15TH ECerS CONFERENCE FOR YOUNG SCIENTISTS IN CERAMICS

CYSC
2023

15TH ECerS CONFERENCE FOR YOUNG SCIENTISTS IN CERAMICS

BOOK OF ABSTRACTS

October 11-14, 2023
Faculty of Technology Novi Sad
Novi Sad, Serbia

15th ECerS CONFERENCE for YOUNG SCIENTISTS in CERAMICS

PROGRAMME
and
BOOK OF ABSTRACTS

October 11-14, 2023
Novi Sad, Serbia

Programme and Book of Abstracts of The ECerS 15th Conference for Young Scientists in Ceramics (CYSC-2023) publishes abstracts from the field of ceramics, which are presented at traditional international Conference for Young Scientists in Ceramics.

Editors-in-Chief
Prof. Dr. Vladimir V. Srdić
Dr. Soňa Hříbalová

Publisher
Faculty of Technology, University of Novi Sad
Bul. cara Lazara 1, 21000 Novi Sad, Serbia

For Publisher
Prof. Dr. Biljana Pajin

Printing layout
Vladimir V. Srdić, Marija Milanović, Ivan Stijepović

Press
TRI 0 Štamparija, Aranđelovac

CIP – Каталогизација у публикацији
Библиотека Матице српске, Нови Сад

666.3/.7(048.3)

CONFERENCE for Young Scientists in Ceramics (15 ; 2023 ; Novi Sad)

Programme and book of abstracts / 15th ECerS Conference for Young Scientists in Ceramics, October 11-14, 2023, Novi Sad ; [editor-in-chief Vladimir V. Srdić, Soňa Hříbalová]. - Novi Sad : Faculty of Technology, 2023 (Aranđelovac : Tri 0). - XV, 137 str. : ilustr. ; 24 cm

Tiraž 130. - Str. III: Preface / editors. - Registar.

ISBN 978-86-6253-174-2

a) Керамика - Технологија - Апстракти
COBISS.SR-ID 126081289

Preface

Dear colleagues and guests we are delighted to welcome you all to Novi Sad, Serbia and the 15th ECerS Conference for Young Scientists in Ceramics. This biannual event is once again jointly organized by the Faculty of Technology Novi Sad, University of Novi Sad and the Young Ceramists Network (YCN) of the European Ceramic Society (ECerS).

The ECerS Conference for Young Scientists in Ceramics is celebrating its 25th anniversary since it started back in 1998 as a national event and now it gathers scientists from all over the world. During all these 25 years the conference has been growing constantly and we are proud to say that it became one of the trademark events in the field of ceramics in Europe.

During the four days of the Conference we will have an opportunity to hear 104 oral presentations given by young scientists together with 12 invited talks and 5 plenary lectures of the more experienced scientists and experts from 29 countries. In addition, we will host a satellite event "Workshop on atomistic calculations in materials science", thoughtfully designed to introduce fundamental computational methods that are accessible to beginners in this field. Thus, we continue to be the venue for the vivid exchange of ideas and knowledge intertwined with fruitful discussions about the one topic that gathers us all - ceramic materials and all its subfields. Young scientists especially have the opportunity to meet with their peers and senior colleagues to promote their work and make new connections that can benefit them throughout their carrier. We have to emphasize that the feedback from our past conferences, which we get from former participants and guests, is more than positive and gives us ever new energy to endure in our mission of bringing young people involved in ceramics closer together. This is why we are confident that you will enjoy your stay in Novi Sad and be able to broaden your knowledge since topics covered by the conference include various aspects of the ceramics including processing, characterisation and application of advanced and traditional ceramics but also cutting edge results in advance manufacturing, high entropy oxides, computer modelling and physics of the ceramic materials and structures.

Our deepest gratitude goes to our sponsors and co-organizers since we would not be able to organize this conference without them. Once again, the JECS Trust Fund of the European Ceramic Society has recognized the significance of the CYSC and became our greatest financial benefactor. Also, we are thankful to the Serbian Ministry of science and technological development which once again endorsed the conference financially. 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.

Editors

LIST OF SPONSORS

The European Ceramic Society

The JECS Trust Fund

Ministry of Education and Science, Republic of Serbia

Provincial Secretariat for Science and Technological Development

LIST OF ENDORSERS

Faculty of Technology

University of Novi Sad

Tourist organization city of Novi Sad

Organizer

- *Department of Materials Engineering, Faculty of Technology, University of Novi Sad, Novi Sad, Serbia*
- *Young Ceramists Network, The European Ceramic Society*

Scientific Committee

Subramshu S. Bhattacharya	*Indian Institute of Technology, Madras, India*
Jon Binner	*University of Birmingham, United Kingdom*
Vincenzo Buscaglia	*ICMATE-CNR, Genoa, Italy*
Francis Cambier	*Belgian Ceramic Research Center, Mons Belgium*
Dragan Damjanović	*Ecole Polytechnique Fédérale de Lausanne, Switzerland*
Igor Djerdj	*Josip Juraj Strossmayer University of Osijek, Croatia*
Erkka Frankberg	*Tampere University, Finland*
Thomas Graule	*EMPA, Zurich, Switzerland*
Nikola Kanas	*Institute Biosense, University of Novi Sad, Serbia*
Horst Hahn	*Forschungzentrum Karlsruhe, Germany*
Andraž Kocjan	*Jožef Stefan Institute Ljubljana, Slovenia*
Akos Kukovecz	*University of Szeged, Hungary*
Anne Leriche	*University of Valenciennes & Hainaut-Cambresis, France*
Marie Lasgorceix	*Université Polyte. Hauts-de-France, Valenciennes, France*
Karel Maca	*Brno University of Technology, Czech Republic*
Branko Matović	*Institute for Nuclear Sciences "Vinca", Serbia*
Marija Milanovic	*University of Novi Sad, Serbia*
Liliana Mitoseriu	*University "Al. I. Cuza", Romania*
Zbigniew Pedzich	*AGH, University of Science and Technol, Krakow, Poland*
Maria Canillas Perez	*Universidad Politécnica de Madrid, Spain*
Mitar Perusic	*University of East Sarajevo, Bosnia & Herzegovina*
Pavol Šajgalik	*Inst. of Inorganic ChemistryAcademy of Sciences, Slovakia*
Laura Silvestroni	*CNR-ISTEC, Faenza, Italy*
Alexandre Simões	*Universidade Estadual Paulista UNESP, Brazil*
Vladimir V. Srdić	*University of Novi Sad, Serbia*
Biljana Stojanović	*University of Belgrade, Serbia*
Maxim M. Sychev	*St.Petersburg State Institute of Technology, Russia*
Paula Vilarinho	*University of Aveiro, Portugal*
Louis A.J.A. Winnubst	*University of Twente, The Netherlands*
Markus Winterer	*University of Duisburg-Essen, Germany*

Secretary

Ivan Stijepović	*University of Novi Sad, Serbia*

Organizing Committee

YCN Committee (Soňa Hříbalová, Awais Qadir, Antonia Ressler, Nicolas Somers, Alejandro Montón Zarazaga	*European Ceramic Society*
Jovana Paskaš	*University of Novi Sad, Serbia*
Danica Piper	*University of Novi Sad, Serbia*
Jovana Stanojev	*University of Novi Sad, Serbia*
Sonja Stojanov	*University of Novi Sad, Serbia*
Iva Toković	*University of Novi Sad, Serbia*
Elvira Toth	*University of Novi Sad, Serbia*
Mihajlo Valuh	*University of Novi Sad, Serbia*
Jelena Vukmirović	*University of Novi Sad, Serbia*

OC-51

PHOTOCATALYTIC DEGRADATION OF REACTIVE ORANGE 16 DYE USING TiO_2/PPy NANOCOMPOSITES UNDER SIMULATED SOLAR LIGHT

Natalija Milojković[1], Bojana Simović[2], Milan Žunić[2], Lidija Radovanović[3], Aleksandra Dapčević[1]

[1]*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*

[2]*University of Belgrade, Institute for Multidisciplinary Research, Belgrade, Serbia*

[3]*University of Belgrade, Innovation Center of the Faculty of Technology and Metallurgy, Belgrade, Serbia*

e-mail: nmilojkovic@elab.tmf.bg.ac.rs

It is well known that titanium dioxide is usually used as a photocatalyst due to its nontoxicity, low cost, and stability. Conductive polymer, polypyrrole (PPy) is also appropriate for photocatalytic application being stable and easy to synthesize. The aim of this study was to obtain TiO_2/PPy composites reaching higher photocatalytic efficiency compared to pure TiO_2. Therefore, TiO_2 was synthesized by the hydrothermal route, while PPy was obtained by the chemical oxidative polymerization method. TiO_2/*x*% PPy nanocomposites (x = 0, 0.5, 1, 1.5, 3, 5 wt.%) were prepared by hand-mixing of powders in agate mortar for 30 min in order to find the optimal PPy content. Obtained materials were characterized by XRD, FTIR, TG/DSC, FESEM, and UV-Vis methods while their photocatalytic activity was estimated towards degradation of Reactive Orange 16 dye (RO16). A kinetic study was performed and a detailed mechanism of RO16 photocatalytic degradation in the presence of TiO_2/PPy composites was proposed based on scavenger tests. The results showed that, despite PPy addition, TiO_2 was present in anatase form in all samples with sufficiently small crystallites (around 26 nm) and preserved structure with no significant deviations in unit cell parameters. The band gap energy decreased with increasing of PPy content, from 3.14 eV for pure TiO_2 to 2.94 eV for TiO_2/5% PPy. All the obtained nanocomposites demonstrated higher photocatalytic activity than pure TiO_2, whereby TiO_2/1% PPy nanocomposite was the most efficient by degrading 99.6% of the dye for 105 min under simulated solar light. Therefore, the amount of 1 wt.% should be consider as optimal amount of PPy in a composite. It is established that the photodegradation of RO16 using TiO_2/PPy nanocomposites follows pseudo-first kinetic order. RO16 photocatalytic degradation mechanism in the presence of TiO_2/PPy nanocomposites can be well described by direct *Z*-scheme heterojunction which has never been reported for TiO_2/PPy system.

AUTHOR INDEX


9 788662 531742