INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

7-9 November 2024, Debrecen, Hungary

PROGRAMME

Thursday, 7th of November 2024 (2-4 Ótemető, Debrecen)

09:00 – 15:00 **Mechanical Engineering Exhibiton and Job Fair** (Aula of the Faculty of Engineering)
list of the exhibiting companies: Mechanical Exhibition and Job Fair
09:00 – 16:00 **ISCAME registration** (Aula of the Faculty of Engineering)
11:00 – 11:15 **Opening of the Mechanical Engineering Professional Days** (Aula of the Faculty of Engineering)
Zoltán SZILVÁSSY rector, University of Debrecen
Sándor CZOMBA state secretary, Ministry of Economic Development
Géza HUSI dean, University of Debrecen
Tamás MANKOVITS head of department, University of Debrecen
Welcoming words

11:00 – 18:00 **ISCAME poster exhibition** (1st floor, Gallery of the Faculty of Engineering)
11:30 – 12:00 **Opening of the (H)őskorunk, a Gépészmérnöki Tanszék múltja képekben Exhibition** (Library, Fac. of Eng.)
11:30 – 14:00 **lunch** (Restaurant, Faculty of Engineering)
13:00 – 14:15 **ISCAME opening and plenary lectures** (4th floor, Lecture Hall 413)
14:30 – 18:00 **ISCAME sessions**
ENGINEERING OPTIMIZATION
INDUSTRIAL PROCESSES
MACHINE AND PRODUCT DESIGN
MATERIALS SCIENCE AND TECHNOLOGY I.
MATERIALS SCIENCE AND TECHNOLOGY II.

18:30 – 19:45 **ISCAME cultural program** - Csonka Church and organ concert – (2 Széchenyi street, Debrecen)
20:00 – 23:00 **ISCAME banquet** - Restaurant Borterasz (19 Piac street, Debrecen) – entrance only with invitation card

Friday, 8th of November 2024 (2-4 Ótemető, Debrecen)

08:30 – 13:00 **ISCAME registration** (Aula of the Faculty of Engineering)
09:00 – 14:00 **ISCAME poster exhibition** (1st floor, Gallery of the Faculty of Engineering)
09:30 – 12:00 **ISCAME sessions**
APPLIED AND THEORETICAL MECHANICS
FLUID MECHANICS
ARTIFICIAL INTELLIGENCE IN ENGINEERING PROBLEMS
POLYMER ENGINEERING
MATERIALS SCIENCE AND TECHNOLOGY III.

11:00 – 11:30 **ISCAME poster session** (1st floor, Gallery of the Faculty of Engineering)
11:30 – 14:00 **lunch** (Restaurant, Faculty of Engineering)
12:45 – 12:55 **ISCAME group photo** (meeting at the Aula of the Faculty of Engineering)
13:00 – 13:30 **ISCAME poster session** (1st floor, Gallery of the Faculty of Engineering)
13:00 – 16:45 **ISCAME sessions**
BIOMECHANICS
ENERGY INDUSTRY
MANUFACTURING SCIENCE
MATERIAL HANDLING AND LOGISTICS
MATERIALS SCIENCE AND TECHNOLOGY IV.

18:00 – 19:30 **ISCAME cultural program** – Sightseeing with private tram
(meeting at the Main Building of the University of Debrecen, 1 Egyetem square, Debrecen)
19:30 – 23:00 **ISCAME dinner** - Restaurant Reskontó (34 Péterfia street, Debrecen) – entrance only with invitation card

Saturday, 9th of November 2024 (Debrecen – Hortobágy - Debrecen)

09:00 – 15:00 **ISCAME excursion with lunch** – Hortobágy National Park Visitor Centre, Fishpond, Herdsmen Museum
(meeting at the Dormitory of the Faculty of Engineering, 2-4 Ótemető street, Debrecen)

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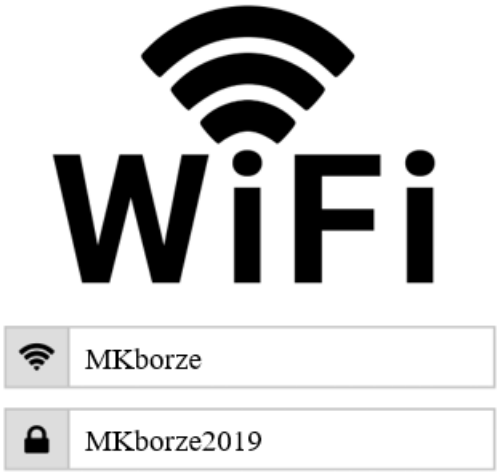
Thursday, 7th of November 2024 (2-4 Ótemető, Debrecen)

13:00 – 14:15	**ISCAME opening and plenary lectures** (Lecture Hall 413, 4th floor)
13:00 – 13:15	**Tamás MANKOVITS**, University of Debrecen, Hungary **Krisztina BÁRDOSI**, Scientific Association of Mechanical Engineers, Hungary *Welcoming words*
13:15 - 13:35	**Zoltán MAJOR, Michael LACKNER, Anna HÖSSINGER-KALTEIS** Johannes Kepler University Linz, Austria *Some examples of engineering with polymers*
13:35 – 13:55	**László KÖNÖZSY** Cranfield University, United Kingdom *Computational engineering methods and their academic research and industrial applications for wide range of problems*
13:55 – 14:15	**Gábor SZAKÁCS, Domonkos TOLNAI, Björn WIESSE, Norbert HORT** Helmholtz-Zentrum Hereon, Germany *Utilizing synchrotron radiation XRD during the solidification of Mg alloys*



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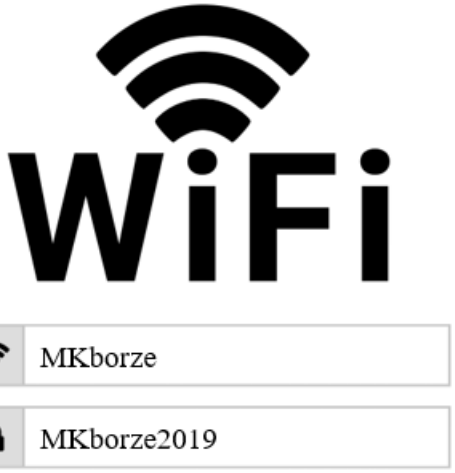
14:30 – 17:45	**Session ENGINEERING OPTIMIZATION**
	(Emerson Pneumatic Laboratory, ground floor, room E.0.21.)
Chairman:	**Dávid HURI**, University of Debrecen, Hungary
Secretary:	**Máté BERECZKI**, University of Debrecen, Hungary
14:30 – 14:45	**Nikola MOMČILOVIĆ, Nemanja ILIĆ, Ana PETROVIĆ, Ivana ČEKOVIĆ** *Evaluating the limit states: a case study of a hull girder*
14:45 – 15:00	**Yassine CHAHBOUB** *A comparative analysis of the direct and backpropagation methods for determining GTN parameters*
15:00 – 15:15	**Omar AL AQRABAWI, Dávid HURI** *Surrogate model-based parameter tuning of genetic algorithm for the shape optimization of automotive rubber bumpers*
15:15 – 15:30	**Attila SZÁNTÓ, Gusztáv Áron SZÍKI, Éva ÁDÁMKÓ** *Filtering procedure to optimize the technical data of a prototype race car*
15:30 – 15:45	**Masar ALSIGAR, Alhafadhi MAHMOOD** *Complex optimization of automatic radial and axial feed*
15:45 – 16:00	**Syed Musa Hassan GILLANI, Gábor BALOGH** *Effects of infills on the mechanical properties of a sample*
16:00 – 16:15	coffee break
16:15 – 16:30	**Ahmad AL-AWAMLEH, Ferenc HEGEDŰS** *Investigation of theoretical energy intensity of sonohydrogen*
16:30 – 16:45	**Andicha ZAIN, Krisztián HRICZÓ, Imre Ferenc BARNA** *Review on characteristics of some thermal insulation materials for multi-layered wall*
16:45 – 17:00	**Ľuboslav STRAKA, Andrii ZALYVCHYI** *Optimizing the mechanical properties of sintered carbides*
17:00 – 17:15	**Olivér HORNYÁK,** *Predicting remaining useful life using adaboost algorithm*
17:15 – 17:30	**Fadia AHMED NAJI** *Investigations on ball end magneto-rheological finishing of TI64 alloy for enhancement surface quality*
17:30 – 17:45	**Attila KÁLMÁN, Katalin BENE** *Optimizing interbasin water transfer for sustainable energy management and multipurpose water utilization*



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14:30 – 16:45 **Session INDUSTRIAL PROCESSES**
(Robert Bosch AS Laboratory, ground floor, room E.0.22.)
Chairman: **Lajos GULYÁS**, University of Debrecen, Hungary
Secretary: **Tibor PÁLFI**, University of Debrecen, Hungary

14:30 – 14:45 **Sahab ALKHOLI, Miklós DARÓCZI, Ebrahim Mirzaiee ASRAMI**
Implementing lean tools to improve a production line in a given company

14:45 – 15:00 **István DÉNES, Sándor SEMPERGER**
Improvement of physical security through continuous authentication for SCADA and DCS systems in industrial automation and control

15:00 – 15:15 **Levente TUGYI**
Analysis of the explosion risk of dried sewage sludge

15:15 – 15:30 **Bendegúz KIS, Péter LÁNG, László HÉGELY**
Design of a semi-batch dividing wall column

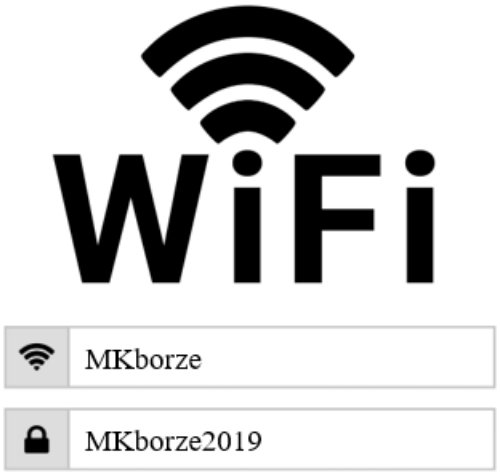
15:30 – 15:45 **Tibor POÓS, Levente SOR**
Determination of adsorber breakthrough point by temperature measurement

15:45 – 16:00 **Tibor POÓS, Kristóf KATONA**
Fluidization curve of a granulate in a closed loop airflow

16:00 – 16:15 **Evelin VARJU, Milán CSÁNYI**
Investigation of the heat transfer and power consumption of a mixing tank

16:15 – 16:30 **Tibor POÓS, Nikolett SZÁVICS, Evelin VARJU**
Investigation of water evaporation rate at different liquid levels

16:30 – 16:45 **Tibor POÓS, Ábel BALLA, Richárd Gyula KISS**
Performance testing of a PCM-based thermal energy storage device



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14:30 – 17:00 **Session MACHINE AND PRODUCT DESIGN**
(Machine Elements Laboratory, 1st floor, room E.121.)
Chairman: **Levente CZÉGÉ,** University of Debrecen, Hungary
Secretary: **István DOMOKOS**, University of Debrecen, Hungary

14:30 – 14:45 **Bálint SIKTÁR, György HEGEDŰS, József KAKUK**
Relation between the cutting force and the current consumption of the bldc motor in a hedge cutter

14:45 – 15:00 **Péter BOZZAY, Dávid BODNÁR, Károly JÁRMAI**
Motion enlargement at structures, literature review, application

15:00 – 15:15 **Krisztián DEÁK**
Analysis of ECG signals with wavelet transform

15:15 – 15:30 **Attila KÁRI-HORVÁTH, Patrik PERCZE**
Steps for the implementation of equipment operating on the principle of thermal drying for the disposal of waste water and bio-w

15:30 – 15:45 **Dániel FEKETE-SZÜCS**
Designing and building a working model of a drive for elevators or cranes

15:45 – 16:00 **Sándor APÁTI, Sándor HAJDU**
Dynamic modelling possibilities of jigsaws

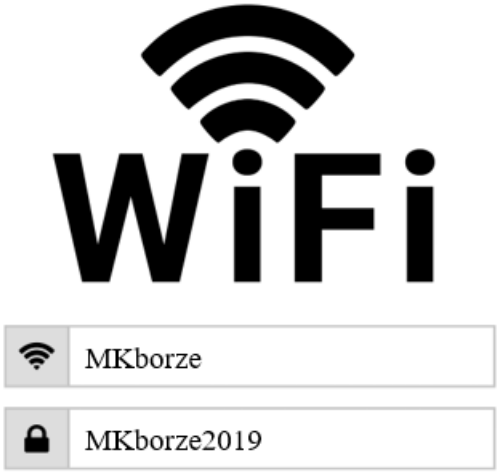
16:00 – 16:15 coffee break

16:15 – 16:30 **István DOMOKOS, Sándor PÁLINKÁS**
Developement of a specialised wear testing machine for hot metal coated cultivator tines

16:30 – 16:45 **Pálma KAPITÁNY, Tamás SZABÓ, László RÓNAI**
Electronic design of a measuring system suitable for electromagnets

16:45 – 17:00 **Pálma KAPITÁNY, Tamás SZABÓ, László RÓNAI**
Mechanical design of a testbench for analysing electromagnets

16:45 – 17:00 **Levente Béla ZUDOR, Péter Tamás ZWIERCZYK**
Upgrading an Amsler twin-disc measurement device to analyze railway rail head-check cracks



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14:30 – 16:30 **Session MATERIALS SCIENCE AND TECHNOLOGY I.**
(Metallograpfic Laboratory, 1st floor, room E.120.
Chairman: **Lars Christian HERZBACH**, BMW Manufacturing Hungary Kft., Hungary
Secretary: **Gábor BALOGH**, University of Debrecen, Hungary

14:30 – 14:45 **Lars Christian HERZBACH**
BMW Manufacturing Hungary Kft. - examples of laboratory work

14:45 – 15:00 **Dorottya VARGA, Attila SZLANCSIK**
Investigation of miniaturized tensile test specimens manufactured by casting

15:00 – 15:15 **Laura MÁDI, Dániel MOLNÁR**
Conditions forming blow-hole defects in castings

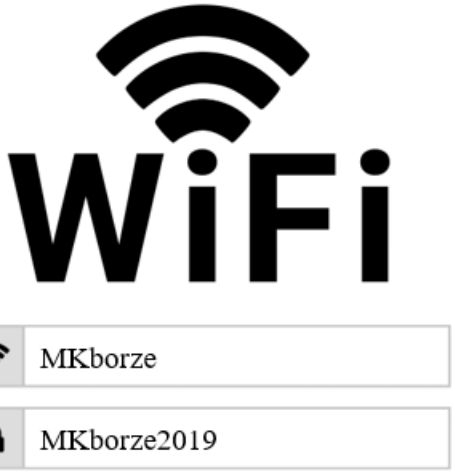
15:15 – 15:30 **Benedek SZIKLAI, Máté SEPSI, Máté SZŰCS, László S. TÓTH, Valéria MERTINGER**
Development of a shear strength measuring tool and method for layered structures

15:30 – 15:45 **Ali AMININEJAD, László S TÓTH, Valeria MERTINGER, Máté SZŰCS, Máte SEPSI**
On the role of crystallographic texture in grain fragmentation during severe plastic deformation

15:45 – 16:00 **Sulaiman AL-TIMMIMI, Szabolcs SZÁVAI**
Effect of reinforcement on mechanical properties of iron metal matrix composites

16:00 – 16:15 **Alexandra KIRI, Zoltán WELTSCH**
Determination of natural frequencies with acoustic methods and their relation to residual stress

16:15 – 16:30 **Winnie Atieno ONYANGO, György CZEL, Györgyné CZEL**
Effect of zeolite on mechanical and rheological properties of HDPE



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16:00 – 18:00 **Session MATERIALS SCIENCE AND TECHNOLOGY II.**
(SMARTMAT Material Technology Laboratory, 4th floor, room E.414.)
Chairman: **István BUDAI**, University of Debrecen, Hungary
Secretary: **Sándor ANDRÁSKÓ**, University of Debrecen, Hungary

16:00 – 16:15 **Ayman ELEMAM**
Effect of compacting pressure and sintering temperature on properties of powder metallurgy 316L stainless steel

16:15 – 16:30 **Viktor NYESTE**
Physical metallurgy aspects of the effect of squeezing during high pressure die casting

16:30 – 16:45 **György THALMAIER, Mircea NASUI, Niculina A. SECHEL, Ioan VIDA-SIMITi**
On the resistivity of cold sintered Zn foams

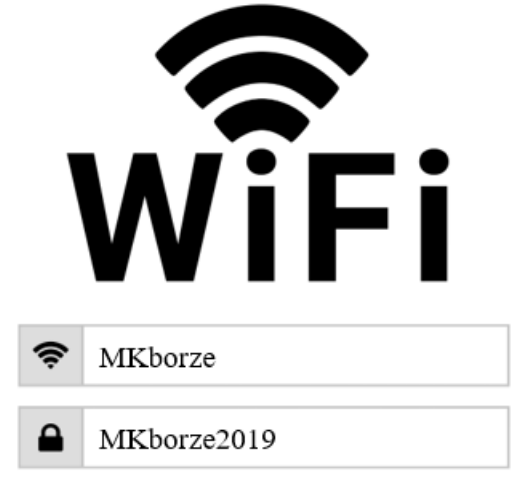
16:45 – 17:00 **Gabriel BATIN,**
Characterization of alumina filament used for thermoplastic extrusion

17:00 – 17:15 **Zoltán BRATU, János ERDÉLYI, Dániel MOLNÁR**
High pressure die casting thermal solutions

17:15 – 17:30 **János SZALAI, Dániel MOLNÁR**
The technology of abrasion resistant cast iron castings

17:30 – 17:45 **Gábor GYARMATI, János ERDÉLYI**
On the interactions of intermetallic compounds and oxide phases in liquid aluminum alloys

17:45 – 18:00 **Cheikh Anta DIOP**
Carbone 14



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09:30 – 11:45 **Session APPLIED AND THEORETICAL MECHANICS**
(Technical Mechanics Laboratory, 1st floor, room U.1.08.)
Chairman: **Natasa TRISOVIC,** University of Belgrade, Serbia
Secretary: **Gábor RUZICSKA**, University of Debrecen, Hungary

09:30 - 09:45 **Csaba GÁSPÁR**
The localized method of fundamental solutions for the stokes equations

09:45 - 10:00 **Jozef LEJA, Jan RYBÁŘ, Stanislav ĎURIŠ, Peter ONDERČO, Andrej SMETÁNKA**
Teaching mechanics and metrology through laboratory exercises - shear modulus measurement using a torsional pendulum

10:00 – 10:15 **Baksa ATTILA, István ECSEDI**
Determination of von Mises stresses in elliptical cross sections

10:15 – 10:30 **Emőke IMRE, Delphin Kabey MWINKEN, Daniel BARRETO, James LEAK, Maria DATCHEVA, Vijay P. SING**
Some notes on the use of an unsaturated constitutive law for sands

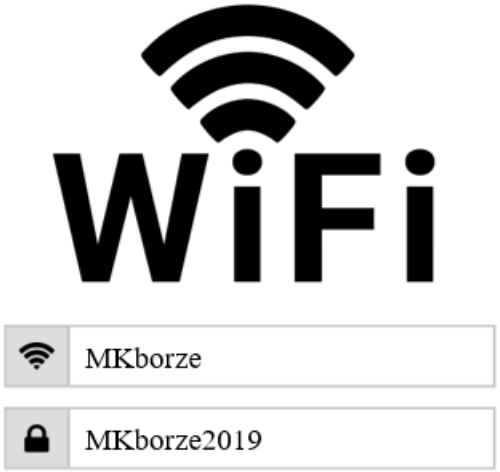
10:30 – 10:45 **Bence MOLNÁR, Krisztián KUN**
Understanding terrain characteristics in autonomous systems from the perspective of vehicle dynamics and agriculture

10:45 – 11:00 **Sinisa KRALJEVIC, Miodrag ZUKOVIC, Livija CVETICANIN**
Oscillatory systems with two degrees of freedom and van der Pol coupling: Analytical approach

11:00 – 11:15 **Márton SZABÓ, Ákos MIKLÓS, Giuseppe HABIB**
Driving torque difference and stability of operation for self-synchronizing vibrating screens

11:15 – 11:30 **Donát M. TAKÁCS, Tamás FÜLÖP**
Improving discrete numerical methods for dynamics using continuous mathematical tools

11:30 – 11:45 **Sotehi FAYCAL, Djebbara BENZERGA**
Numerical analysis of cracking at the nozzle junction in a distillation column



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09:30 – 11:00 **Session FLUID MECHANICS**
(Machine Elements Laboratory, 1st floor, room E.121.)
Chairman: **László KÖNÖZSY**, Cranfield University, United Kingdom
Secretary: **Máté BERECZKI**, University of Debrecen, Hungary

09:30 - 09:45 **Krisztián HRICZÓ**
Numerical study of entropy generation in ferrofluid flow with heat and mass transfer

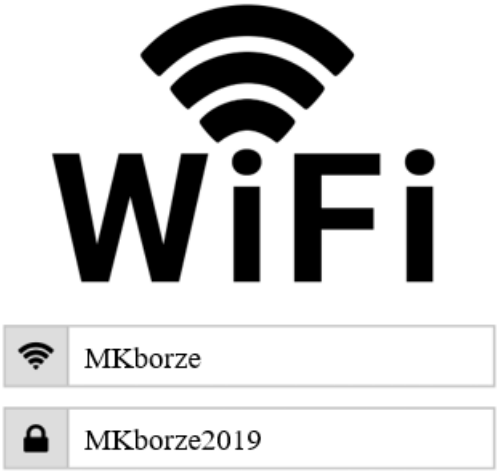
09:45 - 10:00 **Aimen TANOUGAST**
Comparison of turbulence models in the simulation of fluid flow in corrugated channel

10:00 – 10:15 **Ferenc SZODRAI**
Loss coefficient calculations for pipe systems with numerical method

10:15 – 10:30 **Ferenc KUBICSEK, Áron KOZÁK, Sára MOLNÁR, Ferenc HEGEDŰS**
Evaporation models in sonochemistry

10:30 – 10:45 **Kinga Andrea KOVÁCS, Esztella BALLA**
Comparison of vortex identification methods through applications

10:45 – 11:00 **Zakarya Albadwi QASEM, Ayaan FAEIZ; Masuk ABDULLAH**
Enhancing winglet aerodynamics for sustainable aviation through computational analysis



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09:30 – 12:00 **Session ARTIFICIAL INTELLIGENCE IN ENGINEERING PROBLEMS**
(Emerson Pneumatic Laboratory, ground floor, room E.0.21.)
Chairman: **Béla SZEKERES**, Eötvös Loránd University Budapest, Hungary
Secretary: **Dániel NEMES**, University of Debrecen, Hungary

09:30 - 09:45 **Goga ALEXANDRU-SILVIU**
AI-driven workflow optimization: revolutionizing mechanical engineering project management

09:45 - 10:00 **Nataša SOKOLOV MILOVANČEVIĆ, Ivan KOSTIĆ, Nikola MILOVANČEVIĆ**
Neuro-fuzzy assessment of circular economy focusing on waste creation, recycling, renewable energy, biomass, and soil pollution

10:00 – 10:15 **Miloš MILOVANČEVIĆ, Dragana TRNAVAC, Vladislav KRATIĆ**
Daily reference evapotranspiration monitoring system by soft computing and object-oriented approach

10:15 – 10:30 **Miloš MILOVANČEVIĆ, Dragana TRNAVAC, Vladislav KRATIĆ**
Examining gdp deflated real values using adaptive neuro fuzzy inference system (ANFIS)

10:30 – 10:45 **Ákos Koppány KISS,**
AI with MATLAB in academic and industrial applications

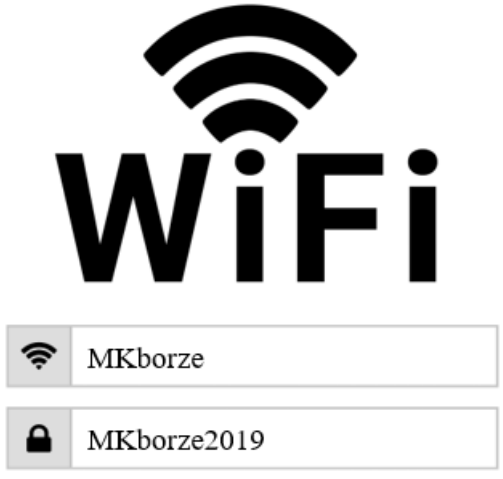
10:45 – 11:00 coffee break

11:00 – 11:15 **Dániel NEMES, Sándor HAJDU**
Possibilities of using ROM modeling in engineering problems

11:15 – 11:30 **Attila Károly VARGA**
AI based digital image processing

11:30 – 11:45 **Attila ARADI, Attila Károly VARGA**
AI (machine learning) - driven approaches for enhancing underwater acoustic noise analysis for electrical boat propulsions

11:45 – 12:00 **KM Euphe HASSAN, Dávid HURI**
Surrogate model-based parameter tuning of tabu search algorithm for the shape optimization of automotive rubber bumpers



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09:30 – 11:45 **Session POLYMER ENGINEERING**
(SMARTMAT Material Technology Laboratory, 4th floor, room E.414.)
Chairman: **István BUDAI,** University of Debrecen, Hungary
Secretary: **Gábor BALOGH**, University of Debrecen, Hungary

09:30 - 09:45 **Dániel GERE**
Effects of HDPE-g-MAH on mechanical properties of recycled PET/HDPE blends

09:45 - 10:00 **Attila BATA**
Investigation of the recyclability of automotive plastic nanocomposites

10:00 – 10:15 **Florian KIEHAS, Zoltán MAJOR**
Polymer toughness predictions via machine learning

10:15 – 10:30 **Mundher ABD UL ZAHRA DOOKHI, Hussein M. JEBUR**
Fatigue properties of composite pipes with cracks

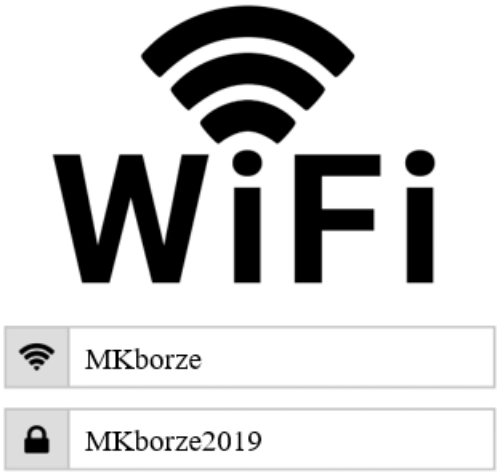
10:30 – 10:45 **Andreas KAPSHAMMER, Michael LACKNER, Zoltán MAJOR**
Experimental and numerical analysis of hail impact on sheet molding compounds

10:45 – 11:00 **Kardo Khalid ABDULLAH, Kolos MOLNÁR**
A novel air-flow electrospinning setup for controlling fiber distribution and morphology

11:00 – 11:15 **Gergő Zsolt MARTON, Gábor SZEBÉNYI**
The effect of polycaprolactone interlayer material on the behaviour of carbon-fibre/epoxy composites

11:15 – 11:30 **Ákos GÖRBE, Tamás BÁRÁNY**
The effect of trans-polyoctenamer compatibilizer on polyethylene and ground tire rubber blends

11:30 – 11:45 **Adrián BOGNÁR, Krisztian KUN, Laszlo ZSIDAI**
Viscoelastic properties of UV-curable resins for photopolymerization-based additive manufacturing



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INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

7-9 November 2024, Debrecen, Hungary

Friday, 8th of November 2024 (2-4 Ótemető, Debrecen)

09:30 – 11:45 **Session MATERIALS SCIENCE AND TECHNOLOGY III.**
(Metallographic Laboratory, 1st floor, room E.120.)
Chairman: **Sándor PÁLINKÁS**, University of Debrecen, Hungary
Secretary: **Tibor PÁLFI**, University of Debrecen, Hungary

09:30 - 09:45 **Jessica DIAS, György BARKÓ**
Agricultural aspects of moon/mars soil simulants for machinery tests

09:45 - 10:00 **Judit PÁZMÁN, Zsuzsa OLESNYOVICSNÉ SZABADI**
Examination of reactor steel after thermal aging process

10:00 – 10:15 **Aymen AOUTI, George KAPTAY, Péter BAUMIL**
Influence of layer thickness on the melting behavior of NiTi nano-multilayers

10:15 – 10:30 **Haniyeh AZIMI, László S. TÓTH, Péter BARKÓCZY**
New deformation route for nanostructuring magnesium alloys

10:30 – 10:45 **Gergely VASKÓ, Zoltán GÁCSI, Erzsébet NAGY**
Simulation of the production of sintered steel gears

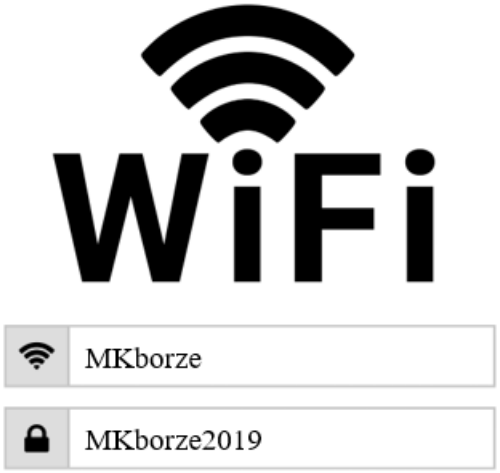
10:45 – 11:00 **Péter Marcell KISS, Gábor KALÁCSKA**
Manufacturing and assembling the components of a mechanical seal testing bench

11:00 – 11:15 **Emőke IMRE, Delphin Kabey MWINKEN, Daniel BARRETO, James LEAK, Maria DATCHEVA, Vijay P. SING**
Some notes on the use of an unsaturated constitutive law for sands

11:15 – 11:30 **Bahram TURAPOV, Gábor KALÁCSKA**
Establishing the tribo-system to study the fraction effects of lunar regoliths

11:30 – 11:45 **Omamoke ENAROSEHA, Obed OYIBO**
First principle calculation on molybdenum properties

11:45 – 12:00 **Ahnaf TAHMID, Gabor BALOGH, Gillani Syed Musa HASSAN**
Production parameter optimization of additive manufactured TPU part



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Friday, 8th of November 2024 (2-4 Ótemető, Debrecen)

13:00 – 14:45 **Session BIOMECHANICS**
(Technical Mechanics Laboratory, 1st floor, room U.1.08.)
Chairman: **Sándor MANÓ**, University of Debrecen, Hungary
Secretary: **Rashwan ALKENTAR**, University of Debrecen, Hungary

13:00 – 13:15 **Katreen EBRAHEM, Szabolcs SZÁVAI**
Applying of 3D numerical techniques in the medical field (intervertebral lumbar disc prostheses)

13:15 – 13:30 **Sándor MANÓ, Lóránd CSÁMER, Tímea VÁRADI, Yongming YU, Guodong LI, Shixin PAN, Jinhai WU, Lei ZHANG**
Investigation of the stability of two different spondylolysis surgical technique utilising finite element simulation

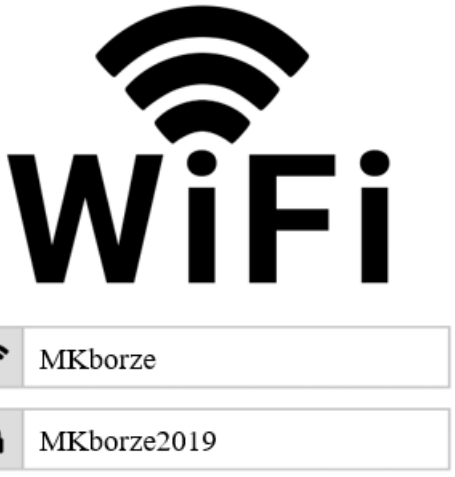
13:30 – 13:45 **Luca MOLNÁR**
Innovative spinal implant development through additive manufacturing

13:45 – 14:00 **Rashwan ALKENTAR, Tamás MANKOVITS**
Patient specific hip implant topology optimization with lattice structures

14:00 – 14:15 **Olawunmi Oluwafikayomi OKUNRINBOYE, Emmanuel Andrew Reuben GAIMA, Dávid HURI**
Insights from biodegradable orthopedic screws with sponge matrix

14:15 – 14:30 **Maliha Binte HASAN, Rashwan ALKENTAR, Sándor MANÓ, Zoltán MAJOR, Tamás MANKOVITS**
Determination of the compressive behavior of Ti6Al4V lattice structures using FEA

14:30 – 14:45 **Ugonna UMEH, Dávid HURI, Dániel NEMES, Zoltán MAJOR, Tamás MANKOVITS**
Determination of the compressive behavior of lattice structures produced by SLA technology



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7-9 November 2024, Debrecen, Hungary

Friday, 8th of November 2024 (2-4 Ótemető, Debrecen)

13:00 – 14:30 **Session ENERGY INDUSTRY**
(Robert Bosch AS Laboratory, ground floor, room E.0.22.)
Chairman: **József MENYHÁRT**, University of Debrecen, Hungary
Secretary: **Zoltán Gergő GÉRESI**, University of Debrecen, Hungary

13:00 – 13:15 **Attila KOVÁCS, Judit SOMOGYINÉ MOLNÁR, Károly JÁRMAI**
Creating a model to simulate harmonic injections within an industrial facility

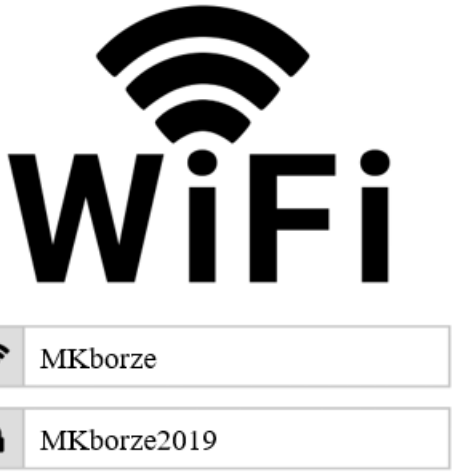
13:15 – 13:30 **József MENYHÁRT, József KERTÉSZ, Péter T. SZEMES**
Investigating the feasibility of integrating electric vehicles into vehicle-to-grid systems in Hungary

13:30 – 13:45 **János KELEMEN**
Development basics of a digital twin for a fuel cell

13:45 – 14:00 **Gábor HASULYÓ, Marianna VADÁSZI**
Safety challenges of hydrogen wells

14:00 – 14:15 **Ayodeji Usman AKERELE, Csaba PÓLISKA**
Thermal properties of ceramic foam glass sintered from industrial waste incinerator slags using SiC as foaming

14:15 – 14:30 **William COR, Abdulmumin Lekan YEMITAN**
Impact of robotic technology in human life



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7-9 November 2024, Debrecen, Hungary

Friday, 8th of November 2024 (2-4 Ótemető, Debrecen)

13:00 – 16:30 **Session MANUFACTURING SCIENCE**
(Machine Elements Laboratory, 1st floor, room E.121.)
Chairman: **Sándor BODZÁS**, University of Debrecen, Hungary
Secretary: **Attila DEBRECENI**, University of Debrecen, Hungary

13:00 – 13:15 **Ľuboslav STRAKA, Juraj HAJDUK**
Influence of tool electrode on quality and productivity in electrical discharge machining

13:15 – 13:30 **Marwen HABBACHI, Attila BAKSA; Péter Zoltán KOVÁCS**
Evaluation of the thickness distribution during the single point incremental forming of pure Al alloy AA 1050

13:30 – 13:45 **Sándor BODZÁS,**
Analysis of grinding technology of spiroid worm on a classical grinding machine

13:45 – 14:00 **Nour El Imane DJIMAOUI, Valéria MERTINGER , Yoni ADONYI**
Additive manufacturing to rebuild worn FSW tools

14:00 – 14:15 **Ibtissam ENNAMOUSS, Sándor BODZÁS**
CAD modeling and surface roughness measurement of the gear pair in the wire bending machine

14:15 – 14:30 **Ian MOKAYA, Sándor BODZÁS**
CAD modelling and 3D scanning of the elements of the wire bending mechanical machine

14:30 – 14:45 **Szabolcs KRIZSMA, András SUPLICZ**
Coupled simulation approach to model the operational behaviour of prototype injection moulds

14:45 – 15:00 coffee break

15:00 – 15:15 **Anas ABU AL-HIAJA'A,**
Enhancing control strategies for mini high bay warehouse: evaluating methods for voltage conversion and encoder pulse detection

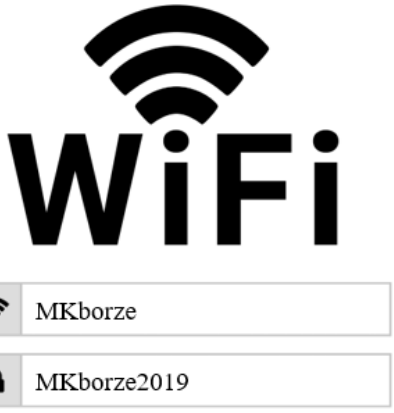
15:15 – 15:30 **Dániel LEDENYÁK, Tamás ROSTA**
Improve practical usability of Ballbar machine tool verification

15:30 – 15:45 **Áron LÓRÁND,**
The effect of surface quality on dimensional measurement with CT

15:45 – 16:00 **Attila DEBRECENI, Sándor BODZÁS**
Integration of machine learning in additive manufacturing for material extrusion and powder bed fusion

16:00 – 16:15 **Omar LKADI, Mohammed NASSRAOUI, Otmane BOUKSOUR**
Influence of generative design and topology optimization on the design and manufacturing processes in AM

16:15 – 16:30 **Géza HAIDEGGER, József VÁNCZA**
Harmonized international processes presently needed for the sustainable digitization of the manufacturing industry



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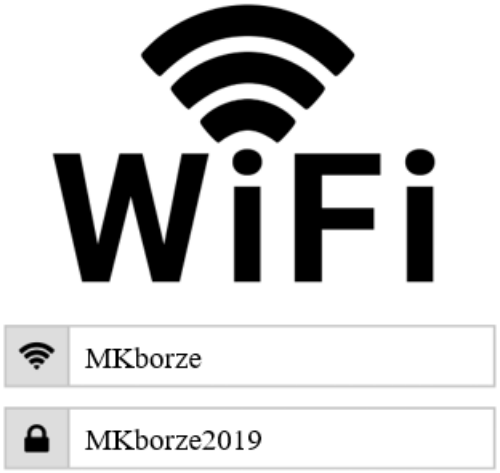
7-9 November 2024, Debrecen, Hungary

13:00 – 15:00 **Session MATERIAL HANDLING AND LOGISTICS**
(Emerson Pneumatic Laboratory, ground floor, room E.0.21.)
Chairman: **Gábor BOHÁCS**, Budapest University of Technology and Economics
Secretary: **Gábor RUZICSKA**, University of Debrecen, Hungary

13:00 – 13:15 **János JUHÁSZ**
General Modelling of electromobility and logistics in finished product distribution
13:15 – 13:30 **Erika BAKSÁNÉ VARGA, Attila BAKSA**
Integrating robotics, logistics, and programming in stem education: preparing students for industry 4.0
13:30 – 13:45 **Nataša SOKOLOV MILOVANČEVIĆ, Ivan KOSTIĆ, Nikola MILOVANČEVIĆ**
Sustainable development within the framework of a circular economy
13:45 – 14:00 **Gábor BOHÁCS, Hizba Muhammad SADIDA**
Integrating material handling machines into an AI-focused framework
14:00 – 14:15 **Péter FICZERE**
Industry 5.0 or industry 4.2
14:15 – 14:30 **Gábor RUZICSKA**
Simulation of the value stream in the field of robotic cable manufacturing using Visual Components
14:30 – 14:45 **Máté KÁTAI, István BUDAI**
Design and development of a production line for the bicycle industry to switch to eco-friendly packaging material
14:45 – 15:00 **Dávid BODNÁR, Károly JÁRMAI**
Frequency response optimization of an industrial robot arm



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Friday, 8th of November 2024 (2-4 Ótemető, Debrecen)

13:00 – 16:45 **Session MATERIALS SCIENCE AND TECHNOLOGY IV.**
(Metallographic Laboratory, 1st floor, room E.120.)
Chairman: **Zoltán WELTSCH**, Széchenyi István University, Hungary
Secretary: **Márton LÉVAI**, University of Debrecen, Hungary

13:00 – 13:15 **Rabea Hussein Mohammed QASEM**
Investigation of solid state dewetting of silver nanofilms

13:15 – 13:30 **Gábor József BÉRES, Richárd BORBÉLY, Martin Laszló KOLUS**
Welded blanks and forming limit diagrams

13:30 – 13:45 **Ferenc HAREANCZ, Gergely JUHÁSZ**
The effect of gap width on laser metal deposition welding of stainless steel sheets

13:45 – 14:00 **Ildiko PETROVICKIJNE ANGERER,**
Changes in concentration of groundwater pollutants in a recultivated non-hazardous landfill with a temporary top cover layer

14:00 – 14:15 **Miklós BERCZELI, Ferenc TAJTI, Péter PÉCZI-KOVÁCS, Benjamin KÖRÖMI, Zoltán WELTSCH**
Adhesive technology research and industry development trends 2025

14:15 – 14:30 **Zoltán WELTSCH, Péter KOVÁCS, Miklós BERCZELI**
Development of automotive adhesive joints with surface treatment technologies

14:30 – 14:45 coffee break

14:45 – 15:00 **Ferenc TAJTI, Miklós BERCZELI, Zoltán WELTSCH**
Contact resistance testing of bonded conductive joints for use in electric vehicles

15:00 – 15:15 **Benjámin Márk KÖRÖMI, Zoltán WELTSCH, Miklós BERCZELI**
Relationship between developed interfacial area ratio and adhesion of the bonded joint

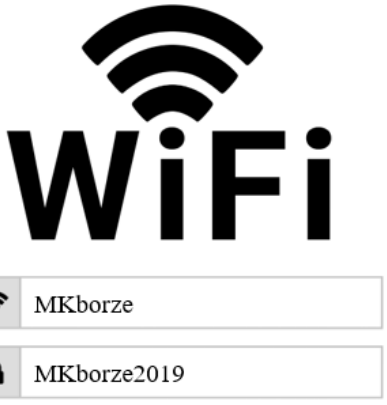
15:15 – 15:30 **Zsolt KÖNYVES, Valéria MERTINGER, Máté SEPSI**
The application of ultrashort pulse laser beams for pattern formation on the surfaces of tool steels

15:30 – 15:45 **Gergely JUHÁSZ, Ferenc HAREANCZ**
Fabrication of multi-material tube using laser metal deposition

15:45 – 16:00 **Péter PÉCZI-KOVÁCS, Miklós BERCZELI, Zoltán WELTSCH**
Effect of high energy density surface treatment atmosphere on surface energy change

16:15 – 16:30 **Comfort DEON NKALANGA, Sándor PÁLINKÁS**
Comparative analysis of plasma and tig welding on mild steel bars

16:30 – 16:45 **Béla KONDÁS, Valéria MERTINGER**
Effect of sampling method on the result of the tensile test



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Friday, 8th of November 2024 (2-4 Ótemető, Debrecen)

11:00 – 11:30
13:00 – 13:30 **ISCAME poster session**

(1st floor, Gallery of the Faculty of Engineering)

Chairman: **Andrea KECZÁNNÉ ÜVEGES**, University of Debrecen, Hungary

Ayodeji Usman AKERELE, Csaba PÓLISKA
Implications of temperature holding time and slag quantity on the mechanical properties of ceramics foam glass

Aws AL-TAYAWI, Hajnalka CSOTT, József Richárd LENNERT, Zsuzsanna Horváth HOVORKA, Zsuzsanna LÁSZLÓ, Cecilia HODÚR, Szabolcs KERTÉSZ
Optimization of ultrafiltration parameters in a laboratory-scale unit using dairy model for membrane fouling mitigation

Tamás ANTAL, Zoltán KOVÁCS
Spray drying of plum jam - ways to enhance a product yield

Maja ČAVIĆ
Clock tower of Petrovaradin Fortress - mechanism restoration

Ivana CEKOVIC, Ljiljana TRUMBULOVIC, Snežana AKSENTIJEVIC, Mihailo MILANOVIC
Optimizing energy efficiency and structural integrity in biomass gasification for CHP systems: environmental and material challenges

Ljiljana TRUMBULOVIC, Ivana CEKOVIC, Snežana AKSENTIJEVIC, Branko DRNDAREVIC
Optimizing energy efficiency and structural integrity in biomass gasification for CHP systems: environmental and material challenges

Mouna CHEGAAR
Mathematical analysis of a frictional contact problem

Mahmood H. DAKHIL, Mahmood ALHAFADHI, Alsigar MASAR, Saleh Suliman Saleh ELFALLAH
Numerical simulation of welding process

Lates DANIEL, Paul TRIPON, Eugen MARIN, Dragoș MANEA
Optimization of the design of an additional working piece of the ripper type

János DOBRÁNSZKY
Achievements in the field of materials for medical devices in Hungary

Viktor GOTTHARD
Design for modularity (DFM) theory and practice: modular design of giant 3D-printer and 3D-printed products

Alexandra HAMZA, István KOCSERHA
The effect of natural additives with high SiO2 content on the properties of fired clay ceramics

Krisztián HORVÁTH
Using machine learning models to predict and reduce noise levels in gear systems

Michael LACKNER
Material and component testing of additively manufactured robot elements

Milan STOJANOVIĆ, Zoran STAMENIĆ, Tatjana LAZOVIĆ
Mathematical modelling of the repair of worn cardan needle roller bearings

Andrea KECZÁNNÉ ÜVEGES, Attila CSÍK, Máté FILE, Tamás MANKOVITS, Csaba HEGEDŰS
The importance of precision manufacturing in the production of scaffolds promoting bone regeneration

Emese KUROVICS, Alexandra HAMZA
Effect of clay mineral content on plasticity

Blaoui MOHAMED MOSSAAB, Ait Ferhat YAZID
Study of the effectiveness of acids as a quenching agent for metals

Gábor NAGY, Csenge Emese TÓTH
Hydrogen production via waste tire pyrolysis

Mustafa OZCANLI, Berkay KARACOR, Belkıs ZERVENT UNAL, Ahmet CALIK
Innovative use of textile waste for automotive applications

Annamária POLYÁKNÉ KOVÁCS, Tamás József SZABÓ
Analysis of the effect of mechanical recycling in the case of aliphatic polyketone

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Annamária POLYÁKNÉ KOVÁCS
Investigation of aliphatic polyketone degradation under the influence of UV

Annamária POLYÁKNÉ KOVÁCS, Tamás József SZABÓ
Investigation of the degradation of composites filled with aliphatic polyketone glass fibers during mechanical recycling

Calin-Virgiliu PRICA
Characterization of invar36 alloy obtained by sintering of the mechanically alloyed powders

Milan RACKOV, Siniša KUZMANOVIĆ
An overview of the development process of universal gear reducers with external helical gears

Md Tanweer RAZA, Rajesh REDDY, Sumit TIWARI, András SZEKERES
Development of nanofluid based on evacuated tube solar colletor for efficient solar heating applications

Ognjen RISTIĆ, Nataša TRIŠOVIĆ, Miloš SEDAK
Bio-inspired optimization algorithms in piping design

Jan RYBÁŘ, Jozef LEJA, Štefan DUNAJ, Andrej SMETÁNKA, Peter ONDERČO
New design solution of reference device with model eye

Argentina Niculina SECHEL
Sintering behavior of Ti/B4C/(±Al) powder mixtures

Hadid SUKMANA, Adrienn FEJÓS, Anikó BIRKÁSNÉ NAGYPÁL, Dorottya CSENKI, József CSANÁDI, Cecilia HODÚR, Zsuzsanna LÁSZLÓ, Gábor VERÉB, Szabolcs KERTÉSZ
Investigation of the ultrafiltration performance of different whey solutions in a dead-end membrane separation system

Benedek SZOVÁK, Alexandra KEMÉNY, Imre Norbert ORBULOV
Numerical study of the adhesion force between syntactic metal foam and reinforcing fibres

Kinga TAMÁSI, Szilvia KÓRA, Annamária POLYÁKNÉ KOVÁCS
New era of sustainable fashion - upcycling and 3D printing

Csenge Emese TÓTH, Tamás József SZABÓ, Zoltán Dávid GYÖKÉR, Helga KOVÁCS, Gábor NAGY
Behavior of photodegraded waste tire during thermal decomposition

Marcell János TÓTH, Annamária POLYÁKNÉ KOVÁCS
Degradation of bioplastic TPS composite with natural fillers

Nataša TRIŠOVIĆ
Numerical simulations in applied mechanics for enhanced safety in engineering structures

Zaga TRIŠOVIĆ
Enhanced biogas yield using co-digestion of food and agricultural waste

Ait Ferhat YAZID
Analysis of crack behavior in functionally graded materials: a mixed-mode stress intensity factor approach

Ait Ferhat YAZID, Blaoui MOHAMED MOSSAAB
Friction Stir Welding (FSW): analyzing crack behavior in metallic materials using a mixed-mode stress intensity factor approach

Fanhua YE, Chang LIU
Refined age and gender prediction with DNNs on utkface dataset

Teng Yue ZHANG, Chang LIU
Yoga posture recognition using mediapipe framework

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