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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Dr. Nina Obradović
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Dear colleagues and friends,

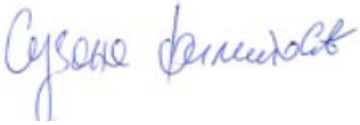
We have great pleasure to welcome you to the Advanced Ceramic and Application XI Conference organized by the Serbian Ceramic Society in cooperation with the Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy, Institute for Technology of Nuclear and Other Raw Mineral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

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Institut za ispitivanje materijala,
Institut za tehnologiju nuklearnih i drugih mineralnih sirovina

ORL1

Diatomic earth: Structure and modification

Petar Knežević[1], Nikola Vuković[2], Katarina Mihajlović[1], Marko Vujaković[1],
Katarina Pantović-Spajić[2], Ana Radosavljević-Mihajlović[2]

[1]Faculty of Mining and Geology, Univesity of Belgrade, Đušina 5-7, 11000 Belgrade, Serbia
[2]Institute for Technology of Nuclear and other mineral raw materials, Franshe D Epere 86, Serbia

One of the most interesting secondary raw materials within the Kolubara Basin is diatomaceous earth or diatomite, with reserves of 308.670 t in fields B and C.Chemical and mineralogical tests were performed on diatomaceous earth samples.The results of these tests are presented in this paper.Diatomite is a soft sedimentary rock formed by the deposition of cell walls (frustulae) of single-celled algae-diatoms at the bottom of sea and lake basen. Diatom frustules consist of two parts that lie on top of each other and represent a highly porous skeleton of amorphous hydrated silica. Diatom frustule size ranges from 1 μm to 1 mm, usually 10-200 μm.The specific area (S_{BET} (m^2/g)) is 47.6. The SEM/EDS, BET and FTIR methods were used for characterization. Based on the presented results, diatomaceous earth can be used in the pharmaceutical, ceramic and food industries.

ORL2

β-$NaYF_4$:Yb,Tm@TiO_2-Acac core-shell structure for efficient photocatalysis

Lidija Mančić[1],Ivana Dinić[1], Lucas A. Almeida[2], Jessica Gil-Londoño[2], Marina Vuković[3],
Paula Jardim[4], Bojan A. Marinkovic[2]

[1]Institute of Technical Science of SASA, Kneza Mihaila 35/4, Belgrade, Serbia
[2]Department of Chemical and Materials Engineering, Pontifical Catholic University of Rio de Janeiro Rio de Janeiro, RJ, Brazil
[3]Innovative Centre, Faculty of Chemistry, University of Belgrade, Serbia
[4]Department of Metallurgical and Materials Engineering, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

Novel hybridcore shell structurewith extensive absorption was synthesized by a two-step wetchemical route. Up-converting β-$NaYF_4$:Yb,Tm core was obtained through EDTA assisted hydrothermal process, while the shell of anatase TiO_2-Acetylacetonate charge transfer complex (TiO_2-Acac) was formed over these *via* sol-gel method. Tetracyclinewas used to investigate photocatalytic efficiency of obtained structure under irradiation of reduced power Vis and NIR spectra. Owing to the fact that $^1D_2 \rightarrow {}^3F_4$ and $^1G_4 \rightarrow {}^3H_6$ emission of Tm^{3+} matches well with the absorption edge of TiO_2-Acac, radiation-reabsorption and FRET processes improve the overall generation of reactive oxygen species and degradation of tetracycline. Beside it, formation of tetracycline intermediates immediately after the addition of this novel hybrid core-shell structures, making them a promising material for water purification through the synergy of catalytic and photocatalytic processes.