13th CONFERENCE for YOUNG SCIENTISTS in CERAMICS

PROGRAMME and BOOK OF ABSTRACTS

October 16-19, 2019
Novi Sad, Serbia

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Preface

Dear conference participants and readers we have the pleasure to once again welcome you all to Novi Sad, Serbia as the venue for the 13th Conference for Young Scientists in Ceramics. This year again the event is jointly organized by the Faculty of Technology Novi Sad, University of Novi Sad and the Young Ceramists Network (YCN) of the European Ceramic Society.

The Conference for Young Scientists in Ceramics, previously known as the Students' Meeting, is the conference with more than twenty years of tradition. It grew from the Serbian only conference in 1998 to the truly international event with participants coming from 31 different countries from all over the world. The one important thing that did not change from the beginning is the basic concept which has always been the promotion of young stage researchers and their achievements. Every two years the Conference becomes the place where young MSc and PhD students and young doctors meet to exchange their ideas, make new networks and share their knowledge of the topics covering ever expanding field of ceramics. Beside 134 oral presentations given by their peers, the young scientists will have the opportunity to hear 14 invited talks and 1 plenary lecture of the more experienced scientists and experts. The presented topics include many important scientific issues and cutting edge results in ceramics ranging from the theoretical and modelling results over the experimental structural and functional characterizations all the way to the applicative examples and industrial scale production of ceramic materials. In this way, all participants will have the chance to expand their knowledge and strengthen their basic understanding of the various branches of ceramics science covering advance materials, ceramic composites and traditional ceramics. It is important to mention that this year, for the first time, we will have the student competition for the best oral presentation of a young researcher. There will be three awards which are dedicated to the late Prof. Dr. Paolo Nanni.

We want to use this opportunity to thank our sponsors and co-organizers for helping us to successfully prepare the Conference. First of all, we want to thank the JECS Trust Fund of the European Ceramic Society for their strong financial support. Also, we want to mention that the Serbian Ministry of education, science and technological development recognized our conference as an important event and gave their financial endorsement. The financial part of the awards for three best presentations dedicated to Prof. Nanni was sponsored by Prof. Liliana Mitoseriu from University of Iasi, Romania. At the end, we would like to thank to all the people in the local organizing committee and colleagues from YCN who participated in the preparations of the Conference.

Editor

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Novi Sad European youth capital - OPENS

Tourist organization city of Novi Sad

“European youth Capital – Novi Sad 2019” – adding colors to the city

Novi Sad is a small, but compact city in the heart of the Vojvodina region. This vivid city with over 80,000 young people will surprise you with it’s transformative energy, multi-nationality and cultural diversity. For centuries, Novi Sad has been a pioneer and symbol of youth activism, making significant social changes in the history and systematic youth care. But, the 2019 is the year when Novi Sad is European Youth Capital. With OPENS Programme Novi Sad is creating more opportunities for youth by youth, empowering them to become pro-active initiators of positive changes, introducing innovative ideas not only in Novi Sad, but also at national and international level.

We have addressed the needs aiming to improve young people’s lives, to increase participation in the social-political process with a strong feeling of ownership of the development of the city. Young people are directly engaged in programs creation when it comes to youth activities, as well as in their implementation.

There is no fixed pattern previously established based on which one could dance through the whole project of the European Youth Capital. Each city tells its own story. At the same time, this is where the excitement of the challenge lies. At the moment, OPENS, within the existing system, is breaking new grounds towards the construction of a new system in order to make a radical change in innovative ideas.

Perhaps you would not say if led only by first impressions, history or architecture that Novi Sad is a city of young people. As a perfect blend of modern and traditional, openness and tolerance, this city has inspired more than 400,000 people to express themselves through different activities. Each month Novi Sad puts on a new color and becomes over and over again the host of a number of festivals, fairs and celebrations, aimed first of all, at young people. And now, at every corner, you can find the traces of history and blend of cultures. The city whose rhythm you must hear to be able to feel it. The city which celebrates the diversity, energy and activism of young people! This is the city led by young people, students, artists. The city for curious, dynamic and motivating people. This is the city you wish to experience! And this is the European youth capital

At the moment, Novi Sad is on the doorstep of becoming the center in which young people have the main say. If young people are to inherit the Earth, our role and our final goal is not only to be led by this saying, but to make it happen as well.

Photo by Vladimir Velickovic, Omladinska prestonica Evrope Novi Sad 2019

Novi Sad European youth capital - OPENS

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PHOTOCATALYTIC PROPERTIES OF $BiFeO_3$ AND $Bi_5Ti_3FeO_{15}$ BASED POWDERS

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Bismuth ferrite ($BiFeO_3$) and bismuth titanate ferrite ($Bi_5Ti_3FeO_{15}$) are studied a lot in recent years because of their specific structure and potential to act as single phase multiferrioics. Thanks to the optical band gap energy of 2.3-2.8 eV for $BiFeO_3$ and 1.8-2.3 eV for $Bi_5Ti_3FeO_{15}$, these materials are also interesting for photocatalytic and solar energy applications, and studies of using $Bi_5Ti_3FeO_{15}$ for this purpose are very rare. Sol-gel methods were used to produce $BiFeO_3$ and $BiFeO_3$-modified diatomaceous earth, while $Bi_5Ti_3FeO_{15}$ was obtained sol-gel and solid-state methods. These powders were characterized, and their visible light photocatalytic activity for decomposition of methylene blue was tested in acidic, close-to-neutral and alkaline conditions. Fenton-like catalysis was also tested. Influence of synthesis method, microstructure, and catalyst composition on dye degradation will help in proposing the mechanism of adsorption and photocatalytic processes.

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IMMOBILIZATION OF SIMULATED RADIOISOTOPES IN ALKALI ACTIVATED INORGANIC POLYMERS

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The increasing importance of nuclear energy in the World's energy supply makes radioactive waste conditioning a constantly emerging issue. The current matrices (ordinary portland cement, bitumen) used for radioactive waste (excluding spent nuclear fuel) immobilization are far from being ideal (e.g. they have poor fire resistance and acid corrosion resistance, and have high leachability). In ordinary portland cement, radiolytic hydrogen production is a serious problem because the hydrogen bubbles induce mechanical stress in the matrix which may ultimately lead to the cracking of the material thus exposing more leachable surface to the environment.