

# ***NOVUS SCIENTIA 2024***

25.01.2024

Kongresové centrum Technickej univerzity v Košiciach



## ***Program konferencie***

### **Patronát konferencie**

Dr.h.c. mult. prof. Ing. Jozef Živčák, PhD., MPH

Technická univerzita v Košiciach, Slovensko

### **Garant konferencie**

prof. Ing. Ján Slota, PhD.

Technická univerzita v Košiciach, Slovensko

## **Vedecký výbor konferencie**

prof. Ing. Jozef Bocko, CSc., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Radovan Hudák, PhD., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Michal Kelemen, PhD., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Ervin Lumnitzer, PhD., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Emil Spišák, CSc., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Tomáš Brestovič, PhD., Technická univerzita v Košiciach, Slovensko  
doc. Ing. Ján Kráľ, PhD., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Peter Frankovský, PhD., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Michal Hatala, PhD., Technická univerzita v Košiciach, Slovensko  
prof. Ing. Eva Tillová, PhD., Žilinská univerzita v Žiline, Slovensko  
prof. Ing. Stanislav Ďuriš, PhD., Slovenská technická univerzita v Bratislave, Slovensko  
prof. Ing. Peter Šugár, CSc., Slovenská technická univerzita v Bratislave, Slovensko  
doc. Ing. Jaroslav Katolický, Ph.D., Vysoké učení technické Brno, Česká republika  
doc. Ing. Miroslav Mahdal, Ph.D., VŠB Technická univerzita Ostrava, Česká republika  
prof. Ing. Tomáš Jirout, Ph.D., ČVUT Praha, Česká republika  
doc. Ing. Petr Lepšík, Ph.D., Technická univerzita v Liberci, Česká republika  
doc. Ing. Václav Vaněk, Ph.D., Západočeská univerzita v Plzni, Česká republika  
dr hab. inż. Andrzej Burghardt, prof. PRz, Politechnika Rzeszowska, Poľsko  
Dr inż. Tomasz Jachowicz, Politechnika Lubelska, Poľsko  
Dr inż. Jacek Rysiński, Uniwersytet Bielsko – Bialski, Poľsko

## **Organizačný výbor konferencie**

Ing. Jaroslav Melko

Ing. Samuel Sivák

Ing. Matúš Lavčák

Ing. Matúš Kačír

Ing. Pavol Tarbajovský

Ing. Lucia Žulfová

Ing. Matúš Virostko

# Sekcia A

9:15 – 16:45

Komisia:

doc. Ing. Michal Puškár, PhD. – predseda komisie

doc. Ing. Miriam Pekarčíková, PhD.

doc. Ing. Miroslav Pástor, PhD.

čas	Doktorand	Názov príspevku	Autorský kolektív
9:15 – 9:30	Ing. Dominik Novotný	DESIGN AND DEVELOPMENT OF A TEST BENCH FOR DETECTING THE EFFECT OF PHOTOCATALYTIC REACTION	Dominik Novotný, Ján Kráľ
9:30 – 9:45	Ing. Martin Matej Benda	CHARACTERISTIC MATERIAL PROPERTIES OF ROTOR AND STATOR LAMINATIONS WITHIN ELECTRIC MOTOR	Martin Matej Benda, Emil Spišák
9:45 – 10:00	Ing. Martina Hančinová	POLYMER MATERIAL CALIBRATION USING THE PRF MODEL	Martina Hančinová, Erika Dubňanská, Róbert Huňady
10:00 – 10:15	Ing. Barbara Schürger	ADDITIVELY MANUFACTURED AUXETIC METAMATERIALS AND THEIR APPLICATION IN BIOMEDICAL ENGINEERING	Barbara Schürger, Peter Palička, Peter Frankovský
10:15 – 10:30	Ing. Ján Kušnir	OPTIMIZING THE MILLING PROCESS THROUGH THE DESIGN OF A SPECIALIZED MACHINING FIXTURE	Ján Kušnir, Jozef Brindza, Michal Demko, Marek Vrabel
10:30 – 10:45	Ing. Ivana Koláriková	RESEARCH ON THE INFLUENCE OF THE PARAMETERS OF THE MEASURING CHAIN OF THE INCLINED TRIBOMETER	Ivana Koláriková, Tatiana Kelemenová, Katarína Paľová
10:45 – 11:00	<b>COFFEE BREAK</b>		
11:00 – 11:15	Ing. Jaroslav Romančík	NON-CONTACT TEMPERATURE MEASUREMENT OF SMA MATERIALS	Jaroslav Romančík, Marek Vagaš
11:15 – 11:30	Ing. Denisa Porubčanová	THE RELATIONSHIP BETWEEN PSYCHOLOGICAL STRESS AND MUSCULOSKELETAL DISORDERS	Denisa Porubčanová, Katarína Vaškovičová, Peter Darvaši, Michaela Balážiková
11:30 – 11:45	Ing. Ján Kopec	EFFECT OF ULTIMAKER CURA SUPPORT AND FILL SETTINGS ON THE 3D MODEL	Ján Kopec, Miriam Pekarčíková, Juraj Kováč
11:45 – 12:00	Ing. Elena Lukáč Jurgovská	NOISE EFFECTS ON HUMAN LIFE FUNCTIONS	Elena Lukáč Jurgovská, Ervin Lumnitzer
12:00 – 13:00	<b>OBEDNÁ PRESTÁVKA</b>		
13:00 – 13:15	Ing. Bibiána Ondrejová	3D SCANNING OF THE MAXILLOFACIAL AREA FOR INDIVIDUAL MASK PRODUCTION	Bibiána Ondrejová, Branko Štefanovič, Lucia Bednarčíková, Teodor Tóth,

			Jozef Živčák
13:15 – 13:30	Ing. Erika Dubňanská	NUMERICAL MODELLING OF PASSENGER CAR FOAM FOR PEDESTRIAN PROTECTION	Erika Dubňanská, Martina Hančinová, Róbert Huňady
13:30 – 13:45	Ing. Jozef Brindza	MACHINING NICKEL-CHROMIUM ALLOY WITH ADJUSTED INSERTS	Jozef Brindza, Michal Demko, Ján Kušník, Marek Vrabel', Peter Ižol
13:45 – 14:00	Ing. Laura Lachvajderová	USE OF DIGITAL TECHNOLOGIES IN ENTERPRISES: SLOVAKIA VS EU-27	Laura Lachvajderová, Jaroslava Kádárová, Dominika Sukopová, Lenka Vyrostková
14:00 – 14:15	Ing. Michal Demko	ESTIMATING TANGENTIAL CUTTING FORCE IN TURNING OPERATIONS THROUGH ANALYSIS OF INTERNAL CNC CONTROL DATA	Michal Demko, Marek Vrabel', Jozef Brindza, Peter Ižol, Ján Kušník
14:15 – 14:30	Ing. Nikita Veligotskyi	ANALYSIS OF JOINING FRC AND LIGHT METAL ALLOYS BY FLOWDRILLING	Nikita Veligotskyi, Anna Guzanová
14:30 – 14:45	Ing. Patrik Pilát	DESIGN OF THE MOBILITY SUBSYSTEM OF A SERVICE ROBOT DESIGNED FOR A CONTAMINATED ENVIRONMENT	Patrik Pilát, Jozef Varga, Matúš Sabol, Ján Semjon
14:45 – 15:00	Ing. Maksym Grytsiv	DEPTH-BASED ANOMALY DETECTION IN REAL-TIME USING MORPHOLOGICAL FILTERS	Maksym Grytsiv, Marek Sukop, Dávid Kovaľuk
15:00 – 15:15	<b>COFFEE BREAK</b>		
15:15 – 15:30	Ing. Lukáš Leštach	CONTROL OF DYNAMIC SYSTEMS	Lukáš Leštach, Ľubica Miková
15:30 – 15:45	Ing. František Ruda	THE IMPACT OF ANNEALING ON THE PROPERTIES OF PACKAGING SHEETS	František Ruda, Emil Spišák
15:45 – 16:00	Ing. Peter Milenovský	POSSIBILITIES OF MODIFICATION OF INTERNAL COMBUSTION ENGINES FOR HYDROGEN FUELS	Peter Milenovský, Natália Jasminská, Lukáš Tóth
16:00 – 16:15	Ing. Ivan Mihálik	EVALUATION OF METAL HYDRIDE ALLOY ACTIVATION IN THE MNTZV-60 HYDROGEN STORAGE TANK	Ivan Mihálik, Marián Lazár
16:15 – 16:30	Ing. Filip Duda	DESIGN OF AN EFFICIENT COOLING SYSTEM FOR A NON-STANDARD HYDROGEN STORAGE TANK	Filip Duda, Natália Jasminská
16:30 – 16:45	Ing. Matúš Kačír	TECHNOLOGIES INCREASING TORSIONAL VIBRATION OF THE CRANKSHAFT AND METHODS OF THEIR ELIMINATION	Matúš Kačír, Lucia Žuľová, Robert Grega

<b>16:45-17:00</b>	Ing. Lucia Žuľová	THERMOVISION ANALYSIS OF HEAT IN PNEUMATIC FLEXIBLE COUPLING	Lucia Žuľová, Robert Grega, Matúš Kačír
<b>17:00-17:15</b>	Ing. Matúš Virostko	GENERATIVE DESIGN AND AUTOMATED MODELING IN FUSION 360	Matúš Virostko, Martin Mantič, Samuel Sivák
<b>18:00</b>	<b>SPOLOČENSKÝ VEČER</b>		

## Sekcia B

9:15 - 16:45

Komisia:

prof. Ing. Michal Kelemen, PhD., – predseda komisie

doc. Ing. Ľuboš Kaščák, PhD.

doc. Ing. Teodor Tóth, PhD.

čas	Doktorand	Názov príspevku	Autorský kolektív
<b>9:15 – 9:30</b>	Ing. Petra Kolembusová	ULTRASONIC LIQUID INDICATOR FOR BLIND PEOPLE	Petra Kolembusová, Veronika Sedláková, Norbert Ferenčík, Radovan Hudák
<b>9:30 – 9:45</b>	Ing. Veronika Sedláková	THE IMPACT OF MONITORING THE LIGHT SPECTRUM WITH A SMART BRACELET ON THE CIRCADIAN RHYTHM	Veronika Sedláková, Petra Kolembusová, Norbert Ferenčík, Radovan Hudák, Jana Hlubeňová, Zuzana Naďová
<b>9:45 – 10:00</b>	Ing. Ondrej Majerčák	THINGSPEAK PLATFORM AS A TOOL FOR WIRELESS DATA COLLECTION	Ondrej Majerčák, Marek Vagaš
<b>10:00 – 10:15</b>	Ing. Kristián Pástor	ANALYSIS OF SELECTED PSYCHOACOUSTIC PARAMETERS IN CAR INTERIORS WITH BINAURAL MEASURING EQUIPMENT	Kristián Pástor, Miroslav Badida
<b>10:15 – 10:30</b>	Ing. Tomáš Merva	USE OF MOTION CAPTURE SYSTEM FOR REACTIVE ROBOTIC MANIPULATIONS	Tomáš Merva, Ivan Virgala
<b>10:30 – 10:45</b>	Ing. Jana Demeterová	BIOCOMPATIBILITY EVALUATION OF POROUS TITANIUM SCAFFOLDS	Jana Demeterová, Marianna Trebuňová, Darina Bačenková, Viktória Rajtúková, Jozef Živčák
<b>10:45 – 11:00</b>	<b>COFFEE BREAK</b>		

<b>11:00 – 11:15</b>	Ing. Juliy Martyn Kulya	EVALUATION OF NAKAZIMA TEST RESULTS OBTAINED BY THE ARAMIS SYSTEM AND COMPARISON WITH NUMERICAL SIMULATIONS	Juliy Martyn Kulya, Miroslav Tomáš
<b>11:15 – 11:30</b>	Ing. Leo Brada	METHODOLOGY FOR MEASURING PRESSURE AND AIR FLOW	Leo Brada, Ľubica Miková, Erik Prada
<b>11:30 – 11:45</b>	Ing. Mateusz Markiefka Ing. Artur Zawada	DETECTION OF STRAIGHTNESS DEVIATION ON A PRODUCTION MACHINE IN AN AUTOMATIC CYCLE	Mateusz Markiefka, Artur Zawada
<b>11:45 – 12:00</b>	Ing. Piotr Szczygieł	MODELING AND 3D PRINTING OF SCAFFOLDS FOR TISSUE REGENERATION	Piotr Szczygieł, Anna Kurowska, Adam Jabłoński, Izabella Rajzer
<b>12:00 – 13:00</b>	<b>OBEDNÁ PRESTÁVKA</b>		
<b>13:00 – 13:15</b>	Ing. Dominika Sukopová	UNVEILING THE POWER AND POTENTIAL OF MICROSOFT POWER BI IN RESEARCH AND DATA ANALYSIS	Dominika Sukopová, Jaroslava Kádárová, Laura Lachvajderová, Lenka Vyrostková
<b>13:15 – 13:30</b>	Ing. Pavol Štefčák	ADAPTIVE SLICING FOR ROBOTIC ADDITIVE MANUFACTURING	Pavol Štefčák, Ivan Gajdoš, Ján Slota
<b>13:30 – 13:45</b>	Ing. Samuel Vilkovský	DEEP-DRAWING EVALUATION OF HX420 USING SIMUFACT FORMING	Samuel Vilkovský, Janka Majerníková
<b>13:45 – 14:00</b>	Ing. Peter Palička	METHODOLOGY FOR MODIFYING THE TENSILE STRESS-STRAIN CURVE OF POLYMER TO THE FLEXURAL MODULUS	Peter Palička, Róbert Huňady, Barbara Schürger
<b>14:00 – 14:15</b>	Ing. Marek Buber	THE EVALUATION OF MODERN STEELS INNOVATION POTENTIAL WHEN USED FOR THE COMPONENTS OF THE DEFORMATION ZONE	Marek Buber, Emil Evin, Miroslav Tomáš
<b>14:15 – 14:30</b>	Ing. Peter Ján Sinčák	POSITIONAL DATA COLLECTION FOR CONTINUUM ROBOT DATASET	Peter Ján Sinčák, Ivan Virgala
<b>14:30 – 14:45</b>	Ing. Miroslava Badidová	RESEARCH ON ULTRAFINE PARTICLES IN THE ENVIRONMENT AND THEIR 1 IMPACT ON HUMANS	Miroslava Badidová, Lýdia Sobotová, Kristián Pástor
<b>14:45 – 15:00</b>	<b>COFFEE BREAK</b>		
<b>15:00 – 15:15</b>	Ing. Peter Krajný	DATA DIGITIZATION IN AN INDUSTRIAL ENTERPRISE	Peter Krajný, Jaroslava Janeková

<b>15:15 – 15:30</b>	Ing. Jozef Výboch	SOLVING INTENSE ABRASIVE WEAR BY OPTIMIZING THE STRUCTURE OF THE COATING TRANSFERRED BY THE MOG AND PLASMA SYSTEM	Milan ČOMAJ, Jozef ZOHN, Jozef VÝBOCH, Ján VIŇÁŠ,
<b>15:30 – 15:45</b>	Ing. Pavol Dzurňák	IOT NETWORK IN MULTIAGENT CONTROL OF OVERHEAD CRANE	Pavol Dzurňák, Martin Mantič
<b>15:45 – 16:00</b>	Ing. Valéria Eiben	UNVEILING THE FUTURE: THERMAL IMAGING DRONES IN SCIENTIFIC APPLICATIONS	Valéria Eiben, Ružena Králiková
<b>16:00 – 16:15</b>	Ing. Július Hajduk	NUMERICAL SIMULATION OF DEEP-DRAWING IN SIMUFACT FORMING	Július Hajduk, Janka Majerníková, Samuel Vilkovský
<b>16:15 – 16:30</b>	Ing. Tomáš Balint	TESTING OF MATERIAL IN THE FORM OF FILAMENT BASED ON PLA/PHB	Tomáš Balint, Jozef Živčák
<b>16:30 – 16:45</b>	Ing. Matúš Lavčák	APPLICATION SOLUTION FOR THE USE OF HCCI TECHNOLOGY IN MOTOR VEHICLES	Matúš Lavčák, Pavol Tarbajovský, Michal Puškár
<b>16:45-17:00</b>	Ing. Pavol Tarbajovský	ADVANCED COMBUSTION CHAMBER AND MIXTURE STRATIFICATION	Pavol Tarbajovský, Michal Puškár, Matúš Lavčák
<b>17:00-17:15</b>	Ing. Samuel Sivák	TOPOLOGY OPTIMIZATION FOR SOLID GEAR WHEEL BODY	Samuel Sivák, Silvia Maláková, Matúš Virostko
<b>18:00</b>	<b>SPOLOČENSKÝ VEČER</b>		