

The 6<sup>th</sup> Biennial International Scientific Conference  
**Applied Natural Sciences 2017**  
**PROGRAMME**

27 September 2017 / Conference day 1

10:00 – 15:00 Registration

Conference Hall

15:30 – 16:00 **Opening**

Rector's and dean's address

16:00 – 17:20 Invited plenary talks, Chair: Roman Boča

16:00 – 16:40 **Azzedine Bousseksou**: MOLECULAR SPIN CROSSOVER PHENOMENON AT THE NANOSCALE MOTION AND SPINTRONIC PROPERTIES. Centre National de la recherche scientifique (CNRS) de Toulouse, France (Centre National de la recherche scientifique (CNRS) de Toulouse, France)

16:40 – 17:20 **Peter Sýkora**: ETHICS OF GENOME EDITING IN HUMANS. (University of SS. Cyril and Methodius in Trnava, Slovakia)

17:20 – 17:50 **Coffee break**

17:50 – 18:15 **PIPETTING UNDER CONTROL. Workshop of the ECOMED company / Room 1**

17:50 – 19:00 **Poster section (Applied Chemistry / Applied Informatics)** Glass Hallway in front of the Conference Hall

*Note: Only presenting authors are stated.*

**Vasil Andruch**: AUTOMATED INDIRECT DETERMINATION OF FLUORIDE IN WATER SAMPLES USING AN OPTICAL PROBE

**Ľubor Dlháň**: SPIN CROSSOVER WITH THERMAL HYSTERESIS IN IRON(III)-SELENOCYANATO COMPLEX

**Marek Došek**: ELECTROCHEMICAL DEGRADATION OF ORGANOPHOSPHATE PESTICIDE AZINPHOS METHYL AND FENCHLORPHOS AT CATHODIC CONDITIONS

**Radovan Herchel**: IRON(III) COMPLEXES WITH HEXACOORDINATE SCHIFF-BASE LIGANDS AS BUILDING BLOCKS FOR SPIN CROSSOVER COMPOUNDS. A THEORETICAL STUDY

**Miroslav Horník**: ACCUMULATION OF HEAVY METALS AND RADIONUCLIDES IN APLINE ZONE PLANTS: A RADIOMETRIC STUDY

**Pavel Janoš**: REACTIVE SORBENTS FOR THE DEGRADATION OF CHEMICAL WARFARE AGENTS

**Peter Kováč**: VISUALIZATION OF PHOTOASSIMILATES DISTRIBUTION IN RADISH PLANTS BY POSITRON EMISSION TOMOGRAPHY

**Vladimír Kuchtanin**: NICKEL(II) SCHIFF BASE COMPLEXES: HUNTING FOR TRIGONABIPYRAMIDAL STEREOCHEMISTRY

**Katarína Kulichová**: DETERMINATION OF BIOLOGICALLY ACTIVE SUBSTANCES PRESENT IN RYE (SECALE CEREALE L.)

**Juraj Lesný**: CHARACTERIZATION OF SEWAGE SLUDGES AND THEIR EFFECT ON SOIL PROPERTIES AND PLANTS GROWTH

**Mária Maliarová**: AVENANTHRAMIDES - BIOLOGICALLY ACTIVE COMPOUNDS OF OAT (*Avena sativa* L.) – EXTRACTION, DETERMINATION AND BIOLOGICAL ACTIVITY

**Jozef Miklovič**: SYNTHESIS, CRYSTAL STRUCTURE AND SPECTRAL PROPERTIES OF NICKEL(II) 3-METHYLTHIOPHENE-2-CARBOXYLATE COMPLEXES WITH N-HET. LIG.

**Peter Nemeček**: QUANTITATIVE STRUCTURE-RETENTION RELATIONSHIP STUDY OF POTENTIAL LOCAL ANESTHETICS

**Ján Pavlik:** ANALYTICAL SOLUTION TO ISING-LIKE MODEL FOR CHAIN-BINUCLEAR SCO SYSTEMS

**Miroslava Puchoňová** METHYLSALICYLATOCOPPER(II) COMPLEXES WITH 2-HYDROXYMETHYLBEZIMIDAZOLE

**Martina Repková:** REMOVING ORGANIC CONTAMINATION FROM WATER USING ADVANCED OXIDATION PROCESSES

**Gábor Simon:** ONE-YEAR MONITORING OF AIRBORNE POLYCYCLIC AROMATIC HYDROCARBONS IN GYŐR AND MOSONMAGYARÓVÁR, HUNGARY

**Jozef Sokol:** DETERMINATION OF BIOGENIC AMINES IN SELECTED FOODS USING HPLC METHOD

**Jiri Štojdl:** ELECTROMAGNETIC INDUCTION AS AUXILIARY INSTRUMENT OF FINDING HOTSPOTS IN FLOODPLAIN

**Ján Titiš:** INVESTIGATION OF SINGLE-MOLECULE MAGNETS BASED ON 3d AND 4f METAL COMPLEXES

**Martin Valica:** UTILIZATION OF A SPECTROPHOTOMETRIC UNIT FOR MONITORING OF BIOLOGICAL POLLUTION IN WATER

**Beata Vranovičová:** MAGNETO-STRUCTURE INTERACTIONS IN DINUCLEAR IRON(III) COMPLEXES

**Darja Gabriška:** METHODS OF SECURITY ANALYSIS OF SAFETY CRITICAL SYSTEMS

**Marián Hostovecký:** ANALYSIS OF BETA WAVES OF STUDENTS IN 3D AND 2D SERIOUS GAME

**Miroslav Melicherčík:** ANALYSIS OF EDUCATION REQUIREMENTS WITH RESPECT TO HIGH PERFORMANCE COMPUTING

**19:30 Welcome Dinner**

## 28 September 2017 / Conference day 2

### Morning part

**07:00 – 08:30** Breakfast

**08:30 – 10:30** Presentations in symposiums and Poster section (Applied Biology and Biotechnology)

**10:30 – 11:00** Coffee break

**11:00 – 12:45** Presentations in symposiums

**12:45 – 13:45** Lunch

### Room 1

#### Symposium Applied Informatics

**Chair: Marián Hostovecký**

**08:30 – 09:00** **Key-Note** with **Miloš Ivanovič**, Simič, V., Andrič, O., Stojanovič, B.  
WOBINGO DISTRIBUTED OPTIMIZATION FRAMEWORK - RECENT ADVANCES

**09:00 – 09:15** **Mihailo Obrenovič**, Vasiljevič, J., Simič, V., Ivanovič, M.  
PARAMETER OPTIMIZATION OF SVM BASED CLASSIFICATION SYSTEM FOR  
HYPERSPETRAL REMOTE SENSING IMAGES

**09:15 – 09:30** **Roman Ďurikovič**, R. Mihálik, M. Sejč  
INDIVIDUAL IDENTIFICATION UNDER CORRIDOR SURVEILLANCE USING MOTION  
CAPTURE

**09:30 – 09:45** **Michal Vagač**, Povinský, M.  
DETECTION OF LINE-BASED FEATURES IN SHOE SOLE IMAGES

**09:45 – 10:00** **Vladimír Siládi**, Polčák, N., Satymbekov, M.  
IBM WATSON IN GEODATA ANALYSIS

**10:00 – 10:15** **Jiří Pospíchal**, Iveta Dirgová Luptáková  
EVOLUTIONARY FIREWALL RULE-ORDERING

**10:15 – 10:30** **Michal Čerňanský**  
PUBLIC TRANSIT TRIP PLANNING ALGORITHMS

**10:30 - 11:00** **Coffee break**

- 11:00 – 11:15** **Ladislav Huraj**, Šimon, M.  
RASPBERRY PI AS ATTACKING NODE IN P2P GRID
- 11:15 – 11:30** **Marek Šimon**, Ladislav Huraj  
COMPUTATIONAL P2P GRID AS A DISTRIBUTED STORAGE SYSTEM
- 11:30 – 11:45** **Miroslav Ölvecký**  
FORENSIC TOOL AUTOPSY
- 11:45 – 12:00** **Iveta Dirgová Luptáková**, Pospíchal, J.  
NEURAL NETWORKS FOR INTERNET TRAFFIC FORECASTING
- 12:00 – 12:15** **Jana Jurinová**  
ITERATING OVER ARRAYLIST IN JAVA 8

## Room 2

### Symposium Applied Physics

Chair: Júlia Horilová

- 08:30 – 09:00** **Key-Note** with **Ivan Štich**  
CREATION OF NANOSTRUCTURES ON SURFACES WITH ATOMIC FORCE MICROSCOPY
- 09:00 – 09:15** **Kamil Tokár**, Derzsi, M., Piekarz, P.  
MODELING OF CRYSTALLINE PHONON SYSTEM AND PHASE STABILITY FROM FIRST PRINCIPLES
- 09:15 – 09:30** **Štefan Húšťava**  
CALCULATION OF THERMAL ENERGY RELEASE IN RADIOACTIVE PLUME AFTER RADIATIONAL ACCIDENT OF NUCLEAR POWER FACILITIES
- 09:30 - 09:45** **Júlia Horilová**  
TIME-RESOLVED SPECTROSCOPY OF NADH DEHYDROGENATION
- 09:45 - 10:00** **Alžbeta Marček Chorvátová**, Teplický, T., Chorvát, D.  
DEVELOPMENT OF INNOVATIVE IMMOBILIZATION SCAFFOLDS BY 2 PHOTON PHOTOPOLYMERIZATION
- 10:00 -10:15** **Tibor Teplický**, Čunderlíková, B., Chorvát, D., Marček Chorvátová, A.  
INTERACTION OF ORMOCOMP MICRO-SURFACES WITH CANCER CELLS
- 10:15 -10:30** **Štefan Húšťava**, Marček Chorvátová, A., Horilová, J., Ölvecký, M.  
ELEKTROMAGNETIC WAVES IN NATURE

**10:30 - 11:00** **Coffee break**

## Room 2

### Symposium Applied Biology and Biotechnology

Chair: Štefan Janeček

- 11:00 - 11:30** **Key-Note** with **Juraj Krajčovič**  
THE CHLOROPLAST – FROM MOLECULAR BIOLOGY TO BIOTECHNOLOGY
- 11:30 - 11:45** **Peter Pristaš**, Kvasnová, S., Hamarová, Ľ., Kaduková, J.  
BACTERIAL COMMUNITY OF NICKEL SLUDGE DISPOSAL SITE OF FORMER NICKEL SMELTER NEAR SEREĎ TOWN
- 11:45 - 12:00** **Lenka Kerényiová**, Janeček, Š.  
IN SILICO STUDY OF FAMILY GH126 – POTENTIALLY NOVEL ALPHA-AMYLASE
- 12:00 - 12:15** **Miroslav Glasa**, Predajňa, L., Sihelská, N., Kraic, J., Mihálik, D.  
APPLICATION OF NEXT-GENERATION SEQUENCING TECHNOLOGY FOR STUDY OF PLANT VIRUS DIVERSITY
- 12:15 - 12:30** **Peter Šiška**, Bryant, V., Goovaerts, P.  
ANALYSIS OF SPATIAL DISTRIBUTION OF MODERN POLLEN RAIN AND ITS RELATIONSHIP TO A BASIN ECOSYSTEM: GEOSTATISTICAL APPROACH

### Room 3

#### Symposium Applied Chemistry

Chair: Azzedine Bousseksou

- 08:30 – 09:00** **Key-Note** with **Franz Renz**, Dlháň, L., Nemeč, I., Boča, R.  
SPIN CROSSOVER WITH THERMAL HYSTERESIS IN IRON(III)-SELENOCYANATO COMPLEX
- 09:00 – 09:15** **Ivan Šalitraš**, Kuppusam, S. K., Fuhr, O., Ruben, M.  
IRON(II) COMPLEXES WITH TRIDENTATE LIGANDS – THERMAL AND PHOTOINDUCED SPIN CROSSOVER
- 09:15 – 09:30** **Lukáš Pogány**, Šalitraš, I., Pavlik, J., Moncoľ, J.  
IRON(III) COMPLEXES WITH PENTADENTATE OR HEXADENTATE SCHIFF BASE LIGANDS
- 09:30 – 09:45** **Miroslav Boča**  
XPS AND NMR SPECTROSCOPY OF TERNARY FLUORIDES
- 09:45 – 10:00** **Daniel Bůžek**, Demel, J., Zelenka, J., Rumil, T., Ulbrich, P., Křížová, I., Lang, J., Kirakci, K., Lang, K., NANOSCALED PORPHYRINIC METAL-ORGANIC FRAMEWORKS AS THE PHOTSENSITIZERS FOR PHOTODYNAMIC THERAPY OF CANCER DISEASE
- 10:00 – 10:15** **Anita Eckstein Andicsová**, Kroneková, Z., Kleinová, A., Opálek, A., Šišková, A.  
SILK-BASED BIOMATERIALS FOR MEDICAL APPLICATION
- 10:15 – 10:30** **Jakub Ederer**, Janoš, P., Ecorchard, P., Tolasz, J., Beneš, H., Perchacz, M., Pop-Georgievski, O.  
GRAPHENE OXIDE – CHARACTERIZATION OF SURFACE FUNCTIONAL GROUPS AND POSSIBILITY OF ITS USE

**10:30 – 11:00** **Coffee break**

Chair: Franz Renz

- 11:00 – 11:15** **Dušan Valigura**  
QUO VADIS THE UNDERSTANDING OF IRON BIOMINERALIZATION REACTIONS
- 11:15 – 11:30** **Ján Moncoľ**, Schoeller, M., Izakovič, M.  
STRUCTURALLY DIVERSE MANGANESE(III)-SALEN COMPLEXES WITH BRIDGING LIGANDS
- 11:30 – 11:45** **Zita Tokárová**, Gorecka, E.  
THIOPHENES IN LIQUID CRYSTALLINE AND HYBRID LIQUID CRYSTALLINE MATERIALS
- 11:45 – 12:00** **Silvie Kříženecká**, Trögl, J., Fikarová, J., Swietoňová, I., Dáňová, P.  
ESTIMATION OF BIOAVAILABILITY OF ALIPHATIC HYDROCARBONS IN SOIL USING NON-EXHAUSTIVE EXTRACTION TECHNIQUES
- 12:00 – 12:15** **Alena Šišková**, Andicsová, A. E.  
CHEMICAL FUNCTIONALIZATION OF CELLULOSE MATERIALS
- 12:15 – 12:30** **Lucie Majerová**, Grygar, T. M., Elznicová, J.  
HISTORICAL SOURCES OF MERCURY POLLUTION IN FLOODPLAIN SEDIMENTS OF THE OHŘE RIVER
- 12:30 – 12:45** **Roman Boča**  
SINGLE ION MAGNETS FORMED OF LOW-SPIN COMPLEXES

### Slovak Room

#### Symposium Pedagogy, Humanities and Foreign Languages in Natural and Technical Sciences

Chair: Juraj Miština

- 08:30 – 09:00** **Lucie Smékalová**  
DIDACTIC PRINCIPLES OF ADULT EDUCATION WITH A FOCUS ON THE EFFECTIVENESS OF EDUCATION OF STUDENTS IN THE COMBINED FORM OF STUDY
- 09:00 – 09:15** **Miroslav Beňo**

POSITIVE AND NEGATIVE IMPACTS OF INFORMATION AND COMMUNICATION TECHNOLOGY RESOURCES ON EDUCATION

**09:15 – 09:30 Lukáš Herout**

MOTIVATION OF UNIVERSITY STUDENTS TO SELECT OCCUPATION IN THE FIELD OF STUDY TEACHER TRAINING IN INFORMATICS

**09:30 – 09:45 Juraj Miština**

DEVELOPMENT OF COMMUNICATION SKILLS AS THE EMPLOYABILITY SUPPORT FACTOR

**09:45 – 10:00 Lucie Smékalová, Němejc, K., Slavík, M.**

VIEW OF THE EVALUATION OF DIDACTIC COMPETENCE OF TEACHERS OF VOCATIONAL SUBJECTS OF TECHNICAL FIELDS: AN EMPIRICAL SURVEY

**10:00 – 10:15 Přemysl Štindl**

INQUIRY-BASED ACTIVITIES AS ONE OF MANY WAYS OF LIFELONG LEARNING FOR THE 21<sup>ST</sup> CENTURY

**08:30 – 11:00 Poster section (Applied Biology and Biotechnology, Applied Physics)**

*Note: Only presenting authors are stated.*

**Simona Dalihodová:** A VALIDATION STUDY FOR THE EXTRACTION OF DNA FROM FORENSIC SAMPLES USING MAGCORE HF 16 PLUS AUTOMATED NUCLEIC ACID EXTRACTOR

**Agáta Fargašová:** PLANTS AS MODELS FOR ENVIRONMENTAL RISK ASSESSMENT

**Jozef Gubiš:** GROWTH PARAMETERS OF ARUNDO DONAX FERTILIZED BY SEWAGE SLUDGE

**Marcela Gubišová:** MICROPROPAGATION OF ENERGY GRASS ARUNDO DONAX BY IN VITRO TILLERING

**Katarína Hrčková:** ANALYSIS OF PHOTOASSIMILATES TRANSPORT IN DIFFERENT PLANT SPECIES: A POSITRON EMISSION TOMOGRAPHY STUDY

**Martina Hudcovicová:** THE USE OF SEROLOGICAL AND MOLECULAR METHODS IN TOMATO BREEDING FOR RESISTANCE TO ToMV

**Lenka Klčová:** IN VITRO CULTIVATION OF SIDA HERMAPHRODITA (L.)

**Peter Kováčik:** IMPACT OF EARTHWORMS (EISENIA FOETIDA) AND VERMICOMPOST ON THE FORMATION OF RADISH PHYTOMASS AND ON OCCURRENCE OF AZOTOBACTER CH

**Erik Krošlák:** ANTIOXIDANT AND PROTEINASE INHIBITION ACTIVITIES OF RYE (SECALE CEREALE L.)

**Mária Martinovičová:** AN OVERALL IN SILICO ANALYSIS OF THE ALPHA-AMYLASE FAMILY GH57

**Ildikó Matušíková:** INFLUENCE OF NITROGEN EXCESS ON PHOTOSYNTHETIC PARAMETERS AND ACCUMULATION OF ARSENIC IN WHEAT

**Jana Moravčíková:** CHITINASE AND BETA-1,3-GLUCANASE ENZYME ACTIVITIES IN MATURING NORWAY SPRUCE EMBRYOS

**Jana Moravčíková:** CHITINASES IN ANTHERS OF RYE (SECALE CEREALE L.) INDUCED TO ANDROGENESIS

**Michaela Mrkvová:** DETERMINATION OF TOMATO MOSAIC VIRUS BY MOLECULAR - BIOLOGICAL METHODS

**Katarína Ondreičková:** SEWAGE SLUDGE AND ITS IMPACT ON THE GENETIC DIVERSITY OF ARBUSCULAR MYCORRHIZAL FUNGI

**Andrej Opálek:** THERMAL TREATMENT OF MAGNESIUM FOR ITS BIODEGRADABLE APPLICATIONS

**Veronika Rošteková:** MOLECULAR CHARACTERIZATION OF POPULATIONS WITHIN THE GENUS IPS

**Mária Šedivá:** ERIC GENOTYPING OF HONEYBEE PATHOGEN PAENIBACILLUS LARVAE OCCURRING IN SLOVAKIA

**Zuzana Šramková:** GETTING TO KNOW NEW ENDOLYSIN: A JOURNEY FROM GENE PREDICTION TO PROTEIN

**Matej Planý:** STUDY OF BACTERIAL DIVERSITY OF SELECTED POLISH AND SLOVAK BRYNDZA CHEESE USING HIGH-THROUGHPUT 16S rRNA GENE SEQUENCING

**Martin Tomáška:** ISOLATION AND IDENTIFICATION OF LEUCONOSTOCS FROM TRADITIONAL SLOVAK SHEEP MILK SPECIALITIES

**Eva Ůrgeová:** IN VITRO CULTURES OF SALVIA OFFICINALIS AND SALVIA HISPANICA AND PRODUCTION OF POLYPHENOLS

**Ľubica Uváčková:** MICROSCOPIC PHOTOTROPHS IN EXTREME BIOTOPES

**Blažena Vargová:** DERMACENTOR RETICULATUS RESPONSE TO AN RADIOFREQUENCY ELECTROMAGNETIC FIELD

**Jana Ziburová:** MULTIOMICS APPROACH IN A CLINICAL CASE OF SUSPECTED SLOVAKIAN CDGx PATIENT

**Kamil Tokár:** ELECTRON CORRELATION IN CHARGED VANADIUM-BENZENE CLUSTERS FROM QMC

## 28 September 2017 / Conference day 2

### Afternoon part

#### Room 3

#### Symposium Young Scientists – Future of Science

Chair: Juraj Krajčovič

**13:45 – 14:00** **Darina Peterková,** Oravkinová, M., Vidová, B., Godány, A.  
ACTINOPHAGE ENDOLYSINS: IN SILICO SEARCHING, PREDICTION AND CHARACTERISATION

**14:00 – 14:15** **Barbora Brachňaková,** Šalitraš, I., Moncol', J.  
THE MONONUCLEAR COBALT COMPOUNDS AS POTENTIAL SINGLE-MOLECULE MAGNETS

**14:15 - 14:30** **Filip Varga,** Rajnák, C., Titiš, J., Moncol', J., Boča, R.  
FIELD SUPPORTED SINGLE-MOLECULE MAGNETS OF TYPE [CO(BZIMPY)<sub>2</sub>]

**14:30 - 14:45** **Dominik Lomjanský,** Moncol', J., Rajnák, C., Titiš, J., Boča, R.  
FIELD EFFECT TO SLOW MAGNETIC RELAXATION IN A MONONUCLEAR NICKEL(II) COMPLEX

**14:45 - 15:00** **Petra Masárová,** Mazúr, M., Moncol', J.  
SYNTHESIS, CRYSTAL STRUCTURES, MAGNETISM AND EPR SPECTRA OF TRANSITION METAL DIPICOLINATE COMPOUNDS

**15:00 - 15:15** **Petra Ranušová,** Nemeček, P., Lehotay, J., Čižmárik, J.  
QSRR STUDY OF HPLC RETENTION PROPERTIES OF SELECTED PHENYLCARBAMIC ACID ESTERS

**15:15 - 15:30** **Jan Matkovič**  
NEUTRON ACTIVATION ANALYSIS USING ISOTOPIC NEUTRON SOURCE

#### 15:30 – 16:00 Coffee break

#### Chair: Dušan Valigura

**16:00 – 16:15** **Monika Bardáčová,** Gregorová, Z., Horník, M., Kraic, J., Moravčíková, J., Apostolova, E., Matušíková, I.  
DIFFERENTIAL ACCUMULATION OF CADMIUM IN FOUR SOYBEAN VARIETIES

**16:15 – 16:30** **Diana Nebeská,** Pidlisnyuk, V., Trögl, J., Malinská, H., Malý, J., Smaha, M., Holubová, M., Medžová, A.  
FIRST RESULTS OF GROWING MISCANTHUS X GIGANTEUS ON SOILS CONTAMINATED BY HYDROCARBONS AND METALS

**16:30 - 16:45** **Eliška Wildová,** Kula, E.  
ACCUMULATION AND DYNAMICS OF MANGANESE CONTENT IN PLANT SPECIES OF FOREST ECOSYSTEM

**16:45 - 17:00** **Veronika Chrenková**, Valigura, D.  
PINCER LIKE LIGANDS IN COORDINATION CHEMISTRY AND SINGLE MOLECULE  
MAGNETS

**17:00 – 18:00** **Poster section (Young Scientists)**

*Note: Only presenting authors are stated.*

**Veronika Jarábková**: NEW DETECTION APPROACH FOR GRAM-POSITIVE PATHOGENS BY PHAGE-  
ENCODED ENDOLYSINS

**Marcela Morvová**: FLUOROPHORES IN YOUNG HUMAN SKIN

**Michaela Oravkinová**: CHIMERIC PHAGE ENDOLYSIN EFFECTIVE AGAINST GRAM-NEGATIVE BACTERIA

**Lenka Raabová**: MICROSCOPIC PHOTOTROPHS IN EXTREME BIOTOPES

**Júlia Šarkanová**: INTERCELLULAR COMMUNICATION AMONG EUGLENOID FLAGELLATES

**Marek Kudláč**: PRELIMINARY STUDY ON MAPPING NATURAL RADIOACTIVITY IN SLOVAKIA USING  
GEOSTATISTICAL METHODS

**19:00** **Social Evening**

**29 September 2017 / Conference day 3**

**09:00 – 10:00** Evaluation meetings in Symposiums (Rooms 1, 2, 3, Slovak Room)

**10:00 – 11:00** Closing plenary meeting – evaluation and the Best Posters Awards