran, Vojka Gardić, Renata Kovačević, Jelena Petrović*

MONITORING THE pH VALUE AND ELECTRICAL CONDUCTIVITY IN THE RIVERS OF THE BOR AREA

*Bojan Radović, Viša Tasić, Renata Kovačević, Tatjana Apostolovski-Trujić, Nevena Ristić, Tamara Urošević, Sanela Vasiljević*

AIR QUALITY IN BOR DURING THE TRIAL OPERATION OF THE COPPER SMELTER AFTER THE RECONSTRUCTION

*Radmila Marković, Vesna Marjanović, Zoran Stevanović, Adriana Isvoran, Vojka Gardić, Renata Kovačević, Jelena Petrović*

MONITORING THE HEAVY METALS CONCENTRATION IN THE RIVERS IN THE BOR AREA

*Stefan Đorđević, Miloš Đukić, Ana Petrović, Dragana Adamović, Jelena Petrović, Ljiljana Lekić, Vesna Stankov Jovanović*

THE IMPACT OF THE VELIKI KRIVELJ OPEN PIT AND MINE WASTES ON THE WATER OF THE KRIVELJ RIVER IN OCTOBER 2023

*Sandra Milutinović, Ljubiša Obradović, Goran Angelov, Srđana Magdalinović, Sanja Petrović*

REHABILITATION AND REINFORCEMENT THE OUTER SLOPE OF THE DAM 6

*Emina Požega, Dragana Božić, Vera Požega, Srđana Magdalinović, Sanja Petrović, Miloš Đukić, Milenko Jovanović*

VERIFYING THE LABORATORY QUALITY SERVICE BY AN INTERLABORATORY COMPARISON

*Ivan Jelić, Petar Jelić, Nikola Stanić, Miloš Živanović, Saša Stepanović, Miljan Gomilanović, Tanja Stanković*

2D-HEC-RAS MODELING OF THE FLOOD WAVE PROPAGATION DUE TO THE RTH FLOTATION DAM OVERTOPPING FAILURE



*Miloš Živanović, Jelena Stefanović, Jelena Đorđević, Sandra Guševac,  
Ivan Jelić, Nikola Jovanović, Tanja Stanković*

TEMPORARY RIVER REINFORCED CONCRETE CROSSING STRUCTURE  
ACROSS THE NEW MUŠNICA RIVERBED

*Petar Jelić, Ivan Jelić, Saša Stepanović, Jelena Đorđević, Jelena Stefanović,  
Aleksandar Doderović, Tanja Stanković*

MONITORING OF THE RELOCATED ČEHOTINA RIVERBED

*Sunčica Stanković, Violeta Jovanović, Vesna Krstić*

MODELING THE LINKS BETWEEN KNOWLEDGE MANAGEMENT,  
GREEN INNOVATION AND SUSTAINABLE BUSINESS IN THE MINING COMPANIES

*Marija Jonović, Lidija Barjaktarović, Maja Stevanović, Dejan Bugarin*

TRANSFORMING RISKS INTO OPPORTUNITIES THROUGH  
THE STRATEGIC MANAGEMENT OF A SCIENTIFIC INSTITUTE

*Marijana Pavlov-Kagadejev, Aleksandra Milosavljevic, Milan Radivojevic*

COMPARATIVE ANALYSIS OF THE TIME SERIES DECOMPOSITION  
TECHNIQUES IN THE ENERGY SECTOR APPLICATIONS

*Slavica Miletić, Biserka Trumić, Suzana Stanković*

INTER-VERIFICATION OF THE PERSONNEL BY THE STANDARD TEST  
METHOD ACCORDING TO THE REQUIREMENTS OF THE ISO/IEC 17025:2017 STANDARD

*Sandra Guševac, Jelena Đorđević, Jelena Stefanović, Ivan Jelić, Miloš Živanović*

CONCRETE WITH COPPER SLAG AS A PARTIAL REPLACEMENT OF  
THE NATURAL AGGREGATE

*Nikola Lekić*

DEVELOPMENT A SOFTWARE TOOL FOR MONITORING THE WATER LEVEL AT  
THE ASH LANDFILLS: A CASE STUDY OF KOSTOLAC, TENT B AND KOLUBARA

*Jelena Đorđević, Sandra Guševac, Jelena Stefanović, Ivan Jelić, Miloš Živanović*

POSSIBILITY OF THE STEEL SLAG USAGE IN THE CIVIL CONSTRUCTION