# Serbian Ceramic Society Conference
# ADVANCED CERAMICS AND APPLICATION XI
## New Frontiers in Multifunctional Material Science and Processing

**Serbian Ceramic Society**
**Institute of Technical Sciences of SASA**
**Institute for Testing of Materials**
**Institute of Chemistry Technology and Metallurgy**
**Institute for Technology of Nuclear and Other Raw Mineral Materials**

# PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Knez Mihailova 35**
**Serbia, Belgrade, 18-20. September 2023.**

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**Book title:** Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION XI Program and the Book of Abstracts

**Publisher:**
Serbian Ceramic Society

**Editors**:
Dr. Nina Obradović
Dr. Lidija Mančić

**Technical Editors:**
Dr. Adriana Peleš Tadić
Dr. Jelena Živojinović

**Printing:**
Serbian Ceramic Society, Belgrade, 2023.

**Edition:**
120 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

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

**SRPSKO keramičko društvo. Conference Advanced Ceramics and Application : New Frontiers in Multifunctional Material Science and Processing (11 ; 2023 ; Beograd)**

Program ; and the Book of abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application XI New Frontiers in Multifunctional Material Science and Processing, Serbian Academy of Sciences and Art Serbia, Belgrade,18-20.September 2023. ; [editors Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2023 (Belgrade : Serbian Ceramic Society). - 90 str. : ilustr. ; 30 cm

Tiraž 120.

ISBN 978-86-905714-0-6

а) Керамика -- Апстракти б) Наука о материјалима -- Апстракти

COBISS.SR-ID 122849545

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## Sponsors:

Analysis - Lab equipment,
Turistička organizacija Beograda, Inovacioni centar Mašinskog fakulteta,
Institut za ispitivanje materijala,
Institut za tehnologiju nuklearnih i drugih mineralnih sirovina

## P32

## Catalytic oxidative degradation of Orange G dye: the effect of different reaction parameters

Sanja Marinović, Tihana Mudrinić, Marija Ajduković, Nataša Jović-Jovičić, Predrag Banković, Tatjana Novaković

University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Department for Catalysis and Chemical Engineering, Njegoševa 12, 11000 Belgrade, Republic of Serbia

Catalytic oxidative degradation of a textile dye Orange G was investigated in the reaction system where oxidant Oxone® was used as a source of $SO_4^{\cdot -}$ anion radicals. Cobalt-doped alumina was tested as a heterogenous catalysts for Oxone® activation. The catalyst was synthetized and calcined at 500 °C. The influence of different reaction parameters was followed: the Oxone® dosage, Orange G concentration and initial pH of the reaction solution. The Oxone® dosage was varied from 10 mg to 80 mg. Small differences in degradation efficiency were observed but mass of 40 mg of Oxone® was found to be optimal in the first hour of the reaction. The effect of the Orange G concentration was investigated in the range from 20 mg $dm^{-3}$ to 50mg $dm^{-3}$. For the concentration of 20 mg $dm^{-3}$ the reaction was much faster than for other investigated concentrations. The effect of the pH was tested in the range from 2 to 9. The optimal pH range was found to be between 6 and 9, but reaction was feasible also for lower pH. It can be concluded that investigated catalyst is applicable with high efficiency in the wide range of Oxone® dosages, dye concentrations and initial pH values.
***Acknowledgement:***This research was financially supported by the Ministry of Science, Technological Development and Innovation of Republic of Serbia (Contract No: 451-03-47/2023-01/200026).

## P33

## Construction and demolition mix waste in traditional ceramics

Mandefrot Dubale[1], Milica Vidak Vasić[2], Gaurav Goel[3], Ajay Kalamdhad[1], Boeing Laishram[1]

[1]Department of Civil Engineering, Indian Institute of Technology Guwahati (IITG), Guwahati 781039, India
[2]Institute for testing of materials IMS, Bulevar vojvode Mišića 43, 11000 Belgrade, Serbia
[3]School of Energy and Environment, Thapar Institute of Engineering and Technology, Patiala 147004, India

Due to the enormous global need for solid waste recovery and usage, the European Green Deal was created to emphasize waste recycling and zero-waste economies in construction and building materials. This comprehensive study investigates the effect of using mixed construction and demolition waste (CDW) in clay bricks. The mixed CDW waste was combined in ratios ranging from 5 % to 45 % with two soil types (alluvial and laterite) and the bricks were fired at three temperatures (700, 850, and 900 °C). The optimal combinations were 10 % CDW fired at 700 °C and 25 % CDW at 850 or 900 °C, for which mineralogical and microstructural analyses are carried out. Although firing at 700 °C results in less efficient waste utilization, it is advantageous and advised for lowering carbon emissions and energy