

# BOOK of ABSTRACTS

## 26<sup>th</sup> Congress of Chemists and Technologists of Macedonia

26<sup>th</sup> Конгрес на  
Хемичари и  
Технолози  
на Македонија

20-23 9 2023 OHRID, RN MACEDONIA





**Сојуз на хемичарите и технолозите на Македонија**  
**Society of Chemists and Technologists of Macedonia**

**26<sup>th</sup> Congress of  
SCTM  
with International Participation**

**BOOK of ABSTRACTS**

**20–23 September 2023  
Metropol Lake Resort  
Ohrid, N. Macedonia**



**Сојуз на хемичарите и технолозите на Македонија**

**Society of Chemists and Technologists of Macedonia**

20–23 September 2023, Metropol Lake Resort, Ohrid

## **SCIENTIFIC COMMITTEE MEMBERS**

### **President**

Prof. Dr. **Jadranka Blazhevska Gilev**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia

### **Members:**

Prof. Dr. **Trajče Stafilov**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University in Skopje, N. Macedonia

Prof. Dr. **Viktor Stefov**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University in Skopje, N. Macedonia

Prof. Dr. **Blažo Boev**, Faculty of Natural and Technical Sciences, Goce Delčev University, Štip, N. Macedonia

Prof. Dr. **Panče Naumov**, Division of Science and Mathematics, New York University (NYU) Abu Dhabi

Prof. Dr. **Radmila Tomovska**, POLYMAT Institute, University of the Basque Country, San Sebastian, Spain

Prof. Dr. **Vesna Rafajlovska**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia

Prof. Dr. **Emilija Fidančevski**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia

## **ORGANIZING COMMITTEE MEMBERS**

### **President**

Prof. Dr. **Biljana Angjusheva**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia

### **Members:**

Assoc. Prof. Dr. **Vojo Jovanov**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia

**Iva Dimitrievska**, MSc, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia

**Marija Prosheva**, MSc, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia

**Ivona Sofronievska**, MSc, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University in Skopje, N. Macedonia

**Marinela Cvetanoska**, MSc, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University in Skopje, N. Macedonia

## COORGANIZERS:

**Ministry of Education and Science of N.  
Macedonia**



**РЕПУБЛИКА СЕВЕРНА МАКЕДОНИЈА  
МИНИСТЕРСТВО ЗА ОБРАЗОВАНИЕ И НАУКА**

**Ss. Cyril and Methodius University in Skopje**



The 26<sup>th</sup> Congress of SCTM is a

 **EuChemS**  
European Chemical Society

recognized event.

Dear Esteemed Colleagues and Participants,

It is with great pleasure that we present the Book of Abstracts for the 26<sup>th</sup> Congress of the Society Chemists and Technologists of Macedonia, which was originally scheduled for 2020 but, due to the global pandemic caused by Covid-19, has been rescheduled to this momentous occasion. As we gather here in the breathtaking backdrop of the historic city of Ohrid, Macedonia, we reflect not only on the innovative strides made in the field of chemistry and chemical engineering, but also on the unwavering spirit of resilience that has brought us together despite the challenges that have beset us. The world has experienced an unprecedented disruption, testing the limits of our adaptability and resolve. Yet, as chemists and chemical engineers, we have shown that the pursuit of knowledge and advancement knows no bounds. Our ability to transcend obstacles, adapt methodologies, and harness innovation in the face of adversity is a testament to the invincible human spirit.

Within the pages of this Book of Abstracts with 15 invited lecturers and almost 200 presentations from 174 authors and 570 coauthors from the region and much wider making it a really international meeting, you will find a diverse array of topics that reflect the vigor and dedication of the scientific community. From breakthroughs in green chemistry to pioneering developments in materials science, from the forefront of pharmaceutical research to cutting-edge advancements in nanotechnology, each abstract showcases the remarkable flexibility and ingenuity of our colleagues.

We extend our deepest gratitude to Prof. Jadranka Blaževska Gilev and Prof. Biljana Angjuševa, the organizers of this meeting who have dedicated all their efforts and time to make this meeting possible. Our gratitude goes to all members of the scientific and organizational committees who have been in the background making sure things flow seamlessly, especially to Assoc. Prof. Vojo Jovanov, Iva Dimitrievska and Marija Prosheva for managing the web page, Book of Abstracts etc. Also, our appreciation goes to the reviewers and all participants who have come together to give the substance to this Congress. Your commitment to the scientific endeavor underscores the importance of collaborative efforts in times of uncertainty. It is through the exchange of ideas, the sharing of knowledge, and the fostering of connections that we fortify ourselves and drive the progress of our disciplines. Furthermore, our deepest gratitude goes to the sponsors given at the end of the book and most of all to the Organization for the

Prohibition of Chemical Weapons who have always given their support to our meetings.

As we come together in Ohrid, we do so with renewed appreciation for the importance of shared experiences and face-to-face interactions. We eagerly anticipate the discussions, debates, and collaborations that will shape the future of our disciplines. Let us seize this opportunity to learn, inspire, and foster connections that will resonate long after the congress concludes.

We hope that this Book of Abstracts serves as a source of inspiration and a record of the remarkable work presented at the 26<sup>th</sup> Congress of SCTM. Let us seize this opportunity to celebrate not only our achievements, but also our resilience, determination, and enduring commitment to the pursuit of knowledge. Let us navigate the challenges together, and through our collective efforts, continue to inspire innovation that transforms the world in a positive way.

With warm regards,

Prof. Zoran Zdravkovski, president

Society of Chemists and Technologists of Macedonia



# CONTENTS

## PLENARY LECTURES

- PL 1**      **L. Avérous**      **1**  
BioTeam/ICPEES-ECPM, UMR CNRS 7515, Université de Strasbourg, 25 rue  
Bequerel, 67087 Strasbourg Cedex 2, France  
**Innovative Biobased Polyurethanes from Cradle to Cradle**
- PL 2**      **N. Sojic**      **2**  
University of Bordeaux, Bordeaux INP, ISM, UMR CNRS 5255, 33607  
Pessac, France  
**Ultrasensitive Electrochemiluminescence Imaging of Single  
Entities: From Cells to Biomolecules**

## INVITED LECTURES

- IL 1**      **V. Mišković-Stanković**      **3**  
Faculty of Ecology and Environmental Protection, University “Union - Nikola  
Tesla”, Cara Dušana 62-64, 11000 Belgrade, Serbia.  
**Biocompatible Poly(Vinyl Alcohol)-Based Hydrogels for Medical Applications**
- IL 2**      **L. Hes**      **4**  
Faculty of Textile Technology, Technical University of Liberec,  
Liberec, Czech Republic  
**The Effect of Garment Interlayers on Evaporation Resistance of  
Textile Laminates with Hydrophilic Membranes**
- IL 3**      **Mihaela Girtan**      **5**  
Photonics Laboratory, (LPhiA) E.A. 4464, SFR Matrix, Université d’Angers,  
Faculté des Sciences, 2 Bd Lavoisier, 49000 Angers, France  
**On the Properties of Perovskites Thin Films for Solar Cells**
- IL 4**      **E. Bartkiene**      **6**  
Department of Food Safety and Quality, Faculty of Veterinary,  
Lithuanian University of Health Sciences, Mickeviciaus str. 9, LT-  
44307 Kaunas, Lithuania  
Institute of Animal Rearing Technologies, Faculty of Animal Sciences,  
Lithuanian University of Health Sciences, Mickeviciaus str. 9, LT-  
44307 Kaunas, Lithuania  
**Fermentation – From Food Industry By-Products Valorization to  
Neurotransmitters Production**
- IL 5**      **I. Ristić**      **7**  
University of Novi Sad, Faculty of Technology, Bul. Cara Lazara 1, Novi Sad, Serbia  
**Development of Novel Bio-Based Materials with Advanced Properties**
- IL 6**      **I. Martin-Fabiani**      **8**  
Department of Materials, Loughborough University, Leicestershire  
LE11 3TU, UK  
**Harnessing Size Segregation Effects in Film-Forming Formulations**



<b>IL 7</b>	<b>I. Merta</b> Institute of Material Technology, Building Physics, and Building Ecology, Faculty of Civil Engineering, TU Wien, 1040 Vienna, Austria <b>Recycled Aggregate Concrete - Current Challenges</b>	<b>9</b>
<b>IL 8</b>	<b>N. Đurišić-Mladenović</b> University of Novi Sad, Faculty of Technology Novi Sad, Novi Sad, Serbia <b>Occurrence of Contaminants of Emerging Concern in Water Resources and the Related Analytical Challenges</b>	<b>10</b>
<b>IL 9</b>	<b>E. Fidanchevski</b> Ss. Cyril and Methodius University in Skopje, Faculty of Technology and Metallurgy, Ruger Boshkovich 16, 1000, Skopje, N. Macedonia <b>Secondary Raw Materials in Line to The Circular Economy Concept for Supporting Smart Specialization Strategy</b>	<b>11</b>
<b>IL 10</b>	<b>E. Velickova</b> Department of Food Technology and Biotechnology, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University in Skopje, N. Macedonia <b>Impact of Food Texture on Food Oral Processing and Sensory Analysis</b>	<b>12</b>
<b>IL 11</b>	<b>B. Pejova</b> Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University in Skopje, N. Macedonia <b>Quantum Dot Solids with Tunable Optical Properties on Glass Substrates</b>	<b>13</b>
<b>IL 12</b>	<b>J. Petreska Stanoeva</b> Institute of chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University in Skopje, N. Macedonia <b>Phytochemical Analysis: Extraction, Characterization and Diversity of Bioactive Secondary Plant Metabolites</b>	<b>14</b>
<b>IL 13</b>	<b>Y. Joseph</b> TU Bergakademie Freiberg Institut für Elektronik- und Sensormaterialien, Freiberg, Germany <b>Nanomaterial-Based Chemical Sensors</b>	<b>15</b>

## ORAL AND POSTER PRESENTATIONS

### INORGANIC CHEMISTRY AND TECHNOLOGY, INORGANIC MATERIALS AND METALLURGY

#### ORAL PRESENTATIONS

- ICTM O-1** M. Fabián, B. I. Arias-Serrano, H. Kolev, J. Briančin, A. Yaremchenko, **16**  
**Calcium Containing ReAlO<sub>3</sub> (Re = La, Gd) Perovskites. Mechynosynthesis, Morphology and Electrochemical properties**
- ICTM O-2** O. Risteski, H. Gjorgjievska T. Shishkova, A. Chankulovska Tenovska B. **17**  
Boshkovski and S. Bogoevski  
**Modification of Mechanical and Thermal properties of Epoxy-Inorganic Composites**
- ICTM O-3** Vojo Jovanov, Snezana Petrovic, Sinisa Markov, Biljana Angjusheva, Emilija **18**  
Fidancevski, Jonjaua Ranogajec  
**Frost Resistance and Biocorrosion of Ceramic Composites**
- ICTM O-4** R. Mravljak, A. Podgornik **19**  
**Silver Nanoplates: Morphology Exhibiting Strong Plasmonic and Catalytic Properties**

#### POSTER PRESENTATIONS

- ICTM P-1** S. Knežević, M. Ivanović, D. Kisić, S. Nenadović, J. Potočnik and M. Nenadović **20**  
**Microstructural Analysis of Thermally Treated Geopolymer Incorporated with Neodymium**
- ICTM P-2** M. Nenadović, D. Kisić, M. Ivanović, S. Knežević, S. Nenadović and L. Kljajević **21**  
**Physicochemical, Radiological and Structural Properties of Alkali Activated Materials – Future Trends and Applications**
- ICTM P-3** M. Rosić, M. Milošević, M. Čebela, V. Dodevski, V. Lojpur, R. Ljupković **22**  
and A. Zarubica  
**Investigation of Co<sub>0.9</sub>Ho<sub>0.1</sub>Mo<sub>4</sub> Nanopowders Obtained by Glycine Nitrate Procedure**
- ICTM P-4** S. Nenadović, L. Kljajević, M. Nenadović, M. Ivanović, S. Knežević, N. **23**  
Mladenović Nikolić and I. Vukanac  
**Green Alkali Activated Materials Based on The Different Precursors**
- ICTM P-5** J. Gulicovski, M. Nenadović, M. Mirković, Lj. Kljajević, I. Bošković, M. **24**  
Vukčević and S. Nenadović  
**Preparation and Performance of Low Content Carbon Geopolymer**
- ICTM P-6** D.Kočović S. Shova, Z. D. Tomić and Ž. Jaćimović **25**  
**Molecular and Crystal Structure of the Bis(Acetato)-Bis(4-Methyl-1h-Pyrazole)-Zinc(Ii)**
- ICTM P-7** M. Šuljagić, L. Andjelković, and D. Jeremić **26**  
**Semiconducting Co<sub>3</sub>O<sub>4</sub> Nanocatalyst Prepared by Eco-Friendly Thermal Decomposition**
- ICTM P-8** V.Mangovski K.Anastasova, F.Godjo and A.M.Cvetanovska **27**  
**Production of Silver Salts in Alkaloid AD Skopje**

ICTM P-9	<u>G. Radića</u> and V. Jevtićb <b>Synthesis and Characterization Of New Copper(II) and Palladium(II) Complexes with S,O-Tetradentate Ligand as Derivative of Thiosalicylic and Thiopropionic Acids</b>	28
ICTM P-10	<u>N. N. Mladenović Nikolić</u> , S. Knežević, M. Ivanović, M. M. Mirković, M. Maletić, L. M. Kljajević and K. V. Trivunac <b>Structural Characteristics and Adsorption Properties of Alkali Activated Blends Ashes/Metakaolin</b>	29
ICTM P-11	<u>T. Skalar</u> , J. Rozman, A. Pondelak <b>Improving the Surface Consolidation of Historical Material Using Calcium-Based Consolidants</b>	30
ICTM P-12	<u>M. Shopska</u> , K. Tenchev, G. Kadinov <b>Heterogeneity of Adsorption and Reaction Sites on Silica Supported (10%Co+0.5%Pd) Catalyst Surfaces During CO Hydrogenation</b>	31
ICTM P-13	<u>M. Ivanović</u> , S. Knežević, M. Mirković, Lj. Kljajević, M. Nenadović, N. Mladenović Nikolića and S. Nenadović <b>Physico-Chemical Properties of Geopolymers Based on Metakaolin with The Addition of Organic Phase PVA</b>	32
ICTM P-14	<u>O. Porodko</u> , M. Fabián, H. Kolev, M. Lischnichuk, M. Zukalová, V. Girman <b>Development of High Entropy Spinel Oxides Prepared via Ball Milling</b>	33
ICTM P-15	<u>G. A. Mousdis</u> , T. Giannakis, S-K Zervou, A. Hiskia, T. Triantis, C. Christophoridis, D. Iossifidis, and M. Kandyla <b>Photocatalytic Activity of Sol-Gel Prepared TiO2 Thin Films Doped with Degussa Nanoparticles</b>	34
ICTM P-16	<u>B. Cekova</u> , M. Marina – Puncheva, and F. Jovanovski <b>Application of Zeolite in Agriculture</b>	35
ICTM P-17	B. Jankulovska, <u>B. Peeva</u> , L. Robeva Čukovska, E. Fidanchevski <b>Characterization of Pottery Vessels Excavated at The Archaeological Site Stobi in Republic of North Macedonia</b>	36
ICTM P-18	<u>E. Stojchevska</u> and A. Bužarovska <b>Electrospun BaTiO3 Nanofibers</b>	37
ICTM P-19	<u>B. Cheliku Ramadani</u> , S. Popovska, M. Bukleski, A. Reka, S. Dimitrovska-Lazovab and S. Aleksovska <b>Synthesis and Investigation of Complex Perovskites with Manganese</b>	38
ICTM P-20	<u>C. Trajkovska</u> , S. Popovska, M. Bukleski, S. Dimitrovska-Lazova and S. Aleksovska <b>Synthesis and Investigation of Ln<sub>1-x</sub>Er<sub>x</sub>Fe<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>3</sub> (Ln = La, Sm; x = 0.2 and 0.4)</b>	39
ICTM P-21	<u>M. Trajkova</u> , D. Stojcheva, M. Bukleskia, S. Dimitrovska-Lazova, S. Aleksovska <b>Synthesis and Characterization of Hybrid Organic-Inorganic Perovskites with Morpholinium as an Organic Cation</b>	40
ICTM P-22	R. Ilieva, <u>D. Rabadjieva</u> , O. Petrov <b>Calcium Phosphate Ceramic Tablets for Studying De- and Remineralization Processes</b>	41

ICTM P-23	<u>K. Sezanova</u> , R. Gergulova and D. Rabadjieva <b>Polycarboxy/Sulfo Betaine Functionalized Calcium Phosphates Obtained by Adsorption Process</b>	42
ICTM P-24	<u>Y. Tuparova</u> , D. Rabadjieva, P. Markov <b>Morphological and Thermal Characteristics of the Mechanochemically Activated Calcium Phosphates</b>	43
ICTM P-25	<u>B. Angiusheva</u> , V. Jovanov, E. Fidanchevski <b>Comparative Crystallization Behaviour of Glass-Ceramics Derived from Raw and Modified Coal Fly Ash</b>	44
ICTM P-26	<u>B. Angiusheva</u> , I. Merta, E. Fidanchevski <b>Alkali Activation of Coal Fly Ash and Construction and Demolition Waste: A Sustainable Path to Innovative Materials</b>	45

## ORGANIC CHEMISTRY, BIOCHEMISTRY AND PHARMACEUTICAL CHEMISTRY

### ORAL PRESENTATIONS

OBPC O-1	<u>I. Erdil</u> , J. Bogdanov, Dz. Kungulovski and N. Atanasova-Pancevska <b>Effect of Pure Anethole and Synergistic Interaction of Anethole with Different Essential Oils- Potential Alternative Biocontrol Products Against Plant Pathogens</b>	46
OBPC O-2	<u>I. Erdil</u> , J. Bogdanov, Dz. Kungulovski, and N. Atanasova-Pancevska <b>Phenol Biodegradation Using Native and Granulated Microorganisms Adapted from Petroleum Wastewater</b>	47
OBPC O-3	<u>J. Ajduković</u> , Đ. Janković, S. Bekić, A. Ćelić and E. Petri <b>New 17<math>\alpha</math>-picolyl Androstane Derivatives: Synthesis, <i>In Vitro</i> Biological Activity and <i>In Silico</i> ADME/T Properties</b>	48
OBPC O-4	<u>M. Chochevska</u> , K. Kolevska, M. Atanasova Lazareva, M. Velichkovska, F. Jolevski, E. Janevik Ivanovska, A. Ugrinska and B. Angelovska <b>The Role of Chemistry in the Development of the Radiosynthesis Methods for Fluorine-18 Radiopharmaceuticals</b>	49
OBPC O-5	<u>J. Kaneti</u> and S. M. Bakalova <b>Model of G-quadruplex Interactions with Heterocyclic Ligands</b>	50
OBPC O-6	M. Khalife, D. Stankovic, V. Stankovic, J. Danicka, F. Rizzotto, V. Costache, A. Slama-Schwok, P. Gaudua and <u>J. Vidic</u> <b>Electrochemical Biosensor Based on NAD(P)H-dependent Quinone Reductase for Rapid and Efficient Detection of Vitamin K<sub>3</sub></b>	51
OBPC O-7	<u>M. Stefanovska</u> * and A. Kjulumoska-Gjorgjievska <b>Method for Analysis of Terpenes in <i>C. Sativa</i> Using Headspace GC-FID and GC-QQQ</b>	52
OBPC O-8	<u>M. P. Savić</u> <sup>a</sup> , T. Lj. Šestić, D. Dj. Škorić, L. Rárová <b>New Thiazole Androstane Derivatives: Synthesis and Cytotoxic Activity</b>	53

### POSTER PRESENTATIONS

OBPC P-1	M. Sazdovska, B. Trifunovski, <u>D. Bachvarovski</u> , B. Janeska Trajkovska, H. Tomovska, M. Ivanoska Zdravkovska, C. Janakieva and Gj. Petrushevski <b>Method Validation for <i>in Situ</i> Identification of Diazepam with Raman Spectroscopy in Pharmaceutical Industry</b>	54
----------	--	----

OBPC P-2	<u>M. Dimitrijević</u> , M. Nešić, M. Mladenović and N. Radulović <b>New Esters from the Essential Oil of <i>Doronicum Columnae</i> Ten</b>	55
OBPC P-3	<u>M. M. Zarić</u> , I. R. Radović and M. Lj. Kijevčanin <b>Molecular Dynamic Simulations in Binary Liquid Mixtures</b>	56
OBPC P-4	<u>I. Kuzminac</u> , S. Bekić, A. Ćelić, D. Jakimov, M. Sakač <b>Synthesis, <i>In silico</i>, and <i>In vitro</i> Biological Testing of Novel 19-halogenated D-homo Lactone Steroids as Potential Antitumor Compounds</b>	57
OBPC P-5	<u>V. Jakimovska Pokupec</u> , M. Stefova, and Gj. Petrushevski <b>A Systematic Study of Esterification of Ibuprofen with Common Alcoholic Excipients using LC-MS/MS</b>	58
OBPC P-6	<u>B. Bogatinovski</u> , M. Stojanovikj, D. Tomovski and F. Godjo <b>Estimation of Measurement Uncertainty for Total Chlorides Content Determination in Concentrated Solutions for Hemodialysis</b>	59
OBPC P-7	<u>E. Cvetkovska Bogatinovska</u> , V. Stefov, N. Geshkovski and Gj. Petrushevski <b>Multivariate Analysis Approach in API-Excipient Compatibility Testing in the Development of Pharmaceutical Dosage Forms</b>	60
OBPC P-8	<u>I. Todorovska</u> , K. Dragarska, N. Hadzi-Petrushev, M. Mladenov and J. Bogdanov <b>Investigating the Structural Features of Some Monocarbonyl Curcuminoids: Insights Into Their Pharmacological Profile</b>	61
OBPC P-9	<u>K. Dragarska</u> , I. Todorovska, R. Stojchevski, N. Hadzi-Petrushev, M. Mladenov, D. Avtanski, and J. Bogdanov <b>Design and <i>in Vitro</i> Evaluation of Monocarbonyl Curcumin Analogs Eliciting Breast Cancer Cytotoxicity</b>	62
OBPC P-10	<u>Z. D. Petrović</u> J. Branković, V. P. Petrović, M. Vukić, D. Simijonović, and V. Milovanović <b>Inclusion Complexes of <math>\beta</math>-Cyclodextrin and Selected Phenolic Acid Derivatives</b>	63
OBPC P-11	<u>M. Mladenović</u> , J. Liu, E.C. Muller, C. Lima, F. Boylan, and N. Radulović <b>The Essential Oil of <i>Acmella Oleracea</i> (L.) R.K. Jansen: Structural Elucidation and Acute Toxicity of New Esters</b>	64
OBPC P-12	<u>M. Mladenović</u> , B. Ilić, L. Vasić, J. Milovanović, M. Šević, S. Makarov, and N. Radulović <b>Chemical Composition of the Defensive Secretion from <i>Pachyiulus Varius</i> (Fabricius, 1781) (Diplopoda, Julida)</b>	65
OBPC P-13	<u>D. Stojanov</u> , M. Stojanovska Pecova, E. Stefova, B. Angelevska, M. Chachorovska, D. Kuneski and V. Stefov <b>Metal salts of Ascorbic Acid and Their Stability at Stress Conditions</b>	66
OBPC P-14	<u>B. Trifunski</u> , D. Bacvarovski, H. Tomovska, C. Janakieva, M. Ivanoska Zdravkovski and Gj. Petrushevski <b>Method Optimization and Validation for Particle Size Distribution for Cefixime Trihydrate Using Malvern Mastersizer 3000</b>	67
OBPC P-15	<u>L. Pavun</u> , A. Janošević-Ležaić and S. Uskoković-Marković <b>Zinc Complex of 3-Hydroxyflavone: Spectrophotometric Determination and their Antioxidative Profiles</b>	68
OBPC P-16	<u>V. P. Petrović</u> , J. Branković and Z. D. Petrović <b>Selected Phenolic Hydrazones as Potential M<sup>Pr</sup>o Inhibitors</b>	69

OBPC P-17	<u>J. Branković</u> , Z. D. Petrović, and V. P. Petrović <b>Synthesis, Characterization, and Antioxidant Activity of the Selected Phenolic Hydrazone Derivatives</b>	70
OBPC P-18	<u>B. Cekova</u> , F. Jovanovski <b>The Role of Proteins in Cosmetic Preparations</b>	71
OBPC P-19	K. Krstevska, M. Sencheva Petrevska, I. Jordanov and <u>V. Dimova</u> <b>A Boiled-Egg to Predict Gastrointestinal Absorption and Brain Penetration of Sulfonylurea Herbicides</b>	72
OBPC P-20	V. Dimova, <u>M. S. Jankulovska</u> and M. Sencheva Petrevska <b>Analysis of QSAR Models Quality</b>	73
OBPC P-21	K. Krstevska, M. Sencheva Petrevska, D. Dimitrovski and <u>V. Dimova</u> <b>QSAR Modeling of Sulfonylurea Herbicides</b>	74
OBPC P-22	<u>I. Davkova</u> , Z. Zhivikj, N. Draskovik, K. Shutevska, T. Kadifkova Panovska, A. Trajkovska, S. Kulevanova, I. Cvetkovikj Karanfilova, M. Karapandzova <b>Volatile Compounds and Cytotoxic Effects of <i>Lavandulae Aetheroleum</i></b>	75
OBPC P-23	<u>Zuljeta Fetaovska</u> , Nora Dochi- Shakiri, Jasmina Petreska Stanoeva and Jane Bogdanov <b>Analysis of Organic Compounds in Single-Use Gloves and Surgical Masks Using Spectroscopic and Gas Chromatographic Methods</b>	76
OBPC P-24	<u>Nora Dochi- Shakiri</u> , <u>Zuljeta Fetaovska</u> and Jane Bogdanov <b>GC-MS Analysis of Volatile Organic Compounds in Aerosol and Integral Parts Of IQOS® E-Cigarettes</b>	77
OBPC P-25	<u>E. Stefova</u> , M. Stojanovska Pecova, D. Stojanov and M. Chachorovska <b>Investigating the Interactions Between Active Pharmaceutical Ingredients and Lubricants Using FTIR Spectroscopy and DSC Analysis</b>	78
OBPC P-26	<u>D. Trajkovikj</u> , M. Trajcev, B. Janeska Trajkovska and Gj. Petrusovski <b>Determination of Trace Metals in Salbutamole Sulfate with ICP-OES</b>	79
OBPC P-27	<u>M. Đorđević Zlatković</u> , D. Zlatković and N. Radulović <b>Resolving a Long-Standing Discrepancy: Investigating the Configuration and Occurrence of 2,6-cyclocuparan-3-ols</b>	80
OBPC P-28	<u>M. Đorđević Zlatković</u> , D. Zlatković and N. Radulović <b>Chemical Analysis of the Diethyl-Ether Extract of <i>Microbiota Decussata</i></b>	81
OBPC P-29	<u>D. Zlatković</u> , M. Đorđević Zlatković, N. Radulović <b>Comparative Analysis of Marjoram Essential Oils from Serbia and Egypt</b>	82

## ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

### ORAL PRESENTATIONS

AEC O-1	<u>N. Đurišić-Mladenović</u> , J. Živančev, I. Antić Z. Šereš, B. Pajin, N. Maravić, V. Vasić, D. Lukić, M. Šćiban, S. Panić, M. Petronijević, J. Crespo, and M. Farre <b>Innovative Approaches in Monitoring and Removal of Contaminants of Emerging Concern from Water</b>	83
AEC O-2	<u>V. Mula</u> , J. Bogdanov, J. Petreska Stanoeva, Z. Zdravkovski <b>Detection of Organic Compounds in Outdoor Urban Air in Kosova and Macedonia Using a Passive Sampling Technique and Gas Chromatography Coupled with Mass Spectrometry</b>	84

AEC O-3	<u>M. Puiu</u> , O.M. Istrate, V. Mirceski and C. Bala <b>Peptide-Molecular Wires as Conductive Supports in Electrochemical Bioassays</b>	85
AEC O-4	<u>M. Wawrzekiewicz</u> , B. Podkościelna and B. Tarasiuk <b>Starch-Based Adsorbents for Environmental Applications</b>	86
AEC O-5	S. Ayaz, S. Uluçay, A. Üzer, <u>Y. Dilgin</u> , and R. Apak <b>Fabrication of a Novel Colorimetric Paraoxon Ethyl Biosensor Using CUPRAC Reagent as a Chromogenic Reagent</b>	87
AEC O-6	<u>K. Dimic-Misic</u> , A. Brkic, V. Spasojevic-Brkic, E. Barcelo Rodriguez, M. Imani, P. Gane <b>Filtering Efficiency of Pollutants in Heavy-Duty Vehicle Cabins</b>	88
AEC O-7	<u>Z. Zhivikj</u> , D. Stefanovski, J. Dimzova, T. Kadifkova Panovska, L. Petrushevska-Tozi, M. Karapandzova, T. Petreska Ivanovska <b>Rapid GC-MS/MS Analysis of Multiple Pesticide Residues in Cereal-Based Products</b>	89
<i><u>POSTER PRESENTATIONS</u></i>		
AEC P-1	<u>V. Mula</u> , J. Bogdanov, J. Petreska Stanoeva, Z. Zdravkovski <b>Pinpointing the Origin of Volatile Organic Compounds in Urban Air Using Passive Sampling and Gas Chromatographic Methods</b>	90
AEC P-3	<u>J. Krstić</u> , D. Paunović, D. Dimitrijević, B. Stojanović and S. Stojanović <b>Determining the Chemical Quality of Drinking Water in Central Serbia</b>	92
AEC P-4	<u>L. Velkoska-Markovska</u> , M. S. Jankulovska, S. Andonova, Lj. Karakashova, F. Babanovska-Milenkovska <b>RP-HPLC Method for Simultaneous Determination of Some Food Additives in Beverages</b>	93
AEC P-5	<u>L. Velkoska-Markovska</u> and B. Petanovska-Ilievska <b>RP-HPLC Method for the Determination of Malathion in Pesticide Formulation</b>	94
AEC P-6	<u>E. Pecev-Marinković</u> , I. Rašić Mišić, A. Pavlović, S. Tošić, A. Miletić Ćirić and J. Mrmošanin <b>Application of the Kinetic-Spectrophotometric Method for Co(II) Ion Determination in Baby Tea Samples</b>	95
AEC P-7	E. Osmani, I. Dimitrievska, P. Paunovic, K. Atkovska and <u>A. Grozdanov</u> <b>Fly Ash/Chitosan Composites as Adsorbent of Heavy Metal Ions</b>	96
AEC P-8	<u>I. Ćurić</u> , and D. Dolar <b>Opportunities and Challenges in Wastewater Treatment with Membrane Pressure Processes</b>	97
AEC P-9	<u>M. Karadjov</u> , D. Pavlova, M. Marinov, and I. Karadjova <b>Edible Plants and Aquatic Systems in Serpentine Region in Bulgaria</b>	98
AEC P-10	<u>M. Radoičić</u> , A. Kovačević, D. Marković, and M. Radetić <b>Carbonized Jute Sorbent for Oil Cleanup</b>	99
AEC P-11	I. Sofronievska*, M. Stefova, J. Petreska Stanoeva, J. Bogdanov <b>Comparison of Different Approaches for Quantification of Volatile Organic Compounds in Ambient Air</b>	100

AEC P-12	<u>R. Tomaš</u> <b>Volumetric Properties of Solutions of 1-Ethyl-3-Methylimidazolium Chloride Ionic Liquid in Tetraethylene Glycol at Different Temperatures</b>	101
AEC P-13	<u>I. Trajković</u> , M. Sentić, A. Miletić and A. Onjia <b>The Potential Ecological Risk Assessment of Heavy Metals in an Urban Shallow Lake</b>	102
AEC P-14	I. Trajković, <u>M. Sentić</u> , I. Deršek-Timotić, S. Cvetković, Z. Stojanović and A. Onjia <b>Polycyclic Aromatic Hydrocarbons in Dry Herbs: Source Identification, Quantification, and Health Risk Assessment</b>	103
AEC P-15	<u>N. Velinov</u> , J. Mitrović, M. Radović Vučić, M. Kostić, M. Petrović, S. Najdanović, A. Bojić <b>Kinetic and Equilibrium Studies About Sorption Removal of Textile Dye from Water</b>	104
AEC P-16	<u>N. Velinov</u> , J. Mitrović, M. Radović Vučić, M. Kostić, M. Petrović, S. Najdanović, A. Bojić <b>A Comparative Study on The Degradation of Textile Dyes With UV-Activated Peroxide and Peroxydisulfate</b>	105
AEC P-17	<u>Z. Veličković</u> , Z. Bajić, R. Karkalić, M. Nikolić, V. Gujaničić and A. Marinković <b>Investigating the Possibility of Using a Cheap Adsorbent Based on Fly Ash to Remove Neonicotinoid Insecticides from Water</b>	106
AEC P-18	<u>B. Dimovska Gonovska</u> , B. Jordanoska Shishkoska, M Glusheska, V. Krsteska, T. Stafilov, V. Pelivanoska, M. Srbinska <b>The Impact of Deltamethrine on Copper and Zinc Content in Oriental Tobacco and Soil</b>	107
AEC P-19	<u>K. Milenković</u> , J. Mrmošanin, S. Petrović, S. Tošić, J. Mutić, D. Kostić, and A. Pavlović <b>Evaluation of the ICP-AES Method for Element Determination in Samples of Rosa Dumalis Bechst.</b>	108
AEC P-20	<u>M. Srbinska</u> , J. Klopchevska, V. Rafajlovska, V. Pelivanoska, B. Jordanoska Shishkoska, V. Krsteska <b>Pretreatment of Burley Tobacco Stalks as Raw Material for Bioethanol Production</b>	109
AEC P-21	<u>D. Manojlović</u> , T. Mutić, A. Mijajlović, V.V. Avdin, Elena Korina, V. Stanković, and D. Stanković <b>Design of Cobalt Oxide Functionalized Carbon Paste Electrode for the Detection of Levofloxacin</b>	110
AEC P-22	<u>D. Manojlović</u> , A. Mijajlović, T. Mutić, V.V. Avdin, Elena Korina, V. Stanković, and D. Stanković <b>Boron-Doped Diamond Electrode as an Environmental-Friendly Electrochemical Tool for the Detection and Monitoring of Mesotrione in Food Samples</b>	111
AEC P-23	<u>N. Velevska</u> , B. V. Trifunovska, M. G. Kostadinovska, P. Antovska and J. Lazova <b>Development and Validation of RP-HPLC-UV Method for Determination of Related and Degradation Products of Active Pharmaceutical Ingredient in Tablet Formulation</b>	112



<b>AEC P-24</b>	<u>S. Kirovski</u> , M. Manasova, S. Petrovski, G. Mitrovska and Gj. Petrushevski <b>Development of Analytical Method for Quantitative Determination of Propyphenazone Residues on Manufacturing Equipment</b>	<b>113</b>
<b>AEC P-25</b>	D. Trajković, M. Vukčević, M. Maletić, K. Trivunac, A. Perić Grujić, <u>D. Živojinović</u> <b>Modified Fly Ash for Adsorption of Pharmaceuticals from Water: Chemometric Approach to the Optimization of Adsorption Method</b>	<b>114</b>
<b>AEC P-26</b>	<u>K. Trivunac</u> , N. Aćimović, M. Vukčević, M. Maletić, N. Karić, and A. Perić Grujić <b>Removal Of Cadmium(II) Ions from Water by Polyethylenimine Modified Fly Ash</b>	<b>115</b>
<b>AEC P-27</b>	<u>M. Vukčević</u> , K. Miletić, K. Kostić, M. Maletić, N. Karić, K. Trivunac and A. Perić Grujić <b>Modification of Waste Hemp and Flax Fibers for Removal of Selected Sedative Residues from Polluted Water</b>	<b>116</b>
<b>AEC P-28</b>	B. Dimovska, K.S. Stojanoski, <u>N. Kitanovska</u> , O. Paneva, E. Karadzinska, O. Kuzmanovska, M. Milanovska <b>Use of Spectrometric Techniques in The Identification of Mechanical Impurities in Solid Pharmaceutical Dosage Forms</b>	<b>117</b>
<b>AEC P-29</b>	<u>V. Todorovska</u> , M. Manasova, S. Petrovski, G. Mitrovska, Gj. Petrushevski <b>Cleaning Validation of Primary Packaging Equipment Line in Pharmaceutical Industry</b>	<b>118</b>

## **PHYSICAL, STRUCTURAL CHEMISTRY, SPECTROSCOPY AND ELECTROCHEMISTRY**

### *ORAL PRESENTATIONS*

<b>PSSE O-1</b>	<u>I. Dimitrievska</u> , P. Paunovic and A. Grozdanov <b>Optimization of Biochemical Sensitivity of Screen-Printed Electrodes for Monitoring Traces of Anticancer Drugs</b>	<b>119</b>
<b>PSSE O-2</b>	<u>V. Ivanovski</u> T. Becker, I. Predarska, E. Hey-Hawkins and G.N. Kaluderović <b>IR Investigation of Some Organotin(IV) Compounds Immobilized on Mesoporous Silica</b>	<b>120</b>
<b>PSSE O-3</b>	<u>D. V. Tripković</u> , S. I. Stevanović and D. L. Milošević <b>Synergistic Effects of the Supporting Material and Annealing Temperature on the Performance of Pt Thin Film Catalysts</b>	<b>121</b>
<b>PSSE O-4</b>	<u>S. M. Bakalova*</u> and J. Kaneti <b>Computational Modeling of Solvent Effects on Electronic Spectra of Carbonyl Chromophores</b>	<b>122</b>
<b>PSSE O-5</b>	<u>D.G. Dilgin</u> , K. Vural, S. Karakaya, and Y. Dilgin <b>Sensitive Voltammetric Determination of Salbutamol at Nafion and f-MWCNT Modified Disposable Pencil Graphite Electrode</b>	<b>123</b>
<b>PSSE O-6</b>	<u>Thomas G. Mayerhöfer</u> , Ankit K. Singh, Jer-Shing Huang, Christoph Krafft, Juergen Popp <b>Quantitative Evaluation of IR and Corresponding VCD Spectra</b>	<b>124</b>
<b>PSSE O-7</b>	<u>J. Cerar</u> <b>One Century of the Debye-Hückel Equation: A Simple Explanation of its Thermodynamical Background</b>	<b>125</b>

POSTER PRESENTATIONS

PSSE P-1	<u>I. Dimitrievska</u> , P. Paunovic and A. Grozdanov <b>Comprehensive Structural Analysis of Gamma Irradiated Carbon Nanomaterials</b>	126
PSSE P-2	A. Leniart, M.-M. Dzemidovich, A. Kosińska, B. Rudolf and <u>S. Skrzypek</u> <b>The First Electrochemical Studies of Metallocarbonyl Complexes with Imides</b>	127
PSSE P-3	<u>J. Sela</u> , L. Stojanov, M. Bukleski, A. Reka, S. Dimitrovska-Lazova, V. Mirčeski, S. Aleksavska <b>Cyclic Voltammetry Study of DMAPbI<sub>3</sub> Perovskite Material</b>	128
PSSE P-4	<u>K. Najkov</u> , V. Stefov, V. Koleva, M. Najdoski <b>Structural, Spectroscopic and Thermal Analysis of Hydrogenphosphate Salts Ca<sub>2</sub>MH<sub>7</sub>(PO<sub>4</sub>)<sub>4</sub>·2H<sub>2</sub>O (M = K<sup>+</sup>, NH<sub>4</sub><sup>+</sup>)</b>	129
PSSE P-5	<u>R. Idrizovska</u> , <u>M. Organdjieva</u> , L. Stojanov and V. Mirceski <b>Oxidation Mechanism of Dopamine and Serotonin Using Cyclic and Square-Wave Voltammetry</b>	130
PSSE P-6	<u>I. Škugor Rončević</u> , M. Buzuk, M. Buljac, J. Dugeč, and N. Vladislavić <b>Micro-Dendritic Electrodeposited Bismuth and Food Coloring Sensing</b>	131
PSSE P-7	<u>S. I. Stevanović</u> , D.L. Milošević, D. V. Tripković, N.D. Nikolić, V. R. Čosović and V. M. Maksimović <b>Design of PtSnZn Nanocatalysts for Anodic Reactions in Fuel Cells</b>	132
PSSE P-8	<u>A. Cvetkovski</u> and <u>E. Drakalska</u> <b>Correlation of H-bonding Distances and Strengths in API Solvates Case Study on Nitrofurantoin and Pyridoxine</b>	133
PSSE P-9	<u>T. Tushev</u> , S. Harizanova, R. Stoyanova and V. Koleva <b>Phosphate-Based Mixed Polyanion Compounds as Promising Electrode Materials for Post-Lithium Ion Batteries</b>	134
PSSE P-10	<u>A. Simović</u> and J. Bajat <b><i>Pinus Nigra</i> Essential Oil and Its Main Active Components as Sustainable Compounds for Mitigation of Carbon Steel Corrosion</b>	135
PSSE P-11	<u>N.D. Nikolić</u> , J.D. Lović, V.M. Maksimović and S.I. Stevanović <b>Correlation Between Morphology and Structure of Galvanostatically Electrodeposited Tin Dendrites</b>	136
PSSE P-12	<u>J.D. Lović</u> , N.D. Nikolić, P. M. Živković, M. Stevanović <b>Facile Synthesis of Sn-Pd Catalysts with High Performances for Ethanol Electro-Oxidation in Alkaline Medium</b>	137
PSSE P-13	<u>V. S. Cvetković</u> , N. M. Petrović, D. Feldhaus, L. Prasakti, B. Friedrich, J. N. Jovičević <b>Greenhouse Gas Emission from The Rare Earth Metals Electrolysis</b>	138
PSSE P-14	<u>V. S. Cvetković</u> , N. D. Nikolić, M. G. Košević, T. S. Barudžija, S. B. Dimitrijević and J. N. Jovičević <b>Copper Electrodeposition onto Palladium from a Deep Eutectic System Based on Choline Chloride</b>	139
PSSE P-15	<u>D. L. Milošević</u> , S. I. Stevanović and D. V. Tripković <b>Formic Acid Electrooxidation on Cr-Supported Platinum Thin Film Catalyst</b>	140

<b>PSSE P-16</b>	<u>I. Dimitrievska</u> , M. Endekovska, P. Paunovic and A. Grozdanov <b>Graphene-Based Biosensor for Detection of Anticancer Agent Doxorubicin Within a Simulated Biological Matrix</b>	<b>141</b>
------------------	--	------------

## **BIOTECHNOLOGY AND FOOD TECHNOLOGY**

### ORAL PRESENTATIONS

<b>BFT O-1</b>	<u>E. Bartkiene</u> , E. Tolpeznikaite, V. Bartkevics, A. Skrastina, R. Pavlenko, M. Ruzauskas, V. Starkute, E. Zokaityte, D. Klupsaite, R. Ruibys and J. M. Rocha <b>The Changes in Bioactive Compounds During the Fermentation of Spirulina</b>	<b>142</b>
<b>BFT O-2</b>	T. Marinkovic, M. Stamenovic and D. Brkic <b>Shaping the Future of the Food Production by CRISP/Cas9 Gene Editing</b>	<b>143</b>
<b>BFT O-3</b>	<u>M. Jaukovic</u> , A. Popovic, P. Maksic, D. Markovic, P. Drobnyak and V. Radivojevic <b>Fate of Deoxynivalenol During the Production Process of Bakery Products</b>	<b>144</b>

### POSTER PRESENTATIONS

<b>BFT P-1</b>	<u>A. Chadikovski</u> , A. Nagy, J. Klopchevska, E. Velickova Nikova and V. Rafajlovska <b>Physicochemical Characteristics of Scotta from Different Whey Cheese Types</b>	<b>145</b>
<b>BFT P-2</b>	<u>A. Chadikovski</u> , A. Nagy, J. Klopchevska, E. Velickova Nikova and V. Rafajlovska <b>Effect of The Heat Treatment Time on the Whey Cheese Yield</b>	<b>146</b>
<b>BFT P-3</b>	<u>I. Cvetkovič</u> , <u>Karanfilova</u> ; J. Gjorgievska; O. Gigopulu; M. Karapandzova; V. Stoilkovska Gjorgievska; A. Trajkovska; I. Davkova; S. Kulevanova; G. Stefkov <b>Assessment of Silymarin Content in Plant Material and Extracts Using HPLC and Raman spectroscopy</b>	<b>147</b>
<b>BFT P-4</b>	<u>N. Šekuljica</u> , J. Mijalković, S. Jakovetić Tanasković, M. Korićanac, I. Gazikalović, Z. Knežević-Jugović <b>Testing The Quality of White and Green Leaf Proteins Using Mixolab™ for Applications in Bakery Products Formulations</b>	<b>148</b>
<b>BFT P-5</b>	<u>J. Mijalković</u> , <u>N. Šekuljica</u> , S. Jakovetić Tanasković, N. Luković, N. Pavlović, J. Bakrač, and Z. Knežević-Jugović <b>Pumpkin Leaf-Isolated RuBisCo as a Protein Source for Bioactive Peptides</b>	<b>149</b>
<b>BFT P-6</b>	<u>M. Arizanova</u> , E. Velickova <b>Evaluation of Anthocyanins Extracted from Black Rice, Acai and Purple Cabbage Using Uv-Vis Spectroscopy</b>	<b>150</b>
<b>BFT P-7</b>	<u>I. Milenković</u> , Yiqun Zhou, S. Z. Spasić, Roger M. Leblanc, and K. Radotić <b>Effect of Orange-Carbon Dots on Plants' Antioxidative Response in Green Beans Cultivated in the Soil</b>	<b>151</b>
<b>BFT P-8</b>	<u>M. Nikolić</u> , S. Petrović, M. Mitić, J. Mrmošanin, and A. Pavlović <b>Stability of Cyaniding-Derivatives in Homemade Raspberry Jams</b>	<b>152</b>
<b>BFT P-9</b>	<u>M. Arizanova</u> , D. Kostadinova, B. Ristovski, E. Velickova <b>Sensory Analysis of Meat Analogues – Veggie Burgers</b>	<b>153</b>

<b>BFT P-10</b>	<u>S. Stamenković Stojanović</u> , S. Mančić, D. Cvetković, M. Malićanin, B. Danilović and I. Karabegović <b>Volatile Profile of Grašac Wines Produced with Different Commercial Inactivated Yeast Derivatives</b>	<b>154</b>
<b>BFT P-11</b>	<u>D. Kostadinova</u> , D. Doneva Sapceska and M. Petrusheska <b>Organoleptic Characteristics of Laboratory Brewed Herbal Beers</b>	<b>155</b>
<b>BFT P-12</b>	<u>D. Burgu</u> , D. Dimitrovski, M. Temkov, and E. Velickova Nikova <b>Enhancing Strawberry Shelf Life with Essential Oil-Infused Edible Coating</b>	<b>156</b>
<b>BFT P-13</b>	<u>I. Kostoska</u> , M. Stojcevski, D. Dimitrovski* and S. Kuvendziev <b>Improving Lycopene Extraction from Tomato Skins Through Enzymatic Treatment</b>	<b>157</b>

## **POLYMERS AND POLYMER MATERIALS**

### ORAL PRESENTATIONS

<b>POL O-1</b>	<u>A. Ivanoska-Dacicj</u> , P. Makreski, N. Geskovski, J. Karbowniczek, U. Stachewicz, N. Novkovski, I. Ristić, and G. Bogoeva-Gaceva <b>Evaluation of Overall Properties and Cytotoxicity of PEO/rGO Scaffolds for Potential Use in Tissue Engineering</b>	<b>158</b>
<b>POL O-2</b>	<u>B. Podkościelna</u> , M. Wawrzkievicz, and B. Tarasiuk <b>Synthesis, Spectroscopic and Thermal Characterization of New Polymeric Microspheres Based on Starch and Acrylic Monomers</b>	<b>159</b>
<b>POL O-3</b>	<u>M. Prosheva</u> , R. Tomovska, and J. Blazevska Gilev <b>Protective Waterborne Coating Based on G/CNT Hybrid Filler</b>	<b>160</b>
<b>POL O-4</b>	<u>A. Puszka</u> , J. Sikora, and A. Nurzynska <b>Influence of The Type of Soft Segment on Selected Properties of Polyurethane Materials for Biomedical Applications</b>	<b>161</b>
<b>POL O-5</b>	<u>J. Kamov</u> , and <u>Zh. Serafimoski</u> <b>The Effects of Component Changes Within Pultruded Epoxy Resin-Based Products</b>	<b>162</b>

### POSTER PRESENTATIONS

<b>POL P-1</b>	<u>Bulatović</u> , B. Marković, T. Tadić, A. Nastasović, M. Ilić, D. Randjelović and N. Nedić <b>Determination of Antimicrobial Activity Of Copper Activated Macroporous GMA Based Copolymer</b>	<b>163</b>
<b>POL P-2</b>	<u>N. Đorđević</u> , A Božić, A Sknepnek, N Curcic, G Stankov and A Janićijević <b>Optimizing Precipitation Conditions of BNC/Fe<sub>3</sub>O<sub>4</sub> Composites</b>	<b>164</b>
<b>POL P-3</b>	<u>A. Petanova</u> , R. Tomovska, E. González, M. Paulis, J. B. Gilev <b>Production of Thermochromic Poly(Methylmetacrylate/Butyl Acrylate) Based Coatings Via Miniemulsion Polymerization</b>	<b>165</b>
<b>POL P-4</b>	B. Samardjioska Azmanoska, V. Velkovska, A. Pizhov, S. Risteska, S. Samak, B. Kostadinoska <b>Determiration of Parameters for Obtaining Resin Film for Production of Prepreg by Hotmelt Procedure</b>	<b>166</b>

<b>POL P-5</b>	<u>T. Skalar</u> , P. Štukovnik, M. Marinšek <b>Characterization of the Thermal Behaviour of a Paraffin-based Phase Change Material</b>	<b>167</b>
<b>POL P-6</b>	<u>Škugor Rončević</u> , B.-M. Kukovec, M. Buzuk, M. Buljac, N. Vladislavić and J. Dugeč <b>An Electrochemical Dopamine Sensor Based on a Cobalt(II) Coordination Polymer, {[Co(1,2-Bpe)<sub>2</sub>(H<sub>2</sub>O)<sub>2</sub>]<sup>2+</sup>]<sub>N</sub>-Modified Electrode</b>	<b>168</b>
<b>POL P-7</b>	<u>S. Maletić</u> , D.D. Cerović, I. Petronijević, M. Milić and N. Jović Orsini <b>Interfacial Polarization and Dielectric Properties of Epoxy/Graphite Flakes Composites</b>	<b>169</b>
<b>POL P-8</b>	<u>P. Miladinova</u> , and P. Najdenova-Marinova <b>The Synthesis and Photostability of Some New 1,8-Naphthalimide Derivative for Fluorescent Polymers</b>	<b>170</b>
<b>POL P-9</b>	<u>K. Młynarczyk</u> , B. Podkościelna, M. Jaszek <b>Study of the Structure and Antimicrobial Properties of Composites based on (met)acrylates</b>	<b>171</b>
<b>POL P-10</b>	<u>M. Prosheva</u> , A. Toteska and J. Blazevska Gilev <b>Synthesis of Lignin-Based Polymer Coatings by Miniemulsion Polymerization</b>	<b>172</b>
<b>POL P-11</b>	<u>M. Prosheva</u> , B. Ozmen-Monkul, R. Tomovska, G. Gumus, D. K. Taskin, and J. Blazevska Gilev <b>Determination of the Optical Band Gap Energies of rGO/Metal Phthalocyanine/Polymer Nanocomposites</b>	<b>173</b>
<b>POL P-12</b>	<u>M. Prosheva</u> , M. Sencheva Petrevska and V. Dimova <b>Prediction of the Refractive Index of Polymers Using QSAR</b>	<b>174</b>
<b>POL P-13</b>	<u>M. Kubin</u> and A. Bužarovska <b>Nanocomposite PVDF/ZnO Piezoelectric Foams</b>	<b>175</b>
<b>POL P-14</b>	<u>I. Stefanović</u> , E. Džunuzović, A. Dapčević, B. Marković, T. Tadić, S. Bulatović, and J. Džunuzović <b>Viscoelastic Properties of Polycaprolactone Based Polyurethane Networks</b>	<b>176</b>
<b>POL P-15</b>	<u>B. Marković</u> , I. Stefanović, T. Tadić, Z. Sandić, S. Bulatović, A. Nastasović and A. Onjia <b>Kinetic and Isotherm Non-Linear Study of Cr(VI) Sorption onto Amino-Modified Macroporousgma Based Copolymer</b>	<b>177</b>
<b>POL P-16</b>	<u>T. Tadić</u> , B. Marković, V. Pavlović, S. Bulatović, A. Nastasović, and A. Onjia <b>Synthesis and Characterization of Magnetic Molecularly Imprinted Polymer for Aniline Recognition</b>	<b>178</b>
<b>POL P-17</b>	<u>A. Puszka</u> , K. Mikon and J. Sikora <b>Investigation of the Effect of Introducing Siloxane Groups into the Polymer Chain on Selected Properties of Polyurethane Materials</b>	<b>179</b>
<b>POL P-18</b>	<u>M. Prosheva</u> , A. Toteska and J. Blazevska Gilev <b>UV Protective Polymer Coatings Based on Lignin Filler</b>	<b>180</b>

## CHEMICAL ENGINEERING

### ORAL PRESENTATIONS

- CE O-1 N. Barrientos, F. Diaz 181  
**Application of Nuclear Measurement Technologies as Tools to Characterize Mineral Processing Operations**

### POSTER PRESENTATIONS

- CE P-1 D. Z. Trotter Z. B. Todorović, D. R. Đokić-Stojanović, B. S. Đorđević, and V. B. Veljković 182  
**Glycine as a Safe Purification Agent of Crude Biodiesel Produced from Inedible Oil Under Mild Conditions**
- CE P-2 A. Sinanova, L. Atanasovska, M. Davcheva Jovanoska, E. Karadzinska and O. Paneva 183  
**State of the Art Process and Process Controls for Production of Concentrates for Haemodialysis**
- CE P-3 S. S. Mladenović, I. M. Savić, I. M. Savić Gajić 184  
**The Influence of Extraction Techniques on The Antioxidant Potential of Chaga Mushroom Extracts**
- CE P-4 M. Ognjanović, M. Radović, M. Mirković, S. Vranješ-Đurić, B. Dojčinović, D. Stanković and B. Antić 185  
**Engineering Multi-Core Flower-like Magnetic Nanoparticles with High Intrinsic Loss Power**
- CE P-5 M. Ognjanović, T. Stanojković, B. Dojčinović, M. Radović, M. Mirković, D. Janković, S. Vranješ-Đurić, and B. Antić 186  
**Radiolabeled Surface-modified Single-core (Mg, Fe)<sub>3</sub>O<sub>4</sub> Colloidal Nanoparticles as Vectors in Radionuclide Therapy of Cancer**

## TEXTILE ENGINEERING

### POSTER PRESENTATIONS

- TE P-1 M. Miljkovic, V. Miljkovic, D. Trajkovic 187  
**Examination of the Wavelength Dependence of K/S Values for Samples Dyed in a Two-Component System**
- TE P-2 N. Ćirković, S. Kapuši, D. Trajković, N. Stamenković, T. Šarac, J. Stepanović 188  
**The Influence of the Characteristics of Knitwear in Parts of Classic Socks on Some Usage Properties**
- TE P-3 D. Marković, J. Petkovska, N. Mladenovic, M. Radoičić, D. Rodriguez-Melendez, M. Radetić, J. C. Grunlan and I. Jordanov 189  
**Multifunctional Cotton Impregnated with Multilayer Chitosan/Lignin Nanocoating and Ag Nanoparticles**
- TE P-4 A. Ivanovska, M. Milošević, J. Ladarević, B. Dojčinović, T. Matić, N. Barać and M. Kostić 190  
**Sodium Periodate Oxidation of Raw Jute Fabric – A Novel Approach for Tuning the Jute Structure and Properties**

## EDUCATION

### ORAL PRESENTATIONS

- EDU O-1** Bojan Šarac, San Hadži and J. Cerar **191**  
**Computer Generated and Graded Online Physical Chemistry Exam**

### POSTER PRESENTATIONS

- EDU P-1** A. Naumoska, S. Aleksovska **192**  
**Identification of Difficulties and Misconceptions in the Study of Organic Chemistry in High School**
- EDU P-2** R. Karkalić, Z. Veličković M. Stojičić, S. Cvetanović<sup>c</sup> P. Otrisal, and S. Florus **193**  
**Implementation of New Methodology of Testing of Body Cooling Systems into the Education Process**
- EDU P-3** L. Atanasovska, A. Sinanova, M. Davcheva Jovanoska, E. Karadzinska, S. Spirovska Burchevska and O. Paneva **194**  
**The Importance of Quality, Safety and Environmental Aspects in Chemical Industry**
- EDU P-4** D. Zlatković, M. Đorđević Zlatković, N. Radulović **195**  
**Problem-Solving with Python: Modeling of Lanthanide Shift Reagent Complexes**
- EDU P-5** Ž. Zdravković, S. Simić, G. Zajic, F. Krivokapic and J. Pavlović **196**  
**Analysis of the Application of Information Technologies in Teaching**

## ICTM P-13

### Physico-Chemical Properties of Geopolymers Based on Metakaolin with The Addition of Organic Phase PVA

M. Ivanović,<sup>a</sup> S. Knežević,<sup>a</sup> M. Mirković,<sup>a</sup> Lj. Kljajević,<sup>a</sup> M. Nenadović,<sup>b</sup> N. Mladenović Nikolić<sup>a</sup> and S. Nenadović<sup>a</sup>

<sup>1</sup>*Department Department of Materials, Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, Mike Petrovića Alasa 12-14, Vinča, 11000 Belgrade, Serbia*

<sup>2</sup>*Department of Atomic Physics, Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, Mike Petrovića Alasa 12-14, Vinča, 11000 Belgrade, Serbia,*

\* [marija@vin.bg.ac.rs](mailto:marija@vin.bg.ac.rs)

Recently, there has been a growing interest in mixing two different systems, organic and inorganic, which would contribute to some improved properties, such as adjustment time, reduced shrinkage, improved mechanical properties and durability. A new class of geopolymer composites with an organic matrix has been developed with the main goal of improving the fire resistance of organic polymers and reducing the production of smoke resulting from their combustion, as well as improving mechanical properties.

For the synthesis of hybrid geopolymer materials, metakaolin with the addition of organic phase poly (vinyl alcohol) (PVA) was used as the starting material. For the synthesis of alkaline activator, a solution of NaOH with a molarity of 12 mol / dm<sup>3</sup> was used. The chemical composition of the samples was determined by XRF analysis. Structural and phase characterization of hybrid and reference materials were analyzed using X-ray diffraction (XRD) and Fourier-transform infrared spectroscopy (FTIR), which revealed new phases in the PVA-added samples. The results show that the content of added PVA in the reaction mixture affects the phase composition of the synthesized materials. The morphology was analyzed using a scanning electron microscope with energy dispersive spectroscopy (SEM/EDS), where efflorescence was observed and identified. After characterizing the geopolymer with the addition of PVA, we obtained a material that is far more porous than the basic sample, and we can conclude that we have synthesized a material that shows good mechanical properties.

**Keywords:** metakaolin, geopolymer materials, organic polymer, organic phase, PVA