

MTSM 2024
Conference venue:
**Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture –
Amphitheatre B402 and B401**

FINAL CONFERENCE SCHEDULE

Thursday, 19th September 2024

- 08.30 – 09.00 **Participant registration, at the registration desk in front of the Amphitheatre B401**
(Karla Kunac, Karla Periša)
- 09.00 – 09.10 Welcome address**
(Jure Krolo, Marina Crnjac Žižić)

SESSION I – B402
Chairmen: Igor Ćulum, Amanda Aljinović Meštrović

Company presentations:

- 09:10 – 09:25 – Instrumentacija ELI-MP d.o.o - **Niko Radonić, mag. ing. geol., Paško Ninčević, dipl. ing.**
- 09:25 – 09:40 – Topomatika d.o.o. - **Nenad Drvar, Ph.D.**

Keynote speakers:

- 09:40 – 10:10 – Electrochemical Treatment for Wastewater and Drinking Water & Valorization of Industrial Waste as Electrode Materials, **Ana Sofija Fajardo Ph.D.**
- 10:10 – 10:40 – Overview of Teaching and Research Machining Activities Carried Out at Coimbra Institute of Engineering, **Fernando Simões Ph.D.**

Presentations:

- 10:40 **Ivan Jandrić**, Lorena Mrkobrada, Tin Brlić and Doris Ljiljak
Comparison of 2D and 3D Digital Image Correlation to monitor the strain rate of the PLC effect on an AlMg alloy
- 10:55 **Franjo Kozina**, Zdenka Zovko Brodarac, Luka Voloder and Ivan Grgić
Detection and analysis of non-conformities in S355JR non-alloy structural steel

11.10 Coffee break – 30 minutes

SESSION II – B402
PRESENTATIONS
Chairmen: Ivan Peko, Nikša Čatipović

- 11:40 **Matej Fonović**, Lovro Liverić, Ljubica Pavlović, Zoran Jurković
Nitriding of steel 20MnCr5 using an environmentally friendly salt

- 11:55 **Alexandra Saliger**, Viktorio Malisa, Martin Schellander and Manfred Grafinger
Development and Implementation of a Digital Safety Passport in Compliance with EU Machinery Regulation
- 12:10 Milena Haralampieva, Rosen Petrov, **Stanislav Gyoshev**
Material selection by thermodynamic properties analysis for thermal energy storage in animal husbandry
- 12:25 Stipo Buljan, Branimir Lela, Safet Isić and **Darko Šunjić**
Determination of deviations and deformations on the sphere obtained by explosive forming
- 12:40 **Katarina Sabelja**, Josip Cerovečki, Darko Landek and Ivan Leutar
The effect of wear on the acoustic and vibration characteristics of the single row tapered roller bearing
- 12:55 **Matej Kljajo**, Ivan Peko, Nikša Čatipović, Ante Bilušić, Petar Ljumović, Jure Krolo, Karla Kunac, Karla Periša
Multiobjective optimization of platinum deposition parameters on 316L stainless steel substrate using magnetron sputtering
- 13:10 **Lamija Mešeljević**, Amra Talić-Čikmiš and Nedim Hurem
Review of technologies used in modern metal additive manufacturing
- 13:25 Massimo Rogante, Valter Travagli, **Gerardo Tricarico**
Structural materials in Human cells: a battlefield for wellness and environment
- 13:40 **Elvis Krulčić**, Sandro Doboviček, Duško Pavletić and Ivana Čabrijan
The role of hybrid program management in the factory floor continuous improvements

13:45 Lunch – “Kampus” restaurant (1st floor)

Restaurant “Kampus” location:



15:00 Free time

20:00 Dinner – “Gusar” restaurant

Restaurant “Gusar” location:



Friday, 20th September 2024

SESSION I – B402

POSTERS SECTION

Chairmen: Igor Ćulum, Karla Periša

- 09:00 **Lorena Mrkobrada**, Ivan Jandrlić
On the Portevin - Le Chatelier (PLC) bands in an AlMg alloy
- 09:05 Dario Kvirgić, Graciela Šterpin Valić, **Matej Fonović**, and Goran Cukor
Influence of Cutting Fluids on the Corrosion Resistance of X2CrNiMo17-12-2 Austenitic Stainless Steel

- 09:10 **Amra Talić-Čikmiš**, Adnan Barlov, Kenan Šabanović, Aida Imamović
Optimization of polyamide support of the overhead crane control system
- 09:15 **Šaban Žuna**, Aida Imamović, Omer Kablar
Importance of Tempcore Technology Application in Improving of the Reinforcing Steel Quality
- 09:20 **Łukasz Gierz**, Wiktor Łykowski
Strength Analysis of a new concept of a ballast for Agricultural Tractors, Working and self propelled machines with an adjustable center of gravitation
- 09:25 **Đerzija Begić-Hajdarević**, Mirnes Ćutuk, Kristijan Šket, Kenan Muhamedagić, Edin Begović, Ahmet Čekić, Maida Čohodar Husic and Mirko Ficko
Multi-response optimization of laser cutting parameters on mild steel using TOPSIS-entropy weight method
- 09:30 **Kenan Muhamedagić**, Ahmet Čekić, Maida Čohodar Husić and Đerzija Begić-Hajdarević
Optimization of flexural properties of FDM printed polymer composite using hybrid PSI TOPSIS method
- 09:35 **Łukasz Warguła**, Michał Dobrzyński, Piotr Kaczmarzyk, Filip Markiewicz, Bartosz Wieczorek, Diyan Dimitrov and Piotr Lijewski
The concentration of CO₂, CO, CH, NO_x, and PM₁₀ in the exhaust gases of combustion engines driving positive pressure fans
- 09:40 **Maida Čohodar Husić**, Kanita Lemes, Kenan Muhamedagic, Ahmet Cekic and đerzija Begić-Hajdarević
Improving the performance of industrial production lines based on human-robot collaboration using 3D visualization techniques
- 09:45 **Milena Haralampieva**, Rosen Petrov, Stanislav Dimitrov
Development of an Automated System for Weighing, Counting, Feeding, and Water supplying of Free-Grazing Meat-Producing Animals Using Phase-Change Materials for Temperature Regulation
- 09:50 **Ivana Dumanić Labetić**, Igor Ćulum, Dražen Bajić and Domagoj Zubac
Innovative Recycling Method for Producing Closed-Cell Metal Foams from Aluminium Chips and Evaluation of Cutting Forces
- 09:55 **Andrej Bašić**, Ivan Peko, Ivan Jerković
Multi-Criteria Analysis of 3D-Printing Procedures in Cultural Heritage: A Human-Centered Approach
- 10:00 **Martin Bilušić** and Luka Olivari
Comparative Analysis of Handheld Laser Scanner and Optical 3D Scanning Systems for Industrial Applications
- 10:05 **Jure Krolo**, Martin Bilušić, Srđan Radić
Analysis of the resistance spot welding process of stainless-steel using response surface methodology and surface topography analysis
- 10:10 Debora Briševac, Ivana Gabelica, Arijeta Bafti, Gordana Matijašić, Davor Ljubas and **Lidija Ćurković**
Synthesis of polymeric graphitic carbon nitride from different precursors by thermal polycondensation method
- 10:15 **Amanda Aljinović Meštović**, Marina Crnjac Žižić, Boris Crnokić, Ivan Peko, Nikola Gjeldum
Learning factory environment for education, science and technology applications

- 10:20 **Karla Periša**, Nikša Čatipović, Andrej Bašić, Karla Grgić
Influence of testing temperature and 3d printing resolution on mechanical properties and cost of selected biopolymers
- 10:25 Olga Kushnarova, Olena Berdnikova, Tetyana Alekseienko, Yevhen Polovetskyi, Yevhenii Titkov, **Massimo Rogante**, Valeriy Pozniakov, Aleksandr Gaivoronskiy, Anatoliy Zavdoveev
Features of the metal welded joints structure in special purpose steel under high-frequency mechanical peening
- 10:30 Toni Kirigin, Jan Karl Ormuž and **Irena Žmak**
Design, material selection, and mechanical properties of cost-effective tennis racquets
- 10:35 Olga Kushnarova, Olena Berdnikova, Tetiana Alekseenko, Evgeniy Polovtsky, Valeriy Pozdnikov, Alexander Gaivoronsky, Anatoliy Zavdoveev, **Massimo Rogante**
Structure features and their effect on the physical and mechanical properties of special steel welded joints

10:35 Coffee break and poster section discussion – 45 minutes

**SESSION II – B401
COMPANY WORKSHOPS**

- 11:20 - 12:20 – Company **Topomatika d.o.o.** workshop*
- 12:20 - 13:20 - Company **Instrumentacija ELI-MP d.o.o** workshop*

*Workshops information is at the end of this schedule



13:30 Lunch – “Kampus” restaurant (1st floor)

Restaurant “Kampus” location:

**SESSION III – B402
PRESENTATIONS**

Chairmen: Karla Kunac, Amanda Aljinović Meštrović

- 15:00 Fabrizio Fiori, **Massimo Rogante**
Production of biomaterials from the recycling of urban organic waste
- 15:15 **Josip Cerovečki**, Darko Landek and Zlatko Čorić
The influence of nitriding of inner ring on the acoustic and vibration characteristics of a needle roller bearing
- 15:30 **Anđela Rohtek**, Željko Penga, Luka Mihanović
Analysis of hydrodynamic lubrication of a radial journal bearing using Computational Fluid Dynamics
- 15:45 **Sven Maričić**, Marko Kršulja, Dario Iljkić, Zoran Knežević
An AI-Driven Approach for a Comprehensive Evaluation of 3D Printed Molds in Aluminum Casting, Considering Material, Speed, Precision, Modeling Time, and Cost
- 16:00 Jan Karl Ormuž, **Irena Žmak** and Tomislav Filetin
Life Cycle Assessment of Photovoltaic Systems

- 16:15 **Mate Jurjević**, Stefano Piantanida
Measurement and analysis of line wear on the marine diesel engine Wärtsilä RT-FLEX50-B
- 16:30 **Nikša Čatipović**, Filipa Sršen, Ivanka Vukšić, Ante Jurčević, Josip Kos, Luka Kurtalj, Jure Krolo, Karla Kunac, Karla Periša, Perica Bošković, Ivan Peko, Petar Ljumović, Andrej Bašić
Possibility of using CT imaging and 3D scanning for the purpose of advanced analysis of archaeological artefacts
- 16:45 Marijana Kalajžić, Sonja Jozić, **Duje Ćurlin**, Luka Kurtalj, Petar Ljumović, Liane Roldo
The influence of mass fraction and size of stainless steel reinforcements on the structure and microhardness of aluminium matrix composites

16:45 Conference closing speech

COMPANY WORKSHOPS INFORMATION

*Company **Topomatika d.o.o.** workshop information

TOPOMATIKA d.o.o. deals with 3D digitization, i.e. 3D scanning, measurement and control of the shape, dimensions, position and deformation of objects. Various devices and techniques can be used to measure objects ranging in size from tens of millimetres to several tens of meters. In addition to 3D optical measurement, the company also owns modern three-dimensional optical measuring systems from Carl Zeiss GOM Metrology, industrial computer tomography systems (industrial CT) from ZEISS, Geomagic software solutions, measuring and inspection microscopes from Vision Engineering, and equipment for measuring the mechanical properties of materials and components from Hegewald&Peschke.

TOPOMATIKA d.o.o. employees will hold an educational workshop dedicated to advanced technologies for measuring the shape and dimensions of objects as well as certain mechanical properties of materials, where they will demonstrate how these methods work in practice. During the workshop, the basic principles of operation of various devices will be explained in detail, including their application in various industries and research areas.

In addition to the theoretical part, there will be a practical demonstration where participants will have the opportunity to see first-hand how different samples are measured and analysed and how these technologies can significantly improve the scientific research work of different institutions.

*Company **Instrumentacija ELI-MP d.o.o** workshop information

Employees of the company INSTRUMENTATION ELI-MP d.o.o. will hold an educational workshop dedicated to advanced XRF (X-ray Fluorescence) and LIBS (Laser Induced Breakdown Spectroscopy) technologies, where they will demonstrate how these methods of material analysis work in practice. During the workshop, the basic principles will be explained in detail principles of operation of these devices, including their application in various industries and research areas.

In addition to the theoretical part, there will be a practical demonstration of the use of XRF and LIBS devices. Attendees will have the opportunity to see first-hand how different samples are analysed and how these technologies can provide fast and accurate data on material composition.