

UNIVERSITY OF BELGRADE
TECHNICAL FACULTY IN BOR



BOOK OF ABSTRACTS

8th INTERNATIONAL STUDENT
CONFERENCE ON TECHNICAL
SCIENCES



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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;**

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REMOVAL OF COPPER IONS FROM AQUEOUS SOLUTIONS USING ONION PEELS AS AN ADSORBENT

Student: Marina Marković

Mentor: Prof. dr Milan Gorgievski

University of Belgrade, Technical Faculty in Bor, Bor, Serbia

Abstract

The physical-chemical process of removing substances from a solution using biological material as an adsorbent is called biosorption. The main advantages of biosorption compared to conventional wastewater treatment technologies are low cost, high efficiency, minimization of chemical or biological sludge, the ability to regenerate biosorbents, and the possibility of metal "recovery" after biosorption. In this paper, the biosorption process of copper ions from aqueous solutions onto onion peels is presented. The pH value and conductivity of the solution from rinsing the biosorbent with distilled water were measured, as well as the change in pH value and conductivity during the biosorption process. The results showed that the pH value of the solution increases during the rinsing of the onion peels with distilled water, which is the result of the transfer of H⁺ ions from the aqueous phase to the structure of the onion peels. The conductivity of the solution increased during the rinsing of the biosorbent, reaching a maximum value at about 60 mL of water passed, after which it decreased. During the biosorption of Cu²⁺ ions on onion peels, the pH value of the solution decreased due to the deprotonation of functional groups in the biosorbent and the transition of H⁺ ions to the aqueous phase, where they exchange with copper ions. As for a change in conductivity during the biosorption of Cu²⁺ ions, a sudden increase was noted in the first 10 minutes of the process, after which the conductivity of the solution changed more slowly.

Keywords: *Biosorption, Copper ions, Onion peels, pH value, Conductivity*

ACKNOWLEDGEMENT

I want to thank my mentor for his help and support in writing this paper.

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