

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**

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## **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*

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## **INVESTIGATING THE EFFECTS OF Zr DOPING ON THE TITANIUM DIOXIDE NANOFIBRES**

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In this work, titanium dioxide (TiO<sub>2</sub>) nanofibers doped with 0.5–5 mol% zirconium ions (Zr<sup>4+</sup>) were synthesized by combining the sol-gel process and electrospinning method, and calcined at 500 °C. The morphological, structural and optical properties of pure and Zr-doped TiO<sub>2</sub> nanofibers were investigated. According to the XRD and FTIR analyses, the addition of Zr as a dopant suppressed the transformation of anatase to rutile phase. Scanning electron microscopy showed that all fibers were smooth, fragile and randomly oriented after the calcination process. HRTEM analysis revealed that Zr<sup>4+</sup> ions were incorporated at the substitutional sites in the anatase TiO<sub>2</sub> crystalline lattice. The photocatalytic efficiency for degradation of methylene blue (MB) was examined for both pure and Zr-doped TiO<sub>2</sub> samples. Nanofibers doped with 1% of Zr<sup>4+</sup> ions have shown the highest photocatalytic activity of 98%, which can be explained by considering lower PL intensity in the PL spectrum of this sample, indicating suppressed electron-hole recombination.