



**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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High School-Academy for Arts and Conservation.

one powder grade achieved such a high final density (98.4 %TD) at 1500 °C with 10 min holding time. The three others attained significantly lower final densities of 90.3 %TD, 85.4 %TD and 85.0 %TD due to formation of gradient microstructure with nearly dense outer shell (characterized by closed porosity) and porous core of the sample (characterized by open porosity network). Possible causes of this phenomena are discussed.

ORL-BCS 2

Synthesis of wollastonite powder and manufacturing of porous scaffolds for multiple applications

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Wollastonite (CaSiO₃) is gaining attention due to its attractive properties, which can be used in a wide field of industries, i.e., thermal insulation; catalysis; filters and water purification; reinforcement phase in composites; and more recently, in orthopaedics. The additive manufacturing method has been used to process various materials in order to obtain diverse shaped-structures with controlled porosity. The aim of the present work is to establish an easy synthesis and processing of wollastonite powder to elaborate porous structures via robocasting technique. An injectable paste that serves as an ink was developed to build up cylindrical structures of 10 mm in diameter and 10 mm in height, using a tip of 410 μm. The cylinders were 3D-printed following two different arrangement patterns, named as honeycomb and rectilinear infills. In the same way, two pore sizes of 350 and 500 μm were produced. The final structures were evaluated in terms of their porosity, shape and size of pores by scanning electron microscopy and compression test. The purity of the wollastonite bodies was evaluated by X-ray diffraction. Moreover, preliminary studies were carried out on the final consolidated porous scaffolds showing its potential use in catalysis, water purification and/or orthopaedics.

ORL-BCS 3

Interaction of oxide ceramics with metal hydrides

Nikola Novaković, Sanja Milošević Govedarović, Bojana Paskaš Mamula, Sandra Kurko, Tijana Pantić, Mirjana Medić Ilić Jasmina Grbović Novaković

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Magnesium hydride (MgH₂) is one of the most favorable hydrogen storage materials because it is directly formed from the reaction of Mg metal with gaseous hydrogen while reaching a high mass capacity (7.6 wt %). However, the sorption reaction is too slow for practical use and needs higher temperature than 300 °C for hydrogen sorption reactions. The hydrogen storage