Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION IX
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, 20-21. September 2021.

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Dear colleagues and friends,

We have great pleasure to welcome you to the Advanced Ceramic and Application IX 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.

It is nice to host you here in Belgrade in person. As you probably know, Serbia launched a vaccination campaign at the beginning of this year, so up to date more than 50 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 understand that some of you had to cancel your lectures in the last minute due to the travel limitation in your countries, but we hope that you will come next year. We deeply hope that the ACA IX 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 nanoceramic 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 16 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 IX.

Prof. Dr Vojislav Mitić
President of the Serbian Ceramic Society
World Academy Ceramics Member
European Academy of Sciences & Arts Member

Prof. Dr Olivera Milošević,
President of the General Assembly of the
Serbian Ceramic Society
Academy of Engineering Sciences of Serbia Member

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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P

An Unusual Behavior of the Briggs-Rauscher Oscillatory Reaction with Addition of Bentonite Clays

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The Briggs-Rauscher (BR) reaction is visually the most interesting oscillating reaction, in which the oxidation of malonic acid by a mixture of hydrogen peroxide and iodate is catalyzed by Mn^{2+}metal ion in acidic solution. It is very sensitive to different analyte addition. Ordinarily,analyte addition causes the linear response of the BR oscillating system, which is used fordetermining the analyte'santioxidant/antiradicalor catalytic activity. In order to investigate the effects of different clay addition on BR oscillatory dynamics, bentonite clays from different deposits: Wyoming (Swy-2), Texas (STx-1b), Idaho (SbId-1), Arizona (SAz-2), Bogovina and Mečji Do, both from Serbia, were applied. In the case of bentonite clays addition, the response of the BR oscillating system resulted inacomplex behavior pattern. Meaning that the addition of all investigated clays causeda complex function oscillatory period *vs.* clay'smass, which passes through the maximum. The position of maximum varied for different bentonite clays. However, it is the first time to obtain such a behavior pattern. Results found areof great importance for the examination of catalytic and heterogeneous phenomena of oscillatory processes in general.

P

ENVIRONMENTAL PRODUCT DECLARATION (EPD) FOR CLAY CONSTRUCTION PRODUCTS

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Environmental Product Declarations (EPD) for clay construction products provide important information about those products and their use. The professional and technical foundations of the EPD must be verifiable and must meet the requirements of ISO 14025 for ecolabels, the ISO 21930 for EPD for building products, and the more specific EN 15804 for Product Category Rules (PCR) for construction products EPD. Each EPD needs to cover all life cycle stages of a product (module A-D). Life Cycle Assessment (LCA) analyzes all phases of the life cycle of a construction product, takes into account the different impacts of these phases on the environment, evaluates, analyzes and interprets the results. In this study, LCA analysis for clay construction products has been conducted with the One Click LCA software, developed by Bionova Ltd, Finland. All processes have been modelled based on the inventory