



**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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tic kaolinite clay. Initially, four series of alkaline activators of NaOH and sodium silicate have been used. Activators present the mixtures of Na_2SiO_3 and solutions of NaOH, of different molarities 2M, 4M, 6M and 8M. The prepared geopolymer slurries were cast into the designated near shape at room temperature and after that at 60°C. In fact, the post-synthesis curing process (28 days) has an important role in the obtaining good characteristics of geopolymers. Densities, viscosities and refractive index of alkaline activators were determined over the temperature range 15-60°C of process of geopolymerizations. Based on the obtained results of investigated parameters have been selected to predict the properties of materials. All geopolymer samples were characterized by XRD, FTIR, SEM/EDS analysis and Raman spectroscopy providing complementary and valuable information of the investigated materials. This route of ceramics production has advantages associated with producing an environmental friendly, energy saving, clean new technology of geopolymer materials.

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Adsorption capacities of Shungite - a Russian Mineral

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Shungite, a carbon-rich rock of the Precambrian age widespread over Russia, attracts much attention due to possibilities of application in various industrial and medical fields. Carbon acts as an efficient catalyst of hydrogenation at low temperatures, as an adsorbent and filter in water purification processes, and as a multifunctional filler of polymeric and inorganic binders.

The presence of the starting components $\alpha\text{-SiO}_2$, Fe_2O_3 , carbon C, $\alpha\text{-Al}_2\text{O}_3$, $\gamma\text{-Al}_2\text{O}_3$, and CaCO_3 has been determined by XRD measurement. Particle size distribution of the initial powder indicates large agglomerates with size of 10 microns and larger, confirmed by SEM also. In a batch test, the influence of shungite mass, contact time and temperature on adsorption efficiency of amlodipine, medicament used to treat high blood pressure and coronary artery disease, has been investigated. This material showed moderate adsorption capacity of 54.95 mg/g at 10 mg/l initial amlodipine concentration. The concentrations of amlodipine were determined using UV-VIS spectrometry.