



**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 emphasize 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, 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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properties can be tailored by addition of small amount of transition metal oxides ( $\text{TiO}_2, \text{VO}_2$ ). In order to understand the processes that occurred during sorption reaction we have used both theoretical and experimental approach to study reaction mechanism in powder and thin films materials. Processes taking place during hydrogen desorption from  $\text{Mg/MgH}_2$  thin films upon modification either by  $\text{TiO}_2$  capped layer or by ion irradiation were also investigated. Irradiation was used to produce controlled point defects quantity with well-defined depth distribution. It was shown that the size, shape, and concentration of Mg nuclei formed during hydrogen desorption from  $\text{MgH}_2$  thin films depend on the characteristics and distribution of the induced defects. Addition of  $\text{VO}_2$  to powder milling blend dramatically improves the kinetics of sorption reaction. It is worth to notice that the full charge/discharge is achieved at relatively low temperatures.

## ORL-OGE 1

### **Dissolution properties of bioactive glasses containing strontium**

Vladimir S. Topalović<sup>1</sup>, Srđan D. Matijašević<sup>1</sup>, Jelena D. Nikolić<sup>1</sup>, Marija S. Đošić<sup>1</sup>,  
Veljko V. Savić<sup>1</sup>, Sonja V. Smiljanić<sup>2</sup>, Snežana R. Grujić<sup>2</sup>

<sup>1</sup> *Institute for the Technology of Nuclear and Other Mineral Raw Materials,  
86 Franchet d'Esperey St, 11000 Belgrade, Serbia*

<sup>2</sup> *Faculty of Technology and Metallurgy, University of Belgrade,  
Karnegijeva 4, 11000 Belgrade, Serbia*

Because of their potential application in bone tissue repair and regeneration, different types of bioactive glasses have been extensively studied. This study has been focused on examination of the dissolution process of two bioactive glass compositions,  $42\text{P}_2\text{O}_5 \cdot 40\text{CaO} \cdot 5\text{SrO} \cdot 10\text{Na}_2\text{O} \cdot 3\text{TiO}_2$  (GSSR5) and  $46\text{P}_2\text{O}_5 \cdot 40\text{CaO} \cdot \text{SrO} \cdot 10\text{Na}_2\text{O} \cdot 3\text{TiO}_2$  (GSSR1) (mol %). Powdered glass samples were immersed in simulated body fluid (SBF) and kept in a water bath at 37 °C for 21 days under semi-dynamic conditions. The mass loss of glass, normalized concentration of ions and pH values of solutions were determined. Dissolution rates for both glasses were increasing until the 5h mark and after that time the dissolution rates decreased. After the 48h glass dissolution rates reached the steady state. Measured dissolution rates after 168h for GSSR5 and GSSR1 were  $1,13 \cdot 10^{-4} \text{ gh}^{-1}$  and  $3,61 \cdot 10^{-4} \text{ gh}^{-1}$ , respectively.

## ORL-NB 1

### **Electrical characterization and humidity sensing potential of NiZn ferrite nanoparticles**

Dalibor L. Sekulić<sup>1</sup>, Zorica Ž. Lazarević<sup>2</sup>, Nebojša Ž. Romčević<sup>2</sup>

<sup>1</sup> *University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia*

<sup>2</sup> *University of Belgrade, Institute of Physics, Belgrade, Serbia*

In recent years, the ferrite nanoparticles are being increasingly recognized as materials for potential applications in humidity sensors. For these technological applications, it is necessary to focus mainly on their electrical properties rather than magnetic properties. The aim of this study is to investigate the electrical properties and humidity sensing potential of  $\text{Ni}_{0.5}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$  nano-