

GENERAL INFORMATION

Dear Colleagues and Guests, we have a great pleasure and honour to welcome you to our YBERC 2018 Conference. We decided to give a chance to you - young engineers, PhD. students and researchers, to present your work and to make new contacts or relationships.

Let's spend nice time together in the beautiful city Košice in eastern Slovakia among people of same interest.

We are sure that your participation will ensure success and quality of this conference.

We look forward to seeing you all in YBERC 2018 and we assure you, that it will be a great experience for you.

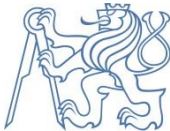
ORGANIZERS:



FME, TUK, KOŠICE, SK



VŠB - TECHNICAL UNIVERSITY OF OSTRAVA



CZECH TECHNICAL UNIVERSITY IN PRAGUE

AUSPICES:

The YBERC 2018 Conference is organized under the auspices of prof. Ing. Stanislav Kmeť, CSc. - Rector of, TUK, Košice, SK and JUDr. Martin Petruško – Deputy Mayor of Košice.

PLATINUM SPONSORS:



GOLD SPONSORS:



SILVER SPONSORS:



PARTNERS:



CONFERENCE VENUE

The conference will be held in the conference room of new University Science Park TECHNICOM, FME, TUK, Košice, SK, Boženy Němcovej 5.

PROCEEDINGS

The YBERC 2018 proceedings will be published in conference proceeding and selected articles in Clinician and Technology Journal (SCOPUS). The full papers and conference program will be included in conference materials.

OFFICIAL LANGUAGE

Official language of the conference is ENGLISH. All presentations, including discussions and submissions, must be made in the official language. No translation will be provided.

COMMITTEES

SCIENTIFIC COMMITTEE		
Chairman	Dr.h.c. prof. Ing. Jozef Živčák, PhD.	FME, TUK, Košice, SK
Members	doc,Ing. Karel Hána, Ph.D.	FBMI, CVUT Prague, CZ
	doc. Ing. Jiří Hozman, Ph.D.	FBMI, CVUT Prague, CZ
	doc. Ing. Milan Tyšler, CSc.	Institute of Measurement Science, SAS, SK
	izr. prof. dr. IGOR Drstvenšek	FME, University of Maribor, Slovenia
	MVDr. Ján Rosocha, CSc.	Associated Tissue Bank Kosice, P.J. Safarik University, SK
	Dr.h.c. prof. Ing. Peter Kneppo, DrSc.	FBMI, CVUT Prague, CZ
	doc. RNDr. Katarína Kozlíková, CSc.	Faculty of Medicine, CU in Bratislava, SK
	prof. Dr. Richard L. Magin,	UIC, Chicago, USA
	doc. MUDr. Jozef Rosina, PhD., MBA	FBMI, CVUT Prague, CZ
	prof. Ing. Klára Čáповá, PhD.	EF ŽU, Žilina
	doc. Ing. Jaroslav Majerník, PhD.	IMI, UPJŠ, Košice, SK
PROGRAMME COMMITTEE		
Chairman	doc. Ing. Teodor Tóth, PhD.	FME, TUK, Košice, SK
Members	doc. Ing. Vladimír Krajča, CSc.	NB, Praha, CZ
	doc. Ing. Martin Černý, PhD.	NB, Praha, CZ
	doc. Ing. Martin Augustynek, PhD.	FEI, VŠB, Ostrava, CZ
	doc. RNDr. Marianna Trebuňová, PhD.	FEI, VŠB, Ostrava, CZ
	Ing. David Korpas, Ph.D.	Palacký University Olomouc, CZ
	Ing. Branko Babušiak, Ph.D.	University of Žilina, SK
	Ing. Michal Gála, PhD.	University of Žilina, SK
	doc. Ing. Vladimír Krajča, CSc.	Žilina University, SK

	Ing. Jan Havlík, Ph.D.	CVUT Praha, CZ
	doc. Eng. Jaroslaw Sidun, PhD.	FME, BTU, Bialystok, PL
	doc. Eng. Kazimierz Dzierzek, PhD.	FME, BTU, Bialystok, PL
STEERING COMMITTEE		
Members	doc. Ing. Radovan Hudák, PhD.	FME, TUKÉ, Košice, SK
	prof. Ing. Karel Roubík, PhD.	FBMI, ČVUT, Praha, CZ
	doc. Ing. Marek Penhaker, PhD.	FEI, VŠB, Ostrava, CZ
ORGANIZING COMMITTEE		
Chairman	doc. Ing. Radovan Hudák, PhD.	FME, TUK, Košice, SK
Co - Chairman	doc. Ing. Marek Penhaker, PhD. prof. Ing. Karel Roubík, PhD.	FEI, VŠB, Ostrava, CZ FBMI, ČVUT, Praha, CZ
Members	Ing. Lucia Bednarčíková, PhD.	FME, TUK, Košice, SK
	Ing. Simona Bodnárová	FME, TUK, Košice, SK
	Ing. Alena Findrik Balogová	FME, TUK, Košice, SK
	doc. Ing. Radovan Hudák, PhD.	FME, TUK, Košice, SK
	Ing. Eduard Jakubkovič	FME, TUK, Košice, SK
	Ing. Jana Klímová	FME, TUK, Košice, SK
	Ing. Viktória Krajňáková	FME, TUK, Košice, SK
	Ing. Monika Michalíková, PhD.	FME, TUK, Košice, SK
	Ing. Lukáš Mitřík	FME, TUK, Košice, SK
	Ing. Viktória Rajtúková, PhD.	FME, TUK, Košice, SK
	Ing. Peter Sedlačko	FME, TUK, Košice, SK
	Ing. Marek Schnitzer	FME, TUK, Košice, SK
	doc. Ing. Teodor Tóth, PhD.	FME, TUK, Košice, SK
	doc. RNDr. Marianna Trebuňová, PhD.	FME, TUK, Košice, SK
	prof. Dr. h. c. Ing. Jozef Živčák, PhD., MPH	FME, TUK, Košice, SK

TOPICS

- Cardiovascular and Respiratory Systems
- Diagnostics and Therapeutic Instrumentation
- Medical Informatics, Quality and Safety
- Human Motion System Analysis
- Biomedical Sensors and Data Acquisition
- Modeling & Simulation in Biomedical Engineering
- Photomedicine and Photodiagnosics
- Clinical Application and Research and Other Special Topics
- Biomechanics
- Biomaterials
- Rehabilitation Engineering
- Regenerative Medicine
- Prosthetics and Orthotics
- Alternative topic
- Cellular and Tissue Engineering

WEDNESDAY 3RD OCTOBER 2018

12:00 - 14:00	REGISTRATION OF YBERC 2018 PARTICIPANTS		
14:00 -14:30	OPENING CEREMONY		
PLENARY SESSIONS			
14:30 - 15:00	Eric MacDonald, Ph.D.	3D PRINTING OF MULTI-FUNCTIONAL STRUCTURES	Youngstown State University, USA
15:00-15:45	MgA. Ales Grygar	DIRECT DIGITAL MANUFACTURING IN PROSTHETICS & ORTHOTICS	Invent Medical, CZ
15:45 – 16:30	prof. Dr. José Maria Ferreira	BIOMATERIALS FOR BONE REGENERATION – AN OVERVIEW ABOUT THE RESEARCH ACTIVITIES AT THE UNIVERSITY OF AVEIRO	University of Aveiro, Portugal
16:30-17:00	COFFEE BREAK		
17:00 – 17:30	Assoc. Prof. Jozef Uličný, Ph.D.	CONTRASTING SOLUTION FOR AN EARLY DIAGNOSTICS AND THERAPY OF GASTROINTESTINAL POLYPS	Pavol Jozef Šafárik University in Košice SK
17:30-18:15	prof. Karel Roubík, Ph.D.	HOW NOT TO WRITE A MANUSCRIPT THAT CANNOT BE PUBLISHED	FBMI, ČVUT, Praha, CZ
19:00	Dinner PIVOVAR HOSTINEC		

THURSDAY 4TH OCTOBER 2018

8:00-9:00 **PRESENTATIONS OF LABORATORIES KBIAM**

Section 1

CHAIRMAN: **MARTIN AUGUSTYNEK**

09:00 - 09:10	Martin Schmidt; Martin Augustynek; Juraj Timkovič	SOFTWARE FOR TRAINING AND IMPROVING OF SPATIAL VISION	VŠB – Technical University of Ostrava, CZ
09:10 - 09:20	Jana Klímová, Viktória Krajňáková, Jozef Živčák	EMBEDDED SENSORIC SYSTEM FOR DOGS WITH VISUAL IMPAIRMENT APPLIED INTO THE 3D PRINTED CUSTOM MADE HELMET	FME, TUK, Košice, SK
09:20 - 09:30	Lukáš Peter	THE SKIN COLORIMETER PROTOTYPE	VSB-Technical University of Ostrava, CZ
09:30 - 09:40	Leoš Tejkl, Jakub Ráfl, Petr Kudrna	THE TIME DELAY OF O2 DELIVERY IN VENTILATORY SYSTEM AFTER THE CHANGE OF FIO2: A MATHEMATICAL MODEL ENHANCEMENT-	FBMI, ČVUT, Praha, CZ
09:40 - 09:50	Viktória Krajňáková, Monika Micháliková, Radovan Hudák, Jozef Živčák, Miroslava Barcalová	PROBLEMS WITH SCANNING THE HEAD FOR PROSTHETICS AND ORTHOTICS AND THEIR SOLUTIONS	FME, TUK, Košice, SK
09:50 - 10:00	DISCUSSION		

Section 2

CHAIRMAN: **ELENA COCHEROVÁ**

10:00 - 10:10	Jana Farbáková, Aladár Mađari, Mária Kuricová, Filip Humeník, Dagmar Mudroňová, Zuzana Mojžišová and Daša Čížková	CANINE COGNITIVE DYSFUNCTION SYNDROM AND STEM CELL THERAPY	University of veterinary medicine and pharmacy in Košice , SK
10:10 - 10:20	Filip Humeník, Alena Findrik Balogova, Jan Danko, Radovan Hudak, Aladar Mađari, Lenka Kresakova, Marcela Maloveska, Daša Čížková	ALGINATE-BASED BIOINKS COMBINED WITH CANINE MESENCHYMAL STEM CELLS IN 3D BIOPRINTING	University of veterinary medicine and pharmacy in Košice, SK

10:30 – 10:40	Lukáš Mitřík, Marianna Trebuňová , Radovan Hudák, Marek Schnitzer, Jozef Živčák	DESIGN, MANUFACTURE AND TESTING OF RABBIT IMPLANTATION STRUCTURES FOR PRECLINICAL EXAMINATIONS-	FME, TUK, Košice, SK
10:40 - 10:50	Beáta Ballóková, Michal Karásek, Jozef Živčák, Radovan Hudák , Marek Schnitzer	ADVANCED AZ61 MG ALLOY COMPOSITES REINFORCED BY AL2O3 NANOPARTICLES	University hospital of L. Pasteur, Košice, SK
10:50-11:00	DISCUSSION		
11:00-11:20	COFFEE BREAK		
Section 3			
CHAIRMAN: MARTIN ČERNÝ			
11:20 - 11:30	Jan Havlík, Markéta Sušánková	STUDY ON A RELIABILITY OF HEART RATE MEASUREMENT USING AUTOMATIC TONOMETERS	FBMI, ČVUT, Praha, CZ
11:30- 11:40	David Occka	RIVYERA SUPERCOMPUTER BATCH PROCESSING WEB INTERFACE	VŠB – Technical University of Ostrava, CZ
11:40-11:50	Martin Králík Jiří Kozumplík	SLEEP APNEA DETECTION USING SINGLE LEAD ECG RESPIRATION ESTIMATES	Brno University of Technology, CZ
11:50- 12:00	Katarína Kozlíková	ELECTRICAL HEART AXIS AS A PART OF PRACTICAL TRAINING ON MEDICAL BIOPHYSICS	Institute of Medical Physics, Biophysics, Informatics and Telemedicine, Faculty of Medicine, Comenius University in Bratislava, SK
12:00- 12:10	Peter Sedlačko, Eduard Jakubkovič, Viktória Rajtúková, Svetlana Kráľová, Lukáš Kapuscinsky, Radovan Hudák, Andrej Somoš, Jozef Živčák	PRODUCTION OF CERAMIC LAYERS APPLIED TO DENTAL RE-PLACEMENTS	FME, TUK, Košice, SK
12:10 – 12:20	DISCUSSION		
Section 4			
CHAIRMAN: PETR KUDRNA			
12:20-12:30	Elena Cocherová	EVALUATION OF ACTIVATION TIMES IN VENTRICULAR MODELS WITH REALISTIC AND ANALYTICAL GEOMETRY	UEF FEI STU, SK
12:30-12:40	Jakub Ráfl, Pavel Sovka, Karel Roubík	DEMAND FLOW SYSTEM WITH TWO CONTROLLED VALVES FOR SUPPORT OF SPONTANEOUS BREATHING	FBMI, ČVUT, Praha, CZ

		DURING HIGH-FREQUENCY OSCILLATORY VENTILATION	
12:40-12:50	Tadeáš Bednár, Branko Babušiak	DESIGN OF MULTICHANNEL BIOAMPLIFIER	University of Žilina, SK
12:50-13:00	Antonino Proto, Marek Penhaker, Martin Cerny, Lukas Peter	FLEXIBLE THERMOELECTRIC GENERATOR ON THE ANKLE FOR MEASURING THE POWER GENERATED WHILE PERFORMING ACTIVITIES OF DAILY LIVING	VŠB – Technical University of Ostrava, CZ
13:10-13:20	Jaroslav Vondrák, Marek Penhaker, Fratišek Jurek; Martina Litschmannová	COMPARASION OF EXISTING VCG LEAKAGE SYSTEMS AND POSSIBILITIES OF MUTUAL TRANSFORMATION	VŠB – Technical University of Ostrava, CZ
13:30	LUNCH		
14:00-17:30	SOCIAL GATHERING		
19:00	CONFERENCE DINNER PARTY		

FRIDAY 5TH OCTOBER 2018

Section 1

CHAIRMAN: **JAN HAVLÍK**

09:00 - 09:10	Vladimír Ďurček, Elena Cocherová, Jozef Púčik, Peter Kubinec	EVALUATION OF THE ACTIVATION CONDUCTION VELOCITY IN THE ANISOTROPIC SLAB MODEL OF THE ATRIAL TISSUE-	UEF FEI STU. SK
09:10 - 09:20	Branislav Hesko, Vratislav Harabiš	SIMULTANEOUS LESIONS AND OPTIC DISC SEGMENTATION FROM OPHTHALMOSCOPIC IMAGES	BUT Brno, CZ
09:20 - 09:30	Ondřej Klempíř, Radim Krupička	ANALYSIS OF NEURAL ACTIVITY OF THE HUMAN BASAL GANGLIA IN DYSTONIA: A REVIEW	FBMI, ČVUT, Praha, CZ
9:30-9:40	Jana Mydlova, Mariana Benova, Maros Smondrk	HE BENEFITS OF HEARING AIDS AND THE IMPORTANCE OF TONE AND SPEECH AUDIOMETRY	University of Zilina, SK
9:40-9:50	Schnitzer, Hudák, Rajtůková, Živčák, Kula, Ižaríková, Karásek	SIMULATION AND EXPERIMENTAL TESTING OF TOPOLOGICALLY OPTIMIZED CERVICAL IMPLANTS MADE BY ADDITIVE MANUFACTURING	FME, TUK, Košice, SK
9:50-10:00	DISCUSSION		

Section 2

CHAIRMAN: **TEODOR TÓTH**

10:00 - 10:10	Klara Fiedorova, Martin Augustynek, Frantisek Fojtik, Milada Hlavackova	MEASUREMENT OF MECHANICAL PROPERTIES OF DIALYSIS SETS DEPENDING ON THE SELECTED PHYSICAL PARAMETERS	VSB-Technical University of Ostrava, CZ
10:10- 10:20	Anna Miltová, Jan Matějka, Jakub Ráfl, Martin Rožánek, Karel Roubík,	REALIZATION OF SPIROMETRY MEASUREMENT USING EIT	FBMI, ČVUT, Praha, CZ
10:20-10:30	Adam Trefil, Vladimír Kasík, Martin Cerný	EDUCATIONAL CYBERNETIC MODEL WITH STEPPER MOTORS CONTROLLED BY FPGA	VSB-Technical University of Ostrava, CZ

10:30-10:40	Radek Halfar, Martin Černý	OPTIMAL SHAPE OF CARDIAC CELL STIMULUS	VSB-Technical University of Ostrava, CZ
10:40-10:50	Alena Findrik Balogová, Radovan Hudák, Jozef Živčák	COMPARISON OF PLA/PHB MATERIAL DRYING AND ITS EFFECT ON VISCOELASTIC PROPERTIES OF 3D PRINTED SAMPLES	FME, TUK, Košice, SK
10:50-11:00	DISCUSSION		
11:00-11:20	COFFEE BREAK		
Section 3			
CHAIRMAN: RADOVAN HUDÁK			
11:20 – 11:30	Ana S. Neto, José M.F. Ferreira	BIPHASIC CALCIUM PHOSPHATE SCAFFOLDS DERIVED FROM HYDROTHERMALLY SYNTHESIZED POWDERS	University of Aveiro, Portugal
11:30 - 11:40	Alice Krestanova, Jan Kubicek, Juraj Timkovic	MORPHOLOGICAL SEGMENTATION AND TORTUOSITY ASSESSEMENT OF RETINAL BLOOD VESSELS	VSB-Technical University of Ostrava, CZ
11:40-11:50	Mario Sokac, Dajana Miljanovic, Zeljko Santosi, Djordje Vukelic, Igor Budak	APPLICATION OF 3D TECHNOLOGIES FOR DESIGN AND FABRICATION OF MANDIBULAR IMPLANT: A CASE STUDY-	University of Novi Sad, Faculty of Technical Sciences, Serbia
11:50-12:00	Denisa Harvanova, Jana Plsikova, Timea Spakova, Marek Schnitzer, Samuel Smoter, Miriam Feretova, Radovan Hudak, Jan Rosocha	STUDY OF MESENCHYMAL STEM CELLS RESPONSE TO PEEK BIOMATERIALS IN VITRO-	Faculty of Medicine, Pavol Jozef Šafárik University in Košice, SK
12:00-12:10	Daniela Brazete, Ana S. Neto, José M.F. Ferreira	FABRICATION OF ZIRCONIA SCAFFOLDS BY ROBOCASTING	University of Aveiro, Portugal
12:10-12:20	Simona Bodnárová , Teodor Tóth, Jozef Živčák, Peter Sedlačko, Radovan Hudák	DETERMINATION OF THE MECHANICAL PROPERTIES OF BIOCERAMICS PRODUCED BY THE ADDITIVE MANUFACTURING TECHNOLOGY	FME, TUK, Košice, SK
12:20-12:30	DISCUSSION		
Section 4			
CHAIRMAN: MAREK PENHAKER			
12:30 – 12:40	Lenka Szerdiiová, Jaroslav Majerník	MULTIMEDIA-ENHANCED TEACHING OF SUBJECT THE COURSE ON 'IT' STUDIES	Faculty of Medicine, Pavol Jozef Šafárik University in Košice, SK

12:40-12:50	Josef Skopalik, Slavomir Med, Tomas Parak, Jaroslav Prucha, Jiri Sekora	PROTOTYPES OF FREEZING BOXES FOR CONTROLLED FREEZING OF STEM CELLS AND PHARMACEUTICAL COMPOUNDS	VFU Brno, CZ
12:50-13:00	Jaroslav Majerník, Lenka Szerdiová, Martina Habiňaková, Janka Vecanová, Darina Kluchová	IMPROVING STUDENTS' COMPETENCES IN HUMAN ANATOMY THROUGH VIDEO RECORDS OF CADAVERIC DISSECTIONS	Faculty of Medicine, Pavol Jozef Šafárik University in Košice, SK
13:00-13:10	Martina Habiňaková, Jaroslav Majerník	ASPECT OF DATA QUALITY FOR BUSINESS INTELLIGENCE SUCCESS IN FACILITIES IN SLOVAKIA	Faculty of Medicine, Pavol Jozef Šafárik University in Košice, SK
13:10-13:20	Peter Antal, Miroslav Ledecký	MACHINE LEARNING AND PREDICTION IN DERMATOLOGY	D.C.Medical s.r.o, SK
13:20-13:30	DISCUSSION		
13:30-13:40	Marek Molcanyi Marina Penner, Bernhard Rieger, Radovan Hudak Jozef Zivcak Ute Schäfer Sebastian Zachar	New didactic approach in step-by-step operation procedure teaching – illustration, schemes and video material united in an interactive tablet application (Poster)	Institute of Neurophysiology, Medical Faculty, University of Cologne, Germany. Research Unit for Experimental Neurotraumatology, Medical University of Graz, Austria. Clinic of Neurosurgery, Medical University of Graz, Austria. Department of Neurocritical Care, First Stage Rehabilitation and Weaning, MediClin Clinic Reichshof-Eckenhagen, Germany.
13:30	OFFICIAL CLOSING OF THE CONFERENCE		
13:40-14:30	LUNCH		
14:30-15:30	PRESENTATIONS OF LABORATORIES KBIAM		

ATTENDANT PROGRAMME

WEDNESDAY 3RD October 2018

19:00	Dinner PIVOVAR HOSTINEC Hlavná 91/65, 040 01 Košice
-------	---

THURSDAY 4TH and Friday 5th October 2018

PRESENTATIONS OF LABORATORIES KBIAM

8:00-9:00	START
	LABORATORY OF BIOMECHANICS AND PROTEOMICS
	LABORATORY FOR THE COMPLETION OF MEDICAL DEVICES
	LABORATORY OF ADDITIVE BIOMEDICAL PROCESSES
	COORDINATE METROLOGY LAB.
	LABORATORIES OF CIB (CENTER FOR INTERDISCIPLINARY BIOSCIENCES)

Thursday 4TH October 2018

SOCIAL GATHERING

14:15 – 16:00	Panic room Running out of time, adrenaline rises! It verifies your logical thinking and team spirit! Will you be able to solve the riddles and to get out from the mysterious room in the given time limit?
16:00-17:30	Villa Cassa You will see our beautiful Košice with a different view and with a glass of wine you will appreciate their beauty. Honorable guide will show you Košice as you never would have seen them.

CONFERENCE DINNER

19:00	GESTO cafe & brunch Námestie L. Novomeského Street 13, 040 01 Košice
-------	--