DEPARTMENT OF ENGINEERING MATERIALS AND BIOMATERIALS
FACULTY OF MECHANICAL ENGINEERING
SILESIAN UNIVERSITY OF TECHNOLOGY

TalentDetector

INTERNATIONAL STUDENTS SCIENTIFIC CONFERENCE

PROGRAM OF THE INTERNATIONAL STUDENTS SCIENTIFIC CONFERENCE
TalentDetector2024_Summer

MONDAY
17th JUNE 2024
Aula B, Education and Congress Center, Silesian University of Technology, Gliwice, Poland

08:30 – 09:00
Registration of participants

09:00 – 09:15
Opening Ceremony of TalentDetector2024_Summer
Chairman: Prof. Mirosław Bonek

Opening lectures

09:15 – 09:30
Influence of LST (Laser Surface Texturing) on the Microstructure and Hardness of Magnesium RZ5 Alloy
John Ampah-Essel, Augustine N.S Appiah, Oktawian Bialas, Beatrice N.A. Ardayfio, Marcin Adamiak
University of Ghana, Ghana /Silesian University of Technology, Poland

09:30 – 09:45
Advanced Surface Engineering and characterization Techniques for Enhancing and Understanding Charge Injection Processes in Metal/Organic Interfaces of Optoelectronic Devices
Sakineh Akbari Nia, Mirosław Bonek, Islamic Azad University Science and Research Branch, Iran/Silesian University of Technology, Poland

09:45 – 10:00
Sample collection and containment system for a compact planetary exploration rover
Maja Rudnicka, Michał Lasak, Igor Puchała, Piotr Bartosz, Dominik Bereta, Dariusz Myszor, Silesian University of Technology, Poland

10:00 – 10:30
Coffee break - opening ceremony of the poster session

10:30 – 13:00
Scientific session TalentDetector2024_Summer
(presentation time 10 min)
Chairmans: Dr Magdalena Szindler, Dr Marek Szindler

Hydrogen embrittlement of ferritic steel 1.4104
Lukáš Šikyňa, František Nový

Analytical Modelling of the Effects of Etchant Concentration on Adhesion Energy and Contact Length Between FTO and Glass Substrates
Addae Elizabeth Adzo, Wojciech Sitek, Marek Szindler

Thrust stand for measuring static thrust of brushless electric motors
Wojciech Cofalik, Patryk Mondry, Dariusz Myszor

Comparison of the impact of the laser beam in various industrial processes using the finite element method
Amadeusz Dziwis, Bartłomiej Jóźwiak, Nikodem Juszczyk, Stanisław Kiełkowski, Mirosław Bonek

Analysis of the possibilities of using BMS technology in network analysis – on the example of the Nazca environment
Kacper Krysiak, Bartosz Nikiel, Kamil Oleksy, Szymon Szeja, Mirosław Bonek

Schlieren Optics: Unveiling the Invisible
Emil Pająk, Alicja Jankiewicz, Błażej Tomiczek

Computer simulation of hip joint loading
Jakub Polis, Jakub Bicz, Zuzanna Buchaj, Rafał Szymik, Zuzanna Zielińska, Mateusz Szojda, Agata Śliwa, Marek Sroka, Amadeusz Dziwis, Wojciech Mikołejko

Brain-Computer-Interface Numeric Keyboard Designs
Maja Rudnicka, Michał Lasak, Igor Puchała, Piotr Bartosz, Dominik Bereta, Dariusz Myszor

Wireless communication between a flight simulation and its controllers
Maja Rudnicka, Michał Lasak, Igor Puchała, Piotr Bartosz, Dominik Bereta, Dariusz Myszor, Maria Ochman, Jakub Wieczorek

Deep Convolutional GAN for realistic sky image generation
Katarzyna Słowiak, Dariusz Myszor

Methodology for EEG signal comparison in virtual and real-life flight scenarios
Michał Sujkowski, Dariusz Myszor, Piotr Bartosz, Jakub Sarno, Wojciech Cofalik, Patryk Mondry

UWB objects positioning system with the ability to change the ranging method dynamically
Tomasz Zawadzki, Krzysztof Paszek

Laser technology in the production of silicon solar cells (part I)
Dominik Żebrowski, Olaf Humeniuk, Mikołaj Guzek, Małgorzata Musztyfaga-Staszuk, Aleksandra Drygała, Krzysztof Wiśniewski, Marcin Staszuk

Leveraging the CARLA Simulator for Realistic Image Generation to Train and Evaluate AI Methods for Autonomous Vehicles
Michał Zieliński, Dariusz Myszor, Marcin Paszkuta, Tomasz Kukuczka, Eryk Szmyt, Daniel Sobieraj, Kacper Matys, Michał Wieczorek, Paweł Michalski, Krzysztof Pawełczyk, Michał Polończyk

13:00 – 13:30
Lunch break

13:30 – 14:00
Poster session
Chairmans: Dr Aleksandra Drygała, Dr Barbara Grzegorczyk

Influence of CWJ (Continuous Water Jet) Pressure on the Surface Structure of Peened SLM AlSi10Mg Alloy
Beatrice N.A Ardayfio, Augustine N.S Appiah, Przemysław Snopiński, Anna Woźniak, John Ampah-Essel, Benjamin Agyei-Tuffour

Laser welding
Jennifer Badora, Justyna Janoszka, Julia Muszyńska, Magdalena Szindler, Mirosław Bonek

Literature Review on Additive Manufacturing
Drilon Beqiri, Afrim Gjelaj, Vladimir Dukovski, Bejtë Çela

Effect of niobium content on corrosion resistance and hardness of $CoCrFeNiNb_x$ high entropy alloys
Jakub Bicz, Wojciech Łoński, Katarzyna Młynarek-Żak, Rafał Babilas

Degradation of thermoplastic based composite materials reinforced with natural particals
Konrad Bogdał, Agnieszka J. Nowak

Laser technology in the production of silicon solar cells (part II)
Aleksandra Drygała, Jakub Budzynowski, Kamil Dziendzioł, Adrian Marusiński, Mateusz Magiera, Małgorzata Muszyfaga-Staszuk, Marcin Staszuk

Characterization of dye-sensitized solar cells
Judyta Drygała, Bartosz Drygała, Janusz Wyrwał, Sabina Lesz, Aleksandra Drygała

Plant-based synthesis of SnO_2 nanoparticles using aqueous extract from *Aglaonema commutatum* leaves
Alicja Duda, Bartosz Kopyciński, Krzysztof Pęcak

Symulator samolotu Cessna 172 bazujący na platformie ruchu
Anna Dyrda, Karolina Kempa, Paweł Ledwoń, Alan Pawleta, Bartosz Pokorski, Nikodem Wspaniały, Wojciech Cofalik, Patryk Mondry, Kacper Matys

Computer simulation of the strength properties of a hammer with a metal and wooden head made using FEM
Aleksander R. Dziwis, Pascal Bzdon, Wojciech Mikołejko, Agata Śliwa, Marek Sroka

Computer analysis of the transmission cushion of a passenger car
Amadeusz Dziwis, Wojciech Mikołejko, Mirosław Bonek, Agata Śliwa, Eva Tillova

Application of 3D printing in medicine
Aleksandra Dzwonek, Karolina Malon, Maja Święcicka, Magdalena Szindler, Mirosław Bonek

Analysis of Group Technology and surface roughness for cutting processes
Arlinda Elezi, Afrim Gjelaj, Besart Berisha

Supporting 3D Prinnting with 3D scanners
Miłosz Ferdyn, Michał Podgórski, Max Żukowski, Magdalena Szindler,Mirosław Bonek

Optimization of a selected production process using the DOE method
Katarzyna Furman, Dominik Towarnicki, Ewa Jonda

Analysis of management systems frequently used in the automotive industry
Katarzyna Furman, Dominik Towarnicki, Hubert Przybyszewski

Observations of the microstructure of sintered gradient materials using various microscopic methods
Aleksandra Gałąska, Emilia Młocek, Oleksandra Nikolaieva, Anna Kloc-Ptaszna, Daniel Pakuła, Konrad Adamczyk, Marcin Staszuk

Kompozyty polimerowe modyfikowane nanorurkami haloizytowymi
Michał Głogowski, Julia Pindur, Karolina Romberg, Klaudiusz Gołombek, Mateusz Lis

The properties of glass fiber polymer composites
Magdalena Gorlicka, Magdalena Polok-Rubiniec

Comparison of the structure of PVD+ALD hybrid coatings applied to austenitic stainless steel
Karolina Grzesikiewicz, Lena Trzewiczek, Agata Zarzycka, Marcin Staszuk, Daniel Pakuła

Korózia horčíka a jeho zliatin
Ľuboš Halimovič, Milan Uhríčik, Mirosław Bonek

Long-Term Effects of Autonomous Vehicles
Mohammed Hesham, Givi Sanadze

Konštrukčný návrh kempingovej platformy na spanie do kufra osobného automobilu
Edita Illichmanová, Lenka Kuchariková, Mirosław Bonek

Project of the personalized knee joint orthosis intended for manufacturing using additive technologies
Jakub Jabłoński, Agnieszka J. Nowak

Wpływ obróbki plastycznej na mikrostrukturę i własności stopu Cu-Cr
Marcin Jaroszek, Beata Krupińska

Corrosion bahaviour of passivated 304 stainless steel
Justyna Jaworska, Monika Kciuk

Unconventional applications of additive technologies
Alicja Kłapsia, Emilia Krajewska, Jakub Kuta, Magdalena Szindler, Mirosław Bonek

Selected properties of perlite concrete also with waste lightweight aggregate
Nicole Kocierz, Barbara Słomka-Słupik

Flammability behavior of UV-curable varnishes for protection of wood-based substrates
Bartosz Kopyciński, Sebastian Jurczyk, Izabela Gajlewicz, Alicja Duda, Ewa Langer

Steel hardness
Mateusz Kozłowski, Maja Kubacka, Julia Popis, Sabina Lesz

Design of wrist orthosis made by 3d printing technique using reverse engineering methods
Mariusz Król, Szymon Jędrzejewski, Daniel Tatar, Adam Woszczak, Branislav Hadzima

Proecological aspects of laser cutting of metals and their alloys
Mateusz Król, Jakub Kukuczka, Anna Woźniak, Mirosław Bonek, Wojciech Pakieła

Stal nierdzewna do zastosowań w sztućcach
Natalia Łonczek, Agata Majnusz, Miłosz Kuźniak, Barbara Grzegorczyk

The microstructure and properties of the nitrided layer with a compound zone after laser modification
Anna Mękarska, Karolina Rogalewska

Deburring Tool Design for Copper Wire Drawing
Cemal Meran, Cihan Atik, Batuhan Gölcük, Atike Oskay, Orhan Akyuz, Gizem Ordu

Investigation of Changes in Mechanical Properties of Nickel Plated Copper Wires at Drawing Stages
Cemal Meran, Recep Tufan Celik, Emre Guzel, Arda Sengul, Orhan Akyuz, Ismail Kiyici

Investigation of the Effect of Silicon Dioxide Nanoparticle on Carbon and Basalt Composites
Cemal Meran, Batuhan Şenkaya

Aplikácia DLC povlakov na valivé ložiská
Matúš Murín, Martin Vicen, Mirosław Bonek

Identification and assessment of the employee's mental load at a selected production workplace
Klaudia Niedziela, Monika Spilka

Microprocessor color recognition and replication system
Bartosz Nikiel, Mirosław Bonek

The resistance to abrasive wear of internal oesophagus prosthesis
Agnieszka J. Nowak

Polymer composite materials
Anna Nowak, Anna Włodarczyk-Fligier

The impact of cerium oxide nanoparticle addition on the morphology of electrospun PVP nanofibers used in the medical industry
Antonina Olszewska, Wiktoria Wanczura, Wiktor Matysiak

Modern 3D Printing Technologies in Space Industry
Emil Pająk, Błażej Tomiczek

3D Printing Applications in Manufacturing
Patryk Pająk, Mateusz Zapiór, Michał Ledwoń, Magdalena Szindler, Mirosław Bonek

Analysis of the structure and thickness of the nitrided layer in 1.2343 steel depending on the furnace used for thermochemical treatment
Mateusz Paluch, Szymon Jędrzejewski, Janusz Mazurkiewicz

Influence of sintering time on the composition and properties of sinters obtained from elemental powder mixture of refractory metals
Krzysztof Pęcak, Piotr Tomczyk, Alicja Duda, Monika Czerny

Using laser and 3D printing in fashion
Michał Pietruszka, Olaf Sobek, Magdalena Szindler, Mirosław Bonek

Computer simulation of crankshaft loading
Jakub Polis, Jakub Bicz, Agata Śliwa

Computer simulation of gear wheel loading
Jakub Polis, Jakub Bicz, Agata Śliwa

The micro-laser texturing process of stainless steel
Jan Sędłak, Jakub Gawek, Wojciech Pakieła, Mirosław Bonek, Anna Woźniak

Wykorzystanie termowizji w kontroli przebiegu laserowej obróbki powierzchniowej
Tymoteusz Setnik, Jan Płocica, Mirosław Bonek

Computer simulation of the mechanical properties of the piston of a passenger car internal combustion engine
Agata Śliwa, Martin Kusy

Thin films of PNDI(2HD)2T conductive polymer for use in photovoltaics
Michał Sładek, Patryk Radek, Jarosław Tłołka, Magdalena Monika Szindler, Marek Szindler, Grzegorz Nowak

Description of the process of preparing ceramic bas-reliefs cast from slips using 3D scanning and printing and making plaster molds
Barbara Słomka-Słupik, Marek Kremzer, Wojciech Zieliński, Julia Franosz, Anna Słupik, Władysława Buriak, Daniel Kostyra

Analysis of corrosion changes in geopolymer binders. Carbonation
Barbara Słomka-Słupik, Paulina Wiśniewska

Interactive diagram of transformations of subcooled austenite
Tomasz Sokoła, Łukasz Soja, Marek Romanowski, Rafał Honysz

Enhancing Osteointegration of Dental and Orthopedic Implants Through Advanced Surface Engineering Techniques
Maryam Soleimani

Process mapping on a selected example
Magdalena Stanik, Aneta Kania

Development of an active vibration protection system
Tornike Tetunashvili, Amkoladze Khatuni, Givi Sanadze

Optimization of the electrospinning process of PVP nanofibers used in the production of dressings
Wiktoria Wanczura, Antonina Olszewska, Wiktor Matysiak

Corrosion mapping with the use of ultrasonic testing
Edyta Wójtowicz, Santina Topolska, Andrzej Wójtowicz

Modelling and Simulation of gyroid structure-based bone scaffold using TiZrNb titanium alloy for bone scaffold; state-of-the-art and evaluation of deformation
Sichale Worku Fita, Mirosław Bonek, Sebastian Sławski, Anna Woźniak

Strategic Site Selection for the Expansion of the University of Prishtina's Faculty of Mechanical Engineering laboratory: Developing a Production Center for Research and Education
Samet Xhemajli, Besart Berisha, Afrim Gjelaj

Development of LMD surfacing technology and evaluation of the properties of surface layers produced on components of oil and gas extraction tools
Julia Żuławska, Michał Wnętrzak, Mateusz Dziergas, Bartosz Siedlaczek, Artur Czupryński

Modeling of a screw extruder 3D printer
Oleh Polishchuk, Andrii Polishchuk, Volodymyr Misiats, Svitlana Lisevych, Mirosław Bonek

14:00 – 15:00
Laboratory trip for International Visegrad Fund participants