



**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
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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.

ent in fly ash leachate was investigated. Metallic cations were detected in quantities not higher than 52.6, 15.5, 52.4 and 22.7 mg/kg for Zn, Pb, Cu and Ni respectively. Adsorption kinetic was monitored using 0.1 mol/dm³ solutions of each of investigated cations (Zn²⁺, Pb²⁺, Cu²⁺ and Ni²⁺) as well as multicomponent solution of all these cations during predefined time intervals in the range from 10-1440 minutes. Adsorption isotherms were obtained in concentration range for each cation of single and multicomponent solution in the range from 0.10-0.30 mol/dm³. The obtained results of this investigation indicate that bentonite and zeolite are efficient adsorbents and, therefore, they can be applied in combination with fly ash in environmentally-safe construction materials.

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Lanthanide doped hydroxyapatite for multimodal imaging

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Lanthanide dual-doped hydroxyapatite (HaP:Ln) is currently the subject of numerous studies in reconstructive medicine. Designed in form of hybrid nanoparticles which have magnetic and luminescent properties HaP:Ln (where Ln=Gd/Eu or Gd/Yb/Tm) is capable to enhance signal detection. Beside it, due biodegradable properties it is suitable for use in bone tissue engineering and target drug delivery. For such a promising approach, doping of a HAp matrix is performed with Gd/Eu and Gd/Yb/Tm during hydrothermal synthesis using EDTA as chelating agent. Morphological and structural characteristics of the particles were obtained using X-ray powder diffraction (XRPD), scanning and transmission electron microscopy (SEM/TEM), energy dispersive X-ray spectroscopy (EDX), Fourier Transform Infrared (FTIR) and photoluminescence (PL). The results show that needle-like nano- or micro- particles were obtained in all systems. Their phase composition and uniform distribution of dopants were confirmed by the structural refinement of the XRPD data and luminescence response from Eu and Tb ($\lambda_{\text{ex}} = 370, 394 \text{ and } 977 \text{ nm}$).