

BOOK of ABSTRACTS

27th Congress of Chemists and Technologists of Macedonia

27

2024

25-28 9 2024 OHRID, RN MACEDONIA





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

27th Congress of SCTM

BOOK of ABSTRACTS

**25–28 September 2024
Metropol Lake Resort
Ohrid, N. Macedonia**

Skopje, 2024



Сојуз на хемичарите и технолозите на Македонија
Society of Chemists and Technologists of Macedonia
25–28 September 2024, Metropol Lake Resort, Ohrid

SCIENTIFIC COMMITTEE MEMBERS

President

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

Members:

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

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

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

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

ORGANIZING COMMITTEE MEMBERS

President

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

Members:

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

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

Despina Kostadinova, MSc, Ss. Cyril and Methodius University in Skopje, Faculty of Technology and Metallurgy, Skopje, N. Macedonia

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

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

Ministry of Education and Science of N. Macedonia



Република Северна Македонија

Министерство за
образование и наука

Ss. Cyril and Methodius University in Skopje



The 27th Congress of SCTM is a



EuChemS

European Chemical Society

recognized event.

Dear Esteemed Colleagues and Participants,

We are pleased to present the Book of Abstracts for the 27th Congress of the Society of Chemists and Technologists of Macedonia. Like our previous congresses over the past two decades, this event takes place in the cradle of Slavic literacy—a region with a rich history of intellectual accomplishments. We trust that the heritage, along with the beauty of Lake Ohrid and the city itself, will not only make your stay enjoyable but also serve as an added source of inspiration for your own work.

The SCTM congresses have grown into a prominent platform for regional researchers from all fields of chemistry and chemical engineering. We are honored to welcome plenary and invited speakers not only from Macedonia but also from countries like Czechia, Denmark, Italy, Serbia, Spain, and the United Kingdom. In addition, we are proud to feature a wide range of oral and poster presentations from researchers representing Austria, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Germany, Greece, Italy, Kosovo, Montenegro, Poland, Serbia, Slovenia, Spain, Romania, and Russia. With nearly 200 presentations from 550 authors and co-authors, it is especially gratifying to see many attendees returning as regular participants.

We hope this Book of Abstracts serves as both a source of inspiration and a record of the exceptional work presented at the 27th SCTM Congress. Let's use this opportunity to celebrate not only our achievements but also our resilience, determination, and steadfast commitment to advancing knowledge. Together, we can overcome challenges and, through our collective efforts, continue to drive innovations that make a positive impact on the world.

We extend our heartfelt gratitude to Prof. Jadranka Blaževska Gilev and Prof. Biljana Angjuševa for once again taking on the challenging task of organizing this year's congress. Their tireless efforts and dedication ensured the event's success. We also wish to thank all the members of the scientific and organizational committees who worked tirelessly behind the scenes, with special recognition to Assoc. Prof. Vojo Jovanov, Marija Prosheva and Despina Kostadinova for their management of the website, Book of Abstracts, and other essential tasks.

Our thanks also go to the reviewers and participants whose contributions have been vital to the success of this Congress. Your commitment to the scientific mission emphasizes the value of collaboration, especially during uncertain times. It is through the exchange of ideas, sharing of knowledge, and building of connections that we strengthen our community and advance our fields. Lastly, we express our sincere gratitude to the sponsors, acknowledged at the end of this book, for their generous support.

Prof. Zoran Zdravkovski, president

Society of Chemists and Technologists of Macedonia



CONTENT

PLENARY LECTURES

PL 1	STEFANO BELLUCCI INFN-Laboratori Nazionali di Frascati, Frascati Graphene-based nanomaterials for water purification	1
PL 2	RADMILA TOMOVSKA Polymat Institute of the University of the Basque Country UPV/EHU, Donostia-San Sebastian Emulsifier-Free Waterborne (Meth)acrylic Formulations Enhanced with Zwitterionic Monomers	2
PL 3	ELIA TOMÁS-PEJÓ IMDEA-Energy Institute, Madrid Carboxylates platform as efficient alternative to sugar platform when targeting at microbial oils production	3
PL 4	MIRJANA KOSTIC University of Belgrade, Faculty of Technology and Metallurgy – Serbia Cellulose: from Natural to Novel Cellulose-based Functional Materials	4

INVITED LECTURES

IL 1	ANDREW PETER EDWARD YORK Johnson Matthey Technology Centre, Sonning Common, U.K. <i>Johnson Matthey Catalysis Research: How Novel Science and Characterization Supports Technology</i>	5
IL 2	GORAN STOJANOVIC Faculty of Technical Science, University of Novi Sad, Novi Sad, Serbia How to Attract EU Funds for Funding Your Innovative Research	6
IL 3	OLE MEJLHEDE JENSEN Technical University of Denmark, Lyngby, Denmark Building Smarter	7
IL 4	KATEŘINA ŠEBKOVÁ RECETOX, Masaryk University, Brno, Czech Republic Critical Importance of Environmental Data and Analysis for Addressing the Triple Planetary Crisis	8
IL 5	SNEZANA VUCETIC University of Novi Sad, Faculty of Technology Novi Sad, HeritageLab, Novi Sad, Serbia The Secrets Behind the Eyes of Mona Lisa	9
IL 6	ONDŘEJ ADAMOVSÝ RECETOX, Faculty of Science, Masaryk University, Brno, Czechia The Microplastic Visualization and Analytical Challenges	10
IL 7	ALEKSANDRA BUŽAROVSKA Ss Cyril and Methodius University, Faculty of Technology and Metallurgy, Skopje, N. Macedonia Piezoelectric Polymeric Materials as Energy Harvesting Systems	11

IL 8	VLADIMIR IVANOVSKI Ss. Cyril and Methodius University in Skopje, Faculty of Natural Sciences and Mathematics, Institute of Chemistry, Skopje, Macedonia IR Reflectance Spectroscopy with Some Examples of Its Application	12
IL 9	DARKO DIMITROVSKI Ss. Cyril and Methodius University, Faculty of Technology and Metallurgy, Skopje, N. Macedonia Harnessing Anoxygenic Phototropic Bacteria for Bioconversion of Food By-Products	13

ORAL AND POSTER PRESENTATIONS

ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

ORAL PRESENTATIONS

AEC O-1	<u>Vllaznim Mula</u> , Jane Bogdanov, Jasmina Petreska Stanoeva, Lulzim Zeneli and Zoran Zdravkovski Assessment of Volatile Organic Compounds in Indoor and Outdoor Air across N. Macedonia and Kosovo	14
AEC O-2	<u>Musaj Paçarizi</u> , Epir Qeriqi, Berat Sinani, Krste Tašev and Trajče Stafilov Mining Landfills in the Republic of Kosovo - A Case of the Artana Landfill	15
AEC O-3	<u>Marijana Kragulj Isakovski</u> , Dragana Tamindžija, Jelena Beljin, Irina Jevrosimov, Tamara Apostolović, Srđan Rončević, Snežana Maletić The Impact of Inoculated Biochar on Pesticide Adsorption and Biosorption in Soil	16
AEC O-4	<u>Sofija Kostandinovska</u> , Marija Chobanova, Slavcho Hristovski, Dzoko Kungulovski and Natalija Atanasova-Pancevska Ecology of Soil Species of the Genus Bacillus and the Influence of Environmental Factors on their Biologically Active Compounds	17

POSTER PRESENTATIONS

AEC P-1	<u>Marina Maletić</u> , Marija Vukčević, Nataša Karić, Katarina Trivunac and Aleksandra Perić Grujić Adsorption of Diazepam onto Differently Modified Waste Cotton-based Yarn	18
AEC P-2	<u>Marina Maletić</u> , Nataša Karić, Marija Vukčević, Aleksandra Perić Grujić and Katarina Trivunac The Adsorption Efficiency of Selected Pharmaceuticals from Water Using Chemically Modified Potato Starch	19
AEC P-3	<u>Majlinda Ramadani</u> , Elida Lecaj, Adelina Haskaj, Bahri Sinani and Musaj Paçarizi Assessment of Heavy Metal Contamination in The Soils of Mitrovica City in The Republic of Kosovo	20
AEC P-4	<u>Vllaznim Mula</u> , Jane Bogdanov, Jasmina Petreska Stanoeva, Lulzim Zeneli and Zoran Zdravkovski Assessing Volatile Methyl Siloxanes in Indoor Environments Using Passive Sampling	21
AEC P-5	<u>Enisa Selimović</u> , Bojana Veljković, Aleksandra Pavlović and Emilija Pecev-Marinković Quantitative Determination of Microelements in Forest Berries from the Pešter Plateau in The Republic of Serbia by ICP-OES Method	22

AEC P-6	<u>Enisa Selimović</u> , Bojana Veljković, Aleksandra Pavlović and Emilija Pecev-Marinković Research of Macroelement and Microelement Composition in Domestic Fruit from the Pešter Plateau in the Republic of Serbia	23
AEC P-7	<u>Sanja Mutić</u> , Jasmina Anojčić, Tamara Apostolović, Tajana Simetić, Nina Đukanović and Jelena Beljin Electroanalytical Approach for Quantification of Pesticide Maneb in River Water Sample Using Biochar-Modified Carbon Paste Electrode	24
AEC P-8	<u>Jasmina Anojčić</u> , Sanja Mutić, Nina Đukanović, Tajana Simetić, Tamara Apostolović and Jelena Beljin Use of Hardwood Biochar for the Development of a Sensitive Electrochemical Sensor for the Determination of Pesticide Mancozeb in Wastewater Sample	25
AEC P-9	<u>Shpresa Thaqi- Ndrecaj</u> , Arieta Camaj Ibrahim and Agron Thaqi Analysis of Heavy Metal Pollution in the Drenica River by Feronikel and the Bioaccumulation of These Metals	26
AEC P-10	<u>Jasmina Rinkovec</u> and Gordana Pehneć Levels of Platinum, Palladium and Rhodium in Zagreb Air	27
AEC P-11	<u>Jovana Perendija</u> , Aleksandra Radomirović and Slobodan Cvetković Removal of Toxic Textile Dyes from Aqueous Solution by Waste Hop-Based Biosorbent: Influence of Particle Size on Adsorption Efficiency	28
AEC P-12	Elida Lecaj, Adelina Haskaj, Majlinda Ramadani, Bahri Sinani, Berat Sinani and <u>Musaj Paçarizi</u> Pollution Indicators of Heavy Metals in the Sediments of The Lepenc River in Republic of Kosovo	29
AEC P-13	<u>Granit Kastrati</u> , Musaj Paçarizi, Krste Tašev, Trajče Stafilov and Flamur Sopaj Presence of As, Hg, and Tl in Honey and Pollen in Kosovo	30
AEC P-14	<u>Adelina Haskaj</u> , Elida Lecaj, Majlinda Ramadani, Bahri Sinani, Berat Sinani and Musaj Paçarizi Analysis of Water Quality Using Physicochemical Parameters: A Study of Lepenc River	31
AEC P-15	Paula Benjak, Marija Tomaš, Vedrana Špada, Ivana Grčić and <u>Ivan Brnardić</u> Solar Photocatalysis as a Method for Passive Air Purification Using Modified Recycled Rubber Tiles	32
AEC P-16	<u>Tamara Apostolović</u> , Tajana Simetić, Nina Đukanović, Jasmina Anojčić, Sanja Mutić, Snežana Maletić and Jelena Beljin Removal of Organic Pollutants from Water Using Wood-Derived Biochar	33
AEC P-17	<u>Ljiljana Kljajević</u> , Snežana Nenadović, Nataša Mladenović Nikolić, Marija Ivanović, Sanja Knežević, Katarina Nikolić and Jelena Gulicovski Immobilization of Toxic Pollutants (Pb, Cu, and Cd) from Wastewater by New Eco-friendly Materials Based on Red Mud, Fly Ash and Wood Ash	34
AEC P-18	Aleksandra Bazan-Wozniak, <u>Alicja Pawlak</u> , Agnieszka Nosal-Wiercińska and Robert Pietrzak Sorption properties of biocarbons produced from residues after supercritical extraction of raw plants	35

AEC P-19	<u>Stefan Trajkovic</u> , Elena Trajcova-Kovachovska, Tamara Georgievska, Natasa Anevaska-Stojanovska, Jelena Lazova and Marina Stefova D-Optimal Experimental Design Utilization for Robustness Evaluation of a HPLC Method For Related Substances in Simvastatin Formulations	36
AEC P-20	<u>Bojana Vulovska Trifunovska</u> , Ana Atanasova, Packa Antovska, Jelena Lazova, Jelena Acevska, Katerina Brezovska, Jasmina Tonic-Ribarska and Natalia Nakov Study of Elution Strength of Ethanol as “Green” Eluent in LC Analysis of Non-polar Acidic Compounds	37
AEC P-21	<u>Darko Vuksanović</u> , Dragan Radonjić and Jelena Šćepanović Noise Emissions from Equipment and Working Mechanisms During Quarry Operation	38
AEC P-22	<u>Jelena Šćepanović</u> , Darko Vuksanović and Dragan Radonjić Waste Tires Management on the Montenegro Coast to Improve the Quality of the Environment	39
AEC P-23	<u>Dragana Trajkovikj</u> , Mirjana Sazdovska, Maja Mindosheva, Bisera J. Trajkovska, Gjorgji Petrushevski and Ljupcho Pejov Two-Trace Two-Dimensional Correlation Spectroscopy as a Tool in Analytical Control Laboratories for Raw Materials	40
AEC P-24	<u>Viktorija Todorovska</u> , Miona Manasova, Stevce Petrovski and Gjorgji Petrushevski Cleaning Validation of Laboratory Glassware	41
AEC P-25	<u>Katarina Milenković</u> , Milena Nikolić, Dalibor Stanković, Dobrila Randelović, Jelena Mrmošanin, Emilija Pecev-Marinković, and Aleksandra Pavlović Optimization of Cyclic Voltammetry Versus Phenolic Profile And In Vitro Properties for Determining Antioxidant Activity of Rosa Dumalis Bechst. Fruit Samples	42
AEC P-26	<u>Boris Trifunoski</u> , Darko Bacvarovski, Bisera Janeska Trajkovska, Mena Ivanoska Zdravkovska and Gjorgji Petrushevski Development and Validation of an Analytical Method for Determination of the Particle Size Distribution of Atorvastatin Calcium Utilizing a Low-Toxicity Dispersant as an Alternative to N-Hexane	43
AEC P-27	<u>Anastasija Georgieva</u> , Bisera Janeska Trajkovska, Hristina Tomovska, Dragana Trajkovikj, Mena Ivanoska Zdravkovska and Gjorgji Petrushevski Validation of an In-House Analytical Procedure for Assessing Residual Solvents in Codeine Phosphate Sesquihydrate Utilizing Gas Chromatography with Flame Ionization Detection	44
AEC P-28	<u>Monika Organdjieva</u> , Bisera Janeska Trajkovska, Metodi Trajcev and Gjorgji Petrushevski The Non-Aqueous Titrimetric Assay of API Using Perchloric Acid as Titrant	45
AEC P-29	<u>Sara Petreska</u> , Bisera Janeska Trajkovska, Nenad.Dimitrovski and Gjorgji Petrushevski Practical Performance of a Volumetric Karl Fischer Titration for Water Content Determination in Pharmaceuticals	46
AEC P-30	<u>Viktorija Petrovska</u> , Marija Kostadinovska, Bojana Vulovska Trifunovska, Ana Atanasova, Packa Antovska and Jelena Lazova Quality by Design (QbD) Approach in Development, Optimization and Validation of Analytical Method for Determination of Content in Drug Product	47

AEC P-31	Vojkan Miljković, Aleksandra Pavlović, Katarina Milenković and <u>Milena Miljković</u> The Microelements Content in Mustard Seeds (Semen Sinapsis)	48
AEC P-32	<u>Ivana Gjorgjevska</u> , Boris Trifunovski, Bisera Janeska Trajkovska, Mena Ivanoska Zdravkovska and Gjorgji Petrushevski Method Verification for Particle Size Distribution for Ibuprofen Lysine Using Mechanical Sieving	49
AEC P-33	<u>Filip Dimkovski</u> , Elena T. Kovachovska, Natasa A. Stojanovska, Jelena Lazova and Jasmina Petreska Stanoeva Development of Liquid Chromatographic Method for Codeine Related Compounds in Tablets: Optimization and Validation Using DoE and Computational Tools	50
AEC P-34	<u>Anastasija Angelovska</u> , Natasa Anevska – Stojanovska, Jelena Lazova and Marina Stefova HPLC Method Development for Simultaneous Determination of Four Structurally Diverse Compounds in a Combined Dosage Form	51
AEC P-35	<u>Marinela Cvetanoska</u> , Vlado Matevski, Marina Stefova and Jasmina Petreska Stanoeva HS-GC-MS Analysis of Biogenic Volatile Organic Compounds in Macedonian Endemic Stachys Species	52
AEC P-36	<u>Filip Andreevski</u> , Marina Chachorovska and Marina Stefova Determination of a Nitrosamine Drug Substance-Related Impurity in Antiarrhythmics by LC-HRMS	53
AEC P-37	<u>Emilija Minevska</u> , Paulina Apostolova, Dino Karpicarov, Petre Vitanov, Anita Grozdanov, Perica Paunovic and Zorica Arsova Sarafinovska A Simple and Sensitive HPLC Method For Determination of Tacrolimus in Pharmaceutical Dosage Forms	54
AEC P-38	<u>Bojana Dimovska Gonovska</u> , Marina Stefova, Trajče Stafilov, Biljana Jordanoska Shishkoska and Krste Tašev Optimizing Experimental Conditions for Accurate Mancozeb Detection in Soil Via HS-GC-MS	55
AEC P-39	<u>Dragana Živojinović</u> , Dušan Trajković, Andrija Janković, Jelena Božović and Aleksandra Perić Grujić Chemometric Approach to Modeling the Extraction Method Parameters for Toxic and Strategic Elements from Fly Ash Samples	56
AEC P-40	<u>Elena Veljanoska</u> , Marina Chachorovska and Jelena Lazova Identification of Essential Oils Carried Out by Gas Ghromatography (GC)-FID Method	57
AEC P-42	<u>Ivana Trajkovic</u> , Milica Sentić, Andrijana Miletić and Antonije Onjia Occurrence, Identification and Distribution Characteristics of BTEX In Urban Shallow Lake Sediment	58
AEC P-43	<u>Milica Sentić</u> , Ivana Trajkovic, Andrijana Miletić, Jelena Vesković, Milica Lučić and Antonije Onjia A Comprehensive Analysis, Source Apportionment and Health Risk Assessment of Polycyclic Aromatic Hydrocarbons in Urban Shallow Lake Sediment	59
AEC P-44	<u>Hristina Trisheska</u> , Dushko Nedelkovski and Marina Stefova Optimization of GC-MS Methods for Characterization of the Volatile Compounds in Macedonian White Wines	60
AEC P-45	<u>Arzu Kamber</u> , Emilija Anevska, Nade Jandrievska Ilieva, and Marina Stefova Optimization and Validation of Gas-Chromatographic Methods for Determination of Chlorination By-Products in Drinking Water	61

AEC P-46	<u>Ivona Sofronievska, Ágnes Dörnyei, Viktor Sándor, Ferenc Kilár, Jasmina Petreska Stanoeva and Marina Stefova</u> Optimization of a RP-HPLC Method For Trace Analysis of Pharmaceutical Compounds in Waters Using UV and ESI QTOF MS Detection	62
AEC P-47	<u>Aleksandar Sokolovski and Bojan Zlatanovski</u> Vapor Recovery Unit – Process principles	63
AEC P-48	<u>Velika-Viktorija Juntev and Viktorija Spasova</u> Determination of Polycyclic Aromatic Hydrocarbon Types in Diesel fuel by HPLC Method with Refractive Index Detector and Operational Experiences	64
AEC P-49	<u>Biljana Balabanova, Trajče Stafilov and Robert Šajn</u> Improvements of Precise Modeling Vs. Screening Models for Metals Depositions in Environment: Case Study Bregalnica River Basin	65
AEC P-50	<u>Marija Srbinoska, Jana Klopchevska, Zoran Kavrakovski and Vesna Rafajlovska</u> Cellulose Recovery from Cigarette Butts	66
AEC P-51	<u>Marija Srbinoska, Jana Klopchevska, Zoran Kavrakovski and Vesna Rafajlovska</u> Waste Stalks of Hot Red Pepper Fruits Potential Source of Nutritional and Bioactive Compounds	67

BIOTECHNOLOGY AND FOOD TECHNOLOGY

ORAL PRESENTATIONS

BFT O-1	<u>Rok Ambrožič, Rok Mravljak and Aleš Podgornik</u> Novel Non-Invasive Method for Determination of Immobilized Macromolecules	68
BFT O-2	<u>Viktor Cicimov and Darko Dimitrovski</u> Isolation Media for Purple Phototrophic Bacteria	69

POSTER PRESENTATIONS

BFT P-1	<u>Jovana Krstić, Dušan Paunović, Jelena Mrmošanin and Danica Dimitrijević</u> Production technology of chocolate prunes	70
BFT P-2	<u>Jelena Mitrović, Nada Nikolić, Ivana Karabegović and Mirjana Pešić</u> Nutritional Values of Products Obtained by Incorporation of Nettle (<i>Urtica Dioica L.</i>) Seeds	71
BFT P-3	<u>Jelena Mitrović, Bojana Danilović, Ivana Karabegović, Ljubica Živković and Kristina Cvetković</u> Antioxidant Properties of Edible Chitosan Films Obtained by Incorporation of Iva (<i>Teucrium Montanum L.</i>) Grass Extract	72
BFT P-4	<u>Bojana Veljković and Enisa Selimović</u> Phytochemical Potential of Wild Berries from the Area of the Pešter Plateau (Serbia)	73
BFT P-5	<u>Bojana Veljković and Enisa Selimović</u> Phytochemical Potential of Cultivated Berries from the Area of the Pešter Plateau (Serbia)	74
BFT P-6	<u>Gabriella Kanižai Šarić, Marija Martić, Vesna Rastija, Dejan Agić, Maja Karnoš and Ivana Majić</u> Evaluation of the Antifungal Potential of <i>Streptomyces</i> sp.	75

BFT P-7	<u>Marija Tasić</u> , Jelena Zvezdanović, Ljiljana Stanojević, Jelena S. Stanojević, Sanja M. Petrović and Dragan J. Cvetković Characterization of Silver Nanoparticles Biosynthesized by Aqueous Extracts <i>Rubus Spp.</i> Leaves	76
BFT P-8	<u>Ivana Danilov</u> , Jovana Grahovac, Bojan Miljević, Vesna Miljić and Snežana Vučetić Implementation of the Circular Economy Principles in Production of Denitrifying Agent Microbial Biomass	77
BFT P-9	<u>Leposava Pavun</u> , Sofija Doganjić, Ivana Lautarević, Ana Gledović, Marina Milenković, Snežana Uskoković-Markovića and Aleksandra Janošević Ležaić Determination of Total Phenolic Content, Antioxidant, and Antimicrobial Activities of Green Vegetables	78
BFT P-10	<u>Biljana Damjanović-Vratnica</u> , Ivana Kasalica, Svetlana Perović and Slađana Krivokapić Effect of Extraction Process Parameters on The Recovery of Bioactive Phenolic Compounds from Blueberry Pomace	79
BFT P-11	<u>Vanya Bogoeva</u> , Gabriela Radulova, Antonio Varriale, Alexandra Kapogianni, Ginka Cholakova, Sabato D`Auria, Els J. M. Van Damme and Ivanka Tsacheva Future of Lectins: Plant Lectin Jacalin and Human Lectin Galectin 3 Interact with Biologically Important Molecules	80
BFT P-12	<u>Despina Kostadinova</u> , Cristina González-Fernández, Elia Tomás-Pejó and Donka Doneva-Shapceska Utilization of SCFA-Rich Effluents from Brewery Spent Grains for Lipid Production by <i>Yarrowia lipolytica</i>: A Sustainable Approach	81
BFT P-13	<u>Krastena Nikolova</u> , Anelia Gerasimova, Ivaylo Minchev, Nikolay Penov, Iliana Milkova, Dragomira Buhalova and Lubomir Makedonski Study on the Kinetic Parameters of Drying Fruit Bars from Blue Plums with an Addition of Freshwater Algae	82

CHEMICAL ENGINEERING

ORAL PRESENTATIONS

CE O-1	<u>Flamur Sopaj</u> Solid Iron Dissolution in Acid Media to Support Fenton Process for Methyl Orange Oxidation	83
---------------	--	----

POSTER PRESENTATIONS

CE P-1	<u>Jelena Lubura Stošić</u> , Bojana Ikonić, Jelena Pavličević, Dario Balaban, Predrag Kojić and Oskar Bera The Influence of the Activation Function within Deep Learning on Predicting Natural Rubber Rheological Properties	84
CE P-2	<u>Katarina Šučurović</u> , Darko Jaćimovski, Mihal Đuriš, Zorana Arsenijević, Tatjana Kaluđerović-Radoičić, Danica Brzić and Nevenka Bošković-Vragolović Experimental Investigation of the Solids Circulation Rate and the Minimum Spouting Velocity in the Modified Spouted Bed	85
CE P-3	Darko Jaćimovski, Katarina S. Šučurović, Jelena Živković and Katarina Šavikin Extraction Gallic Acid, Punicalin, Punicalagin I Ellagic Acid from Pomegranate Peel in Packed Bed Systems and by Recirculation of The Liquid Phase	86

CE P-5	<u>Nina Jovović</u> , Željko Jaćimović and Milica Kosović Perutović Solvent-Free Synthesis of Cu(II) Complex with 3,5-Pyrazoledicarboxylic Acid as Ligand	87
CE P-6	<u>Biljana Damjanović-Vratnica</u> , Bojana Đurišić, Svetlana Perović, Andrej Perović and Slađana Krivokapić Extraction Techniques Impact on Oregano Post-Distillation Waste Biomass Valorization	88

EDUCATION

ORAL PRESENTATIONS

EDU O-1	<u>Aysel Beydullayeva</u> The Role Self-Esteem Plays in Academic Achievement	89
---------	--	----

POSTER PRESENTATION

EDU P-1	<u>Bojan Bogatinovski</u> , Elena Cvetkovska Bogatinovska, Mladen Stojanovikj and Filip Godjo Implementation of Lean Management Approaches into Optimization of Processes Used in Quality Control Laboratories in Alkaloid AD Skopje	90
EDU P-2	<u>Daniel Nikolovski</u> and Marina Stojanovska Evaluating Green Chemistry Education through Student Interventions	91
EDU P-3	<u>Aleksandra Naumoska</u> and Slobotka Aleksovska The Presence of Organic Stereochemistry Issues at the International Level Competition	92

INORGANIC CHEMISTRY AND TECHNOLOGY, INORGANIC MATERIALS AND METALLURGY

ORAL PRESENTATIONS

ICTM O-1	<u>Jasminka Alijagić</u> and Robert Šajn Mining and Metallurgical Waste as Potential Secondary Sources of Metals in the West Balkan	93
----------	---	----

POSTER PRESENTATIONS

ICTM P-1	<u>Andrijana Chankulovska Tenovska</u> , Tajana Shishkova, Boshko Boshkovski and Slobodan Bogoevski Optical Microscopy Control and Sieve Analysis of Milled Diatomaceous Earth Sample After the Elutriation Process	94
ICTM P-2	<u>Tajana Shishkova</u> , Andrijana Chankulovska Tenovska, Gordana Ruseska, Boshko Boshkovski and Slobodan Bogoevski Preparation Of Separate Fraction from Selected Non-metallic Raw Materials According to Granulometric Composition, Suitable for the Elutriation Process	95
ICTM P-3	<u>Aleksandra Dapčević</u> , Natalija Milojković, Bojana Simović, Lidija Radovanović and Jelena Rogan Reactive Orange 16 Photodegradation Mechanism in Presence of the TiO₂/Polypyrrole Nanocomposite	96
ICTM P-4	<u>Ivana Cvijović-Alagić</u> , Gizo Bokuchava, Yulia Gorshkova and Vesna Maksimović Microstructural Alterations of Ti-Based Implant Alloy Induced by High Pressure Torsion	97

ICTM P-5	<u>Sanja Knežević</u> , Marija Ivanović, Snežana Nenadović, Nemanja Marjanović, Nataša Mladenović Nikolić, Marijan Nečemer and Miloš Nenadović Physico-Chemical and Structural Analysis of Sm₂O₃-Doped Geopolymers for Advanced Material Applications	98
ICTM P-6	<u>Aneta Srbinovska Simeonovska</u> , Bojan Bogatinovski, Mladen Stojanovikj and Filip Godjo Method Development for In-House Determination of Heavy Metals in Talk Powder	99
ICTM P-7	<u>Vesna Maksimović</u> , Jelena Maletaškić, Vladimir Pavkov, Aleksa Luković and Ivana Cvijović-Alagić Aluminum-Based Composites Reinforced with Waste Basalt Fiber	100
ICTM P-8	<u>George A. Mousdis</u> , Vasilis Psycharis, Caterina P. Raptopoulou, Nektarios N. Lathiotakis, Christina Kolokytha and Ektoras Apostolou Synthesis and study of 2-dimensional hybride lead based materials	101
ICTM P-9	<u>Teodora Petkoska, Marina Gjoshevska, Natasha Anevaska Stojanovska, Marina Chachorovska and Jelena Lazova</u> Development and Validation of ICP-OES Method for Determination of Elemental Impurities in Topical Antiseptic	102
ICTM P-10	<u>Darko Stojchev</u> , Mihail Trajkov, Miha Bukleski, Sandra Dimitrovska-Lazova and Slobotka Aleksovska Synthesis and Characterization of Hybrid Organic-Inorganic Perovskites With Gadolinium(III) in the B Position	103
ICTM P-11	Houceme Bendriss, Said Boudebane, Samia Lemboub, Aissa Bensehou and <u>Stefano Bellucci</u> Superalloy Development by Combustion of Aluminothermic Mixtures - Characterization	104
ICTM P-12	<u>Milica Kosović Perutović</u> , Slađana Kovačević, Marija Ristić, Jana Mišurović and Zorica Leka Mechanochemical Synthesis of Cu(II) dithiocarbamato complex: Advantages Over Traditional Solution-Based Methods	105
ICTM P-13	<u>Slađana Kovačević</u> , Marija Ristić, Jana Mišurović, Zorica Leka and Milica Kosović Perutović Efficient Solvent-Free Synthesis of Ni(II)- Dithiocarbamato Complexes using Mechanochemistry	106
ICTM P-14	<u>Miloš Nenadović</u> , Sanja Knežević, Nemanja Marjanović, Tijana Stamenković, Nemanja Latas and Danilo Kisić Thermally Treated Low Carbon Geopolymer Foams Doped with Nd₂O₃ and Sm₂O₃	107
ICTM P-15	<u>Biljana Angjusheva</u> , Vojo Jovanov and Emilija Fidancevski Development of Porous Ceramics from Clay and Coal Fly Ash Using Various Pore Creators: A Study on Microstructure and Mechanical Properties	108
ICTM P-16	<u>Vancho Adjiski</u> and Biljana Angjusheva Enhancing Environmental Management of Mining Legacies: Database, Mapping, and Monitoring Insights from COST Action REMINDNET	109
ICTM P-17	<u>Irina Stefanovska</u> , Vojo Jovanov, Aleksandar Zurevski, Aleksandar Zlatevski, Dime Jancev, Toni Arangelovski and Emilija Fidanchevski Use Of Waste Glass and Dolomite as Cement Substitutes in Mortars with a Lower Environmental Impact	110
ICTM P-18	<u>Neli Mintcheva</u> , Gospodinka Gicheva, Alexander Chanachev and Marinela Panayotova	111

	Photocatalytic Activity of Zeolite-Based Nanocomposites for Reduction of Organic Pollutants in Solution	
ICTM P-19	<u>Vojo Jovanov</u> , Snežana Vučetić, Biljana Angjusheva, Jonjaua Ranogajec and Emilija Fidanchevski	112
	Photocatalytic Coating Based on Illite Clay Impregnated with TiO₂	
ICTM P-20	<u>Biljana Jankulovska Peeva</u> , Marija Kovac, Vesna Miljić, Vojo Jovanov, Snežana Vučetić and Emilija Fidanchevski	113
	Characterization of Fragments from Archeological Site Stobi by Non-Destructive Testing Methods	
ICTM P-21	<u>Katerina Zaharieva</u> , Borislav Barbov and Petya Karakashkova	114
	Green Synthesis of CeO₂-ZnO Using Veronica Officinalis L. Extract: Photocatalytic Ability	
ICTM P-22	<u>Katerina Zaharieva</u> , Rumyana Eneva, Daniela Stoyanova, Irina Stambolova, Simona Mitova	115
	Effect of Mixed-Phase ZnO Nanoparticles on The Animal Pathogens Erysipelothrix Rhusiopathiae and Aeromonas Caviae	

ORGANIC CHEMISTRY, BIOCHEMISTRY AND PHARMACEUTICAL CHEMISTRY

ORAL PRESENTATIONS

OBPC O-1	<u>Ivo Crnolatac</u>	116
	Monitoring Lipid Phase Transitions with Fluorescent Dyes	

POSTER PRESENTATIONS

OBPC P-1	<u>Marijana Radić Stojković</u> , Atanas Kurutos, Iva Zonjić, Ivo Crnolatac, Lidija-Marija Tumir, Ana Tomašić Paić, Vanja Tadić and Anamaria Brozovic	117
	Recognition of Double-Stranded and Multi-Stranded DNA and RNA Structures by Cyanine Dyes	
OBPC P-2	<u>Ranko Stojković</u> , Marija Paurević, Aleksandra Maršavelski and Rosana Ribić	118
	Synthesis And Immunomodulating Properties of Mono- And Di-Mannosylated Desmuramyl Peptides	
OBPC P-3	<u>Jelena Đorović Jovanović</u> , Marijana Stanojević Pirković and Žiko Milanović	119
	Examining the Inhibitory Activity of Furanocoumarin Derivatives from Kampo Extract Medicines on Beta-Secretase 1 Enzyme Involved in Alzheimer's Disease Pathogenesis	
OBPC P-4	<u>Fatjonë Krasniqi</u> , Emil Popovski and Ahmed Jashari	120
	Design and Synthesis of Some Novel Compounds Derived from Hybrid Coumarin-Thiazole Structures	
OBPC P-5	<u>Jovica Tomović</u> , Perica Vasiljević, Aleksandar Kočović, Miroslav Sovrlić and Nedeljko Manojlović	121
	Chemical Profiling and Antioxidant Capacity of Lichen Extracts from Genus Physcia	
OBPC P-6	<u>Vesna Rastija</u> , Domagoj Šubarić, Gabriella Kanižai Šarić and Tatjana Gazivoda Kraljević	122
	QSAR study for the antiproliferative activity of 2-aryl benzothiazole derivatives	
OBPC P-7	<u>Vesna Rastija</u> , Dejan Agić, Maja Karnaš and Tatjana Gazivoda Kraljević	123
	Molecular Docking Study for the Antiproliferative Activity of 2-Aryl Benzothiazole Derivatives	

OBPC P-8	<u>Miroslav Sovrlić</u> , Jovica Tomović, Slađana Pirić, Aleksandar Kočović and Sandra Konstantinović Impact of Deep Eutectic Solvent Pretreatment on the Extraction of Polyphenolic Compounds and Antioxidant Activity from Wild Apple (<i>Malus Sylvestris</i>) Waste	124
OBPC P-9	<u>Dejan Agić</u> , Boris M. Popović, Bojana Blagojević, Vesna Rastija, Maja Karnaš and Domagoj Šubarić Insight into the Interactions of Cornelian Cherry Anthocyanins with Dipeptidyl Peptidase III	125
OBPC P-10	Maja Karnaš, <u>Dejan Agić</u> , Domagoj Šubarić, Karolina Vrandečić and Vesna Rastija Molecular Docking Study on the Potential Mechanism of Coumarin-1,2,4-Triazoles Antifungal Activity	126
OBPC P-11	Monika Mutovska, Natali Simeonova, Denitsa Anastasova and <u>Yulian Zagranjarski</u> New Powerful Building Block Molecules in 1,8-Naphthalimide Chemistry	127
OBPC P-12	<u>Konstantin Konstantinov</u> , Monika Mutovska, Natali Simeonova, Stanimir Stoyanov and Yulian Zagranjarski Design Of Peri-Disubstituted Tellurolo-1,8-Naphthalimides	128
OBPC P-13	<u>Monika Mutovska</u> , Konstantin Konstantinov, Tina Kostadinova, Stanimir Stoyanov and Yulian Zagranjarski Heterocyclic Fused 1,8-Naphthalimides as Anticancer Agents	129
OBPC P-14	<u>Denitsa Anastasova</u> , Monika Mutovska, Silvia Angelova and Yulian Zagranjarski Synthesis and Optical Properties of PEG Alkoxyated 1,8-Naphthalimides	130
OBPC P-15	<u>Natali Georgieva</u> , Monika Mutovska and Yulian Zagranjarski Peri-Substituted Dichalcogenides of Ryleneimides	131
OBPC P-16	<u>Elena Cvetkovska Bogatinovska</u> , Nikola Geskovski, Gjorgi Petrushevski and Viktor Stefov Implementation of Supervised and Unsupervised Machine Learning Techniques in the Development of Pharmaceutical Dosage Forms	132
OBPC P-17	<u>Samira A. Plojović</u> , Milan S. Dekić, Niko S. Radulović, Enisa Selimović and Fabio Boylan A Series of Esters of Regioisomeric Furanmethanols: Mass Spectral Libraries and Gas Chromatographic Data	133
OBPC P-18	<u>Alma Ramić</u> and Ines Primožič Evaluating Cinchona-9-amines as Butyrylcholinesterase Inhibitors	134
OBPC P-19	<u>Aleksandra Milenković</u> , Jelena Stanojević, Dragan Cvetković, Vesna Nikolić and Ljiljana Stanojević The Reducing Power of Black Pepper (<i>Piper Nigrum</i> L.) Essential Oil and Hydrolate	135
OBPC P-20	Ljiljana Stanojević, <u>Aleksandra Milenković</u> , Milena Stanković, Jelena Zvezdanović and Jelena Stanojević Chemical Composition and Antioxidant Activity of Geranium <i>Robertianum</i> L. Leaves Hydrolate	136

OBPC P-21	<u>Jelena Stanojević</u> , Tamara Milosavljević, Marija Tasić, Nataša Simonović, Ljiljana Stanojević, Jelena Zvezdanović and Dragan Cvetković Chemical Composition and Antioxidant Activity of Hydrodistillation Wastewater from Herniariae Herba (Herniaria Glabra L.)	137
OBPC P-22	<u>Nikoleta Kircheva</u> , Stefan Dobrev, Lyibima Yocheva, Valya Nikolova, Silvia Angelova and Todor Dudev Why Does Gallium Exert an Antibacterial Effect: Insights from a DFT Study	138
OBPC P-23	Miha Drev, Helena Brodnik, Uroš Grošelj, Franc Perdih, Jurij Svete, Bogdan Štefane and <u>Franc Požgan</u> Ru(II)-catalyzed Synthesis of Heteroarylated 2-Pyridones via Consecutive C–O/C–N/C–C Bond Formation Reactions	139
OBPC P-24	<u>Uroš Grošelj</u> , Luka Ciber, Helena Brodnik, Franc Požgan, Jurij Svete and Bogdan Štefane Tetramic and Tetronic Acids in Enantioselective Organocatalyzed Transformations	140
OBPC P-25	<u>Renata Odžak</u> , Antonio Sabljic and Matilda Šprung Quaternary 3-Quinuclidinone Compounds: Potent Antibacterial Agents Against Staphylococcus aureus and Listeria monocytogenes	141
OBPC P-26	<u>Stefan Dobrev</u> , V. Petkova, Nikoleta Kircheva, D. Nazarova, Liam Nedelchev, Valya Nikolova, Todor Dudev and Silvia Angelov DFT Prediction of Laser Dyes - Cucurbit[7]Uril Binding Affinities	142
OBPC P-27	<u>Vladislava Petkova</u> , Nikoleta Kircheva, Stefan Dobrev, Monika Mutovska, Valya Nikolova, Spas Kolev, Yulian Zagranjarski, Todor Dudev and Silvia Angelova Naphthalimide-Based Amphiphiles: Synthesis and DFT Studies of the Aggregation and Interactions with Water Molecules	143
OBPC P-28	<u>Todor Dudev</u> , Silvia Angelova, Nikoleta Kircheva and Thomas Leonard Elucidating the Metal Specificity in PHLPP2	144
OBPC P-29	<u>Mihail Aleksandrov</u> and Viktorija Maksimova Application of Voltammetric Methods in Electrochemical Analyzes of Cannabinoids	145
OBPC P-30	<u>Nina Peneva</u> , Filip Andreevski, Tina Achkoska, Dejan Kuneski, Biljana Angelevska, Ana Atanasova, Packa Antovska, Jelena Lazova and Jasmina Petreska Stanoeva Effects of Various Nitrite Scavengers on Mitigation Of N-Nitrosamine Formation in Pharmaceutical Drug Product	146
OBPC P-31	<u>Vesna Dimova</u> , Mirjana Jankulovska and Maja Sencheva - Petrevska QSAR Modeling of Substituted Hydrazones - Biological Activity and Selected Descriptors	147
OBPC P-32	<u>Vesna Dimova</u> , Mirjana Jankulovska and Maja Sencheva - Petrevska QSTR Study of Alkaloids	148
OBPC P-33	<u>Ilija Pop Stefanija</u> , Igor Jordanov, Dejan Dimitrovski and Vesna Dimova Evaluation of the Molecular Properties and Bioactivity Score of the Set of Herbicides	149
OBPC P-34	<u>Ilija Pop Stefanija</u> , Dejan Dimitrovski, Igor Jordanov and Vesna Dimova Brain or Intestinal Estimated Permeation Predictive Model of Herbicides	150

OBPC P-35	<u>Zorica Leka</u> , Kristina Sekulić, Milica Kosović Perutović and Nedeljko Latinović The Influence of Synthesized Ni(II)-Dithiocarbamate Complex on the Phytopathogenic Fungus Botrytis Cinerea	151
OBPC P-36	<u>Matea Kuzmanoska</u> , Krume Bogeovski and Viktorija Maksimova Investigating the Methods for Obtaining Extracts from Two Types of Herbal Substances from Elderberry, Sambucus Nigra L.	152
OBPC P-37	<u>Irena Dimitrova Jordanova</u> , Pece Sherovski, Jasmina Petreska Stanoeva and Natasa Ristovska Optimization of a Method for The Isolation of Theobromine from Cocoa	153
OBPC P-38	<u>Ana Stamkova</u> , Marina Chachorovska, Mirjana Bogdanoska Mircheska, Jana Klopchevska and Vesna Rafajlovska Ultrasound-Assisted Extraction of Silymarin from Milk Thistle Seeds (Silybum marianum L.)	154
OBPC P-39	<u>Mihail Trajkov</u> , Darko Stojchev, Miha Bukleski, Sandra Dimitrovska-Lazova and Slobotka Aleksovska Synthesis and Characterization of Novel Fluorescent Quinacridone Derivatives	155
OBPC P-40	<u>Ksenija Petković</u> , Milica Kosović Perutović, Zorica Leka and Nedeljko Latinović Fungicidal Activity of The Zn(II) Complexes with Ethylenediamine and Dithiocarbamate Ligands on Phytopathogenic Fungus Phomopsis Viticola	156
OBPC P-41	<u>Marija S. Ristić</u> , Maja B. Djukić and Milica Kosović Perutović DNA Interactions of Palladium (II) Complex Containing a Thioamide-Type Ligand	157
OBPC P-42	<u>Olivera Politeo</u> , Monika Bekan and Mirko Ruščić Volatile Profile of Limonium Narbonense Mill. From Croatia	158
OBPC P-43	<u>Jana Mišurović</u> , Sladana Kovačević, Ksenija Petković, Milica Kosović Perutović and Zorica Leka The antioxidant capacity of ammonium-iminodiacetatedithiocarbamate and its transition metal complexes	159
OBPC P-44	<u>Anamarija Risteska</u> , Pece Sherovski and Natasha Ristvoska Effective Caffeine Extraction from Cosmetics Containing Surface-Active Substances: An Optimization Study	160
OBPC P-45	<u>Aygun Rustamova</u> , Rovshan Muradkhanov, Sevinj Osmanova, Sevil Khalilova and Etibar Ismailov Thermal Decomposition of the Ferrocene Adsorbed on Boehmite	161
OBPC P-46	<u>Afat Sardarly</u> , Aygun Rustamova, Sevinj Osmanova and Etibar Ismailov Propane Dehydrogenation with Carbon Dioxide Over the VSbO/Al₂O₃ Oxide Catalysts	162
OBPC P-47	<u>Arjjan Ganji</u> , Ivana Todorovska, Katerina Dragarska and Jane Bogdanov Synthesis of Acyclic and Cyclic C₅-Curcuminoids and Comparison of Their Structural and Spectroscopic Properties	163
OBPC P-48	<u>Milena S. Kolevska</u> , Ivana Todorovska, Katerina Dragarska and Jane Bogdanov Spectrophotometric Assessment of Reactivity of Symmetrical Monocarbonyl Analogs of Curcumin Containing A 2-Fluorobenzylidene Moiety With N-Acetylcysteine	164

- OBPC P-49** Radka Arabadzhieva, Nadezhda Petkova, Ivan Ivanov, Rumen Mihov, Ivanka Petrova, Krastena Nikolova, Yulian Tumbariski and Lubomir Makedonski 165
Application of Sucrose octaacetate and Rosa damascena Hydrosol in a Cosmetic Hand Gel
- OBPC P-50** Anelia Gerasimova, Ylian Tumbariski, Ivayla Dincheva, Lubomir Makedonski and Krastena Nikolova 166
Biological Effects and Chemical Composition of African Frankincense Oil

POLYMERS AND POLYMER MATERIALS

ORAL PRESENTATIONS

- PPM O-1** Orkhan Gulahmadov, Mustafa Muradov, Huseyn Mamedov, Lala Gahramanli, Jiseok Kim and Jadranka Blazhevska-Gilev 167
Enhancement of Triboelectric Nanogenerators with Nylon/Graphene Nanocomposite Films
- PPM O-2** Justine Elgoyhen and Radmila Tomovska 168
Semicrystalline Waterborne Coatings via Thiol-ene Polymerization in Dispersed Media
- PPM O-3** Aleksandra Ivanoska-Dacikj, Ejaz Ahmed, Enrica Fontananova, Gianluca Di Profio, Gordana Bogoeva-Gaceva, Gligor Jovanovski and Panče Naumov 169
Electrospun (Dynamic) Composite Membranes for Water Desalination
- PPM O-4** Aynura Karimova, Habiba Shirinova, Lala Gahramanli and Sevinj Nuriyeva 170
Chrysin Loaded Iron Oxide Nanoparticles Coated with Chitosan and Cross-linked Chitosan: A Structural Study
- PPM O-5** Ivan Kodrin, Tea Frey and Ivana Biljan 171
CO₂ Adsorption of Nitrogen-Containing Porous Organic Materials: A Computationally Assisted Approach

POSTER PRESENTATIONS

- PPM P-1** Jelena Milinković Budinčić, Lidija Petrović, Željana Radonić, Jadranka Fraj, Sandra Bučko, Jaroslav Katona, Ljiljana Spasojević and Jelena Škrbić 172
Biopolymer-based hydrogels with microcapsuled vitamin E
- PPM P-2** Lidija Petrović, Jelena Milinković Budinčić, Jovana Zarupski, Jadranka Fraj, Sandra Bučko, Jaroslav Katona, Ljiljana Spasojević and Jelena Škrbić 173
Microencapsulation of coenzyme Q10 in HPMC/SDS system
- PPM P-3** Snežana Ilić-Stojanović, Suzana Cakić, Ivan Ristić, Marija Kostić, Đorđe Petrović, Nada Nikolić and Slobodan Petrović 174
Characterization of Cross-Linked Poly(Vinylbutyrolactam Based Hydrogels: Morphology, Thermal Properties and Swelling Behavior
- PPM P-4** Marija S. Nikolic, Jelena Dikic, Katarina Sokic and Sanja Jevtic 175
Biodegradable Triblock Copolymers Based on Poly(E-Caprolactone) and Different Poly(Alkylene Carboxylate)s
- PPM P-5** Marija S. Nikolic, Jelena Dikic, Katarina Sokic and Sanja Jevtic 176
Composites Based on Biodegradable Aliphatic Polyesters and Copper Enriched Zeolites with Antibacterial Activity

PPM P-6	<u>Marija Lucic Skoric</u> , Stoja Milovanovic, Ivana Lukic, Milica Pantic, Zoran Novak, and Melina Kalagasidis Krusic Optimizing Starch/Alginate Aerogels: Impact of Formulation and Processing on Material Properties	177
PPM P-7	Ksenija Milošević, <u>Marija Lučić Škorić</u> and Melina Kalagasidis Krušić Green Polysaccharide Hydrogels for Wastewater Remediation	178
PPM P-8	<u>Marija Ivanovića</u> , Sanja Knežević, Nemanja Marjanović, Nataša Mladenović Nikolić, Miloš Nenadović, Ljiljana Kljajević and Snežana Nenadović Synthesis of Organic and Inorganic Geopolymers from Different Precursors	179
PPM P-9	<u>Silvia Dimova</u> , Rumiana Eneva, Katerina Zaharieva, Hristo Penchev, Daniela Stoyanova and Irina Stambolova Antimicrobial activity of AB-Polybenzimidazole /plant-synthesized TiO₂ hybrid membranes	180
PPM P-10	<u>Andrea Petanova</u> , Justine Elgoyhen, Jadranka Blazhevaska-Gilev and Radmila Tomovska First Steps Towards Synthesis of Molecularly Imprinted Polymers via Ionic Bonding for Future Sensing Application	181
PPM P-11	<u>Marija Prosheva</u> , Andrea Petanova, Maja Sencheva Petrevska, Ivona Ivanova and Jadranka Blazhevaska-Gilev Evaluation of Some Properties Of Recycled Poly(Ethylene)/Lignin Composites	182
PPM P-12	<u>Marija Prosheva</u> , Andrea Petanova, Radmila Tomovska and Jadranka Blazhevaska-Gilev Effect of Lignin on Different Properties of Lignin/Polymer Composites	183
PPM P-13	<u>Aco Janevski</u> , Metodija Najdoski, Sasho Stojkovikj and Gordana Bogoeva-Gaceva Morphological peculiarities of isotactic polypropylene nucleated with alkaline earth metal pimelates	184

PHYSICAL, STRUCTURAL CHEMISTRY, SPECTROSCOPY AND ELECTROCHEMISTRY

ORAL PRESENTATIONS

PSSE O-1	<u>Lala Gahramanli</u> , Mustafa Muradov, Goncha Eyvazova and Arzu Bakhishova Physical Properties of Cd_xZn_{1-x}S-Based Nanocomposite Materials Produced Via Sonochemical and SILAR Methods	185
PSSE O-2	<u>Lala Gahramanli</u> , Mustafa Muradov, Mahammad Baghir Baghirov and Goncha Eyvazova Influence of Gamma Irradiation and Thermal Annealing to the Graphene Oxide-Based Composite Materials	186
PSSE O-3	<u>Thomas G. Mayerhöfer</u> and Juergen Popp Deviations from the Beer-Lambert Approximation Investigated by 2D-Correlation IR Spectroscopy	187
PSSE O-4	<u>Alicja Pawlak</u> , Agnieszka Nosal-Wiercińska, Aleksandra Bazan-Woźniak and Robert Pietrzak The Influence of Aprotic Organic Solvents on the Kinetics and Mechanism of Electroreduction of Bi(III) Ions	188

PSSE O-5	<u>Hofinger Manuel</u> , Mardare Andrei Ionut, Pelin Gianina Popescu, Socol Gabriel and Hassel Achim Walter Combinatorial Screening of Structural Properties and Oxide Growth on a Co-Evaporated Al-Yb Thin-Film Library	189
<i>POSTER PRESENTATIONS</i>		
PSSE P-1	<u>David Kočović</u> , Sergiu Shova, Zoran D. Tomić, Miljan Bigović and Željko Jaćimović Molecular and crystal structure of the bis(acetato)-bis(4-methyl-1h-pyrazole)-zinc(II)	190
PSSE P-2	<u>Dragana L. Milošević</u> , Sanja I. Stevanović and Dušan V. Tripković Methanol Oxidation at Pt/Ni Electrode Prepared by a Galvanic Displacement Process	191
PSSE P-3	<u>Dušan V. Tripković</u> , Dragana L. Milošević and Sanja I. Stevanović Ultra-thin-film Catalysts for Electrooxidation of Formic Acid	192
PSSE P-4	<u>Milkica Arsova</u> , Sanja Lazarova and Pavlinka Kokoskarova Application of Electrode Mechanisms of Surface Active Systems in Drug Analysis	193
PSSE P-5	<u>Petra Maleš</u> , Danijela Bakarić and Georg Pabst The Structural Insights into the Myelin Model Membranes	194
PSSE P-6	<u>Katarina Nikolić</u> , Neda Nišić, Andrijana Vasić, Milena Rosić, Marija Stojmenović, Milan Kragović and Jelena Gulicovski Structural Properties of Synthesized Domestic Carbon from Almond Shells for Carbon Paste Electrode	195
PSSE P-7	<u>Emel Sherif Miftar</u> and Biljana Pejova Ultrasound-Mediated Control of the Optical Properties of Silver-Based Nanoplasmonic Surfaces	196
PSSE P-8	<u>Flamur Sopaj</u> and Albana Veseli Study on the Electrochemical Behaviour of Macrolides on Carbon and Platinum Electrodes	197
PSSE P-9	<u>Rufija Idrizovska</u> and Valentin Mirceski Study of the Nucleophilic Reaction Between Dopamine and Glutathione and the Effect on Dopamine Oxidation	198
PSSE P-10	<u>Lea Pašalić</u> , David Šťastný and Danijela Bakarić Asymmetric Phospholipid Vesicles as Cell Membrane Models	199
PSSE P-11	<u>Milorad Tomić</u> , Regina Fuchs-Godec and Marija Mitrović Rosemary (<i>Rosmarinus Officinalis</i>) as a Natural Corrosion Inhibitor	200
PSSE P-12	<u>Silvia Angelova</u> , Stefan Dobrev, Todor Dudev, Nikoleta Kircheva, Kalina Krastilova, Valya Nikolova, Hristo Rasheev and Alia Tadjer On The Structure and Stability of Pillar[5]Arene-Water Complexes: A DFT Study	201
PSSE P-13	<u>Sanja Lazarova</u> , Milkica Arsova and Pavlinka Kokoskarova Exploring The Electrochemistry of Surface-Active Redox Systems in Voltametric Analysis of Drug-Drug Interactions	202
PSSE P-14	<u>Besarta Cheliku Ramadani</u> , Sofija Popovska, Leon Stojanov, Arianit Reka, Valentin Mirčeski, Miha Bukleski, Sandra Dimitrovska-Lazova and Slobotka Aleksovska Synthesis, Characterization and Electrocatalytic Properties of GdMn_{0.5}Mo_{0.5}O₃ (M = Cr, Fe, Co) Perovskites	203
PSSE P-15	<u>Jeta Sela</u> , Leon Stojanov, Besarta Cheliku Ramadani, Miha Bukleski, Arianit A. Reka, Sandra Dimitrovska-Lazova, Valentin Mirceski and Slobotka Aleksovska Synthesis, Characterization and Voltammetric Study of Dimethylammonium Lead Halide Perovskites	204

PSSE P-16	<u>Vusala Majidzade</u> , Sevinj Javadova, Samira Jafarova, Akif Aliyev and Dilgam Tagiyev Chronoamperometric Studies in the Electrodeposition of Bi₂Se₃ Thin Films	205
PSSE P-17	<u>Antonio Andonovski</u> , Miha Bukleski, Sandra Dimitrovska-Lazova and Slobotka Aleksovska Construction of a Predictive Model for the Characterization of Layered Perovskite Structures	206
PSSE P-18	<u>Kosta Najkov</u> , Violeta Koleva, Margita Pecovska-Gjorgjevich and Viktor Stefov Centrosymmetric or Non-Centrosymmetric Space Group for Ca₂KH₇(PO₄)₄·2H₂O and Ca₂(NH₄)H₇(PO₄)₄·2H₂O: Infrared and Raman Spectroscopy Study	207

TEXTILE ENGINEERING

ORAL PRESENTATIONS

TE O-1	<u>Sandra Bischof</u> , Zorana Kovačević and Tajana Krička When biomass waste becomes a valuable bioproduct	208
TE O-2	<u>Anica Hursa Šajatović</u> , Tanja Pušić, Kristina Šimić and Edita Vujasinović The Ecological Impact of Protective Clothing Washing	209

POSTER PRESENTATIONS

TE P-1	<u>Leposava Pavun</u> , Magdalena Marjanović and Aleksandra Ivanovska Characterization of Chokeberry Pomace Extract and its Utilization for Dyeing and Functionalization of Fabrics	210
TE P-2	<u>Milena Miljković</u> , Dušan Trajković, Vojkan Miljković and Milena Nikodijević Examination of CIELAB coordinate values for samples painted red by three different manufacturers	211



***PLENARY AND
INVITED
LECTURES***

CXTM

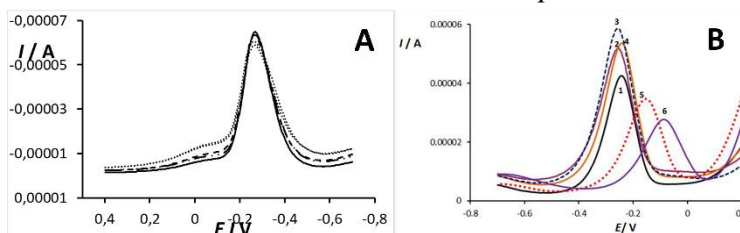
PSSE P-13**Exploring the Electrochemistry of Surface-Active Redox Systems in Voltammetric Analysis of Drug-Drug Interactions**

Sanja Lazarova*, Milkica Arsova and Pavlinka Kokoskarova

*Faculty of Medical Sciences, Goce Delcev University, Štip, N. Macedonia***sanja.lazarova@ugd.edu.mk*

Methylene blue is a model-like surface-active redox system, suitable to study various effects related to chemical interactions involved in voltammetry of surface electrode mechanisms. The redox transformation of methylene blue (MB) described by $2e^-/2H^+$, whereby MB switches between the oxidized form (blue-MB) to a reduced form called leuko-methylene blue (MBH₂).¹ The voltammetric patterns of methylene blue can be analyzed in a way to get access to thermodynamics and kinetics of eventual interactions between MB/MBH₂ and a defined drug. By applying suitable theoretical models developed under square-wave voltammetry, it is possible to evaluate the mechanism, and also kinetic and thermodynamic parameters of interaction between given drug and the electroactive molecules of MB. In experimental protocol, all parameters are kept constant and only concentration of the drug changes.²

Experimental Results: (A) Net SW voltammograms of methylene blue recorded in absence and in presence of ibuprofen, (B) Net-SW voltammograms of methylene blue recorded in absence of vitamin and in presence of vitamin C.



Keywords: voltammetry, kinetics, thermodynamics, drug-drug interactions.

References

1. Gulaboski, R.; Janeva, M.; Maksimova, V. New aspects of protein-film voltammetry of redox enzymes coupled to follow-up reversible chemical reaction in square-wave voltammetry, *Electroanalysis* **2019**, 31 (2). 1-12, 10400397. DOI: <http://dx.doi.org/10.1002/elan.201900028>
2. Janeva, M.; Kokoskarova, P.; Maksimova, V.; Gulaboski, R. Square-wave Voltammetry of Two-step Surface Electrode Mechanisms Coupled with Chemical Reactions – A Theoretical Overview, *Electroanalysis*, **2019**, 29. (1-20), 1040-0397. DOI: <http://dx.doi.org/10.1002/elan.201900416>