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Conference Program



CMBEBIH

International Conference on
Medical and Biological Engineering

in Bosnia and Herzegovina,
Banja Luka, 16 – 18 May, 2019

Organized by:



Co – Organized by:



MEDICINSKI FAKULTET
BANJA LUKA



UNIVERZITET U SARAJEVU
FARMACEUTSKI FAKULTET

Share the Vision

THURSDAY, May 16th 2019

08:00 - 10:00 Registration

10:00 - 11:00 Opening Ceremony, BANSKI DVOR, CONCERT HALL

1. **Milbrad Dodik** – *Chairman of the Presidency of Bosnia and Herzegovina*
2. **Srdan Rajčević** - *Ministry for Scientific and Technological Development, Higher Education and Information Society*
3. **Shankar Krishnan** – *President of International Federation for Medical and Biological Engineering (IFMBE)*
4. **Timo Jämsä**– *President of European Alliance for Medical and Biological Engineering and Science (EAMBES)*
5. **Leandro Pecchia** – *Secretary of International Union for Physical and Engineering Sciences in Medicine (IUPESM)*
6. **Meliha Selak**, - *President of IEEE Bosnia and Herzegovina Section*
7. **Dejan Milojević** - *Hewlett Packard Labs & IEEE President Candidate 2020*
8. **Eddie Custovic** - *Chair of Business Networking Forum (IT & Engineering)*
9. **Ranko Škrbić** – *Chair of International Conference on Medical and Biological Engineering (CMBEBIH 2019)*
10. **Amir Badnjević** – *President of Bosnia and Herzegovina Medical and Biological Engineering Society and Chair of the International Conference on Medical and Biological Engineering (CMBEBIH)*

11:00 - 11:15 Media Press Conference, BANSKI DVOR LOBBY

11:00 – 11:15 South East European International Institute for Sustainable Technologies (SEEIIST) - Presented by Minister of Science of Montenegro Sanja Damjanovic, BANSKI DVOR, CONCERT HALL

11:15 - 12:45 Plenary Lectures I, BANSKI DVOR, CONCERT HALL

1. **Damijan Miklavcic, Ph.D.** - *Electroporation based treatments and therapies*
2. **Zimei Wu, Ph.D.** - *Tumor Micro-Environment Sensitive Liposomes for Targeted Drug Delivery*
3. **Natasa Przulj, Ph.D.** - *New Algorithms for Unravelling Biomedical Knowledge from Heterogeneous Omics Data*

12:45 - 13:00 Zoonosis in Bosnia and Herzegovina. Say NO to Germs!, BANSKI DVOR, CONCERT HALL

13:00 - 14:00 Lunch Break, HOTEL BOSNA, CRYSTALL HALL

14:00 - 15:30 Plenary Session I, BANSKI DVOR, CONCERT HALL

BIOMEDICAL SIGNAL PROCESSING I

Session Chairs: *Dejan Jokić, International Burch University (Bosnia and Herzegovina),*
Šmujžana Paras, University of Banja Luka (Bosnia and Herzegovina),

S1-1: Ermina Alic kovic, Abdulhamit Subasi - *Automatic Detection of Alzheimer Disease Based on Histogram and Random Forest*

S1-2: Francisco Cunha, Luis Távora, Pedro Assunção, Sérgio Faria, Rui Fonseca-Pinto - *Stereo laser speckle dissimilarity analysis using self-organizing maps*

S1-3: Michele Sorelli, Antonia Perrella, Piergiorgio Francia, Leonardo Bocchi - *Wavelet phase coherence analysis between the respiratory activity and the microcirculation: the effects of type 1 Diabetes*

S1-4: Rui Fonseca-Pinto - *Prescribe and Monitor Physical Activity through a community-based eHealth Program: MOVIDA platform*

S1-5: Abdulhamit Subasi, Emine Yaman - *EMG Signal Classification using Discrete Wavelet Transform and Rotation Forest*

S1-6: Smiljana Paras, Nataša Vojinovic - *Impact of high frequency electromagnetic fields on process of angiogenesis*

S1-7: Rijad Saric, Dejan Jokic, Nejra Beganovic - *Implementation of Neural Network-based Classification Approach on Embedded Platform*

14:00 - 15:30 Plenary Session II, BANSKI DVOR, CITY HALL

MEDICAL PHYSICS, BIOMEDICAL IMAGING AND RADIATION PROTECTION 1

Session Chairs: *Nicolas Pallikarakis, University of Patras (Greece), Tatjana Ignjić, Affidea Banja Luka (Bosnia and Herzegovina)*

S2-1: Edis Đedovic, Hasan Osmic, Muhamed Topcagic, Nermine Karaman - *A dosimetric analysis of the overlapping and gap areas produced by simulated set-up errors on a treatment planning system in a case of the craniospinal irradiation of an adult patient*

S2-2: Milos Lucic, Igor Djan, Olivera Sveljo, Katarina Koprivsek, Dusan Ilic, Sasa Vujnovic, Silvija Lucic - *Diffusion tensor imaging and diffusion kurtosis imaging as potential structural MR imaging biomarkers of early white matter microstructure changes during and after high grade glioma patients radiotherapy treatment*

S2-3: Silvija Lucic, Igor Djan, Milena Spirovski, Dusan Ilic, Dusko Kozic, Sasa Vujnovic, Milos Lucic - *Metabolic and structural imaging biomarkers in lung cancer tissue volumedependent comparative analysis*

S2-4: Ivan Lasic, Kristina Galic, Adnan Beganovic, Valentina Lasic, Antonela Krasic-Arapovic, Lejla Crva - *Dose Optimization on CT thorax exam in University Clinical Hospital Mostar*

S2-5: Adnan Beganovic, Irmina Sefic-Pašic, Maja Gazdic-Šantic, Rahima Jašić, Amra Skopljak-Beganovic, Adnan Šehić, Sandra Vegar-Zubovic - *Radiation exposure of patients in neonatal intensive care unit*

S2-6: Adnan Beganovic, Rahima Jašić, Maja Gazdica-Šantić, Amra Skopljak-Beganovic, Nermina Bešlić, Šejla Cerić, Amra Sadija, Sandra Vegar-Zubović - *Use of uptake values to estimate the effective dose to patients in positron emission tomography*

14:00 - 15:30 Plenary Session III, HOTEL BOSNA, PIANO BAR HALL

CLINICAL ENGINEERING AND HEALTH TECHNOLOGY ASSESSMENT 1

Session Chairs: Ernesto Iadanza, University of Florence (Italy), Mario Medvedec, University of Zagreb (Croatia)

S3-1: Davide Piaggio, Roland Houessouvo, Daton Medenou, Leandro Pecchia - *Donation of medical devices in low-income countries: preliminary results from field studies*

S3-2: Ernesto Iadanza, Cesare Massaro, Leonardo Vonci – *Adverse Drug Events (ADEs): a novel RFID device for a safe and strong match between patients and their medications*

S3-3: Mario Medvedec, Mladen Poluta - *Only all together we can make it better on any strategic matter*

S3-4: Ernesto Iadanza, Alessio Luschi, Roberto Gusinu, Filippo Terzaghi - *Designing a Healthcare Computer Aided Facility Management System: a New Approach*

S3-5: Alessio Luschi, Riccardo Di Franco, Beatrice Turillazzi, Ernesto Iadanza - *System for Monitoring Environmental Parameters in a Hospital Facility*

S3-6: Jasminka Hasić, Azra Musić Kilić – *Using data science for medical decision making case: Role of Gut Microbiome in Multiple Sclerosis*

15:30-16:00 Coffee Break

16:00-19:00 Workshop, BANSKI DVOR, CONCERT HALL

IFMBE Clinical Engineering and Health Technology Assessment Divisions Workshop (only for registered participants – students, members and nonmembers)

16:00-18:00 Visit the University Clinic Center and Radiotherapy Centre Affidea in Banja Luka

(it is necessary to register at Registration desk for this visit)

20:00 – 22:00 B2B Meeting Point for Invited Guests at Integra Restaurant (only with Invitations)

21:00 – 02:00 Welcome Cocktail, organized together with BLIMC organizers. LOCATION: SMUGGLER BAR, KRALJA PETRA I KARAOĐEVIĆA 103, Banja Luka 78000 (only for registered participants – students, members and nonmembers)

FRIDAY, May 17th 2019

09:00 - 10:00 Registration

10:00 - 11:30 Plenary Lectures II, BANSKI DVOR, CONCERT HALL

- 1 **Ervin Sejdic, Ph.D.** – *Computational deglutition – A novel computational field to understand swallowing and associated disorders*
- 2 **Borut Strukelj, Ph.D.** – *Pharmaceutical Engineering Of Recombinant Probiotics – Novel Delivery System Of Advanced Biological Medicines*

11:30 - 12:30 Springer Book Promotion: “Nanofood and Internet of Nano Things” Authors: Mirjana Maksimović, Enisa Omanović – Mikličanin, Admir Badnjević, BANSKI DVOR, CONCERT HALL

12:30 - 13:30 Lunch Break, HOTEL BOSNA, CRYSTAL HALL

13:30 – 15:30 Poster session, HOTEL BOSNA, NATIONAL SALON

Poster Chairs: *Ervin Sejdic, University of Pittsburgh (USA), Ratko Magjarevic, University of Zagreb (Croatia), Shankar Krishnan, University of Boston (USA), Ernesto Iadanza, University of Florence (Italy), Mario Medvedec, University of Zagreb (Croatia),*

P1: Marek Zylinski, Malgorzata Wojciechowska, Wiktor Niewiadomski, Marta Sadowiec, Sonia Borodzicz, Gerard Cybulski - *Adaptive Filter Removes Variability Caused by Respiration from Impedance Cardiography Signal*

P2: Grazyna Adler, Izabela Uzar, Anastazja Kazlova, Amina Valjevac, Emina Kiseljakovic, Emir Mahmutbegovic, Nermin N Salkic, Mateusz A Adler, Nevena Mahmutbegovic, Maciej Grabowski, Ewa Rebacz-Maron - *Landscape of CYP3A5 variants in Central-Eastern and South European populations*

P3: Jani Lylykangas, Mirja Ilves, Hanna Venesvirta, Ville Rantanen, Eeva Mäkelä, Antti Vehkaoja, Jarmo Verho, Jukka Leikkala, Markus Rautiainen, Veikko Surakka - *Electrical Stimulation of Eye Blink in Individuals with Dry Eye Symptoms Caused by Chronic Unilateral Facial Palsy*

P4: Heidi Halonen, Jari A.K Hyttinen, Teemu O. Ihalainen - *Miniaturized stimulator for imaging of live cell responses to high frequency mechanical vibration*

P5: Edina Vranic, Amina Tucak, Merima Sirbubalo, Ognjenka Rahic, Alisa Elezovic, Jasmina Hadziabdic - *Development of inhalable dry gene powders for pulmonary drug delivery by spray-freeze-drying*

- P6:** Edina Vranic, Amina Tucak, Merima Sirbubalo, Ognjenka Rahic, Alisa Elezovic, Jasmina Hadziabdic - *Microneedle-based sensor systems for real-time continuous transdermal monitoring of analytes in body fluids*
- P7:** Sergei Akulov, Aleksandr Fedotov, Igor Makarov, Aleksandr Sidorov, Angelina Kosheleva - *Influence on artificial microgravity on human arterial vessels*
- P8:** Emina Alickovic, Abdulhamit Subasi - *Normalized Neural Networks for Breast Cancer Classification*
- P9:** Mirsada Salihovic, Aida Sapcanin, Selma Špirtovic-Halilovic, Irma Mahmutovic-Dizdarevic, Anesa Jerkovic-Mujkic, Elma Veljovic, Ekrem Pehlic, Fuad Gaši, Sabilja Zeciri - *Antimicrobial activity of selected wild mushrooms from different areas of Bosnia and Herzegovina*
- P10:** Aida Sapcanin, Aida Hasanovic, Mirsada Salihovic, Ekrem Pehlic, Selma Špirtovic-Halilovic - *Screening of heavy metal occurrence in edible plants from Bosnian market*
- P11:** Sergei Akulov, Aleksandr Fedotov, Angelina Kosheleva - *Dry electrodes for long term ECG monitoring*
- P12:** Selma Cifric, Jasna Nuhic, Dina Osmanovic, Emina Kišija - *Review of Electrochemical Biosensors for Hormone Detection*
- P13:** Tijana Adamovic, Valentina Veselinovic, Nataša Trtić, Andrej Ivanič, Rebeka Rudolf - *Mechanical properties of new denture base material modified with gold nanoparticles*
- P14:** Safija Herenda, Anera Kazlagic, Edhem Haskovic, Denis Haskovic - *Effects of ^{99m}Tc on the redox properties of Lthyroxine*
- P15:** Amela Masala, Ivona Alilovic, Husein Ohran, Szilvia Kusza, Teufik Goletic, Amina Hrkovic-Porobija, Aida Hodzic - *Genetic polymorphism β -lactoglobulin gene in Dubska Pramenka sheep breed*
- P16:** Nermina Sokolovic, Majda Ajanovic, Samir Badic, Miljana Banjanin, Mirna Brkan, Naida Custo, Barbara Stanic, Merima Sirbubalo, Amina Tucak, Edina Vranic - *Predicting the outcome of granulation and tableting processes using different artificial intelligence methods*
- P17:** Ceren Gürlek, Cagla Yarkent, Izel Oral, ayse köse, Suphi S. Oncel, Murat Elibol - *Evaluation of several microalgal extracts as bioactive metabolites as potential pharmaceutical compounds*
- P18:** Aida Botonjic, Tino Kostic, Nedim Begic - *Comparison of CFD analysis of shorter designed stent graft in abdominal aorta*
- P19:** Tarik Ibrahimasic, Dejan Jokic - *Development of a Tray-Separated Microbiological Incubator by Means of Electronic Components and Testing its Performance*
- P20:** Nevenka Velickova, Marina Nateva, Slagana Stojanovska - *Liver Enzymes as Biomarkers for Hepatotoxicity of Statins in Patients with Dyslipidemia*

P21: Zvezdana Gavrilovic, Mirjana Maksimovic - *Nanomedical devices as a tool for consumer research*

P22: Anastasia Daskalaki, Anthi Malliori, Aris Dermitzakis, Nicolas Pallikarakis - *Novel Physical Heterogeneous Breast Phantom for X-ray Phase Contrast Imaging*

P23: Siniša Vucenovic, Jovan Šetrajcic, Ana Šetrajcic - *Near IR exciton theory of ultrathin crystalline film optics and possibilities for drug delivery*

P24: Emina Kišija, Dina Osmanovic, Jasna Nuhic, Selma Cifric - *Review of Biosensors in Industrial process control*

P25: Tatjana Ignjic, Bojan Pavicar, Goran Kolarevic, Zeljko Ranogajec - *Computer tomography tube voltage and phantom dimensions influence on the number of Hounsfield units*

P26: Dušan Ilic, Silvija Lucic, Sasa Vujnovic, Li Sen, Ranko Skrbic, Milos Lucic - *Phonon Engineering in Nanostructures for Targeted Drug Delivery*

P27: Alija Uzunovic, Minela Dacic, Zahida Ademovic, Sead Osmancevic, Saša Pilipovic, Aida Šapcanin - *In vitro evaluation of transdermal patches containing capsaicin marketed in Bosnia and Herzegovina*

P28: Minela Dacic, Alija Uzunovic, Amar Kunic, Saša Pilipovic, Aida Šapcanin - *UV-VIS determination of acetylsalicylic acid in aspirin tablets using different solvents and conditions*

P29: Igor Saveljic - *Atherosclerotic plaque formation in the coronary arteries*

P30: Aida Hasanovic, Aida Sapcanin, Jakub Hasanovic - *Coronary angiography evaluation of atherosclerosis in diabetic patients*

P31: Bojana Caric, Blazenko Vukovic, Katarina Lalic - *Optimizing insulin pump therapy: Advanced bolus options*

P32: Dalibor Nikolic, Igor Saveljic, Nenad Filipovic - *Parametric optimization of stent design based on numerical methods*

P33: Aneta Kazlagic, Enisa Omanovic-Miklicanin - *Application of Raman Spectroscopy in Food Forensics: A Review*

P34: Lamija Hindija, Armina Gicevic, Alma Karacic - *Toxicity of azo dyes in pharmaceutical industry*

P35: Lejla Gurbeta, Emina Kurta, Alma Badnjevic- Cengic, Sebija Izetbegovic, Almir Badnjevic - *eVerlab: Software Tool for Medical Device Safety and Performance Inspection Management*

P36: Sacira Mandal - *Genes associated with free fatty acid levels and dyslipidemia in Type 2 Diabetes patients*

P37: Seda Damla Hatipoglu - *Two New Certified Reference Materials for Clinical Measurements: UME CRM 1314 Amino Acids in Human Plasma and UME CRM 1315 Organic Acids in Urine*

P38: Lejla Divovic, Lejla Gurbeta, Alma Badnjevic - Cengic, Almir Badnjevic, Behija Berberovic Hukeljic, Tamer Bego, Omer Perva - *Classification of severe aortic stenosis using expert system*

P39: Leticia Silva, Bruno Oliveira Rezende, Hiara Lopes Pinheiro Teixeira, Bianca Duque, Gisele Aparecida Fofano - *Epigenetic: how does it affect cancer?*

P40: Laila Mušić, Nusreta Gabeljic - *Predicting the Severity of a Mammographic Tumor Using an Artificial Neural Network*

P41: Nataša Popovic, Milica Naumovic, Sonja Roganovic - *HIV infection mathematical modeling and future trends of treatment using nanotechnology and nanorobots*

15:30 - 17:30 Plenary Session IV, BANSKI DVOR, CONCERT HALL

BIOMEDICAL SIGNAL PROCESSING 2 + MEDICAL PHYSICS, BIOMEDICAL IMAGING AND RADIATION PROTECTION 2

Session Chairs: Dusanka Boskovic, University of Sarajevo (Bosnia and Herzegovina), Adnan Beganović, University Clinic Center Sarajevo (Bosnia and Herzegovina)

S4-1: Jasna Nuhic, Jasmin Kevric - *Prostate cancer detection using different classification techniques*

S4-2: Ahmed Osmanovic, Sabina Halilovic, Samed Jukic, Jasmin Kevric, Naida Hadziabdic - *Application of a computer-aided diagnostic system for early identification of periapical lesions - a pilot study*

S4-3: Sanda Slijivo, Dusanka Boskovic, Orhan Lepara - *Vector cardiogram e Learning application*

S4-4: Boris Dragojevic, Dusanka Boskovic - *Evaluating MSE applicability to short HR time-series*

S4-5: Lejla Civa, Adnan Beganovic, Mahira Redzic, Maja Gazdic-Šantic, Amra Skopljak-Beganovic, Rahima Jašić, Ivan Lasić, Sandra Vegar-Zubovic - *Evaluation of computed tomography X-ray beam dose profiles*

S4-6: Edis Đedovic, Azra Gazibegovic-Busuladžić, Mustafa Busuladžić, Adnan Beganovic - *Comparison of specific fractal and multifractal parameters for certain regions of interest from digital mammograms*

S4-7: Jovica Ž. Praskalo, Biljana V. Petrovic, Adnan Beganovic - *Portable X-Ray devices: loosing border between controlled and supervised areas*

S4-8: İrfan Karagoz - *Effectiveness of Asymmetry Analysis Technique Based on Statistical Features in Breast Cancer Detection with Modern Thermographic Imaging Systems*

15:30 - 17:30 Plenary Session V, HOTEL BOSNA, PIANO BAR

HEALTH INFORMATICS, E-HEALTH AND TELEMEDICINE + ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN HEALTH CARE

Session Chairs: *Tamer Bego, University of Sarajevo (Bosnia and Herzegovina), Zerina Masetic, International Burch University Sarajevo (Bosnia and Herzegovina)*

SS-1: Nuno Pombo, Nuno Garcia - *Towards Pain-Fingerprinting: a Ubiquitous and Interoperable Clinical Decision Support System for Pain Assessment*

SS-2: Rijad Saric, Dejan Jokic, Eddie Custovic - *Identification of Alcohol Addicts among High School Students using Decision Tree based Algorithm*

SS-3: Joana Moreira, Mariana Moreira, Nuno Pombo, Bruno Silva, Nuno Garcia - *Identification of real and imaginary movements in EEG using Machine Learning models*

SS-4: Arnela Tarakcija, Vedad Terzic, Almir Vardo, Sabrina Smajlovic, Sabilja Zeciri, Selma Imamovic, Tanja Dujic, Maja Malenica, Tamer Bego - *Development of a diagnostic support software in the clinicobiochemical evaluation of thyroid disease diagnosis*

SS-5: Lemana Spahic, Emina Kurta, Sabahudin Cordic, Merjem Becirovic, Lejla Gurbeta, Almir Badnjevic - *Machine Learning Techniques for Performance Prediction of Medical Devices: Infant Incubators*

SS-6: Dželila Mehanovic, Zerina Masetic, Dino Kecic - *Prediction of heart diseases using majority voting ensemble method*

SS-7: Lemana Spahic, Emir Šehovic, Alem Secerovic, Zerina Dozic, Lejla Smajlovic Skenderagic - *Lactose Intolerance Prediction Using Artificial Neural Networks*

SS-8: Jasna Nuhic, Lemana Spahic, Sabahudin Cordic, Jasmin Kevric - *Comparative study on different classification techniques for ovarian cancer detection*

13:30-19:00 **EAMBES Activities, HOTEL BOSNA, BUSINESS SALON**

a) 13:30-15:00 E AMBES Council meeting, b) 15:30-17:30 EAMBES General Assembly meeting, c) 17:30-19:00 E AMBES Round table discussion between EAMBES council members with E AMBES Fellows
(only for EAMBES Representatives)

20:00 – 00:00 Gala dinner, HOTEL BOSNIA

(only for registered Members, Non-Members and special Invitations)

SATURDAY, May 18th 2019

08:00 - 09:00 Registration

09:00 - 10:30 Plenary Lectures III, BANSKI DVOR, CONCERT HALL

1. **Hani Al Salami, Ph.D.** - *Biotechnological advancement in drug delivery and tissue engineering: Future perspective.*
2. **Goran Stojanovic, Ph.D.** - *Design a fabrication of microfluidic chips in different technologies for biomedical applications*

10:30-12:30 Plenary Session VI, BANSKI DVOR, CONCERT HALL

BIO-MICRO/NANO TECHNOLOGIES + BIOMATERIALS, BIOMECHANICS, ROBOTICS AND MINIMALLY INVASIVE SURGERY

Session Chairs: *Enisa Omanović - Mikličević, University of Sarajevo (Bosnia and Herzegovina), Mirjana Maksimović, University of East Sarajevo (Bosnia and Herzegovina)*

S6-1: Tugçe Mutaf, Gülizar Çalışkan, Cafer Meydan, Suphi Öncel, Murat Elibol - *Biogenic nanoparticle synthesis using marine alga *Schizothyrium* sp.*

S6-2: Gülizar Çalışkan, Tugçe Mutaf, Suphi Öncel, Murat Elibol - *Green synthesis of metal nanoparticles using microalga *Galdieria* sp.*

S6-3: Amar Ramovic, Zerina Zorlak, Denana Husic, Samir Ramic - *Zeolite microneedles: recent advancements and implications in the delivery of collagen*

S6-4: Monia Avdic, Zerina Masetic, Ahmed El Sayed, Lejla Odobasic, Mirsada Hukic - *A Novel Approach in Determination of Biofilm Forming Capacity of Bacteria using Random Forest Classifier*

S6-5: Vesna Raspudic - *Analysis of Vertical Ground Reaction Force and Center of Pressure during Stair Climbing*

S6-6: Zlata Jelacic, Remzo Dedic - *Reference tracking of the robotic above-knee prosthetic leg with actuated knee and ankle joints using robust control*

10:30-12:30 Plenary Session VII, BANSKI DVOR, CITY HALL

BIOSENSORS AND BIOINSTRUMENTATION + CLINICAL ENGINEERING AND HEALTH TECHNOLOGY ASSESSMENT 2

Session Chairs: *Baki Karaboce, TUBITAK UME (Turkey), Zdenka Babić, University of Banja Luka (Bosnia and Herzegovina)*

S7-1: Mitar Simic, Ross Gillanders, Alesksej Avramovic, Slavica Gajic, Vedran Jovanovic, Vladan Stojnic, Vladimir Risojevic, James Glackin, Graham Turnbull, Janja Filipi, Nikola Kezic, Mario Muštra, Zdenka Babić - *Honeybee Activity Monitoring in a Biohybrid System for Explosives Detection*

S7-2: Semir Sakanovic, Jasmin Kevric - *HaBEEtat: A Novel Monitoring Platform for more efficient honey production*

S7-3: Andrea Felici, Michele Sorelli, Leonardo Bocchi - *Design and implementation of a monitoring system for elastomeric infusion pumps*

S7-4: Emil Valchinov, Konstantinos Rotas, Athanasios Antoniou, Vasileios Sympeis, Nicolas Pallikarakis - *Wearable system for early diagnosis and follow up of spine curvature disorders*

S7-5: Zeynep Orhan, Mine Mercan, Merve Kevser Gokgol - *A new digital mental health system infrastructure for diagnosis of psychiatric disorders and patient follow-up by text analysis in Turkish*

S7-6: Jasmina Barakovic Husic, Sabina Barakovic, Enida Cero Dinarevic - *Smart Ageing: Are we succeeding?*

S7-7: Karaböce Baki, Huseyin Okan Durmus, Emel Cetin - *Establishment of Measurement System for Hearing Aids at TUBITAK UME*

S7-8: Karaböce Baki, Huseyin Okan Durmus, Emel Cetin - *The Importance of Metrology in Medicine*

10:30-12:30 Plenary Session VIII, HOTEL BOSNA, PIANO BAR HALL

CARDIOVASCULAR, RESPIRATORY AND ENDOCRINE SYSTEMS ENGINEERING

Session Chairs: Nenad Filipović, University of Kragujevac (Serbia), Peđa Kovčević, University of Banja Luka (Bosnia and Herzegovina)

S8-1: Medina Hamidovic, Ferenc Ender, Andreas Springer - *A Novel Enzymatic Microreactor: Towards Transforming the Pharmaceutical Industry*

S8-2: Pietro Tarchi, Francesca Bologna, Costanza Scortecci, Eleonora Tinbilli, Diletta Pennati, Leonardo Sacconi, Michele Sorelli, Leonardo Bocchi - *Modeling of voltage imaging for the study of action potential propagation*

S8-3: Nebojsa Skrepnik, Andrew Spitzer, Roy Altman, John Hoekstra, John Stewart, Richard Toselli - *Assessing the Impact of a Novel Smartphone Application Compared With Standard Follow-Up on Mobility of Patients with Knee Osteoarthritis Following Treatment With Hyal G-F 20: A Randomized Controlled Trial*

S8-4: Nebojsa Skrepnik, Yusuf Yazici, Christopher Swearingen, Anita Di Francesco, Jeyesh Tambiah - *Results from a 52-week randomized, double-blind, placebo-controlled, phase 2 study of a novel, intra-articular WNT pathway inhibitor (sm04690) for the treatment of knee osteoarthritis*

S8-5: Smiljana Djorovic, Igor Saveljic, Nenad Filipovic - *Numerical Analysis of Plaque Progression in 3D Patient Specific Model of Carotid Artery*

S8-6: Arash Ghareh Baghi, Amir A. Sepelji, Ankica Babic - *Forth Heart Sound Detection Using Backward Time-Growing Neural Network*

S8-7: Tijana Sustersic, Milica Nikolic, Nihal Engin Vrana, Nenad Filipovic - *Discrete modelling of liver cell aggregation using partial differential equations*

12:30 - 13:30 Lunch Break, HOTEL BOSNA, CRYSTALL HALL

13:30-17:00 Plenary Session IX, BANSKI DVOR, CONCERT HALL

STUDENTS COMPETITION SESSION 1

Session Chairs: *Ervin Sejdic, University of Pittsburgh (USA), Leandro Pecchia, University of Warwick (UK)*

S9-1: Sabahudin Cordic, Lemana Spahic - *Prostate Tissue Classification Based on Prostate Specific Antigen levels and Mitochondrial DNA Copy Number Using Artificial Neural Network*

S9-2: Ghazaal Sheikhi, Hakan Altincay - *Using the Distance in Logistic Regression Models for Predictor Ranking in Diabetes Detection*

S9-3: Lejla Hadžić, Arnela Fazlic, Osman Hasanovic, Nudžejma Kudic, Lemana Spahic - *Expert system for prediction of performance of patient related parameters of anesthesia machines*

S9-4: Lejla Šabac, Adnan Mujanovic - *Smoking and caffeine consumption as stress coping mechanisms in medical students*

S9-5: Vanja Piljak, Belma Muftic, Sukejna Redžepi, Mirza Dedic, Nermina Žiga - *The Assessment of Drug Interactions and Safety of Administration with Regard to Special Population Groups by a Developed Computer Program*

S9-6: Sukejna Redžepi, Belma Muftic, Vanja Piljak, Nermina Žiga, Mirza Dedic - *Implementing the Calculation of the Appropriate Drug Dose for Children Using the Programming Language C#*

S9-7: Ernesto Iadanza, Rachele Fabbri, Alessio Luschi, Francesca Gavazzi, Paolo Melillo, Francesca Simonelli, Monica Gherardelli - *ORA 'O': RESTful Cloud-Based Ophthalmologic Medical Record for Chromatic Pupillometry*

S9-8: Merve Kevser Gokgol, Zeynep Orhan - *A Language Independent Decision Support System for Diagnosis and Treatment by Using Natural Language Processing Techniques*

S9-9: Sarah Krezic, Esved Krhan, Nikolina Kovac, Emir Mandžuka, Danira Krajina, Amina Manic, Sajra Komic, Azra Nikšić - *Fabrication of rectal and vaginal suppositories using 3D printed molds: the challenge of personalized therapy*

S9-10: Mirela Camovic, Amila Bišcevic, Iman Brcic, Kana Borcak, Sadzida Bušatlic, Nejra Cenanic, Anida Dedovic, Alen Mulalic, Maida Osmanlic, Merima Sirubalo, Amina Tucak, Edina Vranic - *Coated 3D printed pla microneedles as transdermal drug delivery systems*

S9-11: Nikolina Begovic, Amina Džih, Lamija Aliman, Igor Đukic, Arnela Tarakcija, Vedad Terzic, Neven Mesledzic, Selma Imamovic, Tanja Dujic, Maja Malenica, Tamer Bego - *Development of a diagnostic support software in the clinicobiochemical evaluation of secondary amenorrhea diagnosis*

S9-12: Mirela Camovic, Amila Bišcevic, Iman Brcic, Kana Borcak, Sadzida Bušatlic, Nejra Cenanic, Anida Dedovic, Alen Mulalic, Merima Sirubalo, Amina Tucak, Edina Vranic - *Acid-resistant capsules with sugar microneedles for oral delivery of ascorbic Acid*

S9-13: Jasmin Novalic, Berina Bektic - *Effect of Commercially available Synthetic Insulin on the Biofilm formation in S. aureus and E. coli bacterial strains*

S9-14: Haris Hadžovic, Minela Alic, Anida Dedovic, Anesa Sušic, Berina Tatlic, Zerina Zorlak, Nermine Žigic, Maja Malenica, Tamer Bego - *Use of Biosensors in Diabetes Monitoring: Medical and Economic Aspects*

S9-15: Samuel Ferreira, Rubens zeron, Guilherme Carvalho, Lara Gandra, Victoria Carestiato, Alice Bastos, Juliana Silva, Adnan Mujanovic - *Therapeutic aspects and diagnosis of the attention deficit hyperactivity disorder - adhd in adults*

13:30 - 15:30 Plenary Session X, BANSKI DVOR, CITY HALL

GENETIC AND PHARMACEUTICAL ENGINEERING 1

Session Chairs: **Lana Nežic**, University of Banja Luka (Bosnia and Herzegovina),
Tamer Bego, University of Sarajevo (Bosnia and Herzegovina).

S10-1: Fatima Mirkulic, Lejla Gurbeta, Enisa Omanovic-Miklicanin, Tamer Bego, Almir Badnjevic - *Correlation of Leukemia Genes Overexpression and Point Mutations in Different Tissues*

S10-2: Zurifa Ajanovic, Aida Sarac-Hadzihalilovic - *Craniometric analysis of the foramen magnum for gender determination in Bosnian human skulls*

S10-3: Emina Arukovic, Dina Fetahovic, Belma Pehlivanovic - *Impact of antibiotic misuse on genetics alterations of bacteria*

S10-4: Selena Kurtic, Zvezdan Stojanovic - *Diagnosis of skin disease based on fingerprint*

S10-5: Svetlana Golocorbin-Kon, Momir Mikov*, Hani Al-Salami, Boris Miličević, Sasa Vukomirovic, Ranko Skrbic - *Gliclazide microvesicles – a pharmaceutical formulation with hypoglycemic effect in Type 1 diabetes mellitus rats*

S10-6: Momir Mikov, Hani Al-Salami, Svetlana Golocorbin-Kon, Ranko Skrbic - *Probiotics and bile acid semisynthetic analogue as permeation modifiers si*

13:30-15:30 Plenary Session XI, HOTEL BOSNA, PIANO BAR

GENETIC AND PHARMACEUTICAL ENGINEERING 2

Session Chairs: Lana Nezic, University of Banja Luka (Bosnia and Herzegovina), Tamer Bego, University of Sarajevo (Bosnia and Herzegovina)

S11-1: Berina Tatlic, Lejla Šejto, Merima Sibubalo, Amina Tucak, Edina Vranic - *Novel aspects of drug delivery: Wireless electronic devices*

S11-2: Aida Etmnan, Alija Uzunovic, Anela Topcagic, Sabina Žero, Muamer Dizdar, Lejla Klepo, Dušan Culum, Huriya Džudžević Cancar, Ismet Tahirovic - *Quantification of active substances in some drugs using by derivative UV/Vis spectroscopy*

S11-3: Begler Begovic, Midhat Vehabovic, Amila Sahinbasic, Una Glamoclija - *Lysozyme-enzymbiotic with valuable effects in prevention and treatment of postoperative complications in adult patients after bilateral tonsillectomy*

S11-4: Anesa Sušić, Zekira Hrnjica, Ilma Kajgana, Minela Mujezinovic, Alma Hasanbegovic, Jelena Brckalo, Amina Tucak, Merima Sibubalo, Edina Vranic - *Use of hollow microneedle drug delivery systems in treatment of diabetes mellitus*

S11-5: Emir Šehović, Lemana Spahić, Ajla Kulagić, Lejla Smajlović Skenderagić, Aida Saračević – *Analysis of miRNA targets in correlation to neurodevelopment and diagnosis of ASD*

S11-6: Biljana Tubić, Bojan Marković, Tibor Sabo – *Discovery of membrane permeability, pharmacokinetics properties and mechanism of action for analogs of ethylenediamine-N,N-di-2-(3-cyclohexyl)propionic acid*

17:00-17:30 Closing and Award Ceremony, BANSKI DVOR, CONCERT HALL

17:30 – 21:00 IT & Engineering – Business Networking Forum, HOTEL BOSNA, RESTORAN PRESIDENT

Hosted by BH Future Foundation, Forum Chair: Prof. Edhem 'Eddie' Custovic

21:00 – 02:00 Goodbye party

- **Night Club Rudi, Kralja A. I. Karađorđevića 103a, Banja Luka 78000**

SUNDAY, May 19th 2019

10:00 – 18:00 Rafting @Vrbaš river
(for registered Members only)