

University of Ss. Cyril and Methodius in Trnava

Faculty of Natural Sciences

The 9th International Scientific Conference
Applied Natural Sciences 2025



ANS 2025

Book of abstracts

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17th – 19th of September 2025
Štrbské Pleso, Slovakia

University of Ss. Cyril and Methodius in Trnava

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1. Applied Informatics
2. Biology and Biotechnology
3. Environmental Sciences
4. Chemistry
5. Young Scientists

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FOREWORD

Dear Colleagues, Dear Guests,

It is my great pleasure to welcome you to the **9th International Scientific Conference *Applied Natural Sciences* 2025**. Over the past years, this conference has become an important forum for scientists, researchers, and students to exchange ideas, present new findings, and strengthen collaborations across disciplines.

This year, we are honored to host participants from many countries, whose contributions span a wide range of fields – from biology and biotechnology to chemistry, environmental sciences, and informatics. The diversity and quality of the submitted abstracts reflect not only the progress made in applied natural sciences, but also the enthusiasm and dedication of the scientific community to address current and future challenges.

I would like to extend my sincere thanks to all authors for their contributions, to the keynote speakers for sharing their expertise and vision, and to the Organising Committee for their tireless work in making this event possible. My gratitude also goes to our partners and supporters, without whom this conference would not be possible.

I believe that the *Book of Abstracts* you now hold in your hands will serve not only as a record of the scientific discussions held here in **Štrbské Pleso**, but also as an inspiration for future research and cooperation.

I wish you a fruitful conference, stimulating discussions, and many enjoyable moments during your stay in the High Tatras.

With best regards,

Assoc. Prof. Iveta Dirgová Luptáková, PhD.
Dean
Faculty of Natural Sciences
University of Ss. Cyril and Methodius in Trnava

CONTENTS

APPLIED INFORMATICS

Resilience of multi-model NoSQL databases to transport-layer DDoS attacks <i>Nicolas Búčik, Marek Šimon, Ladislav Huraj</i>	8
Artificial intelligence in recruitment: ethical, decision-making and security implications of AI-based systems in human resources <i>Patrik Boršoš</i>	9
Code generation with large language models <i>Michal Čerňanský, Peter Hafner</i>	10
Real-time rendering of glittery materials: Photorealistic visualizations for interactive applications <i>Roman Ďurikovič, Róbert Kica, Andrej Mihálik</i>	11
Using artificial intelligence to optimize performance and autonomously manage relational database systems <i>Darja Gabriška, Katarína Pribilová, Peter Sťahlec</i>	12
Experimental verification of the performance of the iEDF scheduling algorithm for IoT tasks in an Edge cloud system <i>Adrián Hamada, Jarmila Škrinárová</i>	13
Virtual reality as a tool for simulation of land degradation and reclamation scenarios – user experience test and satisfaction <i>Marián Hostovecký, Adam Mečíř</i>	14
An analysis of SSH attack frequency based on standard vs. non-standard port usage <i>Dominik Hrinkino, Ladislav Huraj, Marek Šimon</i>	15
Design of an interactive tool for enhancing algorithmic thinking and programming skills <i>Jana Jurinová, Miroslav Beňo</i>	16
Air pollution data analysis in Prague <i>Alžbeta Michalíková, Miroslav Melicherčík, Viktor Beneš, Miroslav Svítek</i>	17
An analysis of semantic similarity detection methods for automated assessment of open-ended questions <i>Miroslav Ölvecký, Miroslav Beňo, Pablo Díaz</i>	18
Hacking the mind of AI <i>Jiří Pospíchal, Iveta Dirgová Luptáková</i>	19
The use of artificial intelligence in e-learning systems <i>Katarína Pribilová, Darja Gabriška, Peter Sťahlec</i>	20

Cybersecurity by design: Modeling processes first <i>Vladimír Siládi, Miroslav Randlisek</i>	21
--------------------------------------------------------------------------------------------------------	----

Model design for data acquisition from heterogeneous sensors that produce lysimeter station data <i>Peter Střelec, Dominik Bučák</i>	22
------------------------------------------------------------------------------------------------------------------------------------------------	----

BIOLOGY AND BIOTECHNOLOGY

Bacterial inhabitants of wood-decay fungi basidiocarps <i>Terézia Beck, Matej Vesteg, Janka Ševčíková, Janka Kureková, Peter Pristaš</i>	24
----------------------------------------------------------------------------------------------------------------------------------------------------	----

Plant cell, tissue, and organ cultures: research and application perspectives <i>Šarlota Kaňuková, Klaudia Lenkavská, Jennifer Scherrens, Sofia Mikulášková, Juraj Habdák, Simona Slobodová, Lea Veničáková, Mária Cingelová, Marcela Gubišová, Ján Kraic</i>	25
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

Effect of silicon on pigments in grain amaranth under abiotic stress <i>Monika Lisinovičová, Monika Szabóová, Andrea Hricová</i>	26
--------------------------------------------------------------------------------------------------------------------------------------------	----

Swiss similarity – public web tool for searching of new, anti-bacterially effective Nitroxoline™ structural analogues <i>Tibor Maliar, Renata Gašparová, Pavol Vondra, Mária Maliarová, Marianna Šabová</i>	27
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

The balance of plant extracts potency to scavenge model radical and to reduce ferric ion in model complex <i>Tibor Maliar, Marcela Blažková, Mária Maliarová</i>	28
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

The prediction of DPPH radical scavenging potency and ability to reduce ferric ion in model complex for selected compounds <i>in silico</i> <i>Tibor Maliar, Marcela Blažková, Renata Gašparová, Silvia Micháliková, Jana Viskupičová</i>	29
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

Biocidal effect of lichen extract on selected phytopathogens <i>Daniel Mihálik</i>	30
----------------------------------------------------------------------------------------------	----

Training of future biology teachers in summer science schools <i>Liudmyla Mironets</i>	31
--------------------------------------------------------------------------------------------------	----

Plant-mediated green synthesis of silver nanoparticles and their characterization <i>Jana Moravčíková, Simona Tkáčiková, Monika Hofbauerová, Yuriy Halahovets, Mário Kotlár, Michaela Červenáková, Tibor Maliar, Marcela Blažková, Mária Maliarová, Ján Koreň, Eva Ťurgeová, Lubica Uvačková</i>	32
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

Laccase production by <i>Pleurotus ostreatus</i> in repeated solid-state cultivation <i>Lucia Pavlechová, Petra Šlosiariková, Daniela Chmelová, Miroslav Ondrejovič</i>	33
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

Brine over gold – bioprospecting of halophilic microbiota from Miocene salt deposits <i>Peter Pristaš, Jakub Milčák, Soňa Brestovičová</i>	34
------------------------------------------------------------------------------------------------------------------------------------------------------	----

Salinity-induced changes in photosynthetic pigments and proline levels in <i>Euglena gracilis</i> <i>Dominika Šurinová, Eva Ťurgeová, Jana Moravčíková, Lubica Uvačková</i>	35
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

Comparison of the antibacterial effect of biogenic silver and copper nanoparticles <i>Eva Ťurgeová, Lubica Uvačková, Jana Moravčíková</i>	36
-----------------------------------------------------------------------------------------------------------------------------------------------------	----

- Bioinformatic identification of genetic variants in primary lymphedema**
Dominika Vešelényiová, Izabela Belanová, Vanessa Gelanová 37

ENVIRONMENTAL SCIENCES

- Effect of inoculation with arbuscular mycorrhizal fungi on metal (Zn and Cu) or radionuclide (¹³⁷Cs) uptake in tomato plants**
Vanda Adamcová, Katarína Ondreičková, Silvia Dulanská, Martin Valica, Marcela Gubišová, Jozef Gubiš, Martina Hudcovicová, Miroslav Horník 39
- Impact of mercury contamination on soil chemical properties in the historical mining area of Gelnica**
Lenka Bobuľská, Lenka Demková, Michał Kozłowski, Otremba Krzysztof 40
- Microbial activity of Cu-mining heap in Central Slovakia before and after application of natural sorbents**
Justyna Bohacz, Kamila Rybczyńska-Tkaczyk, Michał Możejko, Peter András, Ingrid Turisová 41
- Soil contamination by mercury in the vicinity of abandoned mines: A case study from Gelnica, Slovakia**
Lenka Demková, Lenka Bobuľská, Július Árvay, Ľuboš Harangozo 42
- Energetic trade-offs in two wheat cultivars under metal stress in different nitrogen conditions**
Richard Hančinský, Laura Žideková, Monika Šutáková, Zuzana Gerši, Ildikó Matušíková 43
- Valorization of *Miscanthus* × *giganteus* biomass ash for soil improvement and plant growth support**
Andriy Herts, Abdulmannan Rouhani, Oleksandr Kononchuk, Viktor Markiv, Oksana Horyn, Volodymyr Khomenchuk, Pavlo Shapoval, Valentina Pidlisnyuk 44
- Organic carbon amendments in livestock feeds reduce rumen methane emissions and improve manure quality and soil carbon stability**
Jiri Holatko, Jiri Kucerik, Ondrej Malicek, Svetlana Malyugina, Antonin Kintl, Jakub Houska, Julie Sobotkova, Oldrich Latal, Martin Brtnicky 45
- Human stem cells radiolabeling with unconventional positron emitting metals for theranostic applications**
Miroslav Horník, Lucia Tomášová, Lenka Vavrinčová, Šimon Ján Rezbárik, Vanda Adamcová, Martin Valica, Miroslav Kubeš, Peter Kováč 46
- Exploring the potential of spelt (*Triticum spelta* L.) wheat lines in Czech Republic: Growth, yield and quality characterization**
Jaffar Iqbal, Muhammad Roman, Michal Hejzman 47
- Efficiency of using digestate in growing intercrops**
Antonin Kintl, Julie Sobotkova, Jiri Holatko, Jiri Kucerik, Ondrej Malicek, Igor Hunady, Martin Brtnicky 48
- Biochar from grape pomace: Agronomic and environmental applications**
Zdeňka Kwoczynski, Hana Burdová, Jiří Čmelík, Diana Polanská Nebeská, Josef Trögl, Pavel Leštinský 49

Isolation and characterization of copper-tolerant <i>Arthrobacter</i> sp. from a former gold/copper mine <i>Klara Liskova, Vira Velianyk, Alena Sevcu, Veronika Hlavackova</i>	50
Flying sensors: Honey bees (<i>Apis mellifera</i>) as indicators of trace contamination in the landscape <i>Peter Manko, Lenka Demková, Lenka Bobul'ská, Július Árvay</i>	51
<i>In situ</i> electrically enhanced mobilisation, oxidation and bioremediation of extremely high organic contamination <i>Kristýna Marková, Ondřej Lhotský, Jan Němeček, Jaroslav Nosek</i>	52
Comparative cadmium tolerance in flax: Screening cultivars for <i>in-situ</i> phytoremediation feasibility <i>Mária Pavlovičová, Simona Ilavská, Jana Sedláková, Juraj Podracký, Richard Hančinský, Peter Nemeček, Miroslav Horník, Pavol Hauptvogel, Ildikó Matušiková</i>	53
Biomass of intercrops as a source of lignin as a precursor for the formation of humus substances in the soil <i>Julie Sobotkova, Antonin Kintl, Jiri Holatko, Jiri Kucerik, Ondrej Malicek, Igor Hunady, Martin Brtnicky</i>	54
Bokashi composting as an alternative method of processing biodegradable kitchen waste in households <i>Janka Ševčíková, Karolína Laceková, Michaela Murgašová, Terézia Beck, Matej Vesteg</i>	55
Tracking pathogenic amoebae in water: Molecular insights into emerging health risks <i>Katarína Trnková, Emma Nogová</i>	56
Sorption separation and solidification of heavy metals from metal mine tailings water using synthetic zeolites and geopolymers <i>Martin Valica, Šimon Ján Rezbárik, Lenka Vavrincová, Vanda Adamcová, Peter Sekely, Stanislav Sekely, Ján Rezbárik, Miroslav Horník</i>	57
Restoring soil health through <i>Lactuca sativa</i> phytoremediation of hospital wastewater contaminated soil <i>Muhammad Zubair, Sylvie Kříženecká, Slavomír Adamec, Petr Ryšánek, Josef Trögl, Karim Suhail Al Souki</i>	58

CHEMISTRY

The use of selected <i>in silico</i> methods in the investigation of 2,3,5,7-tetrabromobenzofuro[3,2-<i>b</i>]pyrrole as a potential antibacterial drug <i>Renata Gašparová, Pavol Vondra, Tibor Maliar, Mária Maliarová</i>	60
Green transformation of analytical methods in environmental pollution monitoring <i>Svetlana Hrouzková</i>	61
Electrochemical determination of DMST in water samples <i>Zuzana Kramplová, Andrea Purdešová</i>	62
Development and optimization of a microplate-based assay for phytic acid analysis in cereals <i>Viktória Košíková, Peter Nemeček</i>	63

Using an azo coupling reaction to determine 3-chloro 2,6-diethylaniline by HPLC method <i>Ivan Maga</i>	64
Technique for single-shot time-resolved spectroscopy of irreversible chemical processes utilizing specialty dual-core optical fibers <i>Sarah Pulikottil Alex, Edgar Kaksis, Ryszard Buczynski, Audrius Pugžlys, Andrius Baltuška, Ignác Bugár</i>	65
Electrochemical determination of selected biologically active substances <i>Andrea Purdešová, Patrik Beňovič</i>	66
Biogenic amines in foods and HPLC methods for their determination. <i>Jozef Sokol, Mária Maliarová, Andrea Purdešová</i>	67
(Un)revealed proceeding of Suzuki-Miyaura cross-coupling of thienyl-thiazolo[5,4-d]thiazole halides and sbirofluorenyl boranes <i>Zita Tokárová, Anita Eckstein, Erika Kozma, Wojciech Mróz</i>	68
Molecular properties of amino acids in water <i>Beata Vranovičová, Roman Boča</i>	69

YOUNG SCIENTISTS

7,000 years of environmental change in the Eastern Carpathians: A palynological record from Lake Vinderel <i>Silvia Bartóková, Barbora Kiapešová, Katarína Trnková</i>	71
Reproducible testing of query performance in MongoDB, ArangoDB, CosmosDB, and TerminusDB <i>Nicolas Búčik, Marek Šimon, Ladislav Huraj</i>	72
Classification of motor imagery EEG data: Attribution of high- impact electrodes to associated brain regions <i>Jason Cuthbert, Adham Atyabi</i>	73
The impact of calcium ions on the expression of transmembrane calpains in unicellular flagellate <i>Euglena gracilis</i> <i>Vanessa Gelanová, Dominika Vešelényiová</i>	74
Data analysis to support decision-making processes <i>Oto Gróf, Ladislav Huraj</i>	75
<i>In vitro</i> micropropagation of Country mallow (<i>Sida cordifolia</i> L.) <i>Juraj Habdák, Šarlota Kaňuková, Ján Kraic</i>	76
Case study on UI migration in iOS: Adapting a radio streaming application to liquid glass design <i>Peter Hafner, Iveta Dirgová Luptáková, Michal Čerňanský</i>	77
Shaping zinc-rich wheat: The phenotyping frontier in biofortification <i>Alexandra Hlavatá, Richard Hančinský, Pavol Hlubina, Pavol Hauptvogel, Ildikó Matušiková</i>	78

Utilisation of mycorrhizal fungi in the degradation of microplastics from soil <i>Pavol Hlubina, Alžbeta Marček Chorvátová, Ildikó Matusšíková</i>	79
Virtual laboratories for network technologies: An analysis of selected tools <i>Dominik Hrinkino, Ladislav Huraj, Marek Šimon</i>	80
Production of polyhydroxyalkanoates from molasses by bacteria <i>Cupriavidus necator</i> <i>Eubomíra Jurečková, Daniela Chmelová, Miroslav Ondrejovič</i>	81
Application of high-throughput sequencing for the analysis of grapevine virome <i>Jana Kemenczeiová, Lukáš Predajňa, Peter Alaxin, Adam Achs, Zdeno Šubr, Miroslav Glasa</i>	82
Understanding β-1,3-glucan synthase specificity and evolution in <i>Euglena gracilis</i> <i>Martina Kešeláková, Juraj Krajčovič, Dominika Vešelényiová</i>	83
Modification of solid phase extraction procedure for the determination of 20 selected phenolics in plant material by liquid chromatography <i>Viktória Košíková, Peter Nemeček</i>	84
Analysis and evaluation of SQL tests using generative artificial intelligence models <i>Martin Kubovčík, Jiří Pospíchal</i>	85
Determination of microbial isolates from two different composts and the evaluation of their potency to stimulate the growth of tomato <i>Michaela Murgašová, Vladimíra Krempaská, Terézia Beck, Janka Ševčíková, Matej Vesteg</i>	86
Biosorption of Li^+ ions from aqueous solutions using modified cyanobacterial biomass <i>Šimon Ján Rezbárik, Romana Kormúthová, Lenka Vavrincová, Vanda Adamcová, Martin Valica, Miroslav Horník</i>	87
Effects of superabsorbent polymer on the activity of antioxidant enzymes and defensive PR-proteins in agricultural crops grown under drought conditions <i>Daniil Vainberg, Zuzana Gerši</i>	88
Biochar and bioaugmentation applied to soil mitigate impacts of combined stress with potentially toxic elements and drought on red fescue <i>Radmila Valová, Martin Brtnický, Jiří Holátko, Ondřej Malíček, Tomáš Vyhnánek</i>	89
Biochar/eggshell-based mechanochemically activated adsorbents for efficient phosphate recovery <i>Lenka Vavrincová, Lucia Gašparíková, Martin Pipiška, Vladimír Frišták, Matej Baláž, Miroslav Horník</i>	90
ACKNOWLEDGEMENT TO SPONSORS	91

Microbial activity of Cu-mining heap in Central Slovakia before and after application of natural sorbents

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Abstract: Mine waste poses significant environmental hazards due to high concentrations of potentially toxic elements. One method of waste heap reclamation involves introducing mineral-organic fertilisers and sorbents. Since microbiological activity is a sensitive indicator of environmental changes, this study, which was based on pot experiment, investigated the effect of chicken manure, biochar and bentonite (1%, 20% and 10% of technosol weight, respectively), as well as an organo-zeolite sorbent i.e. a mixture of chicken manure, perlite and CaCO₃ (1%, 5% and 3%, respectively) on the number of microorganisms and enzymatic activity in and around the Maximilián heap in Špania Dolina. Each pot was also sown with a grass mixture of *Agrostis capillaris*, *A. stolonifera*, *Festuca rubra* and *Poa pratensis* was sown in each pot. Compared with untreated technosol, chicken manure, organo-zeolite sorbent and biochar significantly increased the total number of bacteria, copiotrophs, cellulolytic bacteria, proteolytic microorganisms and oligotrophs. The addition of bentonite increased the number of oligotrophs and cellulolytic fungi. The highest biochemical activity was observed after organo-zeolite application but the lowest after addition of bentonite.

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Keywords: Cu mining heap, number of microorganisms, enzymatic activity, natural sorbents, plants



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