

15<sup>TH</sup> ECerS CONFERENCE FOR YOUNG SCIENTISTS IN CERAMICS

**CYSC**  
2023



15<sup>TH</sup> ECerS CONFERENCE  
FOR YOUNG SCIENTISTS IN CERAMICS

**BOOK OF ABSTRACTS**

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

**15<sup>th</sup> 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 15<sup>th</sup> 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, Arandelovac

CIP – Каталогизacija u publikaciji  
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 (Arandelovac : 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



The Book of Abstracts of the 15<sup>th</sup> ECerS Conference for Young Scientists in Ceramics is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/)

## **Preface**

*Dear colleagues and guests we are delighted to welcome you all to Novi Sad, Serbia and the 15<sup>th</sup> 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 25<sup>th</sup> 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	<i>Indian Institute of Technology, Madras, India</i>
Jon Binner	<i>University of Birmingham, United Kingdom</i>
Vincenzo Buscaglia	<i>ICMATE-CNR, Genoa, Italy</i>
Francis Cambier	<i>Belgian Ceramic Research Center, Mons Belgium</i>
Dragan Damjanović	<i>Ecole Polytechnique Fédérale de Lausanne, Switzerland</i>
Igor Djerdj	<i>Josip Juraj Strossmayer University of Osijek, Croatia</i>
Erkka Frankberg	<i>Tampere University, Finland</i>
Thomas Graule	<i>EMPA, Zurich, Switzerland</i>
Nikola Kanas	<i>Institute Biosense, University of Novi Sad, Serbia</i>
Horst Hahn	<i>Forschungszentrum Karlsruhe, Germany</i>
Andraž Kocjan	<i>Jožef Stefan Institute Ljubljana, Slovenia</i>
Akos Kukovecz	<i>University of Szeged, Hungary</i>
Anne Leriche	<i>University of Valenciennes &amp; Hainaut-Cambresis, France</i>
Marie Lasgorceix	<i>Université Polyte. Hauts-de-France, Valenciennes, France</i>
Karel Maca	<i>Brno University of Technology, Czech Republic</i>
Branko Matović	<i>Institute for Nuclear Sciences "Vinca", Serbia</i>
Marija Milanovic	<i>University of Novi Sad, Serbia</i>
Liliana Mitoseriu	<i>University "Al. I. Cuza", Romania</i>
Zbigniew Pedzich	<i>AGH, University of Science and Technol, Krakow, Poland</i>
Maria Canillas Perez	<i>Universidad Politécnica de Madrid, Spain</i>
Mitar Perusic	<i>University of East Sarajevo, Bosnia &amp; Herzegovina</i>
Pavol Šajgalik	<i>Inst. of Inorganic Chemistry Academy of Sciences, Slovakia</i>
Laura Silvestroni	<i>CNR-ISTEC, Faenza, Italy</i>
Alexandre Simões	<i>Universidade Estadual Paulista UNESP, Brazil</i>
Vladimir V. Srdić	<i>University of Novi Sad, Serbia</i>
Biljana Stojanović	<i>University of Belgrade, Serbia</i>
Maxim M. Sychev	<i>St. Petersburg State Institute of Technology, Russia</i>
Paula Vilarinho	<i>University of Aveiro, Portugal</i>
Louis A.J.A. Winnubst	<i>University of Twente, The Netherlands</i>
Markus Winterer	<i>University of Duisburg-Essen, Germany</i>

## **Secretary**

Ivan Stijepović *University of Novi Sad, Serbia*

## **Organizing Committee**

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

<b>Pavlina Bancheva</b> SYNTHESIS AND INVESTIGATING THE PROPERTIES OF PURE AND DOPED ZnO THIN FILMS OBTAINED BY SPRAY PYROLYSIS .....	81
<b>Andrzej Kruk</b> EFFECT OF RE <sup>3+</sup> DOPING ON THE MAGNETO-OPTICAL AND LUMINESCENT PROPERTIES OF Y <sub>2</sub> O <sub>3</sub> .....	82
<b>Dariia Chernomorets</b> SOLUBILITY OF ZrO <sub>2</sub> IN YTTRIUM OXIDE AND ITS INFLUENCE ON TRANSPARENT CERAMICS PROPERTIES .....	83
<b>Dániel A. Karajz</b> STRUCTURAL POSSIBILITIES OF INVERSE OPALS .....	84
<b>Larisa O. Fedorova</b> ADVANCED OPTICAL ZnS AND MgF <sub>2</sub> CERAMICS: MODIFICATION OF THE SURFACE BY CARBON NANOTUBES .....	85
<b>Aicha Elaoui</b> PREPARATION OF ZnO/Bi <sub>2</sub> WO <sub>6</sub> HETEROSTRUCTURES VIA SURFACTANT- ASSISTED HYDROTHERMAL METHOD: CHARACTERIZATION AND PHOTOCATALYTIC ACTIVITY .....	86
<b>Natalija Milojković</b> PHOTOCATALYTIC DEGRADATION OF REACTIVE ORANGE 16 DYE USING TiO <sub>2</sub> /PPy NANOCOMPOSITES UNDER SIMULATED SOLAR LIGHT .....	87
<b>Mourad Mechouet</b> OBTAINING A HYBRID ELECTRODE BASED ON IMIDAZONIUM IONTERMINATED AND METALLIC NANO-CLUSTERS AND ITS CATALYTIC ACTIVITY TOWARD HER .....	88
<b>Jana Petrović</b> ACID TREATED g-C <sub>3</sub> N <sub>4</sub> PHOTOCATALYSTS FOR THE PHOTOCATALYTIC REDUCTION OF Cr(VI) .....	89
<b>Irmak Su Okten</b> PREPARATION OF Pt BASED HYDROTALCITE DERIVED Mg(Al)O SHAPED CATALYSTS VIA WET IMPREGNATION FOR PROPANE DEHYDROGENATION REACTION .....	90
<b>Manuel A. García-Galán</b> EVALUATING THE MECHANICAL INTEGRITY AND RELIABILITY OF MULTI- CHANNELLED FLAT-SHEET CERAMIC MEMBRANES FOR FILTRATION APPLICATIONS .....	91
<b>Miguel Vieira</b> HYDROTHERMALLY ACTIVATED CERAMIC MEMBRANES FOR OXYGEN SEPARATION .....	92
<b>Radu Stefan Stîrbu</b> SIMULATION OF PROPERTIES OF ANISOTROPIC POROUS CERAMICS BASED ON 3D RECONSTRUCTED MICROSTRUCTURES .....	93

OC-51

**PHOTOCATALYTIC DEGRADATION OF REACTIVE ORANGE 16  
DYE USING TiO<sub>2</sub>/PPy NANOCOMPOSITES UNDER SIMULATED  
SOLAR LIGHT**

Natalija Milojković<sup>1</sup>, Bojana Simović<sup>2</sup>, Milan Žunić<sup>2</sup>, Lidija Radovanović<sup>3</sup>,  
Aleksandra Dapčević<sup>1</sup>

<sup>1</sup>*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia*

<sup>2</sup>*University of Belgrade, Institute for Multidisciplinary Research, Belgrade, Serbia*

<sup>3</sup>*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<sub>2</sub>/PPy composites reaching higher photocatalytic efficiency compared to pure TiO<sub>2</sub>. Therefore, TiO<sub>2</sub> was synthesized by the hydrothermal route, while PPy was obtained by the chemical oxidative polymerization method. TiO<sub>2</sub>/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<sub>2</sub>/PPy composites was proposed based on scavenger tests. The results showed that, despite PPy addition, TiO<sub>2</sub> 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<sub>2</sub> to 2.94 eV for TiO<sub>2</sub>/5% PPy. All the obtained nanocomposites demonstrated higher photocatalytic activity than pure TiO<sub>2</sub>, whereby TiO<sub>2</sub>/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 considered as optimal amount of PPy in a composite. It is established that the photodegradation of RO16 using TiO<sub>2</sub>/PPy nanocomposites follows pseudo-first kinetic order. RO16 photocatalytic degradation mechanism in the presence of TiO<sub>2</sub>/PPy nanocomposites can be well described by direct Z-scheme heterojunction which has never been reported for TiO<sub>2</sub>/PPy system.



## AUTHOR INDEX

A. Agnaou	79	M. Kovač	124
S. Ahmetović	134	D. Kozień	57
D. Akbulut	137	M. Kumar	69
J. Aleksandrowicz	61	A. Kruglyak	131
J. Alexander	58	A. Kruk	82
I. Anasser	105	A. Kucheryavaya	56
D. Arslan	54	Z. Kucia	55
P. Bancheva	81	T. Labbilta	122
O. Baranovska	49	M. Łazor	77
N. Bhootpur	108	J. López-Arenal	111
M. Bohus	37	V.-A. Lukacs	36
H. Boussebha	64	A.V. Maletskyi	53
W. Bulejak	120	N. Malima	60
M. Canilles	22	J. Marchewka	121
I.E. Castelli	20	M. Mechouet	88
J. Chen	72	V. Miljić	96
D. Chernomorets	83	A. Milojkovic	42
A. Chrir	103	N. Milojković	87
O. Chudinovych	130	M. Mirković	70
N. Çöpoğlu	126	S. Moreno-Martínez	68
Y. Delikhovskiy	125	H. Moussouni	118
E.A. Didenko	74	B. Muslu Kop	75
D. Djukić	127	E. Nidžović	39
M. Dojčinović	62	E. Novta	114
A. Elaoui	86	C. Ojalvo	21
L.O. Fedorova	85	I.S. Okten	90
E.J. Frankberg	19	H. Orihuel	50
M.A. García-Galán	91	F. Oseko	98
I. Goričan	101	M. Osman	104
A. Graboš	109	Ö.F. Ötken	123
T. Graule	18	A. Oufakir	128
M.-A. Grigoroscuta	105	T.D. Özerdem	135
J. Grygierek	117	A. Pavlović	136
H. Haspel	30	P. Pęczkowski	28
J. Hostaša	23	M. Perić	100
H.F. Ibrahim	112	J. Petrović	89
S. Ilyas	67	R. Pinto	78
S. Iqbal	111	D. Piper	80
S. Joksović	99	D. Rafaja	24
D.A. Karajz	84	Ł. Rakoczy	52
T. Karimpour	102	B. Repič	76
N. Khan	40	T. Rojac	16
L. Kotrbová	59	I. Rutkowska	116

