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
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

degree of variability within and between production systems was observed for all tested elements. The findings suggest that EDXRF and chemometric analysis of eggshell elemental profiles could provide a useful and effective tool for distinguishing between free-range and caged eggs.
Acknowledgements:This investigation is supported by The Ministry of Science, Technological Development and Innovation (contract number: 451-03-47/2023-01/ 200012)

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Heavyweight Ultra-High-Performance Concrete with Micro-Reinforcement

Ksenija Janković[1], Srboljub Stanković[2], Dragan Bojović[1], Marko Stojanović[1], Lana Antić Aranđelović[1], Anja Terzić[1]

[1]Institute for Materials Testing, Bulevar vojvode Mišića 43, 11000 Belgrade, Serbia
[2]"Vinča" Institute of Nuclear Sciences - National Institute of the Republic of Serbia, University of Belgrade, P.O. Box 522, 11001 Belgrade, Serbia

The impacts of nano-silica addition, steel micro-reinforcement, and aggregate type on the mechanical properties and durability of ultra-high-performance concrete (UHPC) were studied. As aggregates, quartz and barite were used. The amounts of steel fibers and nano-silica were alternated. Six concrete mixes were produced with quartz sand, and the remaining six concrete mixes were designed with barite sand. Fibers made about 3-5% of the concrete composition's mass. In a 2-5% concentration, nano-silica was used as a cement replacement. The inclusion of nano-silica significantly boosted the compressive strength of UHPC. The compressive and flexural strengths were also positively impacted by fiber supplementation ranging from 3% to 5%. The amount of fiber utilized proved to be more influential than the aggregate used. The UHPC concrete's durability was increased as all samples were highly resistant to freezing and thawing cycles. UHPC designed with barite aggregate demonstrated good X and gamma ray absorption at energies below 300 keV.
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P38
Development of recycled cement made from biowaste

Anja Terzić[1], Nevenka Mijatović[1], Ljiljana Miličić[1]

[1]Institute for Materials Testing, Bulevar vojvode Mišića 43, 11000 Belgrade, Serbia

Many studies on techniques for diminishing the environmental impact, reducing greenhouse gas emissions, and decreasing industrial and biowaste have been conducted with the mutual goal of achieving sustainable development. The use of industrial byproducts as raw materials for cement clinker production is becoming more common in the Portland cement industry. Eggshell is a biowaste produced in huge quantities by households and the food industry. Eggshell powder has a trigonal-calcite structure and properties similar to limestone; therefore, it can substitute limestone in the cement clinker mix design. In this work, bio-waste cement was produced at temperatures below the standard 1470°C utilizing mechanically activated