Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VI
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 2017.

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Dear Colleagues,

We have great pleasure to welcome you to the Advanced Ceramic and Application Conference VI 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, prosthesis, 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.

For the first time Advanced Ceramic and Application Conference hosting delegations from Republics of Ghana, Nigeria, Niger and Cameroon with the idea to connect, share and provide positive influence to the scientific and industrial communities all around world.

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 Science & Sintering of Ceramics
- Nano, Bio- & Opto Ceramic
- Electro & Multifunctional Ceramics
- Magnetic, Catalytic & Composite Materials
- Renewable Energy, Heritage & Archeology
- Industrial Talks

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P12
Synthesis of hierarchically structured $Y_2O_3:Eu^{3*}$@ Ag nanocomposites with plasmon enhanced luminesencence *via* ultrasonic spray pyrolysis

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$Y_2O_3:Eu^{3+}$@Ag nanocomposites have been successfully synthesized by ultrasonic spray pyrolysis (USP) and examined to reveal effects of surface plasmon resonance, associated to silver nanoparticles, to the luminescence efficiency of Y_2O_3: Eu^{3+} red-emitting phosphors. Various Ag concentrations (1, 2.5 and 5 wt. %) and heat-treatment regimes (as prepared, 2h, 12h) were applied to understand how size and distribution of the Ag nanoparticles affect the luminescence efficiency. Samples were characterized by TEM, XRPD and STEM to evaluate crystal structure and distribution of Eu^{3+} in Y_2O_3 matrix. In terms of Y, O and Eu ions, uniform distribution was observed in the particles interior, while the Ag is present at the particles surface showing that USP is feasible for synthesis of hierarchically organized $Y_2O_3:Eu^{3+}$@Ag. In the case of higher Ag concentration, a deviation from uniform and finely distributed Ag nanoparticles on $Y_2O_3:Eu^{3+}$ surface was detected having detrimental effect to the plasmon enhanced luminescence. Regardless from silver concentrations, all heat treated samples exhibited superior luminescence with respect to as-prepared ones, while decrease of luminescence efficiency was detected with the increase of Ag concentration. The most intense red luminescence at 612 nm which is due Eu^{3+} $^5D_0 \rightarrow {}^7F_2$ transition was observed in $Y_2O_3:Eu^{3+}$@Ag system for sample with 1wt% Ag, annealed for 12 hours.

P13
Microwave assisted synthesis of onion-like carbon

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Onion-like carbon (OLC) is specific allotropic form of carbon which is expected to achieve wide application in many fields such as solid lubricant materials, electron sources, electromagnetic shields, catalysts in fuel cells, lithium ion batteries, etc. Until now, OLC were prepared using chemical vapour deposition (CVD), arc discharge, laser ablation, etc. A novel procedure for OLC synthesis is developed which is based on solid-phase interaction of the carbohydrate precursor and susceptor of microwave energy. The effects of the type and quantity of precursor and susceptor in reaction mixture, reaction mixture weight, power of microwave field and interaction time on the yield of OLC are investigated. Characterization of the resultant product was done by ordinary used techniques such as X-ray diffractometry,