

**TWENTIETH YOUNG RESEARCHERS' CONFERENCE  
MATERIALS SCIENCE AND ENGINEERING**

**November 30 – December 2, 2022, Belgrade, Serbia**

**Programme and the Book of Abstracts**

**Materials Research Society of Serbia  
&  
Institute of Technical Sciences of SASA**

2022

Book title:

Twentieth Young Researchers' Conference - Materials Science and Engineering:  
Programme and the Book of Abstracts

Publisher:

Institute of Technical Sciences of SASA  
Knez Mihailova 35/IV, 11000 Belgrade, Serbia  
Tel: +381-11-2636994, 2185263, <http://www.itn.sanu.ac.rs>

Conference organizers:

Materials Research Society of Serbia, Belgrade, Serbia  
Institute of Technical Sciences of SASA, Belgrade, Serbia

Editor:

Dr. Smilja Marković

Technical Editor:

Aleksandra Stojičić and Dr. Ivana Dinić

Cover page: Ivana Stojković Simatović and Smilja Marković

Cover: Nebojša Labus

Printing:

Gama Digital Centar doo  
Adresa: Otona Zupančiča 19 - Grafičko medijska škola, 11070 Belgrade, Serbia  
Tel: +381-62 880 06 71  
<http://www.gdc.rs>

Publication year: 2022

Print-run:

120 copies

CIP - Каталогизacija у публикацији - Народна библиотека Србије, Београд  
66.017/.018(048)

**YOUNG Researchers' Conference Materials Science and Engineering (20 ; 2022 ; Beograd)**

Programme ; and the Book of Abstracts / Twentieth Young Researchers' Conference Materials Science and Engineering, November 30 % December 2, 2022, Belgrade, Serbia ; [organized by] Materials Research Society of Serbia [and] Institute of Technical Sciences of SASA ; [editor Smilja Marković]. - Belgrade : Institute of Technical Sciences of SASA, 2022 (Beograd : Gama digital centar). - XXI, 98 str. ; 23 cm

Tiraž 120. - Registar.

ISBN 978-86-80321-37-0

1. Društvo za istraživanje materijala Srbije (Beograd) 2. Institut  
tehničkih nauka SANU (Beograd)

a) Наука о материјалима - Апстракти b) Технички материјали - Апстракти

COBISS.SR-ID 80584457

## Aim of the Conference

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

## Topics

Biomaterials  
Environmental science  
Materials for high-technology applications  
Materials for new generation solar cells  
Nanostructured materials  
New synthesis and processing methods  
Theoretical modelling of materials

## Scientific and Organizing Committee

### Committee President

Smilja Marković                      Institute of Technical Sciences of SASA, Belgrade, Serbia

### Vice-presidents

Dragana Jugović                      Institute of Technical Sciences of SASA, Belgrade, Serbia

Magdalena Stevanović              Institute of Technical Sciences of SASA, Belgrade, Serbia

Dorđe Veljović                      Faculty of Technology and Metallurgy, Belgrade, Serbia

### Members

Tatiana Demina                      Enikolopov Institute of Synthetic Polymeric Materials,  
Russian Academy of Sciences

Jasmina Dostanić                      Institute of Chemistry, Technology and Metallurgy, Belgrade,  
Serbia

Xuesen Du                              Chongqing University, Chongqing, China

Branka Hadžić                      Institute of Physics, Belgrade, Serbia

Ivana Jevremović                      Norwegian University of Science and Technology, Trondheim,  
Norway

Sonja Jovanović                      Institute of Nuclear Sciences “Vinča”, Belgrade, Serbia

Snežana Lazić                      Universidad Autónoma de Madrid, Spain

Lidija Mančić                      Institute of Technical Sciences of SASA, Belgrade, Serbia

Marija Milanović                      Faculty of Technology, Novi Sad, Serbia

Miloš Milović                      Institute of Technical Sciences of SASA, Belgrade, Serbia

Nebojša Mitrović                      Faculty of Technical Sciences, Čačak, Serbia

Irena Nikolić                      Faculty of Metallurgy and Technology, Podgorica, Montenegro

Marko Opačić                      Institute of Physics, Belgrade, Serbia

Vuk Radmilović                      Faculty of Technology and Metallurgy, Belgrade, Serbia

Tatjana D. Savić                      Institute of Nuclear Sciences “Vinča”, Belgrade, Serbia

Ana Stanković                      Institute of Technical Sciences of SASA, Belgrade, Serbia

Srečo Škapin                      Institute Jožef Stefan, Ljubljana, Slovenia

Boban Stojanović                      Faculty of Sciences, Kragujevac, Serbia

Ivana Stojković-Simatović Faculty of Physical Chemistry, Belgrade, Serbia  
Konrad Terpiłowski Department of Interfacial Phenomena, Institute of Chemical Sciences, Faculty of Chemistry, Maria Curie-Skłodowska University in Lublin, Poland

Vuk Uskoković TardigradeNano, Irvine, CA, USA  
Rastko Vasić Faculty of Physics, Belgrade, Serbia  
Ljiljana Veselinović Institute of Technical Sciences of SASA, Belgrade, Serbia  
Siniša Vučenović Faculty of Sciences, Department of Physics, Banja Luka, B&H  
Marija Vukomanović Institute Jožef Stefan, Ljubljana, Slovenia

Conference Secretary

Ivana Dinić Institute of Technical Sciences of SASA, Belgrade, Serbia

### Conference Technical Committee

Aleksandra Stojičić, Marina Vuković, Željko Mravik, Katarina Aleksić, Jelena Rmuš

### Results of the Conference

Beside printed «Programme and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journal “Tehnika – Novi Materijali”. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2023.

### Sponsors



**ANALYSIS**  
LABORATORY EQUIPMENT

### Acknowledgement

The editor and the publisher of the Book of abstracts are grateful to the Ministry of Science, Technological Development and Innovation of the Republic of Serbia for its financial support of this book and The Twentieth Young Researchers' Conference - Materials Sciences and Engineering, held in Belgrade, Serbia.

11-2

**TiO<sub>2</sub> nanoparticles supported on natural zeolite clinoptilolite from Serbia for removal of bisphenol A from aqueous solution**

Srna Stojanović<sup>1</sup>, Vladislav Rac<sup>2</sup>, Kristina Mojsilović<sup>3</sup>, Rastko Vasilić<sup>3</sup>, Smilja Marković<sup>4</sup>,  
Ljiljana Damjanović-Vasilić<sup>1</sup>

<sup>1</sup>University of Belgrade-Faculty of Physical Chemistry, Studentski trg 12-16, P.O. Box 47, 11158 Belgrade 118, Serbia, <sup>2</sup>University of Belgrade-Faculty of Agriculture, Nemanjina 6, 11080 Belgrade, Serbia, <sup>3</sup>University of Belgrade-Faculty of Physics, Studentski trg 12-16, 11000 Belgrade, Serbia, <sup>4</sup>Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade, Serbia

Bisphenol A (BPA) is a well-known emerging contaminant that pose a severe threat to human health due to its negative effect on the body's endocrine systems. BPA is widely used in the production of polycarbonate plastic and epoxy resins and therefore often detected in different water environments. Since the conventional wastewater treatments for BPA removal haven't been proven efficient it is important to find a green and efficient method for its complete elimination. Therefore, the aim of this work was to prepare a cost-effective hybrid photocatalyst based on TiO<sub>2</sub> nanoparticles and natural zeolite clinoptilolite and study its photocatalytic performance toward BPA. The TiO<sub>2</sub>/clinoptilolite, containing 20 wt% of TiO<sub>2</sub>, was prepared using ultrasound assisted solid-state dispersion method and characterized using a multi-technique approach by combining X-ray powder diffraction, FTIR, UV Vis DRS spectroscopy, atomic force microscopy (AFM), BET measurements and laser diffraction. The study showed complete removal of BPA (5 mg/L) after 180 minutes of simulated solar irradiation using 2 g/L of hybrid photocatalyst, at pH = 6.4. The addition of H<sub>2</sub>O<sub>2</sub> led to a faster BPA removal after 120 minutes of irradiation. When BPA removal was tested in bottled drinking water a lower removal of 60 % after 180 minutes of irradiation was observed because of the presence of bicarbonate ions and its scavenger effect toward hydroxyl radicals. The reused photocatalyst showed good photocatalytic activity in repeated cycles (e. i. 70 % of BPA was still successfully removed at the end of the 4<sup>th</sup> cycle).