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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Dear colleagues and friends,

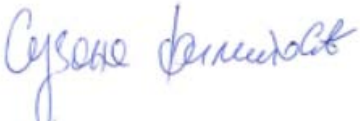
We have great pleasure to welcome you to the Advanced Ceramic and Application XI Conference organized by the Serbian Ceramic Society in cooperation with the Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy, Institute for Technology of Nuclear and Other Raw Mineral Materials and Institute for Testing of Materials.

It is nice to host you here in Belgrade in person. 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..

Dr. Nina Obradović
President of the Serbian Ceramic Society



Dr. Suzana Filipović
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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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P12
The osteogenic effect of Germanium-doped hydroxyapatite nanoparticles on dental pulp stem cells

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Most of the applications for various forms of ion-doped hydroxyapatite have been geared towards pharmacy, dentistry and medicine. This study presents the first biological, response to germanium-doped hydroxyapatite (Ge-HAp). Viability, osteogenic differentiation induction and colony formation potential of dental pulp stem cells (DPSCs) in the presence of Ge-HAp and pure, Ge-free HAp nanoparticles was assessed. DPSCs were isolated from semi-impacted wisdom teeth extracted from systemically sound patients. MTT was used to determine cell viability after 1, 3, and 7 days of incubation. The effect of Ge-HAp on the expression level of osteodifferentiation markers (RUNX2, ALP, and OCN) was determined using RT-qPCR, and mineralized nodule formation was confirmed using Alizarin Red S staining. The colony-forming unit assay was utilized to evaluate the colony-formation potential of the DPSC. Low dosages of Ge-HAp increased cell viability compared to HAp after a week. Ge-HAp increased cell culture mineralization more than HAp. Ge-HAp substantially upregulated all three osteogenic markers relative to control and Ge-free HAp-exposed cells. HAp and especially Ge-HAp hindered stem cell colony formation. As demonstrated above, Ge-doped HAp nanoparticles have great promise in regenerative medicine due to their biocompatibility and osteoinductivity.

P13
Influence of N^{5+} ion irradiation on physicochemical properties of bismuth vanadate

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Photoelectrochemical (PEC) cells for solar-energy conversion have received huge interest as a promising technology for renewable energy production. For the efficient application of such cells, it is necessary to develop adequate photoelectrodes. Recently, bismuth vanadate ($BiVO_4$) has emerged as a promising photoanode due to its visible light harvesting properties, band edge positions and low-cost of synthesis. In this study, the effects of N^{5+} ion irradiation