



**Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION V
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
School of Electrical Engineering and Computer Science of Applied Studies**

PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 21st-23rd September 2016.**

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Dear Colleagues,

We have great pleasure to welcome you to the Advanced Ceramic and Application Conference V 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, Institute for Technology of Nuclear and Other Raw Mineral Materials and School of Electrical Engineering and Computer Science of Applied Studies.

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 spread 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.

Advanced Ceramic & Application Conference V is dedicated to Academician Momčilo Ristić.



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
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General Conference Topics

- Basic Ceramics Science
- Nanostructural, Bio- and Opto-Ceramic Materials and Technologies
- Multifunctional Materials
- Magnetic and Amorphous Materials
- Construction Materials and Eco-ceramics
- Composite Materials, Catalysis and Electrocatalysis
- Artistic Ceramics and Design, Archaeology and Heritage
- Young Researchers
- Sintering processes
 - kinetics
 - microstructure
 - thermodynamics
 - modeling

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The influence of synthesis parameters on textural properties of modified Ni-based catalysts supported on magnesia for production of reducing atmosphere

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Reducing gas atmosphere containing CO and H₂ as processing gasses is commonly used in the metal processing industry for heat treatment of special metals. For the production of reducing atmosphere conventionally are employed nickel catalysts on various ceramic supports. Since the process takes place at high temperature, thermal stability and textural properties of catalysts are of particular interest. In this work magnesia supported nickel catalysts were synthesized. The catalyst synthesis consisted of single or successive impregnations with nitrate precursor salts of nickel and modifiers (Al, Ca and Mg), followed by thermal catalyst activation. Nickel:-modifier molar ratio was 10:1. The solid to liquid mass ratio was 1:3. The concentration of Ni in impregnation solution varied from 1.0 to 3.0 moldm⁻³. Mercury intrusion porosimetry was used for textural characterization since the synthesized catalysts were predominantly macroporous. The impregnation led to decrease of total pore volume, broadening and shifting of pore size distribution curve towards smaller pores. These changes were enhanced with the increase of initial concentration of Ni solution and number of successive impregnations as well as the nature of modifier. The Ni-catalyst modified with Al showed the best textural properties.

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Annealed nanopowder GdVO₄:Sm³⁺ prepared by solution combustion synthesis

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The gadolinium vanadate doped with samarium (GdVO₄:Sm³⁺) nanopowder was prepared by the solution combustion synthesis (SCS) method. After synthesis, in order to achieve the full crystallinity, the material was annealed in air atmosphere at 1300 °C. Phase identification in the post-annealed powder samples were performed by X-ray diffraction, and morphology was investigated by high resolution scanning electron microscope (SEM). Photoluminescence characterization including excitation and emission spectra and lifetime analysis has been done using tunable laser optical parametric oscillator excitation and streak camera. Several strong emission