



**Serbian Ceramic Society Conference**  
**ADVANCED CERAMICS AND APPLICATION X**  
**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, 26-27. September 2022.**

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Dear colleagues and friends,

We have great pleasure to welcome you to the Advanced Ceramic and Application X Conference organized by the Serbian Ceramic Society in cooperation with the Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy, Institute for Technology of Nuclear and Other Raw Mineral Materials and Institute for Testing of Materials. This Conference is dedicated to Prof. Dr. Vojislav Mitić, president of Serbian ceramic society, who passed away in September 2021.

It is nice to host you here in Belgrade in person. As you probably know, Serbia launched a vaccination campaign at the beginning of last year, so up to date more than 70 percent of the adult population has been vaccinated. Since there is no one statistic to compare the COVID19 outbreaks and fears for loved ones in different countries, we believe that we all suffer similarly during this pandemic. That is why we appreciate even more your positive attitude and readiness to travel in this uncertain time. We deeply hope that the ACA X Conference will be worth remembering, that you will respect all COVID-19 safety measures at SASA building, that you will have a nice time here and that ultimately you will return to your home safely. We are very proud that we succeeded in bringing the scientific community together again and fostering the networking and social interactions around an interesting program on emerging advanced ceramic topics. The chosen topics cover contributions from fundamental theoretical research in advanced ceramics, computer-aided design and modeling of new ceramics products, manufacturing of nano-ceramic devices, developing of multifunctional ceramic processing routes, etc.

Traditionally, ACA Conferences gather leading researchers, engineers, specialists, professors and PhD students trying to emphasize the key achievements which will enable the widespread use of the advanced ceramics products in the High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, etc.

Serbian Ceramic Society was initiated in 1995/1996 and fully registered in 1997 as Yugoslav Ceramic Society, being strongly supported by American Ceramic Society. Since 2009, it has continued as the Serbian Ceramic Society in accordance with Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in South-East Europe, with members from more than 20 Institutes and Universities, active in 9 sessions. Part of our members are also members of the Serbian Chapter of ACerS since 2019. Their activities in the organization of this conference is highly recognized. To them and all of you thanks for being with us here at ACA X.

Dr. Nina Obradović  
*President of the Serbian Ceramic Society*

Dr. Suzana Filipović  
*President of the General Assembly of the  
Serbian Ceramic Society*

## Conference Topics

- Basic Ceramic Science & Sintering
- Nano-, Opto- & Bio-ceramics
- Modeling & Simulation
- Glass and Electro Ceramics
- Electrochemistry & Catalysis
- Refractory, Cements & Clays
- Renewable Energy & Composites
- Amorphous & Magnetic Ceramics
- Heritage, Art & Design

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morphology and distribution of diameter of the particles were revealed by Scanning Electron Microscopy and Energy Dispersive Spectroscopy. In the second part, the effect of initial dye's and adsorbent's concentrations and pH value on dye adsorption was studied. Also, the kinetic study of dye adsorption covers the pseudo-second-order and intra-particle diffusion. The change of AV 109 concentration during the adsorption was followed using the UV-Visible spectrophotometer. The adsorption kinetics is in accordance with the pseudo-second-order kinetics model. After 60 minutes of treatment, at the initial dye's concentration of treatment, at the initial dye's concentration of 50 mg dm<sup>-3</sup> using the alumina-iron doped particles adsorption efficiency was 51.3% and the value of adsorption capacity is 2.64 mg g<sup>-1</sup>. The adsorption rate was 0.122 g mg<sup>-1</sup> min<sup>-1</sup>.

## P14

### The behavior of cerium doped phosphate tungsten bronze in Briggs-Rauscher oscillatory reaction

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The Briggs-Rauscher (BR) reaction is an oscillating reaction in which the oxidation of malonic acid (CH<sub>2</sub>(COOH)<sub>2</sub>) in the presence of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and potassium iodate (KIO<sub>3</sub>) is catalyzed with a metal ion (usually Mn<sup>2+</sup>) in acidic aqueous solution. The BR reaction is very sensitive to the addition of different types of analytes. Every change in oscillatory dynamics, caused by analyte addition, can be used for the appraisal of analyte concentration, as well as its potential antiradical or catalytic activity.

The cerium doped phosphate tungsten bronze (Ce-PWB) was obtained by thermal treatment and characterized by TGA, DSC, FTIR, and XRPD technics. In this work, the behavior of Ce-PWB and its influence on BR oscillatory dynamics was examined. Different masses of Ce-PWB (0.0303 g; 0.0400 g; 0.0704 g; 0.1045 g) were added to the BR reaction solution consisting of: [CH<sub>2</sub>(COOH)<sub>2</sub>]<sub>0</sub>=0.0789 mol dm<sup>-3</sup>, [MnSO<sub>4</sub>]<sub>0</sub>=0.00752 mol dm<sup>-3</sup>, [HClO<sub>4</sub>]<sub>0</sub>=0.03 mol dm<sup>-3</sup>, [KIO<sub>3</sub>]<sub>0</sub>=0.0752 mol dm<sup>-3</sup>, and [H<sub>2</sub>O<sub>2</sub>]=1.2 mol dm<sup>-3</sup> in total volume of 25 ml. The obtained results were compared with the basic BR oscillogram (oscillogram obtained without the addition of Ce-PWB). The results revealed that an increase in the mass of added Ce-PWB has slightly shortened the oscillation time duration with the minimal change in the form of the basic BR oscillogram, suggesting the catalytic effect of this bronze in oscillatory reaction.

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