



**Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VIII
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, 23-25. September 2019.**

Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VIII
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, 23-25. September 2019

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

Publisher:

Serbian Ceramic Society

Editors:

Prof.dr Vojislav Mitić

Dr Lidija Mančić

Dr Nina Obradović

Technical Editors:

Dr Ivana Dinić

Dr Marina Vuković

Printing:

Serbian Ceramic Society, Belgrade, 2019

Edition:

100 copies

CIP - Каталогизacija y 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 (8 ; 2019 ; Beograd)

Program ; and the Book of abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application VIII : New Frontiers in Multifunctional Material Science and Processing, Serbia, Belgrade, 23-25. September 2019. ; [organized by] Serbian Ceramic Society ... [etc.] ; [editors Vojislav Mitić, Lidija Mančić, Nina Obradović]. - Belgrade : Serbian Ceramic Society, 2019 (Belgrade : Serbian Ceramic Society). - 98 str. : ilustr. ; 30 cm

Tiraž 100.

ISBN 978-86-915627-7-9

а) Керамика -- Апстракти б) Наука о материјалима -- Апстракти в) Наноматеријали -- Апстракти

COBISS.SR-ID 279041804

P5

The usage of different fluoride sources during solvothermal synthesis of UCNP's in hydroxyl-carboxyl chelated precursor

Marina Vukovic¹, Ivana Dinic¹, Lidija Mancic², Predrag Vulic³,
Marko Nikolic⁴, Olivera Milosevic²

¹Innovation Center of the Faculty of Chemistry, University of Belgrade, Serbia

²Institute of Technical Sciences of SASA, Belgrade, Serbia

³Faculty of Mining and Geology, University of Belgrade, Serbia

⁴Photonic Center, Institute of Physics Belgrade, University of Belgrade, Serbia

There is a great interest for the synthesis of rare earth (RE) doped up-converting nanoparticles (UCNPs) which morphological and luminescence properties are well suited for application in optoelectronics, forensics, security and biomedicine. The synthesis of such particles usually comprises decomposition of organometallic compounds in an oxygen-free environment followed with coating of biocompatible layer or ligands exchange. In this work hydroxyl-carboxyl (HO-C) type of chelators (citric acid and sodium citrate) are used for the stabilization of NaYF₄:Gd,Yb,Er UCNP's during solvothermal treatment of rare earth nitrate salts with different fluoride sources (NaF, NH₄F and NH₄HF₂). The x-ray powder diffraction (XRPD) showed that all powders contain the mixture of cubic and hexagonal NaYF₄:Gd,Yb,Er phase in nano and micro-sized particles respectively. However, the content of later one prevails in samples obtain when Na-citrate is used as chelator, regardless of which fluoride source is used for precipitation. Additionally, variation of the particles size and shape is detected with a variation of fluoride type. All particles have hydrophilic surface due to retention of citrate ligands and emit intense green light emission centered at 519 and 539 nm (²H_{11/2}, ⁴S_{3/2} → ⁴I_{15/2}) when excited with near infrared light.

P6

Barium titanat - electronic ceramics and further Brownian motion fractal analysis development

Zoran B. Vosika¹, Vojislav V.Mitić^{1,2}, Goran Lazović³,
Dušan Milošević¹, Sandra Veljković¹

¹University of Niš, Faculty of Electronic Engineering, Aleksandra Medvedeva 14, Niš, Serbia

²Institute of Technical Sciences of SASA, Belgrade, Serbia, Knez Mihailova 35/IV

³University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Serbia

Considering that until now there has been a positive fractal dimension of the charge carrier trajectories in doped BaTiO₃-ceramics, it would be interesting to consider its complex variant. The trajectories then have a new logarithmic scaling symmetry. It adversely affects to the conductive properties of these materials. AC conductivity studies of various BaTiO₃ or similar ceramics produced equivalent circuits with impedance spectra, usually within the framework of CPE elements serial connection (CPE - constant phase element). CPE, as a as a consequence of complex fractal dimension have a new behavior. Dielectric frequency spectra can be described in similar relations.