
**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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600, 812 and 964 $cm^{-1}$. It was also noted a sharp peak at 323 $cm^{-1}$ which is characteristic of $CaF_2$. A weak band near 400 $cm^{-1}$ in possibly be δ(C—O—C) in spectrum of the PMMA and the composites 1% and 2% $CaF_2$ with PMMA.

## P5

## Electrical properties of doped $BaTiO_3$ Ceramics

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The electrical resistivity ($\rho$) and PTCR (Positive Temperature Coefficient of Resistivity) effect doped $BaTiO_3$ ceramics with different dopant were investigated in this paper, The content of additive in doped samples were ranged from 0.01 to 1.0 at% Er/Yb. The samples were prepared by a conventional solid state sintering procedure and sintered at 1320° for 4 hours. For samples doped with $Er_2O_3$ (0.01 at% Er/Yb), SEM analysis shows abnormal grain growth with the average size range between 20 μm - 40 μm. For samples doped with $Yb_2O_3$ the average size was from 30 μm - 50 μm. With increase of dopants concentration the average grain size decreases, and for samples doped with 1.0 at% Er/Yb, grain size range between 3 μm - 20 μm for samples doped with Er and between 1 μm - 10 μm for samples doped with $Yb_2O_3$. The specific electrical resistance were measured in temperature range from 25°C to 170°C at different frequencies, ranged from 100Hz to 1MHz. To a temperature of 120°C, resistance has a slight increase with increasing of temperature, but above this temperature the resistance rapidly increasing. The value of the specific electrical resistance decreases with increasing concentration of Er/Yb, reached the minimum at certain dopant content (0.5 at% Er/Yb), then increased rapidly with dopant content in high doping level.

## P6

## Application of Curcumin in Dye-Sensitized Solar Cells

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Dye-sensitized solar cells are the closest mankind has come to replicating nature's photosynthesis. The type of a dye influence the efficiency of these cells. In this paper we studied curcumin dye as sensitizer in dye-sensitized solar cells and compared him with mostly used cyanidin. The results have shown that curcumin has higher efficiency and higher absorption in the visible part of the spectrum compared to cyanidin. Model dye molecules, curcumin and cyanidin, are deprotonated upon adsorption on the titanium dioxide surface. The energy levels obtained from the calculation indicate a higher probability of electron transition from molecule to titanium dioxide surface in the case of curcumin than in the case of cyanidin. Based on these results, we concluded that curcumin dye has better properties as sensitizer in dye-sensitized solar cells.