



"1st scientific conference for
CRITICAL ENVIRONMENTAL ISSUES
OF THE WESTERN BALKAN COUNTRIES"



BOOK OF ABSTRACTS

October 28th to 30th, 2019, Faculty of Agriculture,
Goce Delčev University, Štip, Republic of North Macedonia

“1st scientific conference for CRITICAL ENVIRONMENTAL ISSUES OF THE WESTERN BALKAN COUNTRIES”

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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 within the project titled “Creating sustainable transfer of knowledge for building novel ideas for critical environmental issues of the western Balkan countries”, **project number 2019-B1_010, financed by Western Balkans Alumni Association.**

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WELCOME

On behalf of the project coordinators of

“CREATING SUSTAINABLE TRANSFER OF KNOWLEDGE FOR BUILDING NOVEL IDEAS FOR CRITICAL ENVIRONMENTAL ISSUES OF THE WESTERN BALKAN COUNTRIES”

Project number 2019-B1_010

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 chemo-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 chemo-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-University 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 Kiril and Methodius” University in Skopje and University in Tetovo). 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 chemo-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). Two national universities (“Ss Kiril and Methodius” University in Skopje and State University in Tetovo) will participate with one scientific expert and three students. “Goce Delčev” University will participate with 10 scientific experts and 15 students. Four representatives from Non-members institutions (Ministry of education and science, Ministry of environment and physical planning and Academy of science and art of North Macedonia) will be invited as well. 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 chemometric 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).

Assist. 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

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

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SCIENTIFIC PROGRAM		
October 28th, 2019 (Monday)		
Time: 12:00-16:00, Registration for regional participants (Faculty of Agriculture, Campus 2)		
16:00-16:15	Moderator's Introduction speech 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	Regional experts meeting Problems and challenges facing each country; Introduction and proposing new and beneficial chemo-metric tools for environmental pollution; Proposing “environmentally friendly tools” for reduction the toxic effect of the pollutants and hazards.	Students/young participants meeting Introduction of regional and national participants; Promoting environmental issues from each country; Generating new proposal ideas; Creating sustainable cooperation’s.
19:00	<i>Welcoming dinner (Hotel Izgrev hall)</i>	
October 29th, 2019 (Tuesday)		
Time: 08:00-09:00, Registration for national participants		
09:00	Opening Ceremony (Hall Campus 2)	
09:00-09:05	Moderator's Introduction speech	
09:05-09:10	Rector’s speech, prof. Blazo Boev	
09:10-09:15	Project coordinators introduction: Biljana Balabanova / Kiril Jordanov	
09:15-09:20	Representative from Ministry of Education and Science, Republic of North Macedonia	
09:20-09:25	Representative from Macedonian Academy of Science and Arts, Republic of North Macedonia	
09:25-09:30	WBAA representative	
<i>ENVIRONMENTAL POLLUTION: critical issues concerning at national and regional scale</i>		
<i>-PLENARY LECTURES-</i>		
09:30-09:50	Trajče Stafilov Faculty of Natural Sciences and Mathematics, Institute of Chemistry, Ss. Kiril and Methodius, Skopje, Republic of North Macedonia	ENVIRONMENTAL POLLUTION STUDIES IN DIFFERENT ENVIRONMENTAL MEDIA IN THE REPUBLIC OF NORTH MACEDONIA

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09:50-10:05	Biljana Balabanova Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia	CHEMOMETRIC MODELS FOR PREDICTING ENVIRONMENTAL “HOTSPOTS”
10:05-10:20	Panvera Lazo University of Tirana, Department of Chemistry, Tirana, Albania	PASSIVE AND ACTIVE MOSS BIOMONITORING FOR MULTIELEMENTS ATMOSPHERIC DEPOSITION IN ALBANIA
10:20-10:35	Musaj Pacarizi University of Pristina, Department of Chemistry, Pristina, Kosovo	ELECTROCHEMISTRY METHODS AND THEIR ENVIRONMENTAL APPLICATION
10:35-10:50	Jordana Ninkov Institute of Field and Vegetable Crops, Laboratory for Soil and Agroecology, Novi Sad, Serbia	POTENTIALLY TOXIC ELEMENTS (PTEs) IN SOIL
10:50-11:00	High-end Dialogue	
11:00-11:15	<i>Coffee break</i>	
<i>Creating sustainable transfer of knowledge and technology</i> -PLENARY LECTURES-		
11:15-11:30	Vasko Zlatkovski Technology Transfer Office, Goce Delčev University, Štip, Republic of North Macedonia	OPENING NEW POSSIBILITIES FOR UNIVERSITY’S GOCE DELČEV STUDENTS AND RESEARCHERS
11:30-11:45	Alen Mujčinović University of Sarajevo, Faculty of Agricultural and Food Sciences, Sarajevo, Bosna and Hercegovina	QUEST FOR INNOVATIVE KNOWLEDGE TRANSFER
11:45-12:00	Radomir Ljupkovich Department of Chemistry, Faculty of Science and Mathematics, University of Niš, Serbia	CONSTRUCTION WASTE AS POTENTIAL CATALYST FOR BIODIESEL PRODUCTION
12:00-12:15	Violeta Ivanova-Petropulos Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia	LIFE CYCLE ENVIRONMENTAL IMPACTS OF VITICULTURE AND WINE INDUSTRY



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12:15-12:30	Arianit Reka State University of Tetovo, Republic of North Macedonia	HYDROTHERMAL TECHNOLOGY vs “CLASSICAL” TECHNOLOGY- ENVIRONMENTAL BENEFITS IN THE PRODUCTION OF POROUS CERAMICS
12:30-12:40	High-end Dialogue	
12:40-13:30	<i>Lunch break, University lunch bar (First Floor-Campus 2)</i>	
<i>ENVIRONMENTAL PROTECTION: critical issues concerning at national and regional scale</i> -PLENARY LECTURES-		
13:30-13:45	Ljupčo Mihajlov Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia	SELECTED EXCERPTS FROM PUBLISHED RESEARCH DATA AND PUBLICATIONS RELATED TO ENVIRONMENTAL PROTECTION
13:45-14:00	Fidanka Trajkova Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia	AGROCHEMICAL SOIL PROPERTIES AS A KEY FACTOR FOR HIGH YIELDS AND ENVIRONMENTAL PROTECTION
14:00-14:15	Biljana Kovachevik Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia	THE IMPACT OF AGRICULTURE ACTIVITIES ON GROUNDWATER QUALITY
14:15-14:30	Violeta Stefanova Faculty of Natural and Technical Sciences, Goce Delčev University, Štip, Republic of North Macedonia	GOLD IN MACEDONIA- REALITY, OPPORTUNITIES, PERSPECTIVES
14:30-14:45	Emilija Arsov Department for Plant and Environment Protection, Faculty of Agriculture, Goce Delčev University, Štip, Republic of North Macedonia	IMPLEMENTATION OF ACCREDITATION METHOD IN UNILAB LABORATORY, FOR HEALTHY LIFE AND ENVIRONMENTAL PROTECTION
14:45-14:50	High-end Dialogue	
14:50-15:00	<i>Coffee break</i>	
15:00-16:30	Students presentations Oral presentation + e-posters (Hall Campus 2)	

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16:30-18:30	Students workshop “Eliminate & Minimize & Hazards & Pollution” Laboratory for Environmental Chemistry (Part 1)	
<i>19:00</i>	<i>Dinner -Hotel Izgrev</i>	
October 30th, 2019 (Wednesday) 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 generating new project proposal ideas	
10:30 -10:40	<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	
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eP 10

MOSS-BIOMONITORING CHALLENGES IN TRACKING AIRBORNE DUST DEPOSITIONS

Maja Lazarova¹, Ivan Boev¹, Blazo Boev¹, Biljana Balabanova²

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Trace elements may be absorbed on the moss from the atmosphere either as soluble chemical species in wet deposition or contained in particles from dry deposition. Part of the trace element content of particulates may eventually be released by weathering and reabsorbed by the moss. Whereas uptake efficiencies for particulate-bound trace elements are generally poorly known, Ions may be subject to active uptake into cells or attached on the moss surface by physical and chemical forces. Main problem with issue moss-biomonitoring are reveal as: a) transport of soluble compounds from the soil into moss tissue, particularly during periods with excessive soil/water contact. Although mosses do not have a root system, influence from this source cannot be disregarded, in particular in areas with low atmospheric deposition and b) windblown mineral dust from local soil. As far as the surface bound fraction is concerned, little is known about the binding mechanisms, but the fact that different metals show rather large differences in their retention capacities, indicates that both simple cation exchange on negative surface charges and complex formation with ligands on the moss surface are involved. Laboratory analysis using scanning electron microscopy (emission SEM, TESCAN VEGA3) has been involved for determination of the dry deposition occurred within two species (*Homalothecium lutescens* and *Homalothecium sericeum*) from the genus *Homalothecium*.

Keywords: moss, bio-monitoring, heavy metals, air deposition.

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