

NOVUS SCIENTIA 2026

29.01.2026

Congress Centre of the Technical University of Košice



Conference programme

The honorary patronage

Dr.h.c. mult. prof. Ing. Jozef Živčák, DrSc., MPH, akademik UČSS

TECHNICAL UNIVERSITY OF KOŠICE, SLOVAKIA

Chairman

prof. Ing. Ján Slotá, PhD.

TECHNICAL UNIVERSITY OF KOŠICE, SLOVAKIA

Scientific committee

prof. Ing. Jozef Bocko, CSc., Technical University of Košice, Slovakia
Dr.h.c. mult.prof. Ing. Miroslav Badida, PhD., Technical University of Košice, Slovakia
prof. Ing. Michal Kelemen, PhD., Technical University of Košice, Slovakia
prof. Ing. Peter Trebuňa, PhD., Technical University of Košice, Slovakia
prof. Ing. Emil Spišák, CSc., Technical University of Košice, Slovakia
prof. Ing. Tomáš Brestovič, PhD., Technical University of Košice, Slovakia
doc. Ing. Ján Kráľ, PhD., Technical University of Košice, Slovakia
prof. Ing. Peter Frankovský, PhD., Technical University of Košice, Slovakia
doc. RNDr. Tibor Krenický, PhD., Technical University of Košice, Slovakia
doc. Ing. Michal Holubčík, PhD., University of Žilina, Slovakia
prof. Ing. Marcela Pokusová, PhD., Slovak University of Technology in Bratislava, Slovakia
prof. Ing. Peter Šugár, CSc., Slovak University of Technology in Bratislava, Slovakia
doc. Ing. Jaroslav Katolický, Ph.D., Brno University of Technology, Czech republic
doc. Ing. Miroslav Mahdal, Ph.D., Technical University of Ostrava, Czech republic
prof. Ing. Tomáš Jirout, Ph.D., Czech Technical University in Prague, Czech republic
doc. Ing. Petr Lepšík, Ph.D., Technical University of Liberec, Czech republic
doc. Ing. Václav Vaněk, Ph.D., University of West Bohemia, Czech republic
prof. dr. hab. inž. Andrzej Burghardt, Rzeszow University of Technology, Poland
Dr inž. Tomasz Jachowicz, Lublin University of Technology, Poland
Dr inž. Jacek Rysiński, Uniwersytet Bielsko – Bialski, Poland

Organizing committee

Ing. Jaroslav Melko
Ing. Erika Dubňanská
Ing. Martina Hančinová
Ing. Barbara Schürger
Ing. Veronika Sedláková
Ing. Katarína Dudová

Section A

9:15 – 17:15

Committee:

prof. Ing. Jozef Kulka, PhD. – chairman of the committee

doc. Ing. Miriam Pekarčíková, PhD.

prof. Ing. Miroslav Pástor, PhD.

Time	Doctoral student	Title of the paper	Co-authors
9:00 – 9:15	OFFICIAL OPENING OF THE CONFERENCE		
9:15 – 9:30	Jaroslav Romančík	Integration of Shape-Memory Alloy Actuator into a Scissor-Mechanism Gripper Design	Marek Vagaš, Ondrej Majerčák
9:30 – 9:45	Ján Ivanecký	Analysis of the accuracy of additive technology models	Jozef Kulka, Matúš Virostko
9:45 – 10:00	Maryna Yeromina	Simulation-Based Productivity Assessment of an Automated Dental Manufacturing Cell	Ján Duplák, Samuel Mikuláško
10:00 – 10:15	Matej Cichý	Current State and Potential Applications of Real-Time Data for Predictive Assessment of Ergonomic Risks in Industry	Darina Dupláková
10:15 – 10:30	Maksymilian Maślanka, Damian Pytka	Sound Generator Selection for Musical Tesla Coils	Mateusz Waluszek
10:30 – 10:45	Mateusz Waluszek	Real-Time Machine Vision Inspection of Embedded Inserts on a Belt Feeder	Maksymilian Maślanka, Damian Pytka
10:45 – 11:00	COFFEE BREAK		
11:00 – 11:15	Leo Brada	Design of educational tool for PID motor control	Ľubica Miková, Erik Prada
11:15 – 11:30	Martin Matej Benda	Experimental analysis of the influence of layer order in double-layer blanking of electrical steel sheets with variable strength properties	Emil Spišák, Peter Mulidrán
11:30 – 11:45	Ondrej Majerčák	Detection of compressed air leakage using compressor energy consumption analysis	Patrik Šarga, Róbert Rákay
11:45 – 12:00	Peter Čurma	Development of an Apparatus for Recycling Metal Hydride Alloys	Peter Milenovský, Marián Lázár

12:00 – 13:00	LUNCH BREAK		
13:00 – 13:15	Matúš Virostko	Generative Design for Spur Gear Optimization	Martin Mantič, Silvia Maláková, Ján Ivanecký
13:15 – 13:30	Dárius Rusiňák	A Data-Driven Forward Kinematics Model for a Tendon-Driven Continuum Robot Using MLP-Based Regression	Ivan Virgala
13:30 – 13:45	Matúš Leščinský	Extension of the open-source software for a haptic glove for bimanual and modular control of robotic limbs and manipulators	Juraj Kováč
13:45 – 14:00	Samuel Kerekeš	Kinematic Design and Functional Principle of a Kinetic Sculpture Mechanism	Barbara Schürger, Ingrid Delyová, Peter Frankovský
14:00 – 14:15	Peter Böszörményi	Personalized titanium cage implant and surgical guide template for distal radius defect reconstruction: a case study integrating CAD planning, additive manufacturing, and clinical evaluation	Marek Schnitzer, Radovan Hudák, Jozef Živčák, Tomáš Ševčík
14:15 – 14:30	Talal Ali	Biomechanical factors in the pathophysiology and clinical features of Wilkie syndrome	Jozef Živčák, Silvia Šišková
14:30 – 14:45	Silvia Šišková	The biomechanical mechanisms involved in the pathophysiology of Abdominopelvic Vascular Compression Syndromes and their clinical manifestations	Jozef Živčák, Talal Ali, Lukáš Vincze, Diana Deáková, Marta Ščipáková
14:45 – 15:00	Dmytro Malakhov	Overview of calibration methods for measuring microscopes	Tatiana Kelemenová
15:00 – 15:15	Katarína Paľová	The Surface Roughness Standards	Tatiana Kelemenová
15:15 – 15:30	Ján Kušnir	Experimental data acquisition from a milling fixture	Michal Demko, Jozef Brindza, Marek Vrabel', Filip Dominik
15:30 – 15:45	Patrik Pilát	IMU-Based Experimental Verification of the Stability of a Specialized Robotic Locomotion System for Pipeline Environments	Jozef Varga, Ján Semjon, Filip Dominik, Kristián Takáč
15:45 – 16:00	František Ruda	Influence of Rolling Mill Parameters on the Mechanical and Surface Properties of Thin Galvanized Sheets	Emil Spišák
16:00 – 16:15	Ján Džugan	Tool Cost Optimization in the Machining of EN-GJS-450 Bushings: Effects of Tool Design, Cutting Parameters, and Tool Life on Cost per Piece	

16:15 – 16:30	Samuel Mikita	Possibilities of applying progressive energy beam methods in surface restoration	
16:30 – 16:45	Peter Milenovský	Development of an Apparatus for Recycling of Metal Hydride Alloys	
16:45 – 17:00	Barbara Schürger	Metamaterials for Smart Cities Applications	Martina Hančinová, Erika Dubňanská, Samuel Kerekeš, Peter Frankovský
17:00 - 17:15	Martina Hančinová	Finite Element Simulation of Tensile Test of Silicone Material	Erika Dubňanská, Barbara Schürger, Róbert Huňady, Matyáš Machalla
18:00	BANQUET		

Section B

9:15 – 17:00

Committee:

prof. Ing. Michal Kelemen, PhD. – chairman of the committee

doc. Ing. Ľudmila Dulebová, PhD.

doc. Ing. Teodor Tóth, PhD.

Time	Doctoral student	Title of the paper	Co-authors
9:00 – 9:15	OFFICIAL OPENING OF THE CONFERENCE		
9:15 – 9:30	Marek Grega	Influence of chemical composition, inclusions and microcracks on the mechanical properties of G24Mn6 type steel	Janette Brezinová
9:30 – 9:45	Dominika Sukopová	Comparative Analysis of AI Adoption and Labour Productivity in Slovakia and the EU27	Milan Fiňo, Jaroslava Kádárová, Lenka Leščinská
9:45 – 10:00	Peter Onderčo	Construction of timetables in urban public transport from a metrological perspective	Jan Rybář, Jozef Leja, Stanislav Ďuriš
10:00 – 10:15	Gregor Starinský	The use of digital calibration certificates in healthcare	Jan Rybář, Peter Onderčo, Adam Benčat, Jana Gerneschová, Andrej Smetánka
10:15 – 10:30	Stela Levická	International metrological comparison of ocular tonometers for optometry purposes	Dominik Pražák, Václav Sedlák, Eliška Najmanová, František Pluháček
10:30 – 10:45	Marek Málik	Communication Layer Compatibility in Cross-Generation ROS Systems	Rudolf Jánoš
10:45 – 11:00	COFFEE BREAK		
11:00 – 11:15	Erik Varjú	Implementation of Realistic Physical Interactions for Maintenance Tools in Unity3D	Juraj Kováč
11:15 – 11:30	Jakub Brna	Design and Evaluation of a Cross-Platform Communication Architecture for Industrial Data Exchange	Marek Sukop
11:30 – 11:45	Martin Bučko	Design of a Double-Axle Bogie for Regional Rail Vehicles	Ján Dižo, Vladimír Samaš, Patrik Slušňák
11:45 – 12:00	Vladimír Samaš	Construction Design of a Device for Determining the Static Coefficient of Friction on an Inertia Brake Test Stand	Martin Bučko, Juraj Gerlici, Patrik Slušňák
12:00 – 13:00	LUNCH BREAK		

13:00 – 13:15	Peter Špuro	Effect of Laser Shock Peening on Additively Manufactured Components	Andrej Czan, Michal Sajgalik, Mario Drbul, Jaromir Markovic, Andrej Scotka
13:15 – 13:30	Yitbarek Firew Minale	Segmental Dynamics and Thermo-Mechanical Response of PVC/TPU Blends Plasticized with a Bio-Based Plasticizer	Ivan Gajdoš, Tamas Szabo, Annamaria Polyákné Kovács, Kálmán Marossy, Andrea Ádámné Major
13:30 – 13:45	Magdaléna Kordošová	Milling of proprio and orthopedic insoles	Teodor Tóth, Lucia Bednarčíková, Monika Michalikova
13:45 – 14:00	Vanda Tomková	Possibilities of manufacturing and testing sheets with organic coatings and their damages in practice	Ján Slota
14:00 – 14:15	Štefan Novotný	Design of engine modifications and construction for an experimental vehicle	Maroš Palko
14:15 – 14:30	Radovan Šiška	Optimization of Roll-Bonded Sheet Cutting Quality through Surface Treatment of Shearing Tools	Ján Slota
14:30 – 14:45	Katarína Dudová	Quantitative and Visual Assessment of Burn Scars Using 3D Scanning	Lucia Bednarčíková, Jozef Živčák
14:45 – 15:00	Jana Čajková	MSC Senescence in Prolonged Biocompatibility Evaluation of Biomaterials	Marianna Trebuňová, Darina Bačenková
15:00 – 15:15	Filip Dominik	Automation of VRFB component production using a custom-made vacuum fixture	Ján Slota, Marek Vrabel', Ján Kušnir, Patrik Pilát
15:15 – 15:30	Viktória Divoková	Application potential of physiologically beneficial vibrations in traumatological practice	Radovan Hudák, Maroš Divok
15:30 – 15:45	Pavol Dzurňák	Image classification using convolutional neural network in container spreader control process	Martin Mantič
15:45 – 16:00	Veronika Sedláková	Overview of the Effects of Vibrations on Stem Cells	Radovan Hudák, Teodor Tóth, Dominik Hakulin

16:00 – 16:15	Valéria Eiben	Advancing Technical Research through Thermal Imaging: Educational Perspectives and Case Studies	Ružena Králiková, Ervin Lumnitzer
16:15 – 16:30	Tomáš Zábavský	Assessment of the impact of noise on mental stress	
16:30 – 16:45	Vladimír Kokarda	LIBS vs. EDX: A Comparative Study of Elemental Analysis Methods	
16:45 – 17:00	Erika Dubňanská	Numerical Modelling and Simulation of the Buildability of a 3D- Printed Component Using Grasshopper Plug-ins: VoxelPrint and CobraPrint	Martina Hančinová, Barbara Schürger, Róbert Huňady
18:00	BANQUET		