



**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.**

Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VI
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Science 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

Book title: Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION VI Program and the Book of Abstracts

Publisher:

Serbian Ceramic Society

Editors:

Prof.dr Vojislav Mitić

Dr Lidija Mančić

Dr Nina Obradović

Technical Editors:

Dr Lidija Mančić

Dr Nina Obradović

Ivana Dinić

Printing:

Serbian Ceramic Society

Edition:

200 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)

66.017/.018(048)

SRPSKO keramičko društvo. Conference Advanced Ceramics and Application : New Frontiers in Multifunctional Material Science and Processing (6 ; 2017 ; Beograd)

Program ; and the Book of Abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application VI : New Frontiers in Multifunctional Material Science and Processing, Serbia, Belgrade, 18-20. September 2017. ; [organized by] Serbian Ceramic Society ... [et al.] ; [editors Vojislav Mitić, Lidija Mančić, Nina Obradović]. - Belgrade : Serbian Ceramic Society, 2017 (Belgrade : Serbian Ceramic Society). - 86 str. : ilustr. ; 30 cm

Tiraž 200.

ISBN 978-86-915627-5-5

a) Керамика - Апстракти b) Наука о материјалима - Апстракти c)
Наноматеријали - Апстракти
COBISS.SR-ID 244577036

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

Conference Co-chairmen:

Prof. Dr. Vojislav Mitić SRB
Prof. Dr. Olivera Milošević SRB
Prof. Dr. Marcel Van de Voorde EU
Prof. Dr. Rainer Gadow GER

Conference Programme Chairs:

Dr. Lidija Mančić SRB
Dr. Nina Obradović SRB

Scientific Committee

Academician Zoran Đurić SRB
Academician Ninoslav Stojadinović SRB
Academician Zoran Popović SRB
Academician Pantelija Nikolić SRB
Academician Miroslav Gašić SRB
Academician Laszlo Forro CHE
Academician Dragoljub Mirjanić BiH(RS)
Prof. Dr. Vojislav Mitić SRB
Prof. Dr. Marcel Van de Voorde EEZ
Prof. Dr. David Johnson GBR
Prof. Dr. Slavcho Rakovsky BGR
Prof. Dr. Jurgen G. Heinrich DEU
Prof. Dr. Masohiro Yoshimura JPN
Dr. Mrityunjay "Jay" Singh USA
Prof. Dr. Rainer Gadow DEU
Dr. Richard Todd GBR
Dr. Moritz von Witzleben DEU
Dr. Jon Binner, UK
Dr. Fiqiri Hodaj FRA
Prof. Dr. Hans Fecht DEU
Dr. Dušan Jovanović SRB
Prof. Dr. Olivera Milošević SRB
Prof. Dr. Vladimir Pavlović SRB
Dr. Nina Obradović SRB
Dr. Lidija Mančić SRB
Prof. Dr. Steven Tidrow USA
Dr. Wilhelm Siemen DEU
Dr. Jonjaua Ranogajec SRB
Dr. Snežana Pašalić SRB
Prof. Dr. Zoran Nikolić SRB
Dr. Zagorka Radojević SRB
Dr. Nebojša Romčević SRB
Dr. Zorica Lazarević SRB

Prof. Dr. Ljubica Pavlović SRB
Prof. Dr. Nebojša Mitrović SRB
Prof. Dr. Ljubiša Kocić SRB
Dr. Aleksandra Milutinović–Nikolić SRB
Dr. Predrag Banković SRB
Dr. Zorica Mojović SRB
Dr. Dušan Milivojević SRB
Dr. Miomir Korać SRB
Prof. Dr. Branislav Vlahović SRB
Dr. Radomir Žikić SRB
Prof. Dr. Stevo Najman SRB
Dr. Biljana Djordjević SRB
Dr. Anja Terzić SRB

Organizing Committee

Prof. Dr. Vojislav Mitić SRB
Dr. Nina Obradović SRB
Dr. Lidija Mančić SRB
Prof. Dr. Vladimir Pavlović SRB
Dr. Dušan Jovanović SRB
Dr. Zorica Lazarević SRB
Prof. Dr. Ljubica Pavlović SRB
Dr. Vesna Paunović SRB
Dr. Darko Kosanović SRB
Dr. Anja Terzić SRB
Dr. Suzana Filipović SRB
Dr. Vladimir Blagojević SRB
Prof. Zvonko Petković SRB
Ivana Dinić SRB
Zoran Gajić SRB
Jelena Živojinović SRB

Sponsors & Endorsements:

Analysis - Lab equipment, Belgrade (Serbia), Direktna Banka a.d. Kragujevac, Exchange office „Hulk“, LMB Soft, Niš (Serbia), SCAN doo. Preddvor (Slovenia), Voda Vrnjci (Serbia), Regular Authority of Electronic Media (Serbia), Turisticka organizacija Beograd, Štamparija "Format" and GRAND doo (Serbia).

Acknowledgements:

The Conference Organizers are grateful to the Ministry of Education and Science of the Republic of Serbia for financial support, as well as to the Serbian Academy of Sciences and Arts, European Academy of Sciences and Arts, American Ceramics Society, Institute of Technical Sciences of SASA, Archeological Institute of SASA, Institute of Physics UB, Vinča Institute of Nuclear Sciences - Laboratory of Physics (010), Electrical Engineering Institute Nikola Tesla and High School-Academy for Arts and Conservation, Serbian Orthodox Church.

INV-NOP2

New aspects in processing of hydroxyapatite ceramics

Miodrag J. Lukić

Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia

Sintering of hydroxyapatite ceramics has been a challenging topic for decades since the material has good bioactivity, proven biocompatibility, low cost, and high availability. Besides its biomaterial applications, hydroxyapatite has been used so far as a catalyst support, sensor material, etc. For improvements in its functional properties, new synthesis and processing routes are certainly required.

This work will present current achievements in new processing routes of hydroxyapatite ceramics. In the first part, sintering of hydroxyapatite in the presence of lithium iron phosphate will be presented. Such composition induces formation of liquid phase during sintering and interaction between materials that provides decreasing of the processing temperature and formation of reinforcing Fe-rich phase located along the grain boundaries of the matrix material. Furthermore, an influence of heating rate on pure hydroxyapatite sintering will be presented showing that conventional processing with high heating rates can be beneficial for microstructural refinement without any drawbacks regarding the final density of sintered ceramics. This will be discussed regarding the chemical changes induced due to release of hydroxyapatite structural ionic species.

INV-NOP3

Self-assembly on surfaces and nanotechnology

Jelena Manojlovic

Faculty of Mechanical Engineering, University of Nis, Nis, Srbija

Tribology is a study of friction, lubrication and wear. The basic principles of friction have been described very well in an empirical way, but the molecular mechanisms underlying friction are still not understood. With the development of nanotechnology and the new experimental probes, scientists have been able to study the origins of friction on the atomic scale. Usually, there is a need to reduce the friction coefficient and the lubricants are normally employed. In this research special attention is dedicated to the boundary lubrication regime, when specific molecules form absorbed molecular film on the solid surfaces and dry contact is excluded. A good model for boundary lubrication are the self-assembled monolayers. Our aim was to produce homogeneous monolayers of surfactants on muscovite mica. We have chosen quaternary ammonium surfactants, to use the ion-exchange capabilities of the negatively charged mica substrate and positively charged head groups of the quaternary ammonium surfactants (primary cetyltrimethylammonium bromide). The adsorbed layers were characterized by contact angle measurements and atomic force microscopy imaging. It has been shown that the temperature during solution preparation can be potentially detrimental to surfactant adsorption on the solid surface from solution.