

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

INFLUENCE OF MIXING OF QUENCHING MEDIA ON MICROSTRUCTURE AND HARDNESS OF STEEL 23MnB4

Students: Nizama Baručija, Resul Čehajić, Mahir Dreco

Mentors: Almaida Gigović-Gekić, Amna Hodžić

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

Abstract

Steel cooling is an important technological operation because the final microstructure of the steel, and therefore its properties, depends on the cooling rate. In practice, three methods of cooling are usually distinguished; slow, normal and fast. Slow cooling is the cooling of samples in the furnace and is most often used in annealing process. Normal cooling is carried out in air, as in the case of normalization. Rapid cooling is applied during quenching and has the greatest impact on microstructure and properties. The speed of steel cooling depends on numerous factors, one of which is the movement of the quenching media. This paper presents the results of testing the influence of the water mixing as the quenching media on the microstructure and hardness of 23MnB4 steel. The samples were cooled in an unstirred media and in a stirred media with six different stirring speeds (500, 750, 1000, 1250, 1500 and 1750 rpm). The results showed that mixing the media has influence on the microstructure and hardness of steel. Samples that were cooled in a mixed medium had a higher hardness. Microstructure after cooling in the water was martensite-bainite. With increasing cooling rate, the ratio of martensite in microstructure increases.

Keywords: *Quenching, Water, Mixing, Microstructure, Hardness*

REFERENCES

- [1] Steel Heat Treatment Handbook: Steel Heat Treatment Metallurgy and Technologies, Edited by G.E. Totten, Taylor & Francis Group, 2006.
- [2] K.E.Thelning, Steel and its heat treatment, Butterworth-Heinemann, Oxford, Second edition 1984, Reprinted 2000.
- [3] A.Gigović-Gekić, H.Avdušinović, Termička obrada metala, Praktikum s teorijom, Univerzitet u Zenici, Metalurško-tehnološki fakultet, Zenica, 2019.
- [4] https://www.lucefin.com/wp-content/files_mf/152336964123MnB4.pdf [13.02.2023.]



www.tfbor.bg.ac.rs



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

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

ISBN 978-86-6305-141-6