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 emphasizes the key achievements which will enable the wide speared 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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research. The main hypothesis of adding PRP to bone grafts in combination with different biomaterials, is that the high concentration of platelets in the bone defects increase the local concentration of secreted growth factors and consequently boost the initial bone regeneration. A few days later, the direct effect of applied PRP will fade, and physiological mechanisms of bone reparation will proceed working on higher level. Beside the fact that PRP is intensively used in clinical practice because of its osteoconductive capacity, there are also evidences that PRP possess osteoinductive capacity. The differences in success of experimental procedures can be explained with inconsistency in used platelet concentrations, type of used biomaterials, experimental animals and experimental models. Further investigations of physiology of platelets, importance of platelet concentrations, biomaterials interactions, site of biomaterial application will bring us a bit a closer to controlled ectopic osteogenesis as a most promising approach for reconstruction of bone defects.

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The biocompatibility of nanotubular oxide layer formed on the ultrafine -grained Ti-13Nb-13Zr alloy

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Primary stability of biomaterials is associated with the mechanical contact of an implant with the surrounding bone, which is governed by surface properties. The implant often needs some kind of modification to optimize and improve biological properties of the surface. In the present study, nanotubular oxide layer on Ti-13Nb-13Zr alloy (coarse-grained, CG, and ultrafine-grained, UFG, obtained by high pressure torsion) alloy was formed by means of electrochemical anodization in the 1M H_3PO_4 + NaF electrolyte, during 60 and 90 minutes. The atomic force microscopy (AFM) was studied to characterize the surface topography and it was shown that highly ordered nanotubular layers were obtained by anodization. Also, results show that increasing anodizing time increases roughness of the surface. The aim of this paper is to determine the vitro biocompatibility of the titanium alloy after electrochemical anodization. In vitro nanotubular oxide layer examinations were performed on the human fibroblast cell lines (MRC-5). The cytotoxicity of the examined materials was measured as a percent of cell growth inhibition using in vitro colorimetric methyl-thiazol-tetrazolium (MTT) test. Scanning Electron Microscope (SEM) observation of MRC-5 cell was performed using a SEM MIRA3 TESCAN which operated at an accelerating voltage of 4.5 keV. Results show that nanotubular oxide layer formed on the UFG Ti-13Nb-13Zr alloy during 90 minutes indicates better cells contact and spreading along nanotubular surface.