Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VII
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, 17-19. September 2018.

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Dear Colleagues,

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

Advanced Ceramics today include many old-known ceramic materials produced through newly available processing techniques as well as broad range of the innovative compounds and composites, particularly with plastics and metals. Such developed new materials with improved performances already bring a new quality in the everyday life. The chosen Conference topics cover contributions from a fundamental theoretical research in advanced ceramics, computer-aided design and modeling of a new ceramics products, manufacturing of nanoceramic devices, developing of multifunctional ceramic processing routes, etc. Traditionally, ACA Conferences gather leading researchers, engineers, specialist, professors and PhD students trying to emphasizes the key achievements which will enable the wide speared use of the advanced ceramics products in High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, etc.

Serbian Ceramic Society has been 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 Serbian Ceramic Society in accordance to the Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in the South-East Europe, with members from more than 20 Institutes and Universities, active in 16 sessions, by program and the frames which are defined by the American Ceramic Society activities.

This year, the conference is dedicated to the memory of Academician Momčilo M. Ristić (1929-2018), Honorary President of the Serbian Ceramic Society and founder of Material Science in our country.

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 – *in memoriam Momčilo M.Ristić, academician*
Optical, Glass & Electro Ceramics
Nano & Bio Ceramics
Modeling & Simulation
Advanced Ceramics
Heritage, Arts & Design
Guide on Science Writing

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Effects of Gd^{3+} co-doping on $NaYF_4$:Yb,Er nanoparticles structure

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$NaYF_4$ doped with Rare Earth elements such as Yb and Er is well known as a compound with the remarkable up-conversion photoluminesce and wide application. In this work, the influence of additional co-doping of $NaYF_4$:Yb,Er with gadolinium (0, 15 and 30 mol%) was explored. The syntheses were performed solvothermally using the mixture of water/ethanol as medium and polyvinylpyrrolidone (PVP) as capping ligand. The obtained powders were subjected to X-ray powder diffraction (XRPD), scanning electron microscopy (SEM), Fourier-transform infrared (FTIR) spectroscopy and photoluminesce (PL) analyses. Structural refinement shown that $NaYF_4$:Yb,Er particles generally crystallized in a cubic form (*Fm-3m*), while the additional presence of Gd^{3+} in the crystal lattice lead to the pure hexagonal phase crystallization (*P63/m*). Morphological analyses revealed that all powders are composed from nanodimensional particles with the size in the range of 50-70 nm, while FTIR spectra confirmed the presence of PVP functional groups on the particles surfaces. The strongest effect of Gd^{3+} doping was notices in the PL spectra, where the up-conversion response increases with the mol% of this dopant.

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Optomagnetic Imaging Spectroscopy for material characterization

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Optomagnetic Imaging Spectroscopy is a novel method for characterization of different types of materials. It is a nanophysical technique based on the interaction between visible light and valence electrons within the sample material. By Optomagnetic Imaging Spectroscopy it is possible to obtain magnetic properties of the sample material by convoluting the sample spectra in RGB color channels from the digital image of the sample when material is exposed to white diffuse light and white light under the Brewster's angle. The method was used for the characterization of nanophotonic filters – filters made using fullerene thin film deposition technique in vacuum from gaseous phase on the glass substrate, polymer materials for contact lenses with different concentrations of nanomaterials, and biological materials. We are presenting and discussing results and strategies for future applications of this fast and easy to use method which has already shown great performance and accuracy in previous studies.