



**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 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, 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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Tartrazine azo-dye degradation using Co-impregnated Al-pillared clay and Oxone: influence of temperature

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Heterogeneous Fenton-like reaction is one of the most efficient solutions for the degradation of organic pollutants in water. A variant of this reaction involves the application of Oxone reagent, based on potassium peroxydisulfate. Oxone, in conjunction with cobalt, is the source of sulfate radicals. These radicals are very efficient oxidants because of their high standard reduction potential at neutral pH.

In this work Co-impregnated Al-pillared clay (CoAP2) was used as heterogeneous catalyst in the degradation of Tartrazine azo-dye in aqueous solutions. For this purpose, Na-montmorillonite source clay from Wyoming, USA, with particle diameters of up to 2×10^{-6} m was submitted to pillaring with aluminium (Keggin ions) and subsequent impregnation with $\text{Co}(\text{NO}_3)_2$ followed by calcination. Morphological and textural characterization as well as phase and chemical characterization were performed on the obtained material.

Catalytic degradation of Tartrazine using CoAP2 and Oxone was investigated with respect to reaction temperature in the range from 30–70 °C and monitored using UV-Vis spectroscopy. The obtained spectra indicated that solution decolorization was efficient. Increasing temperature increased decolorization efficiency, and led to the degradation of the dye, the formation and subsequent disappearance of different reaction products. The catalyst showed to be stable under investigated conditions.

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Bioactive scaffolds based on doped hydroxyapatite powders

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Modified hydroxyapatite (HAp) with desirable antibacterial properties and high biocompatibility is of great interest in many biomedical applications. Four different HAp powders were hydrothermally obtained by adding of Si^{4+} , Ag^+ , Cu^{2+} and Zn^{2+} ions at 160 °C, and labeled as HAp, Si-HAp, AgCuSi-HAp and AgZnSi-HAp. The powders were additionally calcinated at 1100 and 1150 °C and further used in synthesis of scaffolds by replica foam technic. The scaffolds sintered at 1300 and 1400 °C were placed in SBF for 14 days and then characterized by powder X-ray diffraction, field emission scanning electron