

UNIVERSITY OF BELGRADE
TECHNICAL FACULTY IN BOR



BOOK OF ABSTRACTS

8th INTERNATIONAL STUDENT
CONFERENCE ON TECHNICAL
SCIENCES



www.tfbor.bg.ac.rs



8th INTERNATIONAL
STUDENT CONFERENCE
on Technical Sciences

20-21 October,
Bor Lake, Serbia

Editor: Uroš Stamenković

Book of Abstracts,

8th International Student Conference on Technical Sciences ISC 2023

Editor:

Doc. dr Uroš Stamenković

University of Belgrade - Technical Faculty in Bor

Technical Editors:

Milan Nedeljković, dipl. ing.

Avram Kovačević, dipl. ing.

University of Belgrade - Technical Faculty in Bor

Publisher: *University of Belgrade - Technical Faculty in Bor*

For the publisher: *Dean, Prof. dr Dejan Tanikić*

Circulation: 50 copies

Year of publication: 2023

Printed by "GRAFIKA GALEB DOO" NIŠ, 2023

ISBN 978-86-6305-141-6

CIP - Каталогизacija у публикацији Народна библиотека Србије, Београд

622(048)

669(048)

66(048)

66.017/.018(048)

INTERNATIONAL Student Conference on Technical Sciences (8 ; 2023 ;
Borsko jezero)

Book of abstracts / 8th International Student Conference on Technical
Sciences ISC 2023, 20-21 October, Bor Lake, Serbia ; [organized by University
of Belgrade, Technical Faculty in Bor] ; editor Uroš Stamenković. - Bor :
University of Belgrade, Technical Faculty, 2023 (Niš : Grafika Galeb). - VII, 51
str. ; 24 cm

Tiraž 50. - Bibliografija uz većinu apstrakata.

ISBN 978-86-6305-141-6

a) Рударство -- Апстракти b) Металургија -- Апстракти v) Хемијска
технологија -- Апстракти g) Технички материјали -- Апстракти

COBISS.SR-ID 126594825

**8th International Student Conference on Technical Science,
ISC 2023.**

Is organized by

UNIVERSITY OF BELGRADE, TECHNICAL FACULTY IN BOR

and co-organized by

**University of Zenica, Faculty of engineering and natural sciences,
Zenica, Bosnia and Herzegovina**

**University in Priština, Faculty of Technical Science, Kosovska
Mitrovica,
Serbia;**

**University of Montenegro, Faculty of Metallurgy and Technology,
Podgorica, Montenegro;**

**University of Tuzla, Faculty of Technology, Tuzla, Bosnia and
Herzegovina;**

**University of Chemical Technology and Metallurgy, Faculty of
Metallurgy and Material Science, Sofia, Bulgaria;**

TABLE OF CONTENTS

1.	<i>Invited lecture: Yuhui Zhang, Shuhong Liu, Yuling Liu; Mentor: Yong Du (China)</i> MICROSTRUCTURAL SIMULATION OF AGEING PRECIPITATION BASED ON THE DIFFUSION STUDY OF THE HCP α_3 PHASE IN Mg-Al-Sn ALLOYS	1
2.	<i>Student: Marina Marković; Mentor: Milan Gorgievski (Serbia)</i> REMOVAL OF COPPER IONS FROM AQUEOUS SOLUTIONS USING ONION PEELS AS AN ADSORBENT	2
3.	<i>Students: Nizama Baručija, Armin Čaušević, Merjem Delibašić; Mentor: Hasan Avdušinović (Bosnia and Herzegovina)</i> INFLUENCE OF GRAPHITE MORPHOLOGY ON THERMAL CONDUCTIVITY	3
4.	<i>Student: Alexandr Chesnyak; Mentor: Tamara Tikhomirova (Russia)</i> WAYS TO SOLVE ALTERNATIVE ENERGY SOURCES	4
5.	<i>Student: Nikolay Palienko; Mentor: Tamara Tikhomirova (Russia)</i> DEVELOPMENT OF GEOTHERMAL ENERGY IN THE WORLD	7
6.	<i>Student: Andrey Slyunkin; Mentor: Tamara Tikhomirova (Russia)</i> THE USE OF BIOENERGY RESOURCES IN THE PRODUCTION OF ELECTRICITY	10
7.	<i>Students: Alida Kusić, Ilma Bošnjak; Mentor: Miliša Todorović (Bosnia and Herzegovina)</i> SAFETY AND HEALTH IN COKING PLANTS THROUGH THE APPLICATION OF ENGINEERING MEASURES	13
8.	<i>Student: Aleksandra Radić; Mentor: Danijela Voza (Serbia)</i> METHODS FOR PRIORITISATION OF SUSTAINABLE DEVELOPMENT GOALS (SDGS) - AN OVERVIEW	14
9.	<i>Student: Marija Kovač; Mentor: Snežana Vučetić (Serbia)</i> NON-DESTRUCTIVE TESTING OF INORGANIC MATERIALS AS DECISION TOOL IN CULTURAL HERITAGE	17
10.	<i>Student: Edita Bjelić; Mentors: Mersiha Suljkanović, Jasmin Suljagić (Bosnia and Herzegovina)</i> HYDROPHOBIC DEEP EUTECTIC SOLVENTS: PROMISING GREEN MEDIA FOR BIOMASS TREATMENT	18
11.	<i>Student: Miloš Vuleta; Mentor: Jasmina Petrović (Serbia)</i> CONSIDERATION OF THE INFLUENCE OF STIR CASTING PROCESS PARAMETERS ON OBTAINING MMC CASTINGS	19
12.	<i>Students: Nizama Baručija, Resul Čehajić, Mahir Dreco; Mentors: Almáida Gigović-Gekić, Amna Hodžić (Bosnia and Herzegovina)</i> INFLUENCE OF MIXING OF QUENCHING MEDIA ON MICROSTRUCTURE AND HARDNESS OF STEEL 23MnB4	20
13.	<i>Students: Mahir Dreco, Armin Čaušević; Mentors: Branka Muminović, Behar Alić, Almáida Gigović-Gekić (Bosnia and Herzegovina)</i> TESTING OF WELDED JOINTS WITH LIQUID PENETRANTS	21
14.	<i>Students: Vedran Milanković, Tamara Tasić; Mentor: Tamara Lazarević-Pašti (Serbia)</i> REMOVAL OF CHLORPYRIFOS AND MALATHION USING SPENT COFFEE GROUNDS – ISOTHERM STUDY	22

NON-DESTRUCTIVE TESTING OF INORGANIC MATERIALS AS DECISION TOOL IN CULTURAL HERITAGE

Student: Marija Kovač

Mentor: Snežana Vučetić

*University of Novi Sad – Faculty of Technology, Laboratory for Materials in Cultural Heritage
(HERITAGELAB), Bulevar cara Lazara 1, 21000, Novi Sad, Serbia, snezanap@uns.ac.rs*

Abstract

Non-destructive testing (NDT) methods are one of the most used examination methods in modern materials analysis because of their capacity to investigate material properties without causing chemical alterations. This characteristic is highly advantageous not only in advanced materials analysis, but also in the context of cultural heritage preservation. These methods serve as very useful decision-making tools for conservators and contribute to multidisciplinary approach within the field. Preserving cultural heritage materials, such as glass, mortars, binders and bricks, is complex because of historical significance and potential fragility. Analyzing these materials can be challenging, primarily because traditional destructive testing methods are often unacceptable. These materials can be fragile and prone to damage from physical contact or invasive testing analysis, which makes these methods of analysis often inadequate in this field. Variations in composition, surface degradation, and multilayered structures are the difficulties in examination, and these difficulties can be avoided with NDT methods and adequate methodology of testing materials. Non-destructive testing methods such as FTIR, Raman spectroscopy, colorimetry, and XRF can offer valuable information for conservators. Also, they can offer *in-situ* analysis in case of portable devices, which is very useful in this field. For conservators, results of these methods can play crucial role in determining techniques of preservation, cleaning and protection for cultural heritage objects.

Keywords: *Non-destructive testing, Inorganic materials, Cultural heritage, Spectroscopy*



www.tfbor.bg.ac.rs

ISC 2023

**8th INTERNATIONAL
STUDENT CONFERENCE
on Technical Sciences**

**20-21 October, Bor Lake,
Serbia**

ISBN 978-86-6305-141-6