



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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- 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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Infrared Spectroscopy, X-ray diffraction (XRD) and scanning electron microscope (SEM) and other analytical methods. Bricks were manufactured by mixing the soil and waste materials in various ratios. After drying these bricks were fired under laboratory environment at firing temperature ranging from 800-900 °C analogous to commercial brick kiln temperature range. Manufactured bricks were characterised by conducting water absorption, apparent porosity, shrinkage, and compressive strength determination. These bricks were found suitable for non load bearing purpose such as making partition wall. The work done enables towards meeting Sustainable Development Goals as Life on land (SDG 15) can only be healthy when waste is properly managed.

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Nanomaterials: size is the key

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Nanomaterials deserve special attention since they constitute a kind of material that improves structural and functional properties compared to the bulk material. Nanomaterials have emerged as materials with at least one dimension in the range of 1 to 100 nm. They can be classified into different classes based on their properties, shapes (0D, 1D, 2D, or 3D), or sizes. Nanomaterials possess unique physical and chemical properties due to their high surface area and nanoscale size. They can be produced with outstanding magnetic, electrical, optical, mechanical, and catalytic properties that are substantially different from their bulk counterparts. Their optical properties are reported to depend on the size, which imparts different colors due to absorption in the visible region. Their reactivity, toughness, and other properties are also dependent on their unique size, shape, and structure. In summary, their properties can be tuned by controlling the size, shape, synthesis conditions, and appropriate functionalization.

This talk will review the past, present, and future of nanomaterials. Based on our research developed in recent years in this area, we will review some of the most important milestones we have reached thanks to the collaboration with international research centers. We will mention the semiconductor systems (ZnO, TiO₂,...), nanomaterials with luminescent properties (Gd₂O₃, Eu₂O₃,...), multi/single-wall carbon nanotubes, and many other "exotic" materials due to their small size.