

2nd SCIENTIFIC CONFERENCE

**FOR CRITICAL ENVIRONMENTAL ISSUES OF
THE WESTERN BALKAN COUNTRIES**

BOOK OF ABSTRACTS

October 28th to 30th, 2021, Faculty of Agriculture, Goce Delčev University, Štip,
Republic of North Macedonia



Funded by
the European Union

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ORGANIZERS:

Goce Delčev University, Faculty of Agriculture, Štip,
Republic of North Macedonia

WBAA-Western Balkan Alumni Association

The conference is organized and financed within the project titled “Extracting Green-COVID effects for generating clean technologies and successful youth transition awareness for the climate change and sustainable development of the Western Balkan countries”, **project number 2021030, financed by Western Balkans Alumni Association.**

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WELCOME

On behalf of the project coordinators of

“Extracting Green-COVID effects for generating clean technologies and successful youth transition awareness for the climate change and sustainable development of the Western Balkan countries”

Project number 2021030

financed by Western Balkans Alumni Association

The project involves networking of students and scientific researchers from Western Balkan countries for creating dataset base of the latest chemi-metric approaches for environmental pollution/protection and ecological effects as well. Even the environmental pollution is a global problem, the latest research indicate that the Western Balkan countries are significantly affect with the environmental pollution. Furthermore, the Western Balkan countries still deals with the problem of poor population awareness for environmental protection. Therefore, this project idea is to unite knowledge from Western Balkan countries and share with youth from this region, increasing the environmental protection awareness within students. Therefore, the students will have the main role in lunching the environmentally friendly aspects for creating novel chemi-metric models in environmental sciences. The beneficiary effect for the Western Balkan students will be creating long-term valuable and sustainable correlations.

The project has regional focus, networking six universities from the Western Balkan countries (students and scientific experts and professors). Furthermore, this project has a national focus for the students from three state universities from North Macedonia (students from Goce Delčev University in Štip, Ss. Ss. Cyril and Methodius University in Skopje and University in Tetovo and St. Kliment Ohridski University - Bitola). Even the environmental pollution is a global problem, the latest research indicate that the Western Balkan countries are significantly affected with the pollution, pointing strongly on heavy metal industry, uncontrolled xenobiotic introduction in the different parts of the environment, electronic waste disposal etc. Furthermore, the Western Balkan countries still deals with the problem of poor population awareness for environmental protection. Therefore, this project will involve regional and national students and scientific researches in order to provide novel chemi-metric methodology and beneficial environmental protection methods.

The project intends to involve three national and five regional universities (WBAA members). Each regional university will participate with one scientific expert (university professor) and two students (WBAA member). Three national universities (Ss. Cyril and Methodius University in Skopje, State University in Tetovo and St. Kliment Ohridski University - Bitola) will participate with one scientific expert and three students. Goce Delčev University will participate with scientific experts, young researchers and students. Participants from North Macedonia, Albania, Kosovo, Serbia, Bosnia and Hercegovina and Montenegro shall collaborate for the benefit of the whole region for several critical environmental issues.

Overall objective: Use of universities' expertise in creation new valuable, suitable and accurate chemimetric models for predicting and measuring the contamination level in different parts of the environment (air, soil, water, plant food). Creating a regional scale of experience for determining the anomalous parts of the environment. Proposing new ideas for national and regional strategies for environmental protection. Promoting new ideas for Inter-university cooperation. Creating sustainable University network for continuous cooperation in the field of environmental monitoring, pollution and protection (both, for students and researchers).

Assoc. Prof. Biljana Balabanova

Kiril Jordanov

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About the Western Balkans Alumni Association (WBAA)

The Western Balkans Alumni Association (WBAA) is a regional network of students and alumni from the Western Balkan region (Albania, Bosnia and Herzegovina, Kosovo*, North Macedonia, Montenegro, Serbia) who have spent part of their studies in one of Erasmus+ programmed countries. These exchanges were mostly funded by the European Commission. WBAA is neutral, unbiased and nonpartisan in the existing political discourse.

WBAA is supported and funded by the European Commission.

WBAA Mission:

- Advocating modernization and improvement of higher education quality in the region;
- Empowering young people of the Western Balkans on their academic and career development towards successful employment;
- Strengthening regional exchange, collaboration and integration;
- Supporting region's efforts towards European integration;

Web page:

<https://www.western-balkans-alumni.eu/>

FB page: <https://www.facebook.com/WesternBalkansAlumniAssociation/>

Instagram: @wbaassociation

e-mail: info@western-balkans-alumni.eu

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SCIENTIFIC COMMITTEE MEMBERS

President:

Biljana Balabanova - Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia

Members:

Panvera Lazo - University of Tirana, Department of Chemistry, Tirana, Albania.

Musaj Pacarizi - University of Pristina, Department of Chemistry, Pristina, Kosovo.

Jovica Vasin - Institute of Field and Vegetable Crops, Laboratory for Soil and Agroecology, Novi Sad, Serbia.

Jordana Ninkov - Institute of Field and Vegetable Crops, Laboratory for Soil and Agroecology, Novi Sad, Serbia.

Radomir Ljupkovich - Department of Chemistry, Faculty of Science and Mathematics, University of Niš, Serbia.

Alen Mujčinović - University of Sarajevo, Faculty of Agricultural and Food Sciences, Sarajevo, Bosna and Hercegovina.

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Trajče Stafilov - Faculty of Natural Sciences and Mathematics, Institute of Chemistry, Ss. Kiril and Methodius, Skopje, Republic of North Macedonia.

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Marija Hadzi-Nikolova - Faculty of Natural and Technical Sciences, Goce Delčev University, Štip, Republic of North Macedonia.

ORGANIZING COMMITTEE MEMBERS

Kiril Jordanov, BEc, Team Member of Western Balkans Alumni Association and advisor of public procurement, Štip, Republic of North Macedonia

Sanja Stefanova, MSc, Board Member of Western Balkans Alumni Association and International Relations Officer at Goce Delčev University, Štip, Republic of North Macedonia

Biljana Balabanova, Associate Professor at Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia

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| SCIENTIFIC PROGRAM | | |
|---|--|--|
| October 28th, 2021 (Thursday) | | |
| Time: 12:00-16:00, Registration for regional participants (Faculty of Agriculture, Campus 2) | | |
| 16:00-16:15 | Presentation of Goce Delčev University to the regional participants | |
| 16:15-16:30 | WBAA representative | |
| 16:30-17:30 | Introducing Scientific Research Centers of Goce Delčev University | |
| 17:30-17:40 | <i>Coffee break</i> | |
| 17:40-18:30 | <p>Regional experts meeting Problems and challenges facing each country; Introduction and proposal of new and beneficial chemi- metric tools for environmental pollution; Proposal of “environmentally friendly tools” for reduction of toxic effect of pollutants and hazards.</p> | <p>Students/young participants meeting Introduction of regional and national participants; Presentation of environmental issues from each country; Generation of new proposal ideas; Creation sustainable cooperations.</p> |
| 19:00 | <i>Welcoming dinner (Hotel Izgrev hall)</i> | |
| October 29th, 2021 (Friday) | | |
| Time: 08:00-09:00, Registration for national participants (Faculty of Agriculture, Campus 2) | | |
| 09:00-9:15 | OPENING CEREMONY (HALL CAMPUS 2) | |
| | Moderator's Introduction speech | |
| | Dean of the Faculty of Agriculture, Prof. Ljupco Mihajlov / Vice dean Assoc. prof. Emilija Arsov | |
| | Project coordinator introduction: Assoc. prof. Biljana Balabanova WBAA representative/ Kiril Jordanov | |
| <i>ENVIRONMENTAL POLLUTION: critical issues concerning at national and regional scale</i> - PLENARY LECTURES - <i>Chairwoman Assoc. prof. Biljana Balabanova</i> | | |
| 09:15-09:30 | <p>Trajče Stafilov Faculty of Natural Sciences and Mathematics, Institute of Chemistry, Ss. Cyril and Methodius , Skopje, Republic of North Macedonia</p> | <p>GEOCHEMISTRY OF MAJOR AND TRACE ELEMENTS IN SOILS OF THE REPUBLIC OF NORTH MACEDONIA</p> |
| 09:30-09:45 | <p>Musaj Pacarizi University of Pristina, Department of Chemistry, Pristina, Kosovo</p> | <p>DETERMINATION AND STATISTICAL ANALYSIS OF THE ATMOSPHERIC DEPOSIT OF ELEMENTS IN KOSOVO THROUGH MOSSES AS BIOMONITORS</p> |
| 09:45-10:00 | <p>Panvera Lazo University of Tirana, Department of Chemistry, Tirana, Albania</p> | <p>STUDY OF AIR QUALITY BY MOSS BIOMONITORING AND TRACE ELEMENTS CONTENT</p> |
| High-end Dialogue | | |
| 10:00-10:30 | <i>Coffee break</i> | |


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| <i>Creating sustainable transfer of knowledge and technology</i> - PLENARY LECTURES - <i>Chairwoman Assist. prof. Biljana Balabanova</i> | | |
|---|--|--|
| 10:30-10:45 | Stanko Milić Institute of Field and Vegetable Crops, Laboratory for Soil and Agroecology, Novi Sad, Serbia | SOIL CHARACTERISTICS OF PLUM ORCHARDS WITH INDICATION OF GEOGRAFICAL ORIGIN |
| 10:45-11:00 | Radomir Ljupkovich Department of Chemistry, Faculty of Science and Mathematics, University of Niš, Serbia | COMPOSITES OF GRAPHENE-OXIDE AND TITANIA AS PROMISING PHOTOCATALYSTS FOR ORGANIC POLLUTANTS DEGRADATION |
| 11:00-11:15 | Flamur Sopaj Chemistry Department of Natural Sciences Faculty, University of Prishtina, Kosovo | FENTON AND ELECTRO- FENTON ADVANCED OXIDATION PROCESSES FOR ORGANIC POLLUTANTS REMOVAL FROM POLLUTED WATERS |
| High-end Dialogue | | |
| 11:20-12:20 | POSTER SESION – PART 1 | |
| 12:30-13:30 | <i>Lunch break, University lunch bar (First Floor-Campus 2)</i> | |
| ENVIRONMENTAL PROTECTION: critical issues concerning at national and regional scale <i>Chairwoman Assoc. prof. Natalija Markova-Ruzdik</i> | | |
| 13:30-13:45 | Alen Mujčinović University of Sarajevo, Faculty of Agricultural and Food Sciences, Sarajevo, Bosna and Hercegovina | INTRODUCING CLIMATE OPTIMIZED PRODUCTION OPPORTUNITIES FOR WESTERN BALKAN ECONOMIES |
| 13:45-14:00 | Elena Doneva Faculty of Natural and Technical Sciences, Goce Delcev University, Štip, North Macedonia (students' oral presentation) | INDOOR AIR QUALITY IN HOMES USING BIOMASS FOR HEATING AND COOKING |
| 14:00-14:15 | Kristina Panev UNILAB, Faculty of Agriculture, Goce Delcev University, Štip, North Macedonia (students' oral presentation) | DETERMINATION OF CHLOROPHYLL IN A WATER SAMPLE |
| High-end Dialogue | | |
| 14:15-14:30 | Filip Andonovski Some practical aspects: “SOLAR HEATER AND AIR PURIFIER” AGRO SOLAR | |
| 14:40:15:00 | <i>Coffee break</i> | |
| 15:00-16:30 | POSTER SESION Part 2 | |
| 16:30-17:00 | Experts' meeting-evaluation of poster presentations | |
| 17:00-18:30 | Students workshop “Eliminate & Minimize & Hazards & Pollution” Laboratory for Environmental Chemistry (Part 1) |  |

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| <i>19:00</i> | <i>Dinner -Hotel Izgrev</i> | |
| October 30th, 2021 (Saturday) Faculty of Agriculture, Campus for Natural, Technical and Biotechnical Sciences, Goce Delčev University, Republic of North Macedonia | | |
| 09:00-10:00 | Students workshop “Eliminate & Minimize & Hazards & Pollution” Laboratory for Environmental Chemistry (Part 2) |  |
| 10:00-10:10 | Summary event conclusions and perspectives (Hall-Campus 2) | |
| 10:10-10:30 | Closing remarks and generation of new project proposal ideas | |
| <i>10:30 -10:40</i> | <i>Coffee break</i> | |
| 10:40-11:00 | Certificate awards for participation | |
| 11:00-11:20 | Awarding the best student presentations | |
| 11:20-12:00 | Student event evaluation (SWOT) | |
| 12:00-12:30 | WBAA meeting- Closing remarks | |
| <i>12:40-13:30</i> | <i>Lunch break – Hotel Izgrev</i> | |
| <i>14:00</i> | <i>Departure</i> | |

Protocols for COVID safe conditions will be in accordance and within the published decision on preventive recommendations, interim measures, follow-up measures, purposeful protocols, plans and algorithms for action to protect the health of the population from the infectious disease COVID-19 caused by the SARS-CoV-2 virus, the cases and the period of their application, published on 15.10.2021 in the Official Gazette No. 234/21, Republic of North Macedonia.

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CHARACTERIZATION OF MERLOT WINES BASED ON PHENOLIC COMPOSITION DETERMINED BY HPLC-DAD-ESI-MS AND MS/MS TECHNIQUE

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Abstract

The concentration of phenolic compounds in wine depends on many factors, such as the variety, climate, soil, oenological practices applied for winemaking, aging and storage conditions. The purpose of this investigation was to determine the detailed phenolic profile of Merlot wines (vintage 2008), produced in Tikveš wine region in Republic of N. Macedonia. High-performance liquid chromatography with diode array detection coupled to mass spectrometry (HPLC-DAD-ESI-MS/MS) was used to identify and quantify the phenolic compounds in wines. Identification of the individual phenolic compounds was carried out by comparison of their UV/Vis spectra and retention times with those of the available standards, as well as by comparing the ESI-MS and MS/MS data with the standards analyzed under the same experimental conditions and those found in the literature. Different families of phenolic compounds were considered: anthocyanins, vitisins, hydroxyphenyl-pyranoanthocyanins, flavonols, hydroxycinnamic acids derivatives and stilbenes. With regards to pigments, malvidin-3-glucoside and its 3-acetylglucoside and 3-*p*-coumaroylglucoside derivatives were the major anthocyanins, while vitisin A and 10-DHP-pyranomalvidin-3-glucoside (pinotin A) were the dominant pyranoanthocyanins. Obtained results are significant data for the Macedonian winemaking industry to understand the nature and content of phenolic compounds in Merlot wines, as the most important components that influence the color, stability and sensorial properties of wines.

Keywords: Phenolic compounds, HPLC-DAD-ESI-MS/MS, wine, Vranec.