

The **15<sup>th</sup>** International Conference

# Innovative Technologies for Joining Advanced Materials

**November 07-08, 2024**

**Organizers**



**TIMIȘOARA**

National R&D Institute for Welding  
and Material Testing - ISIM  
Timișoara



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**Conference Agenda**

[www.isim.ro/en/technological-transfer/tima](http://www.isim.ro/en/technological-transfer/tima)



## Information concerning the conference

### Face to face participation:

**07 and 08 of November**  
Faculty of Mechanical from the University Politehnica Timisoara -  
Mihai Viteazu 1, Timisoara, Romania

### Online:

**07 and 08 of November**  
ZOOM platform: Meeting ID: **812 9275 4062** / Password: **873010** or  
<https://us02web.zoom.us/j/87439060047?pwd=PGFJaeR2363SXJBf1IECMcD31A5vYA.1>

### Festive diner:

**Evening of 07.11.2024, starting from 6:30 PM**  
Location: Vineri 15 Restaurant, Bulevardul Vasile Parvan, no. 9,  
Timisoara

**Additional information:** [tima@isim.ro](mailto:tima@isim.ro)

## Committees

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- Assoc. Prof. Ph.D. Eng. Florin DRĂGAN - Politehnica University Timișoara, Romania;
- Prof. Ph.D. Eng. Gheorghe LUCACI - Technical Sciences Academy of Romania - Timișoara Branch, Romania.

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PhD. Eng. Nicușor-Alin SÎRBU - National R&D Institute for Welding and Material Testing - ISIM Timișoara, Romania

#### **Conference Secretary**

PhD. student Jur. Aurelia-Ioana BIHOLAR

PhD. Eng. Gabriela-Victoria MNERIE

## CONFERENCE PAPERS

**Thursday, November 07, 2024**

**09:00 - 09:45** Participants registration

**10:00 - 10:15** Conference opening

### Welcome of participants

- PhD eng. Nicușor-Alin SÎRBU, General Director of ISIM Timișoara
- Assoc. Prof. PhD. eng. Florin DRĂGAN, Rector of Politehnica University Timișoara
- Prof. dr. eng. Gheorghe LUCACI, President of ASTR Timișoara branch

**10:15 - 10:30**

- Opening remarks of Sponsors and invited participants

**10:30 - 13:30** Session 1 / Moderator: Assoc. Prof. Dr. eng. Bogdan RADU

- 1. The effect of flame straightening thermal cycles on S1100M properties**  
Gáspár Marcell, Alden Sahn, Török Márk, Gyura László.
- 2. Testing of tensile strength and elongation at break of polymer packaging materials**  
Tanović Petra, Savić Branko, Mnerie Gabriela-Victoria, Mnerie Dumitru
- 3. Hybrid organic-inorganic perovskites for bifunctional applications**  
Sfirloagă Paula, Balcu Ionel, Cata Adina-Elena, Macarie Amalia Corina, Aurelia-Ioana BIHOLAR
- 4. AI-driven X-RAY image analysis for enhanced NDT performance**  
Szávai Szabolcs, Dudra Judit, Zsíros Zsombor, Margitai Peter, Pataki Marton
- 5. Determination of the effective microstructural unit in relation to the low-alloy steels weld metals brittle fracture resistance**  
Holovko Viktor., Kostin Valery., Korolenko D., Reminnyi M.
- 6. Experimental Study on Spent Garnets for Fine Grain Aggregate as a Partial Substitution in Cement Based Mortars: Validation of Preliminary Research**  
Vasile Ana C., Baeără Cornelia, Gruin Aurelian, Perianu Ion-Aurel, Petrișor Iasmina K., Ion Alexandru
- 7. Generative assistive artificial Intelligence for Welders and Inspectors**  
Michelangelo Mortello
- 8. Microstructural investigations on built-up cold-formed steel beams welded by MIG brazing**  
Hulka Iosif, Radu Bogdan, Ungureanu Viorel, Sîrbu Nicușor-Alin
- 9. The research of the cavitation erosion resistance of the aluminium alloy 2017 A structure obtained by WIG remelted**  
Luca Alexandru Nicolae, Bordeasu Ilare, PARMANCHE Robert, Ghera Cristian, Salcianu Laura, Ostoia Daniel, Duma Iuliana, Safta Voicu

**12:00 - 12:15** Coffee break

- 10. Study of the Influence of Process Parameters on Processing Time in Laser Engraving)**  
Corb Flaviu, Buidos Traian, Stănășel Caius, Stănășel Iulian, Mnerie Gabriela Victoria
- 11. Integration of thermographic data and SolidWorks simulation for welding process optimization in shipbuilding**  
Midan Angelo Andrei, Savu Sorin Vasile, David Andrej, Biholar Aurelia-Ioana
- 12. Examination of the need for pre-heating in case of hardfacing on S1100QL steel**  
Terdik Gábor, Meilinger Ákos
- 13. Submerged friction stir processing of EN AW 5754 aluminum alloy**  
Boțilă Lia-Nicoleta, Perianu Ion-Aurel, Duma Iuliana, Constantin Vlad, Popescu Radu-Nicolae, Faur



# Friday, November 08, 2024

## 8:30-09:00 COVE-WENDT - Participants registration

## 9:00 - 10:00 Workshop: New trends in welding sector, Project 101143944 - COVE-WENDT - ERASMUS-EDU-2023-PEX-COVE: Centre of Vocational Excellence in Welding and Non-Destructive Testing

**Presentation of the COVE-WENDT project: vision, objectives, activities, actions and current results**

Alin Constantin MURARIU, Project Manager – ISIM Timișoara

**The role of the virtual reality simulators and interactive training tools in the modern industrial education of the 21st century**

Ferenc Benus - MATRAI, Hungary

**Transition to a green welding industry**

Dobrin Emilia - ISIM Timișoara

**Laser welding: a revolutionary technology for modern industry**

Constantin Vlad-Ștefan - ISIM Timișoara

**Innovation and automation. Integrating collaborative robots in welding**

Frici Eneia - S.C. COMELF S.A. Bistrița

## 10:00 - 13:30 Session 3 / Moderator: IDT I Drd. eng. Ion-Aurel PERIANU

**28. Connection between the matching phenomenon and fatigue crack growth behaviour of high strength structural steel welded joints**

Kovács Judit, Lukács János

**29. Process parameters testing for various aluminium alloys using laser beam welding**

Guran Darius, Constantin Vlad-Ștefan

**30. Investigating Sprinkler System Pipe Failure: A Case Study**

Duma Iuliana, Dobrin Emilia, Mărginean Gabriela, Popescu Radu-Nicolae, Faur Raluca

**31. Researches regarding heterogeneous welding between carbon and stainless steel used in fabrication of cylinders' rod for magnesium alloy extruders**

Zgripcea Laurențiu, Socalici Virginia, Baneasa Corneliu Birtok, Duma Iuliana, Faur Raluca

**32. Experimental research concerning structural and hardness stability of 100Cr6 steel parts**

Duma Deliana-Maria, Duma Sebastian, Duma Iuliana, Buzdugan Dragoș

**33. Ultrasound welding of automotive seat belts**

Bucur Andrei Christian, Cazacu Alexandru, Faur Raluca, Florea Mihai

**34. Investigation of the high cycle fatigue behaviour of aluminium alloy clinched joints**

Shukurea Abdulhakim, Kovács Péter Zoltán, Lukács János

**35. Failure Analysis in Resistance Welded Automotive Components**

Perianu Ion-Aurel, Murariu Alin-Constantin, Duma Iuliana, Popescu Radu-Nicolae, Faur Raluca

## 11:30 - 11:45 Coffee break

**36. Experimental research on submerged friction stir processing of EN AW 1200 aluminum alloy**

Boțilă Lia-Nicoleta, Perianu Ion-Aurel, Duma Iuliana, Dobrin Emilia, Popescu Radu-Nicolae

**37. 3D-Printed Protective Button Covers for Technical Devices**

State Cristian, Predu Denis Andrei

**38. Characterization of a Low-Friction EPDM for Dynamic Sealings Applications: Tensile, Wear Behavior and Hot Water Resistance**

Foltuț Daniel, Sosoi Georgiana-Iulia, Pascal Dragoș Toader, Uțu Ion Dragoș, Șerban Viorel Aurel

**39. Nanocomposite coating system for renewable energy**

Ciurel Claudia, Murariu Alin-Constantin

**40. Accuracy of mechanical properties testing using complementary methods for GFRP**

Morăraș Ciprian, Dobrescu Gabriel, Goanță Viorel, Bărsănescu Paul-Doru

**41. Aspects of fracture surface analysis of aluminum alloy EN AW 6082 processed by underwater rotating active element friction**

Sîrbu Lavinia-Ileana, Boțilă Lia-Nicoleta, Herci Raul, Faur Raluca

**42. Aly718 and H13 alloy mixed powder vs layers, 3D printed by DED method. Comparison**

Mnerie Gabriela-Victoria, Predu Denis-Andrei, Sîrbu Nicușor- Alin, Tanović Petra, Sikolya Laslo

**43. Vibration instrumentation in analysing the dynamic structural behaviour**

Dobre Daniela, Dragomir Claudiu-Sorin, Craifaleanu Iolanda-Gabriela, Dobrescu Cornelia-Florentina, Georgescu Emil-Sever, Gruin Aurelian

**44. Analysis of the implementation of an industrial robot using the analytic hierarchy process method**

George Belgiu, Bogdan Radu

**45. Analysis of the vibration behavior of the cutting tool in the case of turning machining**

George Belgiu, Mircea E. Șelariu

**46. A short description of most common biocompatible materials that are suitable for 3D printing in medical field**

Florea Mihai

**13:00 - 13:30 Lunch break**

**13:30 - 16:00** Session 2 / Moderator: CS I Dr. eng. Alin-Constantin MURARIU

**47. Design and structural analysis of a support system for a 3D printer**

Dohan Șerban, Galatanu Sergiu Valentin, Biholar Aurelia-Ioana

**48. Analysis of the fracture surface in multiple pass SFSP processing of aluminium alloy EN AW 1200**

Dobrin Emilia, Boțilă Lia Nicoleta, Faur Raluca, Mnerie Gabriela-Victoria, Sîrbu Ileana-Lavinia

**49. Effect of printing parameters on mode I fracture toughness of FFF printed PLA samples**

Bercuci Răzvan Paul, Baban Marian Vasile, Linul Emanoil

**50. Analysis of ultrasonic welding of samples made by 3D printing**

Bontea Elena, Predu Denis Andrei

**51. Optimization of 3D Printing Parameters for H13 and Inconel Metal Powder: A Comprehensive Study on Achieving Superior Print Quality**

Predu Denis-Andrei, Sîrbu Nicușor-Alin, Trihenea Nicolae, Faur Raluca

**52. 3D printing materials testing for Gears**

Klobucaric Raul, Predu Denis Andrei, Bontea Elena

**53. Optimising the HVOF Deposition Technology of Al<sub>2</sub>O<sub>3</sub>-40%TiO<sub>2</sub> Coatings for Energy Industry Applications**

Murariu Alin-Constantin, Perianu Ion-Aurel, Cocard Marius

**54. Optimization of Ultrasonic Welding Technology for 3D printed Metal Composite Materials: A Research Study**

Sîrbu Lavinia-Ileana, Mnerie Gabriela-Victoria, Dobrin Emilia

**55. Fracture behaviour of EN AC 5083 cast aluminium alloy underwater friction stir processed**

Raia Angelo Ovidiu, Boțilă Lia-Nicoleta, Dobrin Emilia, Bucur Andrei Christian, Cazacu Alexandru

**56. Fracture surface analysis of EN AW 5754 aluminium alloy during submerged friction stir processing**

Mnerie Gabriela-Victoria, Boțilă Lia-Nicoleta, Faur Raluca, Savić Branko, Akac Attila

**57. SEM and EDX analysis of the fracture surface of the submerged friction stir processed EN AW 7075 aluminum alloy**

Herci Radu-Raul, Boțilă Lia-Nicoleta, Sîrbu Lavinia-Ileana, Faur Raluca

**58. Barriers to intellectual proprieties and directions of evolution of imaging techniques - past, present and future**

Andronic Dan Theodor, Sîrbu Nicușor-Alin, Țițu Aurel Mihail

**59. CNC training center implementation in Politehnica University Of Timisoara, Romania**

But Adrian

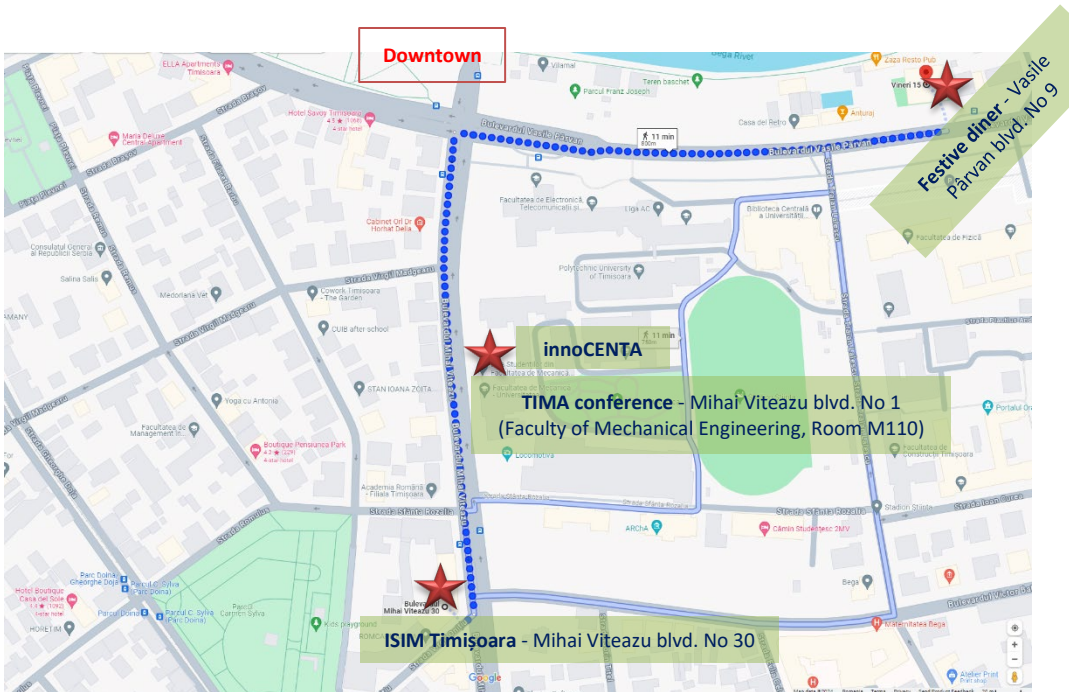
**60. New CNC turning solution versus cnc conventional turning**

But Adrian, Lucian

**16:00 Closing of the conference works**\_\_\_\_\_



# ORIENTATION INFORMATION



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