



INTERNATIONAL CONFERENCE ON MATERIALS heat treatment, corrosion, testing and tribology, 2025

MTECH 2025



26th – 29th, October 2025, Plitvička Jezera, Croatia

ORGANISED BY

Croatian Society for Materials and Tribology – HDMT
Croatian Society for Heat Treatment and Surface Engineering – HDTIOIP
Croatian Society for Materials Protection – HDZaMa
Center for Non-destructive Testing – CENI



WITH THE SUPPORT OF



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TOPICS

Materials and processes, Materials characterization, Nanomaterials and nanotechnology, Friction, wear and lubrication, Metallurgy, Quenchants and quenching technology, Coatings, Advanced surface modification and coating technologies, Vacuum heat treatment, Heat treatment equipment, Mathematical modelling and process simulation of heat treatment, Corrosion and corrosion protection methods, Corrosion resistant materials, Non-destructive and destructive testing methods, In-service inspection, Certification and accreditation, Measurement and quality assurance

EFC Event No. 543.

Conference Chairman

Prof. dr. sc. Željko Alar



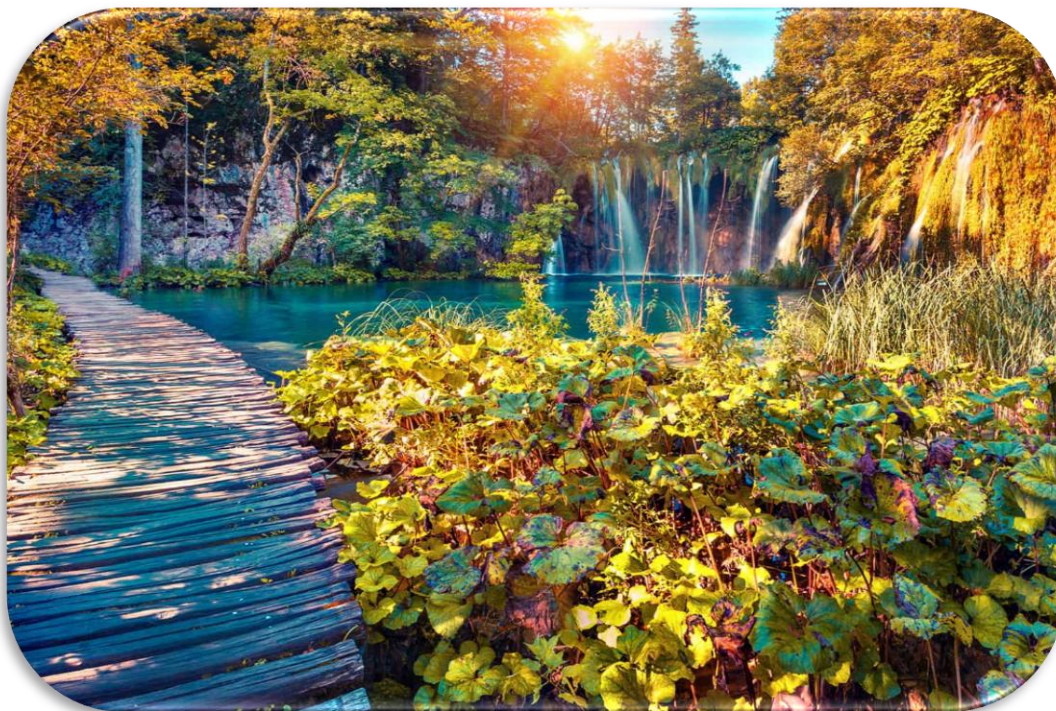
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VENUE AND DATE

MTECH 2025 International Conference will be held from 26th – 29th, October 2025, Plitvička Jezera, Croatia

The MTECH 2025 will take place in the beautiful town Plitvička Jezera, located in the Plitvice Lakes National Park. The accommodation is provided in Hotels Jezero at special prices for the Conference. Hotel Jezero is located in the central zone of the Plitvice Lakes National Park, only 300 meters from Kozjak Lake. Hidden in the quiet surroundings of Plitvice Lakes, this hotel is at the ideal location for experiencing the unique beauty of nature. Combining hotel service quality and affordable prices, it offers guests a relaxing holiday in a peaceful and cordial atmosphere. There are special rates for the conference participants and accompanying persons, valid also for their pre/post stay in the hotel.





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PROGRAMME:

DAY 1 – October 26th 2025, Sunday	
19'00 h	Welcome reception – <i>Hotel Jezero</i>, Josipa Jovića 19, 53231, Plitvička Jezera
DAY 2 – October 27th 2025, Monday	
8'00 – 9'00 h	Registration – <u>Hotel Jezero</u> - Josipa Jovića 19, 53231, Plitvička Jezera MTECH 2025 CONFERENCE will be held in Hotel Jezero
9'00 – 9'15 h	Opening ceremony
9'15 – 10'00 h	Invited Lectures Chairman: Božidar Matijević, Ivan Stojanović
	- Kunkle James AI PREDICTIVE MODELING FOR COATING PERFORMANCE AND DEGRADATION - Tea Marohnić APPLICATION OF ANNs FOR ESTIMATION OF MATERIAL BEHAVIOR – CHALLENGES AND OPPORTUNITIES
10'00 – 10'30 h	Commercial Lectures
	- Ivana Radić Boršić Cortec Corporation: Roadmap to Sustainable Corrosion Protection - Mitrev Stoyan Barkhausen noise, Technofita Adria d.o.o. - Trokuttest
10'30 – 11'00 h	Coffee Break
11'00 – 13'00 h	Lectures Chairman: Ivan Stojanović, Ivan Fatović
	- Dinko Cudic INNOVATIVE ROBOTIC FIELD SOLUTIONS FOR SUSTAINABLE PIPELINE COATING - Arezoo Assarian INNOVATIVE COATINGS WITH EMBEDDED EDGE-AI SENSORS FOR REAL-TIME ENVIRONMENTAL MONITORING IN URBAN INFRASTRUCTURE



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	• Yanhui Cao, Jingjing Wang, Yu Liang, Congshu Huang THE CORROSION PROTECTION MECHANISM AND APPLICATION OF LAYERED DOUBLE HYDROXIDE (LDH) IN COATINGS • Mario Mrvelj, Ivan Stojanović, Boris A. Mikšić THE IMPACT OF CORROSION INHIBITORS ON THE PROTECTIVE PROPERTIES OF COATINGS FOR DIRECT METAL PROTECTION • Nina Oljača, Marin Kurtela CORROSION PROPERTIES OF ALUMINIUM ALLOY OBTAINED BY WIRE ARC ADDITIVE MANUFACTURING WITH ELECTRIC ARC AND WIRE MA-6063 • Neven Tomašić, Wojciech Sitek, Dario Iljkić OPTIMIZING ALLOYING ELEMENTS FOR REQUIRED STEEL HARDENABILITY USING DEEP LEARNING
13'00 – 14'00 h	LUNCH BREAK
14'00 – 15'30 h	Lectures Chairman: Krešimir Grilec, Tomislav Rodinger
	• Branka Jakopović, Ines Kolarić, Ivan Zovko ENVIRONMENTAL FRIENDLY PAINTING PROCESS OR NOT? • Tonica Bončina, Franc Zupanič METHODS FOR ANALYSIS OF QUASICRYSTALLINE PHASES IN ALUMINIUM ALLOYS • Dino Bogdanić, Darko Landek, Marin Kurtela, Bruno Vucelić EFFECT OF SURFACE ROUGHNESS AND DEPOSITION TEMPERATURE ON THE COATING ADHESION AND ELECTROCHEMICAL BEHAVIOR OF TIN-COATED AISI 316 STAINLESS STEEL • Josip Cerovečki, Dino Bogdanić, Darko Landek THE INFLUENCE OF INNER RING DAMAGE ON WORK CAPABILITIES OF NEEDLE BEARING • Ivan Strelar COATINGS AND PUTTIES FOR STRUCTURAL REINFORCEMENT OF DAMAGED COMPONENTS • Matija Živoder, Suzana Jakovljević, Dino Bogdanić, Darko Landek INFLUENCE OF BORIDING PARAMETERS ON THE PROPERTIES OF AUSTENITIC STAINLESS STEEL AISI 316L



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	• Daniel Pustički, Željko Alar MICROSTRUCTURAL EVOLUTION OF MARAGING STEEL PRODUCED BY SELECTIVE LASER MELTING AND HEAT TREATMENT
15'30 – 16'00 h	<i>Coffee Break</i>
16'00 – 17'30 h	Lectures – Student Section Chairman: Mladen Franz, Daniel Pugar
	• Sara Jurić, Ivan Stojanović, Robert Jurić ANTI-SLIP COATINGS • Mitrev Stoyan PRIMJENA METODE PASIVNOG ULTRAZVUKA U ODRŽAVANJU INDUSTRIJSKIH POSTROJENJA • Antonio Kranjec, Maria Grozdanić, Morana Mihaljević INFLUENCE OF TRANSVERSE WAVE PROPAGATION ANGLE ON ULTRASONIC VELOCITY DETERMINATION • Nada Brigić FROM TIMBER TO TONE: MATERIAL SELECTION AND ACOUSTIC RESPONSE IN A HANDCRAFTED ELECTRIC GUITAR • Stjepan Vranjković DEVELOPMENT OF A MECHANICAL MEASURING DEVICE FOR THE INDIVIDUALIZATION OF PESSARIES USING ADDITIVE TECHNOLOGIES • Tomislav Štefanec, Tomislav Kezele, Maria Grozdanić APPLICATION OF DIGITAL RADIOGRAPHY IN THE ANALYSIS OF POLYMER CONCRETES • Tena Jančec, Željko Alar, Daniel Pustički COMPARISON OF MEASURED AND CONVERTED HARDNESS VALUES OF METALLIC MATERIALS
16'00 – 17'30 h	Conference Workshop – Hall 2 Trokuttest group
17'30 – 18'30 h	POSTER SESION



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DAY 3 – October 28th 2025, Tuesday

9'15 – 10'00 h	Invited Lectures Chairman: Damir Markučić, Mateja Šnajdar
	- Mato Pavlović SMART INSPECTION: AI, DATA & TRUST IN NON-DESTRUCTIVE TESTING - Božidar Matijević ANALYSIS OF QUENCHING OIL PERFORMANCE AND HEAT TRANSFER ENHANCEMENT METHODS
10'00 – 10'30 h	Commercial Lectures
	- Assarian Arezoo Eninco Engineering B.V., Enschede, 7543 BK, The Netherlands - Juraj Hodžajev IDEF d.o.o. za industrijsku defektoskopiju
10'30 – 11'00 h	Coffee Break
11'00 – 13'00 h	Lectures Chairman: Krešimir Grilec, Marin Kurtela
	- Zhen Li, <u>Lin Fan</u>, Li Ma, Tigang Duan, Haibing Zhang, Jian Hou, Mingxian Sun PERSPECTIVE REVIEW ON THE STRESS CORROSION OF TI ALLOYS FOR DEEP-SEA APPLICATIONS - Hrvoje Goreta, <u>Krešimir Kekez</u> COST-EFFECTIVE CATHODIC PROTECTION SURVEY OF A SUBSEA GAS PIPELINE - Goran Rozing, Vesna Alar, Ivan Vidaković, Goran Pačarek INCREASING THE TRIBOCORROSION RESISTANCE OF AUSTENITIC STAINLESS STEELS - Franc Zupanič, Lara Hočurščak, Judith Lammer, Jaka Burja, Tonica Bončina AGEING OF A MICROALLOYED AL-MN-CU ALLOY - Ivan Fatović, Ivan Stojanović, Vesna Alar, Marin Kurtela FIELD AND LABORATORY TESTS OF ANTIFOULING COATINGS ON ALUMINIUM SUBSTRATES - Dorotea Marčec, Ivan Stojanović, Vesna Alar CORROSION PROPERTIES OF METALLIC MATERIALS USED IN THE CONSTRUCTION OF WIND POWER PLANTS - Matija Šuler, Marin Kurtela INTERNAL LININGS FOR HYDROGEN PIPELINES



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13'00 – 14'00 h	LUNCH BREAK
14'00 – 15'30 h	Lectures Chairman: Morana Mihaljević, Damir Markučić
	• Markučić Damir, Morana Mihaljević NDT COMPETENCIES REFLECTED BY ISO 9712 REQUIREMENTS • Morana Mihaljević, Tomislav Kezele, Damir Balder VALIDATION OF ULTRASONIC PULSE-ECHO TESTING FOR THIN-WALLED WELDED JOINTS IN CORRUGATED TRANSFORMER BOILERS • Maria Grozdanić, Morana Mihaljević, Damir Markučić VOLUMETRIC NDT CHARACTERISATION OF DISC REFLECTORS IN ADDITIVELY MANUFACTURED SPECIMEN • Aleksandar Dragojević, Kristijan Markač COMPARISON OF TR ANGLE BEAM PROBES AND STANDARD ANGLE BEAM PROBES IN THE TESTING OF WELDED JOINTS MADE OF AUSTENITIC STEEL • Luka Cvetko, Morana Mihaljević, Maria Grozdanić INFLUENCE OF ULTRASONIC TESTING SYSTEM ON SIZING OF FLAT BOTTOM HOLES • Igor Ciganović, Zdenka Keran, Petar Piljek, Andrej Razumić, Biserka Runje ENERGY ANALYSIS OF A NUMERICAL MODEL OF THE ECAP PROCESS FOR AN ALUMINIUM WORKPIECE • Ivan Ptičar, Ankica Kovač, <u>Marin Kurtela</u>, Ivan Stojanović, Vesna Alar, Ivan Fatović THE INFLUENCE OF HYDROGEN ON THE PROTECTIVE PROPERTIES OF COMMERCIALY AVAILABLE COATINGS
15'30 – 16'00 h	<i>Coffee Break</i>
16'00 – 17'30 h	Conference Workshop – Hall 2 IDEF d.o.o. za industrijsku defektoskopiju
16'00 – 17'30 h	POSTER SESION
20'00 – 00'00 h	Conference dinner – <i>Lička kuća Restaurant</i>, Rastovača 11, 53231, Rastovača (bus is organized from hotel reception at 19'30 h)
DAY 4 – October 29th 2025, Wednesday	
10'00 – 13'00 h	Conference excursion –tour of the Plitvice Lakes National Park with an expert guide (departure in front of the hotel reception at 09'45 h)



POSTER SESSION

- Matija Bušić, Sanja Šolić, Vlado Tropša, Dino Makovec
PLASMA CUTTING OF COPPER ETP USING AIR PLASMA CUTTER
- Borna Car, Željko Alar, Daniel Pustički
INFLUENTIAL PARAMETERS IN UNIAXIAL CREEP TESTING UNDER TENSILE LOAD
- Jan Haček
ROBOTIC ULTRASONIC TESTING OF STEEL FLAT PRODUCTS
- Luka Ivanković, Zdravko Schauperl
EFFECT OF NON-NEWTONIAN FLUIDS ON THE MECHANICAL PROPERTIES OF POLYMER COMPOSITES
- Jure Jakovljević, Marko Crnjac, Krešimir Grilec
FAILURE ANALYSIS OF A TIBIAL COMPRESSION PLATE
- Marko Jambrošić, Željko Alar, Daniel Pustički
EVALUATION OF MEASUREMENT UNCERTAINTY OF MECHANICAL QUANTITIES OBTAINED FROM STATIC TENSILE TESTING
- Ivica Garašić, Maja Remenar, Marin Šebešćen, Kristijan Jurgec
COMPARATIVE STUDY OF MAG AND MCAW WELDING OF S355J2+N STRUCTURAL STEEL
- Kladarić Ivica, Golubić Stjepan, Milinović Andrijana, Kladarić Slavica
INFLUENCE OF HEAT TREATMENT AND SURFACE ROUGHNESS ON THE ADHESION OF PVD COATINGS ON C45E STEEL
- Edgar Korenjak
COMBINED ULTRASONIC TESTING OF BUTT WELDED JOINTS ON A SPHERICAL TANK FOR LIQUEFIED PETROLEUM GAS 336-SE-023, VOLUME 5000M³ AT INA-RIJEKA OIL REFINERY USING ADVANCED ULTRASOUND TESTING TECHNIQUES (PAUT AND TOFD)
- Vinko Legin, Ivan Stojanović, Ivan Fatović
CORROSION PROTECTION OF RAILWAY VEHICLES WITH COATINGS
- Lucija Malenica, Daniel Pustički, Željko Alar
ADDITIVE MANUFACTURING OF AISI10Mg ALLOY USING SELECTIVE LASER MELTING
- Božidar Matijević
USPOREDBA FIZIKALNIH I MEHANIČKIH SVOJSTAVA INOVATIVNIH ČELIKA FASTCOOL S ALATNIM ČELIKOM ZA TOPLI RAD



- Karlo Murković, Sanja Šolić, Matija Bušić, Mario Šercer, Vlado Tropša
THREE-POINT BENDING BEHAVIOR OF LPBF-MANUFACTURED ALSI10MG ALLOY IN AS-BUILT AND STRESS-RELIEVED CONDITIONS
- Josip Radošić
COMPARISON OF THE RESULTS OF CONVENTIONAL AND DIRECT DIGITAL RADIOGRAPHY METHOD
- Tomislav Rodinger, Danko Ćorić
COMPARATIVE ANALYSIS OF FOAMING AGENTS ON THE FORMATION AND STRUCTURE OF ALUMINUM FOAMS
- Sandro Žabek, Mateja Šnajdar, Daniel Pugar
ADDITIVE MANUFACTURING APPROACHES FOR INTEGRATING MULTIMEDIA DEVICES IN VEHICLES
- Mislav Štefok, Ivica Garašić, Maja Remenar, Ivan Stojanović, Filip Majetić
INFLUENCE OF AC MIG BALANCE POLARITY ON WALL GEOMETRY AND BTF RATIO IN WIRE AND ARC ADDITIVE MANUFACTURING OF ALUMINIUM 6063 ALLOY
- Dalibor Viderščak, Luka Balatinec, Zdravko Schauperl
TOPOLOGICAL OPTIMIZATION – A STEP TOWARDS PERSONALIZED MEDICINE
- Krešimir Vučković, Pavla Tafra, Ivica Galić, Ivan Čular
INFLUENCE OF FRICTION AND FULLY REVERSING LOADING ON THE FATIGUE LIFE OF SPUR GEARS
- Matija Živoder, Suzana Jakovljević, Krešimir Grilec, Dario Ravlić
ANALYSIS OF THE CAUSE OF DRIVE SHAFT FAILURE IN AN M1 CATEGORY MOTOR VEHICLE



INVITED LECTURERS – MONDAY



James D. Kunkle, PCS

Is a globally recognized technical communicator and strategic thought leader in protective coatings, corrosion, and digital transformation. He is the Technical Principal at ProCoatTec LLC.



Izv. prof. dr. sc. Tea Marohnić

Tea Marohnić is an Associate Professor at the Faculty of Engineering, University of Rijeka (RITEH), where she works at the Department of Engineering Design where she also earned both her diploma and doctoral degrees in Mechanical Engineering. Her research is primarily focused on the development of predictive models for the mechanical behavior of materials, with a particular emphasis on integrating machine learning methods into traditional engineering analyses. She has been involved in several national and international research projects. She is currently leading the project „Development of a methodological framework for estimation of properties and mechanical behavior of materials using machine learning“ and co-leading the work group 2 (Analysis of fatigue data) within COST Action “Fatigue Benchmark Repository” (FABER) CA23109.



INVITED LECTURERS – TUESDAY

Dr. Mato Pavlović



Principal Scientist – AI & Automated NDT at deeplify GmbH, where he leads developments at the intersection of artificial intelligence, signal processing, and materials evaluation. He holds a Dipl.-Ing. degree from the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, and a Dr.-Ing. from the Faculty of Natural Sciences and Technology, Saarland University, Germany. He has led major research projects at the Federal Institute for Materials Research and Testing (BAM) in Berlin and at A*STAR's Advanced Remanufacturing and Technology Centre (ARTC) in Singapore, focusing on ultrasonic inspection, reliability modeling, and the digital transformation of NDT. A DGZfP-certified UT Level III specialist and recipient of a Merit Certificate from the 18th World Conference on NDT, his current work advances the integration of AI and automation to enhance the precision, efficiency, and reliability of inspection technologies.

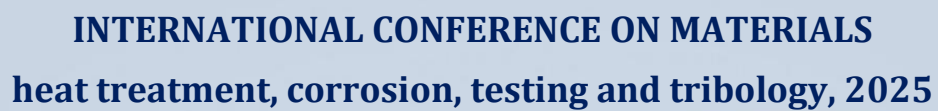
Prof. dr. sc. Božidar Matijević



Full Professor at the Faculty of Mechanical Engineering and Naval Architecture (FAMENA) University of Zagreb. He published more than 80 scientific papers in the fields of Heat Treatment, Tribology and Surface Engineering. He is a reviewer for many international scientific journals and international conference Proceedings. In 2005, 2009, 2013 and 2023 Božidar Matijević, was the President of the Organizing Committee for the conference of International Federation for Heat Treatment and Surface Engineering (IFHTSE) which was held in Croatia.

NOTES

BILJEŠKE



BILJEŠKE