

The Serbian Society for Ceramic Materials  
Institute for Multidisciplinary Research (IMSI), University of Belgrade  
Institute of Physics, University of Belgrade  
Center of Excellence for the Synthesis, Processing and Characterization of  
Materials for use in Extreme Conditions "CEXTREME LAB" - Institute of  
Nuclear Sciences "Vinča", University of Belgrade  
Faculty of Mechanical Engineering, University of Belgrade  
Center of Excellence for Green Technologies, Institute for Multidisciplinary  
Research, University of Belgrade  
Faculty of Technology and Metallurgy, University of Belgrade

# PROGRAMME and the BOOK of ABSTRACTS

6CSCS-2022

6<sup>th</sup> Conference of  
the Serbian Society for Ceramic Materials  
June 28-29. 2022. Belgrade Serbia

Edited by:  
**Branko Matović**  
**Aleksandra Dapčević**  
**Vladimir V. Srdić**

Programme and Book of Abstracts of The Sixth Conference of The Serbian Society for Ceramic Materilas **publishes abstracts from the field of ceramics, which are presented at international Conference.**

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***Publisher***

Institut za multidisciplinarna istraživanja  
Kneza Višeslava 1, 11000 Belgrade, Serbia

***For Publisher***

Dr Dragica Stanković

***Printing layout***

Vladimir V. Srdić

***Press***

Faculty of Technology and Metalurgy, Research and Development Centre of Printing  
Technology, Karnegieva 4, Belgrade, Serbia

*The year off issue:*

2022.

ISBN 987-86-80109-23-7

CIP - Каталогизacija у публикацији  
Народна библиотека Србије, Београд

666.3/.7(048)  
66.017/.018(048)

DRUŠTVO za keramičke materijale Srbije. Konferencija (6 ; 2022 ; Beograd)

Programme ; and the Book of Abstracts / 6th Conference of The Serbian Society for Ceramic Materials, 6CSCS-2022, June 28-29, 2022, Belgrade, Serbia ; [organizers] The Serbian Society for Ceramic Materials ... [et al.] ; edited by Branko Matović, Aleksandra Dapčević, Vladimir V. Srdić. - Belgrade : Institut za multidisciplinarna istraživanja, 2022 (Belgrade : Faculty of technology and metalurgy, Research and development centre of printing technology). - 91 str. : ilustr. ; 25 cm

Tiraž 120. - Str. 7: Welcome message / Branko Matovic. - Registar.

ISBN 978-86-80109-23-7

a) Керамика -- Апстракти б) Наука о материјалима -- Апстракти  
в) Наноматеријали -- Апстракти

COBISS.SR-ID 69088009

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## **XANTHATE ABSORPTION KINETICS AS A FUNCTION OF THE STARTING CONCENTRATION WITH THE USE OF THE WASTE SLAG AS ADSORBENT**

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In order to avoid environmental issues considering disposal of great volumes of waste generated from the mining industry processes there is a tendency among researchers to find potential use of these harmful by-products. Waste slag is one such waste product since the content of different undesirable elements like cadmium, arsenic, zinc and other heavy metals may be at a level that can potentially endanger the environment and cause public health issues.

On the other hand, tailings generated in the flotation facilities are also considered to be environmentally harmful because of different residual organic reagents that are applied in the process. As it is well-known, xanthates are the most widely used reagents in flotation processing of the sulfide ores, and, therefore largely present in tailings. Besides, xanthates are reported to pose toxicity and numerous negative impacts from the ecological point of view. That explains why it is of great importance to find efficient and low-cost routes for minimizing their remaining levels in tailings, therefore exposure to environment.

In this study, xanthate absorption by using of the waste slag as adsorbent was investigated. For that purpose, three different starting concentrations of xanthates were selected, -20, 50 and 90 mg/l. The mass of the adsorbent i.e. waste slag put into 50 ml of xanthate solution amounted to 0.01 g. Experiment was conducted on room temperature while pH value was set to be 10. The percentage of the total xanthates content absorbed was evaluated after the period of 24 h. Obtained results indicated that potential reuse of the waste slag for the removal of xanthates, may be justified and after 24 h, 98 %, 58 % and 62 % of the xanthates were adsorbed, respectively. However, further examination is needed in terms of better understanding of xanthate absorption mechanisms and improvement of waste slag absorption efficiency.