

12TH CONFERENCE FOR YOUNG SCIENTISTS IN CERAMICS

CYSC

2017



12TH CONFERENCE
FOR YOUNG SCIENTISTS IN CERAMICS

BOOK OF ABSTRACTS

October 18-21, 2017
Faculty of Technology Novi Sad
Novi Sad, Serbia

**12th CONFERENCE for
YOUNG SCIENTISTS in CERAMICS**

**PROGRAMME
and
BOOK OF ABSTRACTS**

**October 18-21, 2017
Novi Sad, Serbia**

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Preface

The 12th Conference for Young Scientists in Ceramics is organized by the Department of Materials Engineering, Faculty of Technology Novi Sad, University of Novi Sad, in cooperation with Young Ceramists Network (an initiative of the European Ceramic Society).

This Conference first started as the Students' Meeting back in 1998 when it was just a national meeting for Serbian PhD students. After three national, this year is going to be the ninth consecutive international conference held every second year. For several years now, the Conference has a well-earned reputation as an excellent opportunity for the promotion of the work in the field of ceramics done by early stage researchers, being MSc and PhD students or young doctors. Additionally, the young scientists will be in the position to attend sessions covering major general topics of broad interest which will be presented by experienced scientists through the invited lectures. In that way, young researchers will have a chance to participate in the active discussions with their senior colleagues who are all well-known scientists in their area of expertise. We strongly hope that the overall activities during this event will create for the young researchers a fruitful platform for finding new topics, ideas and approaches for their scientific research and an excellent opportunity for establishing connections and finding proposals for collaborations.

General idea behind the Conference was and will continue to be the building of the closely intertwined European scientific network by offering the platform for young scientists to meet, discuss and exchange ideas in the ever growing field of ceramics. It is our deepest belief that this approach will be beneficial for both young researchers and the European science as a whole. Therefore, we strongly appreciate that the European Ceramic Society identified the efforts and the enthusiasm we have put into this idea of creating the bridge between young researchers and we truly hope that the European Ceramic Society will support this initiative in the future. Special thanks to the JECS Trust Fund for strong financial support of the Meeting. The Conference was also recognized by the Serbian Ministry of education, science and technological development as well as by the Provincial Secretariat for Higher Education and Scientific Research and we would like to thank them for their endorsements, too. A total number of 115 presentations given by young researchers, 1 plenary talk, and 13 invited talks coming from 25 countries with multidisciplinary profiles will be presented during the conference. It should be emphasized that presented topics cover research subjects of the highest scientific interest: experimental, theoretical and applicative aspects of synthesis, processing, advanced nano/microscale and functional characterization of various types of structures and ceramic materials.

We wish to express our thanks to the members of the local organizing committee in Novi Sad for their effort and time during preparation of the Conference, and especially to thank our endorsers and sponsors for making this event possible.

Editor

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LUMINESCENT Pr³⁺ DOPED FLUORAPATITE NANOPARTICLES WITH DIFFERENT EXCITATION-EMISSION PROFILES

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The fluorapatite (FAP) nanoparticles doped with rare earth elements have been extensively studied as a potential luminescence inorganic material for *in-vitro* and *in-vivo* cells and tissue bioimaging [1-3]. Luminescent nanoparticles of undoped and Pr³⁺ doped fluorapatite (Pr-FAP) have been successfully synthesized by co-precipitation method followed by calcination. Obtained materials are characterized by XRD, FTIR-FAR, PLE-PL and SEM-EDAX methods, and theoretical prediction of structural changes was also done.

Emission of FAP nanoparticles occurs in violet-blue region of visible part of spectrum under excitation in UV region. Introducing the Pr³⁺ into the lattice causes the red or blue shift depending of Pr³⁺ concentration and synthesis conditions. MCR-ALS analyses of fluorescence spectra and *ab initio* calculation indicated that Pr³⁺ ions are located in Pr-FAP lattice at Ca2 (*6h*) sites. Assumed mechanism of substitution of Ca²⁺ with Pr³⁺ ion is accompanied with charge compensation by incorporation of CO₃²⁻ ions into the structure or by vacancies formation on metal ions position. Synthesized nanoparticles can be potentially used as a luminescent nanomaterials in biomedicine for targeting, bioimaging, drug delivery and therapy.

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