

# BOOK of ABSTRACTS

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



19-22 9 2018  
OHRID, R MACEDONIA





**Сојуз на хемичарите и технолозите на Македонија**

**Society of Chemists and Technologists of Macedonia**

**25<sup>th</sup> Congress of SCTM**  
**with international participation**

**BOOK of ABSTRACTS**

**19–22 September 2018**  
**Metropol Lake Resort**  
**Ohrid, R. Macedonia**



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

19–22 September 2018, Metropol Lake Resort, Ohrid

**SCIENTIFIC COMMITTEE MEMBERS**

**President**

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

**Members:**

Academician **Gligor Jovanovski**, Macedonian Academy of Sciences and Arts, Bul. Krste Misirkov 2, 1000 Skopje, R. Macedonia

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

Prof. Dr. **Mustafa Culha**, Genetics and Bioengineering Department, Yeditepe University, Istanbul, Turkey

Prof. Dr. **Jane Bogdanov**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, R. Macedonia

Prof. Dr. **Gordana Bogoeva-Gaceva**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University, Skopje, R. Macedonia

Prof. Dr. **Valentin Mirčeski**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, R. Macedonia

Prof. Dr. **Ljupčo Pejov**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, R. Macedonia

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

Prof. Dr. **Adnan Cahil**, St. Kliment Ohridski Faculty of Pedagogy, Ss. Cyril and Methodius University, Skopje, R. Macedonia

Prof. Dr. **Petre Makreski**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, R. Macedonia

Dr. **Gjorgji Petrushevski**, Research & Development Institute, Alkaloid AD, Skopje, R. Macedonia

Dr. **Ivan Radovic**, Vinca Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

**ORGANIZING COMMITTEE MEMBERS**

**President**

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

**Members:**

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

Prof. Dr. **Aleksandra Buzarovska**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University, Skopje, R. Macedonia

Prof. Dr. **Jadranka Blazevska Gilev**, Faculty of Technology and Metallurgy, Ss. Cyril and Methodius University, Skopje, R. Macedonia

Assoc. Prof. Dr. **Violeta Ivanova Petropulos**, Faculty of Agriculture, Goce Delčev University, Štip, R. Macedonia

Assist. Prof. Dr. **Miha Bukleski**, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, R. Macedonia

**Leon Stojanov**, MSc, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, R. Macedonia

**Katarina Josifovska**, MSc, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, R. Macedonia

**Pece Šerovski**, MSc, Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje, R. Macedonia

# COORGANIZERS:

**Ministry of Education and Science of Republic of Macedonia**



Република Македонија  
Министерство за образование и наука

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



**Goce Delčev University, Štip**



The 25<sup>th</sup> Congress of SCTM is a



recognized event.

Dear Colleagues,

Welcome to the 25<sup>th</sup> Congress of the Society of Chemists and Technologists of Macedonia. Although this is our silver jubilee, our society is celebrating more than 50 years of scientific meetings. The first conference, one of the first activities of our society, was organized in the 1960-ties and was a meeting between the faculties of the Institute of Chemistry at Faculty of Sciences and Mathematics and the Faculty of Technologists, both at the Ss. Cyril and Methodius University in Skopje. They gradually grew into biennial meetings and attracted participants outside of Macedonia. Beginning from the 18<sup>th</sup> Congress in 2004 all our meetings are held in the exceptional setting of Lake Ohrid. In 1994 our society started to organize students' scientific meetings and now the two alternate, so there is a congress organized by our society every year.

Since 2012 we have been using the Open Journal System to manage the editorial process of the [\*Macedonian Journal of Chemistry and Chemical Engineering\*](#) published by our society. In order to streamline the technical management of this congress and future such meetings, we have undertaken for the first time to implement the Open Conference System. You are all now familiar with the whole process of registering, submitting the abstracts etc. – at times you/we did encounter problems but overall we are satisfied with this platform and plan to use it in the future. For all of you who have smart phones, you will find the abstracts and schedule online which can be searched by various criteria. Furthermore, in line with the digital age we live in, for the first time we will not have a printed Book of Abstracts but only an electronic one. A draft version with all submitted abstracts along with the conference program was uploaded to the platform three weeks ago. The final version will be available after the conference and only the presented contributions will be included. Another first at this conference will be a Skype presentation on Saturday. We hope in the future to further improve the technical capabilities by streaming at least some of the lectures online.

Next year the world will be celebrating 150 years of Mendeleev's Periodic table of the chemical elements. Our society was involved from the very beginning two years ago – we immediately contacted our representative to UNESCO to give our full support for this important event marking one of the few discoveries in science that has withstood such a long test of time. It is nice to see the world united in a scientific achievement despite the extreme polarization in other areas. I believe you share my opinion that we are so fortunate to have chosen to pursue chemistry, the ever evolving science. Whenever I hear divisive undignified debates that take place so often now, the words of Sir Humphrey Davy in his discourse delivered at the Royal Society, in November 1825 echo in my ears: *Fortunately science, like that nature to which it belongs, is neither limited by time nor by space. It belongs to the world, and is of no country and of no age. The more we know, the more we feel our ignorance; the more we feel how much remains unknown; and in philosophy, the sentiment of the Macedonian hero can never apply, – there are always new worlds to conquer.*

From the more than 250 contributions given in this book we have a truly diverse body of researchers in many fields of chemistry. But more important than the number is the quality of the scientists presenting their new results: we have two exceptional keynote speakers, 10 invited speakers, 49 oral presentations and 195 poster presentations. Due to the traditional environment of tolerance in Macedonia, it is a truly unique regional conference bringing together the scientists from a very wide area.

I would like to thank sincerely the presidents of the Organizing and Scientific Committees, Prof. Viktor Stefov and Prof. Trajče Stafilov. Also, I must mention Assistant Prof. Jasmina Petreska-Stanoeva and Prof. Marina Stefova. I think this is the best team we could put together to make a really flawless organization. Furthermore, I would like to thank the Ministry of Education and Science of Macedonia, the Ss. Cyril and Methodius University in Skopje and the Goce Delčev University in Štip for their financial support, as well as the commercial sponsors that are given at the end of this book for their financial support and/or support in their products.

I do hope you will enjoy the scientific program of this congress, the interactions with colleagues from other institutions and countries and will build new relationships and collaborations. Most of all I would like to ask you to spend some time with the young researchers and students present here – for one of our main goals is also to build on the nexus between education and research and inspire and energize the young in the intricacies of the science of chemistry. I know I do not need to tell you to enjoy this magnificent lake, for us the most beautiful lake in the world, the inspirational crammed with extraordinary churches city of Ohrid and its unique heritage to world civilization.

Prof. Zoran Zdravkovski, president  
Society of Chemists and Technologists of Macedonia

# CONTENTS

## KEYNOTE LECTURES

- KL 1 RICHARD G COMPTON**  
Department of Chemistry, Oxford University, UK  
**Electrochemical nano-impacts: new insights into nanoparticles** 1
- KL 2 ELENA BOLDYREVA**  
Department of Natural Science, Novosibirsk State University and Institute of  
Solid State Chemistry and Mechanochemistry, Novosibirsk, Russia  
**High pressure research of organic and coordination compounds.  
Retrospect and prospects** 2
- KL 3 KERSTI HERMANSSON**  
Department of Chemistry - Ångström Laboratory, Uppsala University, Uppsala,  
Sweden  
**Multiscale modelling of metal oxide-surfaces – and their aqueous  
interfaces** 3

## INVITED LECTURES

- IL 1 CHRISTOPHER BATCHELOR-MCAULEY**  
Department of Chemistry, Oxford University, UK  
**Single nanoparticle catalysis: nanomorphology and interfacial structure** 4
- IL 2 BERNWARD ENGELEN**  
Institute of Inorganic Chemistry, Siegen University, Siegen, Germany  
**Strong hydrogen bonds – structures, properties, effects** 5
- IL 3 VIOLETA KOLEVA**  
Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences,  
Sofia, Bulgaria  
**Design of phosphate intercalation compounds: synthesis approaches,  
structure and morphology control** 6
- IL 4 MUSTAFA CULHA**  
Genetics and Bioengineering Department, Yeditepe University, Istanbul, Turkey  
**Novel nanocarriers: DNA origami based nanostructures and boron  
nitride nanotubes** 7
- IL 5 MILENA HORVAT**  
Department of Environmental Sciences, Jožef Stefan Institute,  
Ljubljana, Slovenia  
**Analytical challenges in the implementation of the minamata convention** 8
- IL 6 MAJA LEITGEB**  
Laboratory for Separation Processes and Product Design, Faculty of Chemistry  
and Chemical Engineering, University of Maribor, Maribor, Slovenia  
**Enzyme immobilization today** 9
- IL 7 CHIARA GUALANDI**  
Chemistry Department "G. Ciamician", University of Bologna, Bologna, Italy  
**Functional and smart nanofibers for advanced and biomedical  
applications** 10
- IL 8 GORDANA BOGOEVA-GACEVA**  
Faculty of Technology and Metallurgy, Ss. Cyril & Methodius University,  
Skopje, R. Macedonia  
**Filler surface-induced effects in polymer composites: relationship with  
overall composite's properties** 11

<b>IL 9</b>	<b>VALENTIN MIRČESKI</b> Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril & Methodius University, Skopje, Macedonia Department of Electroanalysis and Electrochemistry, Faculty of Chemistry, University of Lodz, Pomorska 163, 90-236 Lodz, Poland <b>Methodological development of advanced voltammetric techniques: theory and application</b>	<b>12</b>
<b>IL 10</b>	<b>LJUPČO PEJOV</b> Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril & Methodius University, Skopje, R. Macedonia <b>Single molecule temperature-dependent theoretical spectroscopy with combined atom centered density matrix propagation and time series analytic methods</b>	<b>13</b>
<b>IL 11</b>	<b>PETRE MAKRESKI</b> Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril & Methodius University, Skopje, R. Macedonia <b>Minerals from Macedonia. spectra-structure correlations by combined use of vibrational (IR and Raman) spectroscopy, X-ray diffraction and thermal analysis</b>	<b>14</b>
<b>IL 12</b>	<b>TOMCE RUNCEVSKI</b> Department of Chemistry, University of California at Berkeley, Berkeley, CA, USA & Department of Chemistry, Southern Methodist University, Dallas, TX, USA <b>Crystal structure solutions from powder diffraction data</b>	<b>15</b>
<b>IL 13</b>	<b>KIRIL HRISTOVSKI</b> Ira A. Fulton Schools of Engineering, Arizona State University, Arizona, USA <b>Developing nano-enbaled water treatment technologies: challenges and barriers</b>	<b>16</b>

## ORAL AND POSTER PRESENTATIONS

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

#### ORAL PRESENTATIONS

<b>ICTM O-1</b>	<u>Stanisław Pietrzyk</u> , Andrzej Wojciech Piotrowicz, Bartosz Handke, Konrad Świerczek <b>Recycling of valuable metals from spent lithium-ion batteries</b>	<b>17</b>
<b>ICTM O-2</b>	<u>Stanisław Pietrzyk</u> , Andrzej Wojciech Piotrowicz, Grzegorz Cios, Piotr Noga <b>Recycling of Nd-Fe-B magnets by hydrogen decrepitation</b>	<b>18</b>
<b>ICTM O-3</b>	<u>Ljubica Andjelkovic</u> , Milorad M. Kuraica, Aleksandar S Nikolic <b>External magnetic field-induced aggregation and sedimentation processes arising in magnetic fluids</b>	<b>19</b>
<b>ICTM O-4</b>	<u>David Havlicek</u> , Jiri Plocek <b>Study of proton conductivity on powder samples using XRD</b>	<b>20</b>
<b>ICTM O-5</b>	<u>Jiri Plocek</u> , Snejana Bakardjieva, Jaroslav Kupcik, Jiri Vacik <b>Preparation and microstructural analyses of nanolaminar ceramic materials</b>	<b>21</b>
<b>ICTM O-6</b>	<u>Matous Kloda</u> <b>Triazines as starting molecules for novel nonlinear optical materials</b>	<b>22</b>
<b>ICTM O-7</b>	<u>Natasha Bakreska</u> , Milica Jakshic, Ane Anchev, Efstathios Politis <b>Co-processing of alternative fuels in cement industru – quality, process and environmental aspects</b>	<b>23</b>

POSTER PRESENTATIONS

ICTM P-1	<u>Ljiljana M Kljajević</u> , Katarina Trivunac, Nataša Mladenović, Adela Egelja, Svetlana Ilić, Jelena J Gulicovski, Snezana S Nenadovic <b>Effect of high-temperature heat treatment on structural properties of metakaolin-based geopolymer samples</b>	24
ICTM P-2	<u>Snezana S Nenadovic</u> , Marija Ivanovic, Miljana Mirkovic, Milos Nenadovic, Ivana Vukanac, Jelena J Gulicovski, Ljiljana M Kljajević <b>Radiological and physicochemical characterization of geopolymer</b>	25
ICTM P-3	<u>Petar Stanic</u> , Marija D. Živković, Tijana Maksimovic, Ljubinka Joksovic, Biljana Smit <b>Unexpected formation of <i>cis</i>-[(DMSO)<sub>2</sub>ClCu<sup>II</sup>(μ-Cl)<sub>2</sub>Cu<sup>II</sup>Cl(DMSO)<sub>2</sub>] in the reaction of <i>trans</i>-[CuCl<sub>2</sub>(DMSO)<sub>2</sub>] with the thiohydantoin type ligand</b>	26
ICTM P-4	<u>Jelena J Gulicovski</u> , Marija Ivanovic, Nataša Mladenović, Katarina Trivunac, Ljiljana M Kljajević, Snezana S Nenadovic <b>Microstructure analysis and adsorption properties of metakaolin based geopolymer samples</b>	27
ICTM P-5	<u>Nimet Orqusha Sheqerxhiu</u> , Avni Berisha, Sereilakhena Phal, Solomon Tesfalidet <b>Surface modification of gold by heterocyclic covalently bonded multi-layered 2D thin films - an experimental and “<i>ab initio</i>” investigation</b>	28
ICTM P-6	<u>Anđela A Franich</u> , Marija D Živković, Snežana Rajković, Miloš I Djuran <b><sup>1</sup>H NMR study of the reactions between dinuclear platinum(II) complexes and nitrogen-containing biomolecules</b>	29
ICTM P-7	<u>Marija D Živković</u> , Anđela A Franich, Snežana Rajković, Miloš I Djuran <b>Hydrolysis of the amide bond in l-methionine-containing peptides catalyzed by new dinuclear Pt(II) complexes with aromatic 1,5-naphthyridine bridging ligand</b>	30
ICTM P-8	<u>Blagica Cekova</u> , Afrodita Ramos, Viktorija Bezhovska <b>Examination of the natural material perlite from the Republic of Macedonia and its application for the synthesis of zeolite 4A</b>	31
ICTM P-9	<u>Blagica Cekova</u> , Viktorija Bezhovska, Afrodita Ramos <b>Adsorption characteristic of the residue extracted with 10% HCl solution from natural red opalite against water vapor depending on the particle size</b>	32
ICTM P-10	<u>Marija Šuljagić</u> , Ljubica Andjelkovic, Predrag Vulić, Predrag Iskrenovic, Ivan Krstic, Mladen Lakic, Milorad M Kuraica, Aleksandar S Nikolic <b>Biocompatible magnetic colloids: insight into the structure, morphology and influence of external magnetic field</b>	33
ICTM P-11	<u>Svetlana Genieva</u> , Ginka Baikusheva-Dimitrova, Romyana Yankova, Miluvka Stancheva <b>Kinetics of thermal decomposition of rare-earth selenites</b>	34
ICTM P-12	<u>Romyana Yankova</u> , Svetlana Genieva, Ginka Baikusheva-Dimitrova <b>Structural and electronic properties of Hf(SeO<sub>4</sub>)<sub>2</sub>(H<sub>2</sub>O)<sub>4</sub>: a combined X-ray and quantum mechanical study</b>	35
ICTM P-13	Jovana V. Bogoeski, Snežana Jovanović-Stević, Biljana Petrović, Marina Ž. Mijajlović, Miloš V. Nikolić, Andriana M. Bukonjić, Dušan Lj. Tomović, Ana S. Stanković, Verica V. Jevtić, Zoran R. Ratković, Srećko R. Trifunović, <u>Gordana P. Radić</u> <b>Reactivity of copper(II) complexes of S-alkyl derivatives of thiosalicylic acid toward small biomolecules, calf thymus DNA and bovine serum albumin</b>	36
ICTM P-14	<u>Gordana P. Radić</u> , Marina Ž. Mijajlović, Miloš V. Nikolić, Andriana M. Bukonjić, Dušan Lj. Tomović, Ana S. Stanković, Verica V. Jevtić, Zoran R. Ratković, Jovana V. Bogoeski, Srećko R. Trifunović <b>Synthesis and characterization of copper(II)-complexes with S,O-tetradentate ligand</b>	37

ICTM P-15	<u>Rumyana Georgieva Gergulova</u> , Diana Rabadjieva, Kostadinka Sezanova <b>Influence of aminoacids on the characteristics of double doped calcium phosphate precursors</b>	38
ICTM P-16	<u>Radojko Jaćimović</u> , Milena Taseska-Gjorgijevski, Trajče Stafilov, Gligor Jovanovski, Petre Makreski <b>Application of <math>k_0</math>-instrumental neutron activation analysis for determination of major and trace elements in some manganese minerals</b>	39
ICTM P-17	<u>Sandra Dimitrovska-Lazova</u> , Peter Tzvetkov, Holger Kohlmann, Christian Pflug, Daniela Kovacheva, Evamarie Hey-Hawkins, Slobotka Aleksovska <b>X-ray and neutron diffraction study of <math>YCo_{1-x}Cr_xO_3</math> (<math>x = 0.25, 0.5, 0.75</math>) perovskites synthesized by solution combustion method</b>	40
ICTM P-18	<u>Aco Janevski</u> , Krsto Blazev, Darko Andronikov, Kiro Mojsov, Sonja Jordeva, Marija Kertakova, Afrodita Zendelska <b>Several ash features obtained from rice husk</b>	41
ICTM P-19	<u>Zora Levi</u> , Rada Petrović, Slavica Sladojević, Darko Bodroža <b>Application of natural tuffs in the processes of purification of graphical industry waste water</b>	42
ICTM P-20	Blagoj Pavlovski, <u>Arianit A. Reka</u> , Blazo Boev, Ivan Boev, Petre Makreski <b>Chemical, spectra-structural and microscopy study of the natural tridymite from Republic of Macedonia</b>	43
ICTM P-21	<u>Jovica Todorov</u> , Vasil Makrievski, Milena Taseska-Gjorgijevski, Trajče Stafilov, Gligor Jovanovski, Radojko Jacimovic, Petre Makreski <b>New optimized two-step liquid-liquid extraction method for consecutive elimination of thallium and arsenic as matrix elements in lorandite mineral</b>	44

## ORGANIC CHEMISTRY, BIOCHEMISTRY AND PHARMACEUTICAL CHEMISTRY

### ORAL PRESENTATIONS

OBPC O-1	<u>Violeta D Jakovljevic</u> , Nataša Đorđević, Bojana Veljković, Zana Dolićanin, Miroslav Vrvic <b>The effect of a high concentration of pollutant on metabolic activity of selected fungi and their bioremediation potential</b>	45
OBPC O-2	<u>Dawid Zych</u> <b>Symmetrical and unsymmetrical NCN-coordinating ligands based on pyrene structure - synthesis and characterization</b>	46
OBPC O-3	<u>Aneta Slodek</u> <b>Novel phenothiazine derivatives - synthesis and characterization</b>	47
OBPC O-4	<u>Olesya Koloskova</u> , Anastasiia Nosova, Musa Khaitov <b>Design of in vivo stabilization technique for liposomal nucleic acids' delivery systems</b>	48
OBPC O-5	<u>Anastasiia Nosova</u> , Olesya Koloskova, Yurii Sebyakin, Musa Khaitov <b>Synthesis of hydrophobic peg derivatives for liposomal nucleic acids delivery</b>	49
OBPC O-6	<u>Maja Hadzieva Gigovska</u> , Ana Petkovska, Jelena Acevska, Natalija Nakov, Blagica Manchevska, Packa Antovska, Sonja Ugarkovic, Aneta Dimitrovska <b>Multiple experimental designs in optimization of experimental variables in forced degradation study of rosuvastatin</b>	50

### POSTER PRESENTATIONS

OBPC P-1	<u>Aurel Nuro</u> , Jonida Salihila, Dorina Shengjergji, Dhimiter Peci, Aida Dervishi <b>Chemical composition of essential oil for <i>Thymus</i> population from Albania</b>	51
OBPC P-2	<u>Vesna Dimova</u> , Mirjana Jankulovska, Milena Jankulovska-Petkovska <b>Quantum chemical studies of some <i>p</i>-substituted benzoylhydrazone derivatives</b>	52

OBPC P-3	<u>Mirjana Jankulovska</u> , Ilinka Spirevska, Vesna Dimova, Milena Jankulovska-Petkovska <b>Thermodynamic dissociation constants of some benzoylhydrazones</b>	53
OBPC P-4	<u>Snezana Ilic-Stojanovic</u> , Vesna Nikolic, Ivana M Savic-Gajic, Ivan M Savic, Ljubiša Nikolic, Slobodan Petrovic <b>Total flavonoid content and radical scavenging activity of red raspberry (<i>Rubus idaeus</i> L.) fruit extracts</b>	54
OBPC P-5	<u>Ivana Nikolić</u> , Ljiljana P. Stanojević, Ana Tačić, Vesna Nikolic, Vesna Ljubisav Savić, Jelena Zvezdanović <b>Antioxidant activity of Osage orange (<i>Maclura pomifera</i> (Raf.) Schneid.) fruit extracts</b>	55
OBPC P-6	<u>Vesna Ljubisav Savić</u> , Vesna Nikolic, Milica I. Stanković, Ivana Nikolić <b>Safety estimation of topical application of wild orange extract (<i>Maclura pomifera</i> (Raf.) Schneid.)</b>	56
OBPC P-7	<u>A. Chapkanov</u> , T. Ignatova, R. Georgiev, T. Dzimbova <b>Synthesis, desing and characterization of short-chain peptide analogues containing aromatic heterocyclic rings</b>	57
OBPC P-8	Snežana Č. Jovanović, <u>Goran M. Petrović</u> , Olga P. Jovanović, Zorica S. Mitić, Jovana N. Krstić <b>Characterization of the volatile composition of frequently used culinary herbs from Lamiaceae family (basil, marjoram, oregano, rosemary and thyme) by HS-GC-MS/FID</b>	58
OBPC P-9	<u>Goran M. Petrović</u> , Jelena G. Stamenković, Olga P. Jovanović, Violeta D. Mitić, Gordana Stojanović <b>Phytochemical analysis of the <i>Elaeagnus angustifolia</i> L. essential oil and headspace volatiles</b>	59
OBPC P-10	<u>Snezana Ilic-Stojanovic</u> , Vesna Nikolic, Saša Savić, Ivana M Savic-Gajic, Ivan Savić, Ljiljana Takić, Slobodan Petrovic <b>Comparison of conventional reflux and ultrasound-assisted extraction techniques of ellagic acid content from <i>Rubus idaeus</i> L.</b>	60
OBPC P-11	<u>Snezana Brasanac Vukanovic</u> , Vanja M. Tadic, Ivana Arsic, Nada Blagojevic, Vesna Vukasinovic-Pesic, Jelena Mutic <b>Metals content in different extracts of <i>Vaccinium myrtillus</i> L.</b>	61
OBPC P-12	<u>Snezana Brasanac Vukanovic</u> , Jelena Mutic, Dalibor M. Stankovic, Ivana Arsic, Nada Blagojevic, Vesna Vukasinovic-Pesic, Vanja M. Tadic <b>The antioxidant potential of different extracts of <i>Vaccinium myrtillus</i> L.</b>	62
OBPC P-13	<u>Sevim Tunalı</u> , Gizem Sinanoglu, Refiye Yanardag <b>In vitro inhibition of collagenase by various peptides, amino acids and chemical substances</b>	63
OBPC P-14	<u>Sevim Tunalı</u> , Fatma Yasar Boztas, Refiye Yanardag <b>Investigation of inhibitory effects of some vitamins, amino acids and peptides on myeloperoxidase activity</b>	64
OBPC P-15	<u>Anca Octavia Dragomirescu</u> , Andrei Felicia <b>The chemical characterization of <i>Salvia officinalis</i> oil and proposal for a pharmaceutical use, in the field of skin antiaging</b>	65
OBPC P-16	<u>Anca Octavia Dragomirescu</u> , Andrei Felicia <b>Chemical characterization and proposal of a dermatocosmetic formulation for <i>Anethum graveolens</i> essential oil, from Timiș region, Romania</b>	66
OBPC P-17	<u>Maya Tavlinova-Kirilova</u> , Kalina Kostova, Mariana Kamenova-Nacheva, Rositsa Nikolova, Boris Shivachev, Vladimir Dimitrov <b>Mannich-type approach to chiral amino-quinolinols - synthesis and application</b>	67

OBPC P-18	<u>K. Dikova</u> , I. Zagranyarska, K. Kostova, R. Nikolova, B. Shivachev, V. Dimitrov <b>Preparation of chiral nonracemic aminobenzylnaphthols by betti- condensation and catalytic applications</b>	68
OBPC P-19	<u>Lirim Sopaj</u> , Kastriot Morina, Flamur Sopaj, Mimoza Koskoviku, Kemajl Kurteshi, Arben Haziri, Majlinda Daci-Ajvazi, Sevdije Govori <b>Green synthesis of silver nanoparticles using Basil extracts and evaluation of genotoxic activity</b>	69
OBPC P-20	Kastriot Morina, <u>Lirim Sopaj</u> , Flamur Sopaj, Mimoza Koskoviku, Kemajl Kurteshi, Albana Mehmeti, Albert Maxhuni, Sevdije Govori <b>Green synthesis of silver nanoparticles using Ginger and Aloe vera extracts and evaluation of genotoxic activity</b>	70
OBPC P-21	<u>Azra Đulović</u> , Dina Vlajčević, Ana Silić, Ivica Ljubenkov, Mirko Ruščić, Ivica Blažević <b>Glucosinolate profiling of <i>Bunias erucago</i> L., <i>Matthiola incana</i> (L.) R. Br. and <i>Lepidium sativum</i> L. (Brassicaceae)</b>	71
OBPC P-22	<u>Zhanina Petkova</u> , Martin Ravutsov, Georgi Dobrikov, Violeta Valcheva, Vladimir Dimitrov <b>Synthesis of benzene and ferrocene sulfonamides with potential antimycobacterial activity</b>	72
OBPC P-23	<u>Jovana Ickovski</u> , Katarina Stepić, Aleksandra Đorđević, Ivan Palić, Goran M. Petrović, Gordana Stojanović <b>Chemical composition and antimicrobial activity of solvent extracts of <i>Artemisia scoparia</i> Waldst. et Kit.</b>	73
OBPC P-24	<u>Ivan Palić</u> , Jovana Ickovski, Aleksandra Đorđević, Violeta Mitić, Goran M. Petrović, Gordana Stojanović <b>Chemical composition of <i>Satureja kitaibelii</i> Wierzb. ex Heuff. essential oils from Serbia during different stages of vegetative development</b>	74
OBPC P-25	<u>Maya Krasimirova Marinova</u> , Mariana Kamenova-Nacheva, Atanas Kurutos, Kalina Kostova, Georgi Dobrikov <b>New organic luminophores – preparation, structure and fluorescence properties</b>	75
OBPC P-26	<u>Yana Nikolova</u> , Pavletta Shestakova, Georgi Dobrikov, Vladimir Dimitrov <b>Borane-mediated asymmetric reduction of ketones by sterically hindered aminodiols as chiral ligands</b>	76
OBPC P-27	<u>Ivana M Savic-Gajic</u> , Ivana Arsen Boskov, Ivan M Savic <b>Total flavonoid contents in the extracts of black locust flowers</b>	77
OBPC P-28	<u>Ivana Arsen Boskov</u> , Ivan M Savic, Snezana Ilic-Stojanovic, Vesna Nikolic, Ljubisa Nikolic, Ivana M Savic-Gajic <b>Effect of extraction solvents on the antioxidant activity of black locust flowers</b>	78
OBPC P-29	<u>Joanna Stoycheva</u> , Ismail Hdoufane, Katarina Josifovska, Menče Najdoska-Bogdanov, Galia Madjarova, Jane Bogdanov, Alia Tadjer, Driss Cherqaoui <b>QSAR models for assessment of the potential of azaindole analogs as HIV-1 attachment inhibitors</b>	79
OBPC P-30	<u>Elena Trajkoska-Bojadziska</u> , Jana Simonovska, Marija Srbinoska, Zoran Kavrakovski, Vesna Rafajlovska <b>Effects of particle size and solid to liquid phase ratio on the yield and composition of the essential oil from the wild oregano</b>	80
OBPC P-31	<u>Marija Srbinoska</u> , Jana Simonovska, Elena Trajkoska-Bojadziska, Zoran Kavrakovski, Vesna Rafajlovska <b>Effect of solvent composition on extraction of total flavonoids from unfermented tobacco</b>	81
OBPC P-32	<u>Pero Sailović</u> , Branka Rodić Grabovac, Snezana Uletilovic <b>Biologically active cellulosic material with the bound cefazolin</b>	82

OBPC P-33	<u>Hurija Džudžević-Čančar</u> , Alema Dedić, Sanjin Gutić, Amra Alispahić <b>Determination of total phenolic, flavonoid, anthocyanin contents and antioxidative activity of ethanolic extracts of blackthorn fruits (<i>Prunus spinosa</i> L) from Bosnia and Herzegovina by spectrophotometric and cyclic voltammetry methods</b>	83
OBPC P-34	<u>Jonida Tahiraj</u> , Elda Marku <b>PAHs Contamination In Elbasani Metallurgical Complex, Albania</b>	84
OBPC P-35	<u>Katerina Jancevska</u> , Gjorgji Petrushevski, Sonja Ugarkovic <b>Implementation of ICH Q3D guideline in the pharmaceutical industry – what should we know about the heavy metals in the commercial drugs</b>	85
OBPC P-36	<u>Zlatko Lozanovski</u> , Jane Bogdan Bogdanov, Miha Bukleski, Marijana Nikolovska <b>Synthesis of monocarbonyl curcumin analogs and UV-Vis studies of their interactions with thiols</b>	86
OBPC P-37	<u>Vasil Makrevski</u> , Tamara Pavlova, Petre Makrevski, Jane Bogdan Bogdanov <b>Synthesis and comparative structural study of (2<i>E</i>,6<i>E</i>)-4-<i>tert</i>-butyl-2,6-bis(2-furylmethylene)cyclohexanone and (2<i>E</i>,6<i>E</i>)-2,6-bis(2-furylmethylene)-cyclohexanone</b>	87
OBPC P-38	<u>Ziko Simakovski</u> , <u>Tamara Pavlova</u> , Zlatko Lozanovski, Alajdin Imerov, Dejan Pejovski, Nora Dochi, Bogdan Bogdanov, Jane Bogdan Bogdanov <b>Synthesis, purification and computational studies of bioactive symmetrical monocarbonyl analogs of curcumin based on the 2,6-bisarylidene cyclohexanone core</b>	88
OBPC P-39	<u>Kosta Najkov</u> , Jane Bogdanov <b>Synthesis and structural study of (2<i>E</i>,6<i>E</i>)-4-<i>tert</i>-butyl-2,6-bis(2-bromobenzylidene)cyclohexanone and (2<i>E</i>,6<i>E</i>)-2,6-bis(2-bromobenzylidene)cyclohexanone</b>	89

## ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

### ORAL PRESENTATIONS

AEC O-1	<u>Violeta D Jakovljevic</u> , Nataša Đorđević, Bojana Veljković, Zana Dolićanin, Miroslav Vrvic <b>Capacity of cladosporius cladosporioides for bioremediation environment contaminated with ethoxylated oleyl-cetyl alcohol</b>	90
AEC O-2	<u>Stefan Penchev Marinov</u> , Maya Stefanova, Jan Czech, Robert Carleer, Jan Yperman <b>Lignocellulosic biomass main components study through pyrolysis</b>	91
AEC O-3	<u>Biljana Balabanova</u> , Robert Šajn, Jasminka Alijagic, Trajče Stafilov, <b>Advanced spatial modeling for copper and lead distribution due to the longtime mining activities</b>	92
AEC O-4	<u>Miloš Kostić</u> , Slobodan Najdanović, Nena Velinov, Miljana Radović, Jelena Mitrović, Danijela Bojić, Aleksandar Bojić <b>Removal of textile dye reactive blue 19 from water by new mesoporous metal sorbent</b>	93
AEC O-5	<u>Elda Marku</u> , Aurel Nuro, Jonida Tahiraj <b>A review of the presence and profile of PCB indicators in different environmental matrices in Albania</b>	94
AEC O-6	<u>Albana Mehmeti</u> , Merita Shehdula, Ismet Hashani, Musaj Paçarizi <b>DPP investigation of heavy metals in honey</b>	95
AEC O-7	Egzontina Shabani, <u>Liridon Berisha</u> , Arsim Maloku, Tahir Arbneshi <b>Voltammetric determination of dopamine and uric acid in serum using anionic surfactants as a surface modifier of carbon paste electrodes</b>	96

<b>AEC O-8</b>	Egzontina Shabani, <u>Liridon Berisha</u> , Arbneshtë Arbneshti, Arsim Maloku <b>A novel spectrophotometric method for determination of famotidine by nitrosyl derivate formation</b>	<b>97</b>
<b>AEC O-9</b>	<u>Katarina Josifovska</u> , Zoran Zdravkovski, Ljupčo Pejov <b>Triclosan in water samples: adjoined experimental and theoretical study under GC-MS conditions</b>	<b>98</b>
<b>AEC O-10</b>	<u>Ana Alexandra Sorescu</u> , Alexandrina Nuta, Rodica Mariana Ion, Ioan Raluca Suica-Bunghez, Sabina Georgiana Nitu, Madalina Grigore <b>Metallic nanoparticles from natural materials: a research overview</b>	<b>99</b>

#### POSTER PRESENTATIONS

<b>AEC P-1</b>	<u>Liljana Anastasova</u> , Nada Kostadinovska, Ana Poceva Panovska, Katerina Brezovska, Jelena Acevska, Natalija Nakov, Zoran Kavrakovski, Aneta Dimitrovska, Suzana Trajkovic Jolevska, Jasmina Tonic Ribarska, Rumenka Petkovska <b>An experimental design approach in optimization of an extraction procedure for AAS determination of Ca, Mg, Zn, Cu and Fe in multiminer dietary supplements</b>	<b>100</b>
<b>AEC P-2</b>	<u>Ljubinka Joksovic</u> , Ivan Jakovljevic, Nevena Ivanovic, Petar Stanic, Biljana Smit <b>Influence of fluoroquinolone antibiotics on biospeciation of iron (III) ion in human blood plasma</b>	<b>101</b>
<b>AEC P-3</b>	<u>Aurel Nuro</u> , Elda Marku, Bledar Murtaj <b>Impact of oil extraction and processing industry in surface waters. Case study: patos-marinza area, Albania</b>	<b>102</b>
<b>AEC P-4</b>	<u>Katerina Havlickova</u> <b>Quality control and quality assurance in analytical laboratory</b>	<b>103</b>
<b>AEC P-5</b>	Jeton Halili, Trëndafil Sertolli, Adelina Nimanaj Halili, Valbonë Veli Mehmeti, Ismet Hashani, Veprim Thaqi, Avni Berisha <b>The adsorption of pesticides through titanium dioxide particles grafted by substituted phenyl layers</b>	<b>104</b>
<b>AEC P-6</b>	<u>Naile Haliti</u> , Lejla Canziba, Egzona Neziri, Valbonë Veli Mehmeti, Jeton Halili, Ramë Vataj, Fetah Podvorica, Avni Berisha <b>Surface modification impact on the graphene oxide adsorption performance toward the Aldrin® molecule</b>	<b>105</b>
<b>AEC P-7</b>	<u>Lejla Canziba</u> , Naile Haliti, Egzona Neziri, Jeton Halili, Avni Berisha <b>Tailoring the graphene surface through the covalent grafting of substituted aryl groups. A pesticide adsorption study</b>	<b>106</b>
<b>AEC P-8</b>	<u>Egzona Neziri</u> , Naile Haliti, Lejla Canziba, Veprim Thaqi, Tahir Arbneshti, Jeton Halili, Ismet Hashani, Valbonë Veli Mehmeti, Fetah Podvorica, Avni Berisha <b>Tuning the adsorption performance of graphite flakes through covalent surface modification with substituted phenyl layers derived from diazonium salts</b>	<b>107</b>
<b>AEC P-9</b>	<u>Maria Angela de B. C. Menezes</u> , Paula Maria Borges de Salles, Márcia Maia Sathler, Ana Clara Oliveira Pelaes, Radojko Jacimovic <b>Neutron activation analysis, <math>k_0</math>-standardization method, at service of health determining impurities in food</b>	<b>108</b>
<b>AEC P-10</b>	<u>Maya Stefanova</u> , Zlatka Milakovska, Stefan Penchev Marinov <b>Potential organic pollutants from core sediment samples, Troyanovo-1 mine, maritsa iztok lignite basin, Bulgaria</b>	<b>110</b>
<b>AEC P-11</b>	<u>Rodrigo Reis de Moura</u> , Maria Angela de B. C. Menezes, Wellington Ferrari da Silva, Igor Felipe Silva Moura, Vinícius Verna Magalhães Ferreira, Alberto Avellar Barreto <b>Nuclear technology development centre, Belo horizonte, Brazil: environmental monitoring program</b>	<b>111</b>

AEC P-12	<u>Fjolla Hashani</u> , Ilirjana Osmani, Taulant Demelezi, Jeton Halili, Musaj Paçarizi, Ismet Hashani, Fetah Podvorica, Avni Berisha <b>The effect of the surfactants on the electrochemical detection performance of the vitamin C</b>	112
AEC P-13	<u>Vesna Vasić</u> , Sladjana Djurdjić, Jelena Mutic, Dražen Lušić, Dušanka Milojković-Opsenica, Živoslav Tešić, Jelena Trifković <b>Authenticity assesment and quality control of croatian honeydew honeys on the basis of multi-element analysis with chemometric approach</b>	113
AEC P-14	<u>Vibor Roje</u> , Filip Galinec <b>Water as a mild extractant of metals and metalloids from soil samples</b>	114
AEC P-15	<u>Vibor Roje</u> , Petar Šutalo <b>Multi-elemental characterization of croatian bottled waters by ICP-AES</b>	115
AEC P-16	<u>Musaj Paçarizi</u> <b>The presence of some heavy metals (Cu, Pb, Cd AND Zn) in honey samples collected in industrialized region of Mitrovica (Kosovo)</b>	116
AEC P-17	<u>Musaj Paçarizi</u> , Valbona Kolshi, Avni Berisha <b>The use of lemon peels as an adsorbents for heavy metals</b>	117
AEC P-18	<u>Zeljko Jacimovic</u> , Nedeljko Latinovic, Jelena Latinovic, Milica Kosovic, Vlatko Kastratovic, Mia Vlahovic, Veselinka Grudic <b>The influence of some pyrazole derivatives and newly synthetised Cu(II), Ni(II) and Zn(II) complexes to the inhibition of <i>Phomopsis viticolamycelium</i> in vitro</b>	118
AEC P-19	<u>Leposava Pavun</u> , Andrija Ćirić, Marina Milenković, Snežana Uskoković-Marković <b>Spectrophotometric Zinc(II) based determination of quercetin in pharmaceutical formulations</b>	119
AEC P-20	<u>Aleksandar Dimitrov</u> , Stela Naydenova, Dimitrinka Ivanova, Marina Dimitrova, Dimitar Gogov <b>Hidrodynamic characteristics of adsorbents with fibrous configuration</b>	120
AEC P-21	Radu Claudiu Fierascu, <u>Irina Fierascu</u> , Raluca Somoghi, Liliana Cristina Soare, Anca Nicoleta Sutan, Mirela Florina Calinescu, Diana Elena Vizitiu, Camelia Ungureanu <b>Development of recipes based on phytosynthesized nanoparticles to reduce biocenotic stress in horticultural crops</b>	121
AEC P-22	Radu Claudiu Fierascu, <u>Irina Fierascu</u> , Sorin Marius Avramescu, Raluca Somoghi, Sorin Claudiu Ulinici, Cristina Elena Dinu-Pirvu, Valentina Anuta <b>Synthesis and characterization of composites for the removal of endocrine disrupting compounds from water</b>	122
AEC P-23	<u>Liljana Stavreska</u> , Sara Drogrishki, Teodora Jovanoska, Jasmina Petreska Stanoeva, Marina Stefova, Margit Cichna-Markl <b>Using anthocyanin profiles for the authentication of various red fruits and products thereof</b>	123
AEC P-24	<u>Radost Ilieva</u> , Antonina Kovacheva, Diana Rabadjieva, Stefka Tepavitcharova, Ivelin Vladov <b>Analytical and thermodynamic study of trace metals in surface waters of the Central sub-Balkan region, Bulgaria</b>	124
AEC P-25	<u>Antonina Petrova Kovacheva</u> , Stefka Tepavitcharova, Diana Rabadjieva <b>Thermodynamic modeling for evaluation of trace metals impact on the ecosystem in the protected site PODA, Bulgaria</b>	125
AEC P-26	<u>Olga Veleva</u> , Penka Vassileva, Katerina Bacheva Andonovska, Trajče Stafilov, Metody Karadjov, Irina Bogdanova Karadjova <b>Gold decorated silica cores - synthesis, characterization and extraction efficiency toward Hg(II) and methylHg</b>	126
AEC P-27	<u>Olga Veleva</u> , Ivanka Dakova, Penka Vassileva, Katerina Bacheva Andonovska, Trajče Stafilov, Metody Karadjov <b>Ionic liquid grafted on submicron silica spheres – efficient sorbent for noble metals</b>	127

<b>AEC P-28</b>	Irina Fierascu, Radu Claudiu Fierascu, <u>Raluca Somoghi</u> , Sorin Marius Avramescu, Sorin Claudiu Ulinici, Gabriel Vasilievici, Cristian Andi Nicolae <b>Synthesis and characterization of catalytic systems composed of metallic oxides deposited on Al<sub>2</sub>O<sub>3</sub> with applications in advanced oxidation processes</b>	<b>128</b>
<b>AEC P-29</b>	Irina Fierascu, <u>Radu Claudiu Fierascu</u> , Iuliana Raut, Mariana Calin, Melania Liliana Arsene, Ana Maria Gurban, Luiza Jecu, Petronela Fotea, Stefan-Ovidiu Dima, Marius Ghiurea, Raluca Somoghi, Cristian-Andi Nicolae, Valentin Raditoiu <b>Transdisciplinary methodologies for the study and valorisation of cultural heritage artifacts</b>	<b>129</b>
<b>AEC P-30</b>	Irina Fierascu, <u>Radu Claudiu Fierascu</u> , Petronela Fotea, Alina Ortan, Ioana Popitui, Alexandru Stirban, Ioan Constantin Inel, Gabriel Rustoiu <b>Development of nanomaterials and nanostructures for preservation of cultural heritage artifacts</b>	<b>130</b>
<b>AEC P-31</b>	<u>Raluca Somoghi</u> , Irina Fierascu, Radu Claudiu Fierascu, Violeta Purcar, Cosmin Mihai Cotrut <b>Sol-gel synthesis of modified zinc oxide nanoparticles for metallic coatings and the anti-corrosive effect of the final materials</b>	<b>131</b>
<b>AEC P-32</b>	<u>Marjan Dimitar Piponski</u> , Tanja Bakovska Stojmenova, Marina Naumoska Topkoska, Stefan Pavel Stefov, Magdalena Marjan Piponska, Elena Lazarevska Todevska, Gordana Trendovska Serafimovska <b>Fast simple high-throughput HPLC method for quantification of nitroglycerin in retard tablets</b>	<b>132</b>
<b>AEC P-33</b>	<u>Marjan Dimitar Piponski</u> , Tanja Bakovska Stojmenova, Marina Naumoska Topkoska, Stefan Pavel Stefov, Magdalena Marjan Piponska, Elena Lazarevska Todevska, Gordana Trendovska Serafimovska <b>Three different strategies in development of HPLC method for simultaneous determination of paracetamol and ibuprofen in tablets</b>	<b>133</b>
<b>AEC P-34</b>	<u>Sacira Mandal</u> , Huriya Džudžević Čančar, Alema Dedić, Amra Alispahić <b>Preparation of the fatty acid derivatives of castor oil by methanolysis</b>	<b>134</b>
<b>AEC P-35</b>	<u>Sacira Mandal</u> , Huriya Džudžević Čančar, Alema Dedić, Amra Alispahić <b>Determination of total iron content in selected herbal tea products</b>	<b>135</b>
<b>AEC P-36</b>	<u>Elisaveta Mladenova</u> , Ralitsa Balkanska, Tsvetomil Voyslavov, Rositsa Shumkova <b>Identification of Bulgarian honeydew honeys and monofloral honeys</b>	<b>136</b>
<b>AEC P-37</b>	<u>Lidia Ivanova</u> , Paunka Vassileva, Albena Detcheva <b>Comparison of the adsorption properties of <i>Mentha spicata</i> L. and <i>Ruta graveolens</i> L. with respect to their use as biosorbents for Cu<sup>2+</sup> and Cd<sup>2+</sup> ions</b>	<b>137</b>
<b>AEC P-38</b>	<u>Lenche Velkoska-Markovska</u> , Biljana Petanovska-Ilievska <b>HPLC method development for determination of active ingredient in pesticide formulations monosan herbi and DMA-6</b>	<b>138</b>
<b>AEC P-39</b>	<u>Lenche Velkoska-Markovska</u> , Biljana Petanovska-Ilievska <b>HPLC method development for determination of some pesticide residues in water samples</b>	<b>139</b>
<b>AEC P-40</b>	<u>Nives Vladislavić</u> , Marijo Buzuk, Ivana Škugor Rončević, Maša Buljac <b>Simple electroanalytical methods for sunset yellow artificial dye (E-110) determination in food</b>	<b>140</b>
<b>AEC P-41</b>	<u>Marijo Buzuk</u> , Ivana Škugor Rončević, Nives Vladislavić, Maša Buljac <b>Electrochemical behavior of mixed silver-copper sulfide toward H<sub>2</sub>O<sub>2</sub>: analytical applicability for biosensing systems</b>	<b>141</b>
<b>AEC P-42</b>	<u>Katerina Bacheva Andonovska</u> , Ramize Kurti, Adelina Osmani, Elena Cimevska, Trajče Stafilov <b>Determination of mineral nutrients in raw nuts and seeds from the markets in Skopje</b>	<b>142</b>

AEC P-43	<u>Biljana Balabanova</u> , Violeta Ivanova-Petropulos, Liping Fan, Yan Minxiu, Wang Meicong, Liang Yanqiu <b>Characterization of multi-elements content and isotopes ratio profiles for various plant food due to the historical and modern metal pollution</b>	143
AEC P-44	<u>Zlate S Veličković</u> , Zoran J Bajić, Radovan Karkalic, Vladimir Mladenovic, Aleksandar Marinkovic <b>New adsorbent based on carp scales modified with cerium nanoparticles for the removal of arsenic from water</b>	144
AEC P-45	<u>Flamur Sopaj</u> , Emmanuel Mousset, Fetah Podvorica, Ramë Vataj <b>Systematic evaluation of the degradation of methyl orange by fenton process at a wide range of concentrations of H<sub>2</sub>O<sub>2</sub> and Fe<sup>2+</sup></b>	145
AEC P-46	<u>Besa Mulaj</u> , Marte Raja, Mentor Hamidi, Sevdije Govori, Ramë Vataj, Fetah Podvorica, Flamur Sopaj <b>Degradation of methyl violet, methyl blue, and methyl red by fenton process</b>	146
AEC P-47	<u>Marte Raja</u> , Besa Mulaj, Fetah Podvorica, Ramë Vataj, Sevdije Govori, Flamur Sopaj <b>The influence of the chemical nature of organic compounds on the efficiency of their degradation by Fenton process</b>	147
AEC P-48	<u>Jelena Mitrović</u> , Miljana Radović, Milica Petrović, Miloš Kostić, Danijela Bojić, Aleksandar Bojić <b>Degradation of textile dye reactive orange 16 by UV-activated peroxydisulfate process in continious photoreactor</b>	148
AEC P-49	<u>Biljana Dojčinović</u> , Dalibor M. Stanković, Miloš Ognjanović, Nataša Zabukovec Logar, Bratislav Antić <b>Removal of radiotoxic elements (Co and Sr) from contaminated water using environmentally compatible magnetic nanomaterials</b>	149
AEC P-50	<u>Tim Causon</u> , Violeta Ivanova-Petropulos, Dragana Petruseva, Elena Bogeve, Stephan Hann <b>Application of liquid chromatography combined with low-field drift tube ion mobility time-of-flight mass spectrometry (HPLC×IM-TOFMS) for red wine fingerprinting</b>	150
AEC P-51	<u>Elena Bogeve</u> , Violeta Ivanova-Petropulos, Trajče Stafilov, Marina Stefova, Barbara Siegmund, Nicole Pabi, Ernst Lankmayr <b>Determination of aroma compounds in vranec wines produced with different oenological practices</b>	151
AEC P-52	<u>Nedeljko Latinovic</u> , Zeljko Jacimovic, Jelena Latinovic, Milica Kosovic, Vlatko Kastratovic, Miljan Bigović <b>The examination of potential fungicidal activity ethyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxylate and ethyl-1-(4-nitrophenyl)-5-(trifluoromethyl)-1H-pyrazole-4-carboxylate on fungus <i>Botryosphaeria dothidea</i> under laboratory conditions</b>	152
AEC P-53	<u>Magdalena Trajkovska Trpevska</u> , Mladenka Chakarovski, Izabela Stojanoska <b>Examination of the quality of the enviromental media in REK Oslomej</b>	153
AEC P-54	<u>Biljana Jordanoska Shishkoska</u> , Trajče Stafilov, Valentina Pelivanoska <b>Differentiation of Macedonian tobacco using multielement composition - comparison with corresponding soil</b>	154
AEC P-55	<u>Milena Jankulovska-Petkovska</u> , Mirjana Jankulovska, Vesna Dimova <b>Protonation of citraconic and glutaconic acid in aqueous perchloric acid solutions</b>	155
AEC P-56	<u>Kosta Najkov</u> , Leon Stojanov, Valentin Mirčeski <b>Voltammetric study of redox properties of blood serum isolated from mice treated with electrolyzed reduced water</b>	156
AEC P-57	<u>Martina Bogojovska</u> , Viktor Damjanovski, Jasmina Petreska Stanoeva, Marina Stefova <b>Optimization of solid-phase extraction followed by HPLC-DAD-MS characterization of honey polyphenols</b>	157

<b>AEC P-58</b>	Ivana Taseska, Jasmina Petreska Stanoeva, <u>Marina Stefova</u> <b>Development of reversed phase HPLC-DAD-MS method for characterization of cannabinoids in hemp oil samples</b>	<b>158</b>
-----------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------

## PHYSICAL, STRUCTURAL CHEMISTRY, SPECTROSCOPY AND ELECTROCHEMISTRY

### ORAL PRESENTATIONS

<b>PSSE O-1</b>	<u>Bekir Salih</u> <b>Sol-gels in proteomics applications</b>	<b>159</b>
<b>PSSE O-2</b>	<u>Dila Kaya</u> , Kaan Keçeci <b>Fabrication and applications of nanoporous materials</b>	<b>160</b>
<b>PSSE O-3</b>	<u>Krešimir Molčanov</u> <b>Iodide<math>\cdots\pi</math> interactions of perhalogenated quinones in co-crystals with organic bases</b>	<b>161</b>
<b>PSSE O-4</b>	<u>Vladimir Stilinović</u> , Dominik Cinčić <b>Halogen bond as a rival to hydrogen bond in crystal engineering – cocrystals of N-halogenoimides</b>	<b>162</b>
<b>PSSE O-5</b>	<u>Dalibor M Marinković</u> , Stefan M Pavlović, Miroslav V Stanković <b>Deactivation aspects of methanolysis catalyst based on CaO loaded on mesoporous carrier</b>	<b>163</b>
<b>PSSE O-6</b>	<u>Dalibor M. Stanković</u> , Miloš Ognjanović, Vesna Vukojević, Sladjana Djurdjić, Biljana Dojčinović, Bratislav Antić <b>Nano-structured materials and their application in the detection of biological compounds</b>	<b>164</b>
<b>PSSE O-7</b>	<u>Avni Riza Berisha</u> <b>Aryldiazonium interaction/chemical grafting on graphyne and graphydine structures via “<i>ab initio</i>” calculations</b>	<b>165</b>
<b>PSSE O-8</b>	<u>Kai S. Exner</u> <b>Recent model development in theoretical electrochemistry in order to close the apparent community gap between electrocatalysis and battery research</b>	<b>166</b>
<b>PSSE O-9</b>	<u>Vancho Kocovski</u> <b>Temperature dependence of radiative lifetimes, optical and electronic properties of silicon nanocrystals capped with various organic ligands</b>	<b>167</b>
<b>PSSE O-10</b>	<u>Flamur Sopaj</u> , Nihal Oturan, Fetah Podvorica, Mehmet Oturan <b>Efficiency of indirect electrolytic degradation of sulfamethazine by fenton’s reagent generated at carbon sponge, carbon felt, and stainless steel cathode</b>	<b>168</b>
<b>PSSE O-11</b>	<u>Leon Stojanov</u> , Valentin Mirčeski, Sławomira Skrzypek <b>A theoretical and experimental square-wave voltammetric study of ascorbic acid in the light of multi-step electron transfer mechanism</b>	<b>169</b>
<b>PSSE O-12</b>	<u>Milena Jankulovska-Petkovska</u> , Teresa Lana Villarreal, Roberto Gomez <b>The electrochemistry as a general tool to unravel the electronic structure and the (photo)electrocatalytic properties of nanostructured titanium dioxide</b>	<b>170</b>
<b>PSSE O-13</b>	<u>Monika Stojanovska Pecova</u> , Gjorgji Petrushevski, Sonja Ugarkovic, Petre Makreski <b>How heavy is heavy magnesium carbonate – tetrahydrate or pentahydrate?</b>	<b>171</b>

### POSTER PRESENTATIONS

<b>PSSE P-1</b>	<u>Fjolla Hashani</u> , Jeton Halili, Valbonë Veli Mehmeti, Avni Berisha <b>Electrochemical detection of ascorbic acid in the presence of sodium dodecylbenzenesulfonate</b>	<b>172</b>
-----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------

PSSE P-2	<u>Jeton Halili</u> , Avni Berisha <b>Experimental and Monte Carlo simulation study of aldrin adsorption on rutile surface</b>	173
PSSE P-3	<u>Veton Haziri</u> , Jean Francois Boily, Avni Berisha <b>Monte Carlo simulation studies toward the understanding of the solvent/solute interaction between the oxygen molecules formed by secm onto Fe(001) surface</b>	174
PSSE P-4	<u>Veton Haziri</u> , Jean Francois Boily, Avni Berisha, Fetah Podvorica, Fatbardh Gashi, Ramë Vataj, Bashkim Thaqi, Musaj Paçarizi <b>Effect of time, bubble diameter and pH value on the electrochemical behavior of oxygen bubble emerged on hematite and gold electrode</b>	175
PSSE P-5	<u>Valbonë Veli Mehmeti</u> , Avni Berisha, Fetah Podvorica <b>Carboxylated graphene oxide as a corrosion inhibitor for tantalum metal – an experimental and “<i>ab initio</i>” study</b>	176
PSSE P-6	<u>Valbonë Veli Mehmeti</u> , Jeton Halili, Avni Riza Berisha, Fetah Podvorica <b>Experimental and computational evaluation of <i>n</i>-alkanoic acids as a corrosion inhibitor niobium in sulfuric acid solution</b>	177
PSSE P-7	<u>Egzona Neziri</u> , Naile Haliti, Lejla Canziba, Avni Berisha <b>Experimental, theoretical (DFT) and Monte Carlo simulation of aldrin adsorption onto bare and modified graphite surface</b>	178
PSSE P-8	<u>Lejla Canziba</u> , Naile Haliti, Egzona Neziri, Avni Berisha <b>Monte Carlo simulations and experimental study of the aldrin adsorption onto graphene surface modified with substituted phenyl layers</b>	179
PSSE P-9	<u>Naile Haliti</u> , Lejla Canziba, Egzona Neziri, Makfire Sadiku, Valbonë Veli Mehmeti, Jeton Halili, Teuta Selimi, Avni Berisha <b>“<i>Ab Initio</i>” and experimental evaluation of the aldrin adsorption onto bare and covalently modified graphene oxide surface</b>	180
PSSE P-10	<u>Avni Riza Berisha</u> <b>DFT and MD study of the interaction of some substituted aryl diazonium cations with graphene oxide</b>	181
PSSE P-11	<u>Vladimir A Sreckovic</u> , Ljubinko M. Ignjatovic, Milan S. Dimitrijevic <b>Determination of rate coefficients of chemi-ionization processes</b>	182
PSSE P-12	<u>Milena Rosić</u> , Dejan Zagorac, Maria Čebela, Dragana Jordanov, Jelena Zagorac, Jelena Luković, Aleksandra Zarubica, Branko Matović <b>Examination of nanostructured CoMoO<sub>4</sub> obtained by glycine nitrate procedure</b>	183
PSSE P-13	<u>Dragana Jordanov</u> , Dejan Zagorac, Jelena Zagorac, Milena Rosić, Maria Čebela, Jelena Luković, Branko Matović <b>Energy landscape investigations of Y-ternary system (Y<sub>2</sub>O<sub>3</sub>S)</b>	184
PSSE P-14	<u>Jelena Milićević</u> , Milan Vraneš, Aleksandra Dimitrijević, Slobodan Gadžurić, Tatjana Trtić-Petrović <b>Liquid-liquid equilibria of aqueous two-phase systems based on pyridinium ionic liquids</b>	185
PSSE P-15	<u>Milan Vraneš</u> , Snežana Papović, Slobodan Gadžurić, Jovana Panić, Aleksandar Tot, Sanja Belić <b>A comparative study on the interactions of imidazolium and pyrrolidinium-based ionic liquids with organic carbonates</b>	186
PSSE P-16	Nese Yuncu, Songul Sevinc, Keziban Atacan, <u>Salih Zeki Bas</u> , Mustafa Ozmen <b>Graphene oxide-CuFe<sub>2</sub>O<sub>4</sub> nanocomposite for simultaneous electrochemical detection of catechol and hydroquinone</b>	187
PSSE P-17	Salih Zeki Bas, <u>Salih Yildiz</u> <b>Gold nanoparticle functionalized graphene oxide nanocomposite film for amperometric detection of hydrogen peroxide</b>	188

PSSE P-18	<u>Violeta Koleva</u> , Tanya Boyadzhieva, Radostina Stoyanova <b>Mixed <math>\text{NH}_4\text{Mn}_{1-x}\text{Fe}_x\text{PO}_4 \cdot \text{H}_2\text{O}</math> dittmarites as highly efficient precursors for synthesis of electrochemically active <math>\text{LiMn}_{1-x}\text{Fe}_x\text{PO}_4</math> olivines: effect of the cation substitution on structure, IR spectra and morphology</b>	189
PSSE P-19	<u>Mustafa Ozmen</u> <b>The preparation of mesoporous clay composite containing dispersed iron oxide nanoparticles</b>	190
PSSE P-20	<u>Irina Stambolova</u> , Stanko Yordanov, Vladimir Blaskov, Lyuben Lakov, Sasho Vassilev, Ognyan Dimitrov, Albena Dimitrova Bachvarova-Nedelcheva <b>Zirconia sol-gel films, coated on <math>\text{SiO}_2</math> and <math>\text{CeO}_2</math> with enhanced barrier properties</b>	191
PSSE P-21	<u>Albena Dimitrova Bachvarova-Nedelcheva</u> , Stanko Yordanov, Reni Iordanova, Irina Stambolova, Vladimir Blaskov <b>The role of metal alkoxide on the sol – gel synthesis and properties of Ti and Zr nanopowders</b>	192
PSSE P-22	<u>Miloš Ognjanović</u> , Dalibor M. Stanković, Biljana Dojčinović, Bratislav Antić <b>Reduced graphene oxide modified with Mg-ferrite nanoparticles for potential applications in biosensors</b>	193
PSSE P-23	<u>Ana Alexandra Sorescu</u> , Alexandrina Nuta, Rodica Mariana Ion, Cristina Lavinia Nistor <b>Physical – chemical characterization and antioxidant activity of noble metal nanoparticles from <i>Robinia pseudacacia</i></b>	194
PSSE P-24	<u>Jovica Todorov</u> , Valentin Mirčeski <b>Amperometric detection of triacetone triperoxide at electrode modified with gold-prussian blue nanocomposite</b>	195
PSSE P-25	<u>Jovica Todorov</u> , Jane Bogdanov, Petre Makreski <b>Synthesis and comparative structural study of (2E,6E)-2,6-bis[(2-trifluoromethyl)benzylidene]cyclohexanone and (2E,6E)-4-tert-butyl-2,6-bis[(2-trifluoromethyl)benzylidene]cyclohexanone</b>	196
PSSE P-26	<u>Miha Bukleski</u> , Sandra Dimitrovska-Lazova, Slobotka Aleksovska <b>Synthesis and characterization of perovskite-MWCNTs composites</b>	197
PSSE P-27	<u>Viktor Stefov</u> , Violeta Koleva, Metodija Najdoski, Adnan Cahil, Zuldjevat Abdija <b>Infrared and Raman spectra of <math>\text{MgRbAsO}_4 \cdot 6\text{H}_2\text{O}</math></b>	198
PSSE P-28	<u>Margarita Pecovska-Gjorgjevich</u> , Viktor Stefov, Metodija Najdoski, Violeta Koleva, Slavko Mentus, Gjorgji Petrushevski <b><math>\text{Mg}:\text{KH}(\text{XO}_4)_2 \cdot 15\text{H}_2\text{O}</math> (X = P, As) containing acidic dimer units: Electrochemical impedance spectroscopy, IR spectroscopy and DSC studies</b>	199

## BIOTECHNOLOGY AND FOOD TECHNOLOGY

### ORAL PRESENTATIONS

BFT O-1	<u>Katarina Mihajlovski</u> , Marija Milić, Suzana Dimitrijević-Branković <b>Production of enzymes by a new strain <i>Streptomyces fluvissimus</i> CKS7 using agricultural by-products</b>	200
BFT O-2	<u>Hatice Zengin</u> , Ayşe Giritlioğlu, Zeynep Tuğçe Ata <b>The effect of edible coating containing Turkish mountain tea extract on the fresh strawberries</b>	201
BFT O-3	<u>Sibel Kahraman</u> , Mine Tunç, Sevinç Büşra Değerli <b>Extraction of total carotenoids and <math>\beta</math>-carotene from pumpkin by using different solvent systems</b>	202

POSTER PRESENTATIONS

<b>BFT P-1</b>	<u>Katarina Mihajlovski</u> , Marija Milić, Darka D Marković <b>Possibility of using microbial enzymes produced by <i>Streptomyces fluvissimus</i> CKS7 in hydrolysis process</b>	<b>203</b>
<b>BFT P-2</b>	<u>Jelena Stanojević</u> , Ljiljana P. Stanojević, Dragan Cvetković, Marija Stevanović <b>Determination of capsaicin content and antioxidant activity of hot pepper (<i>Capsicum annuum</i> L.) seeds ethanolic extract</b>	<b>204</b>
<b>BFT P-3</b>	<u>Ljiljana P. Stanojević</u> , Jelena Stanojević, Dragan Cvetković, Jelena Zvezdanović, Vesna Savić, Vesna Nikolic <b>Comparative analisys of chemical composition and antioxidant activity of isolated and comercial essential oil from rosemary (<i>Rosmarinus oficinalis</i> L.)</b>	<b>205</b>
<b>BFT P-4</b>	<u>Dragan Cvetković</u> , Marija Stevanović, Jelena Zvezdanović, Jelena Stanojević, Ljiljana P. Stanojević, Sanja Petrović <b>Antioxidant activity of aqueous extract from raspberry (<i>Rubus idaeus</i> L.) leaves esimated by DPPH test</b>	<b>206</b>
<b>BFT P-5</b>	Jovan Ćirić, Nataša Joković, <u>Slavica Ilić</u> , Sandra Konstantinović, Dragiša Savić, Vlada Veljković <b>The growth of <i>Enterococcus faecalis</i> MK3-10A on the combined media with glucose and waste glycerol</b>	<b>207</b>
<b>BFT P-6</b>	Jovan Ćirić, <u>Slavica Ilić</u> , Sandra Konstantinović, Dragiša Savić, Vlada Veljković <b>Utilization of waste glycerol from biodiesel production by freshwater microalgae</b>	<b>208</b>
<b>BFT P-7</b>	<u>Julijana Cvetković</u> , Katerina Bacheva Andonovska, Trajče Stafilov, Milena Taseska-Gjorgjievska, Duško Nedelkovski, Aleksandar Markovski, Melpomena Popovska, Viktor Gjamovski <b>Mineral composition and phenolic content of pomegranate fruit (<i>Punica granatum</i> L.)</b>	<b>210</b>
<b>BFT P-8</b>	<u>Tea Bilušić</u> , Azra Đulović, Franko Burčul, Josip Tomaš, Ivica Ljubenković, Joško Markić, Ivica Blažević <b>In vitro enzymatic digestion of glucosinolates and isothiocyanates of <i>Lepidium latifolium</i> L.</b>	<b>211</b>
<b>BFT P-9</b>	<u>Irena Karova</u> , Elena Velickova, Jana Simonovska, Eleonora Winkelhausen, Vesna Rafajlovska <b>Industrial production of beaten cheese with propionic bacteria</b>	<b>212</b>
<b>BFT P-10</b>	<u>Jana Simonovska</u> , Elena Velickova, Anita Grozdanov, Zoran Kavrakovski, Vesna Rafajlovska <b>Extraction of wild oregano with different particle size</b>	<b>213</b>
<b>BFT P-11</b>	<u>Sandra Stamenković Stojanović</u> , Ivana T. Karabegović, Vladimir P. Beškoski, Nada Č. Nikolić, Miodrag L. Lazić <b>Modeling <i>Bacillus subtilis</i> growth kinetics under different oxygen transfer rates</b>	<b>214</b>
<b>BFT P-12</b>	Svetlana H. Lakićević, Aleksandra S. Djordjević, Ivana T. Karabegović, Nada Č. Nikolić, Sandra Stamenković Stojanović, <u>Miodrag L. Lazić</u> <b>Antioxidant and antimicrobial activity of Plovdina wine with aromatic plants</b>	<b>215</b>
<b>BFT P-13</b>	<u>Aleksandar Lazarević</u> , Sanja Petrović, Jelena Stanojević, Dragan Cvetković, Jelena Zvezdanović <b>Irreversible Bacteriopheophytin <i>a</i> degradation induced by visible light, UV-A and UV-B irradiation in methanol solutions</b>	<b>216</b>

## POLYMERS AND POLYMER MATERIALS

*ORAL PRESENTATIONS*

- POL O-1** Stoja Milovanovic, Jasna Ivanovic, Darka D Markovic, Irena Zizovic  
**Biomaterials for controlled thymol release produced using supercritical CO<sub>2</sub>** 217
- POL O-2** Aleksandra Ivanoska-Dacikj, Gordana Bogoeva-Gaceva, Andres Krumme, Chiara Scalera, Velimir Stojkoski, Icko Gjorgoski, Trpe Ristoski, Ivica Gjurovski, Valentin Mirčeski  
**Polyurethane/graphene oxide grafts for tissue engineering** 218
- POL O-3** Aleksandra Buzarovska  
**Flexible thermoplastic polyurethane/ZnO nanocomposite foams for biomedical application** 219
- POL O-4** Victor Boey, Vania Georgieva Ilcheva, Dragomir Tatchev, Georgi Avdeev, Galina Zamfirova, Valentin Gaydarov, Vanya Lilova, Eike Gericke, Armin Hoell, Tamara Petkova  
**Optical, structural and mechanical properties of sol-gel organic – inorganic hybrids, obtained by co-condensation of two ureasilicate stoichiometric precursors** 220

*POSTER PRESENTATIONS*

- POL P-1** Ivan Stefanović, Enis S. Džunuzović, Bojana M. Marković, Aleksandra B. Nastasović, Jasna V. Džunuzović  
**Investigation of the structure and surface properties of novel polyurethane networks based on polycaprolactone** 221
- POL P-2** Bojana M. Marković, Zvezdana P. Sandić, Ivan Stefanović, Jasna V. Džunuzović, Antonije E. Onjia, Aleksandra B. Nastasović  
**Silver(I) adsorption on magnetic macroporous chelating polymer** 222
- POL P-3** Danica Zmejkoski, Dragica Spasojević, Marina Soković, Jasmina Glamočlija, Irina Orlovska, Natalia Kozyrovska, Ksenija Radotić  
**Antimicrobial composite polymers as potential agents in chronic wound healing** 223
- POL P-4** Jelena Pajnik, Ivana Lukic, Stoja Milovanovic, Irena Zizovic  
**High pressure functionalization of bio-composite films with thymol** 224
- POL P-5** Nimet Orqusha Sheqerxhiu, Avni Berisha, Sereilakhena Phal, Solomon Tesfalidet  
**Electrochemical surface modification of glassy carbon electrode by 2D covalently bonded thin polymeric film composed of heterocyclic moieties** 225
- POL P-6** Gordana Bogoeva-Gaceva, Dimko Dimeski, Vineta Srebrenkoska  
**Tribological behavior of polymer composites intended for pneumatic valve spool** 226
- POL P-7** Emilija Damjanovska, Dejan Stojevski, Monika Doneva, Violeta Vasilevska, Nikodinovska, Anita Grozdanov, Perica Paunović, Aleksandar Dimitrov  
**Electrical properties and characterization of polymer matrix composites reinforced with graphene, MWCNTs and a mixture of graphene, MWCNTs and fullerenes** 227
- POL P-8** Bashkim Thaci, Salih Gashi, Nexhat Daci, Fetah Podvorica, Majlinda Daci-Ajvazi  
**The role of modification process on properties of reverse osmosis membranes** 228
- POL P-9** Miroslava Valchanova, Stanislav Rangelov, Sevdalina Turmanova, Emilya Ivanova  
**Nanosized polymer structures formed from diblock copolymers based on poly(allylglycidyl ether) and polyglycidol in water** 229
- POL P-10** Nataša Jović Orsini, Dragana D Cerovic, Mirjana Milić, Jablan Dojčilović, Slavica Maletić  
**Dielectric properties of epoxy/graphite flakes composites** 230
- POL P-11** Slavica Maletić, Nataša Jović Orsini, Dragana D Cerovic, Jablan Dojčilović  
**The influence of graphite load content on dielectric properties of composites** 231

<b>POL P-12</b>	Marija Prosheva, Radmila Tomovska, <u>Jadranka Blazevska-Gilev</u> <b>Synthesis of reduced graphene oxide/multiwalled carbon nanotubes/polymer nanocomposites</b>	<b>232</b>
<b>POL P-13</b>	Monika Doneva, Radek Fajgar, <u>Jadranka Blazevska-Gilev</u> <b>Pulsed laser depositon and characterisation of platinum- and palladium-doped graphene thin films</b>	<b>233</b>
<b>POL P-14</b>	Ana Trajcheva, Nikolaos Politakos, Radmila Tomovska, <u>Jadranka Blazevska-Gilev</u> <b>Synthesis of graphene nanoribbons/polymer nanocomposites and its reinforcing effect</b>	<b>234</b>
<b>POL P-15</b>	<u>Dragana D Cerovic</u> , Slavica Maletić, Ivan M Petronijevic, Filip S Marinkovic, Jablan Dojčiloović, Dusan M Popovic <b>Dielectric properties of biocomposites of polypropylene with oats and rye bran</b>	<b>235</b>
<b>POL P-16</b>	<u>Vania Georgieva Ilcheva</u> , Victor Boev, Taras Kavetsky, Oleh Smutok, Mykhailo Gonchar, Tamara Petkova <b>Organically modified silicate hybride materials as sensing layers for enzyme immobilization in amperometric biosensors</b>	<b>236</b>
<b>POL P-17</b>	<u>Predrag Karamanolevski</u> , Aleksandra Buzarovska, Gordana Bogoeva-Gaceva <b>Epoxy-silicone hybrids for coatings application</b>	<b>237</b>
<b>POL P-18</b>	Stefanija Acevska, Svetlana Risteska, <u>Julija Gogu</u> <b>Comparison of glass transition temperature values of cyanate ester resin obtained by TMA, DMA and DSC methods</b>	<b>238</b>
<b>POL P-19</b>	<u>Julija Gogu</u> , Svetlana Risteska, Stefanija Acevska <b>Thermal analysis of epoxy resin system</b>	<b>239</b>
<b>POL P-20</b>	<u>Bogdan Cursaru</u> , Anamaria Zaharia, Anita-Laura Radu, Andrei Sarbu, Tanta-Verona Iordache, Steluta Apostol, Claudia Mihaela Ninciuleanu, Sabina Georgiana Nitu, Bogdan Trica, Angela Casarica, Paul Octavian Stanescu, Mircea Teodorescu <b>Synthesis and characterization of new PEG – bacterial cellulose networks</b>	<b>240</b>
<b>POL P-21</b>	<u>Aco Janevski</u> , Gordana Bogoeva-Gaceva, Metodija Najdoski, Viktor Stefov <b>Isothermal crystallization of isotactic polypropylene nucleated with pimelates of earth-alkaline elements</b>	<b>241</b>

## CHEMICAL ENGINEERING

### ORAL PRESENTATIONS

<b>CE O-1</b>	<u>Ali A. Jazie</u> <b>Optimization of biodiesel production from mustard oil</b>	<b>242</b>
<b>CE O-2</b>	<u>Yordanka Tzankova Tasheva</u> <b>A novel process of hydrocarbon groups of gas oil fractions</b>	<b>243</b>

### POSTER PRESENTATIONS

<b>CE P-1</b>	<u>Ali A. Jazie</u> , Mohammed Ali Mutar <b>Transesterification of low grade edible oil mixtures: mustard oil, rapeseed oil and peanut oil</b>	<b>244</b>
<b>CE P-2</b>	Momčilo Đ. Spasojević, Branislava G. Nikolovski, <u>Milan N. Sovilj</u> <b>Hydrodynamic characteristics of spray liquid-liquid extraction column</b>	<b>245</b>
<b>CE P-3</b>	<u>Karmina Miteva</u> , Slavčo Aleksovski, Gordana Bogoeva-Gaceva <b>Production of pyrolytic liquid fuel over SiO<sub>2</sub> catalyst</b>	<b>246</b>
<b>CE P-4</b>	<u>Karmina Miteva</u> , Slavčo Aleksovski, Gordana Bogoeva-Gaceva, Jelena Stanojevic, Ljubisa Nikolic <b>Chemical composition of liquid fuel obtained by waste plastic pyrolysis over natural catalyst</b>	<b>247</b>

CE P-5	<u>Yordanka Tzankova Tasheva</u> <b>Optimization of desulfurization and dearomatization of gas oil fractions</b>	248
CE P-6	<u>Nikola Bedekovic</u> , Vladimir Stilinović, Tomislav Friščić, Dominik Cinčić <b>1,3- and 1,4-diiodotetrafluorobenzene as halogen bond donors in crystal engineering</b>	249
CE P-7	<u>Radovan Karkalic</u> , Smiljana Markovic, Zlate S Veličković, Negovan Ivankovic, Veselin Maslak, Aleksandar S Nikolic <b>Application of ventilation vents in polluted environment</b>	250
CE P-8	<u>Biljana S. Đorđević</u> , Ivica G. Đalović, Dragan Z. Troter, Petar M. Mitrović, Zoran B. Todorović, Vlada Veljković <b>The influence of extraction technique and the type of solvent on the antioxidant activity of the black mustard oil (<i>Brassica nigra</i>)</b>	251

## TEXTILE ENGINEERING

### ORAL PRESENTATIONS

TE O-1	<u>Darka D Markovic</u> , Mirjana Trajković, Željko Radovanović, Marija Radoičić, Maja Radetić <b>The influence of 1,2,3,4-butanetetracarboxylic acid on in situ synthesis of Cu-based nanoparticles on the viscose rayon fabric and its antibacterial activity</b>	252
TE O-2	<u>Aleksandra Ivanovska</u> , Mirjana Reljic, Biljana Mangovska, Koviljka Asanovic, Mirjana Kostic <b>The influence of the bleaching and dyeing processes on the comfort properties of knitted fabrics containing elastane</b>	253
TE O-3	<u>Aleksandra Ivanovska</u> , Matea Korica, Koviljka Asanovic, Mirjana Kostic <b>The influence of alkali treatment on the chemical composition, sorption and electrokinetic properties of jute woven fabrics</b>	254

### POSTER PRESENTATIONS

TE P-1	<u>Magdalena Georgievska</u> , Elena Tomovska <b>Image analysis of knitted fabric roughness</b>	255
TE P-2	<u>Magdalena Georgievska</u> , Elena Tomovska, Lubos Hes <b>Thermal absorptivity of knitted fabrics</b>	256
TE P-3	<u>Dragana D Cerovic</u> , Koviljka Asanovic, Mirjana Kostic, Tatjana V Mihailovic, Aleksandra Ivanovska, Slavica Maletić <b>Electrophysical properties of nonwoven viscose/polypropylene fabrics</b>	257
TE P-4	<u>Nenad Ćirković</u> , Tatjana Šarac, Nataša Radmanovac <b>Correlation between certain sewing thread characteristics in knitwear industry</b>	258
TE P-5	<u>Tatjana Šarac</u> , Nenad Ćirković, Olivera Stanković, Sandra Stojanović <b>Investigation of the air permeability through the knitwear intended for the production of sportswear</b>	259



**AEC P-51**

**DETERMINATION OF AROMA COMPOUNDS IN VRANEC WINES PRODUCED  
WITH DIFFERENT OENOLOGICAL PRACTICES**

Elena Bogeveva<sup>1</sup>, Violeta Ivanova-Petropulos<sup>1</sup>, Trajče Stafilov<sup>2</sup>, Marina Stefova<sup>2</sup>,  
Barbara Siegmund<sup>3</sup>, Nicole Pabi<sup>3</sup>, Ernst Lankmayr<sup>3</sup>

e-mail: elena\_bogeveva@yahoo.com

<sup>1</sup>Faculty of Agriculture, University "Goce Delčev", Krste Miriskov, 10-A, 2000 Štip, R. Macedonia

<sup>2</sup>Institute of Chemistry, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Skopje,  
Arhimedova 5, 1000 Skopje, R. Macedonia

<sup>3</sup>Institute of Analytical Chemistry and Food Chemistry, Graz University of Technology, Stremayrgasse 9/II, A8010  
Graz, Austria

Aroma compounds are vital to wine quality, determining their odour and varietal characteristics. Their concentration in wine depends on grape variety, light intensity, soil, maceration, fermentation temperature, etc. This study is focused on the determination of volatile compounds in Vranec wines, applying headspace solid phase microextraction (HS-SPME) method for sample preparation, coupled to GC-MS technique [1]. Vranec wines were produced with different vinification techniques, applying maceration time of 4, 7, 14 and 30 days, in the presence of enzyme and oak chips during fermentation, in order to determine the influence of vinification conditions on the aroma profile. A total of 63 aroma compounds were identified and quantified in the wines, belonging to different volatile families: esters, alcohols, fatty acids, aldehydes, ketones and sulphur compounds. The results showed that maceration time influenced the relative amount of volatile compounds, leading to increased content from the fourth to the seventh day. The presence of oak chips during fermentation enhanced the formation of aroma compounds, such as phenyl-ethyl alcohol, isobutyl alcohol, propanoic acid ethyl ester, butanoic acid ethyl ester, pentanoic acid ethyl ester and hexanoic acid ethyl ester. No significant effect of the enzyme on the volatiles in Vranec wines was noticed.

**References:**

[1] Ivanova-Petropulos, V., Bogeveva E., Stafilov T., Stefova M., Siegmund B., Pabi N., Lankmayr E. Study of the influence of maceration time and oenological practices on the aroma profile of Vranec wines. *Food Chemistry*, 165, 506-514, <https://doi.org/10.1016/j.foodchem.2014.05.144>.

**Acknowledgments:** This work was supported by a grant from the CEEPUS, CII-HU- 0010-03-0809 Network which is acknowledged.

**Keywords:** wine aroma, maceration, oak chips, enzyme, HS-SPME-GC-MS.