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*Innovating Tomorrow's Materials Today*

# 4<sup>th</sup> INTERNATIONAL MATERIALS TECHNOLOGIES AND METALLURGY CONFERENCE

2-3 October 2025

ITU SULEYMAN DEMIREL CONFERENCE CENTER

ISTANBUL - TÜRKİYE

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## PROGRAM

**Opening Ceremony**

**Main Hall**

08:30-10:00 Registration

10:00-10:10 Prof. Dr. Gultekin Goller - Istanbul Technical University, Türkiye - Opening Speech

10:10-10:20 Prof. Dr. Hasan Mandal - Rector - Istanbul Technical University, Türkiye

10:20-10:35 Presentation of Plaques

10:35-10:40 Presentation of SEZERSEM Awards

**Plenary Speakers**

**Main Hall**

**Session Chair: Prof. Dr. Ozgul Keles - Istanbul Technical University**

10:40-11:00 **Plenary Speaker**

Dr. Csaba Balazsi - Centre for Energy Research, Eotvos Loránd Research Network (ELKH), Hungary

Advances in Ceramic Biomaterials: personalized solutions via novel approaches

11:00-11:20 **Plenary Speaker**

Prof. Dr. Iulian Antoniac - Materials Science and Engineering Faculty, The National University of Science and Technology Politehnica Bucharest, Romania

Current Trends and Directions in Biomaterials Science

11:20-11:40 **Plenary Speaker**

Prof. Dr. Hakan Gür - Department of Metallurgical and Materials Engineering, Middle East Technical University, Türkiye

Role of Material Science and Engineering in the Technological Development of Societies

**11:40-12:00 Family Photo – COFFEE BREAK**

**Session Chair: Prof. Dr. Onuralp Yucel - Istanbul Technical University****12:00-12:20 Plenary Speaker**

Prof. Dr. Eda Tahir Turanli - Faculty of Engineering and Natural Sciences, Dept.of Molecular Biology and Genetics, Acibadem University, Türkiye  
Understanding the Genetics of Familial Multiple Sclerosis

**12:20-12:40 Plenary Speaker**

Opr. Dr. Onur Kulaksızoglu - İstanbul, Türkiye  
There is more in our brains than all the precious metals and stones in the world. We just need to realize it.

**12:40-13:40 LUNCH****Session Chair: Asst. Prof. Dr. Ercin Cagan Duran – Istanbul Technical University****13:40-14:00 Meltem Alim Atmaca**

Marketing and Sales Director, International Trade, World Steel Industry & OYAK Mining & Metallurgy / Career at Erdemir - Türkiye

**14:00-14:20 Caner Guney**

Quality Director, Hascelik A.S.-Türkiye

**14:20-14:40 Plenary Speaker**

Opr. Dr. Tansu Gursoy - İstanbul, Türkiye  
Brain and Spinal Cord Stimulator Applications Applied in Neurosurgery Practice

**14:40-15:00 Plenary Speaker**

Assoc. Prof. Dr. Mustafa Ozer Ulukan - Gaziosmanpasa Training and Research Hospital, İstanbul, Türkiye  
Outcomes and Current Status of the Implantable Left Ventricle Assist Device (LVAD) Known as Artificial Heart.

**15:00-15:20 Plenary Speaker**

Prof. Dr. Taner Albayrak - Faculty of Economics and Administrative Sciences, Piri Reis University, Türkiye  
Materials in Maritime Applications

**15:20-15:30 COFFEE BREAK****15:30-16:30 POSTER SESSION****15:30-16:30 Industry (Aveks) and Student Panel (in Turkish)**

## Biomaterials, Biotechnology and Drug Delivery Systems

Main Hall

Session Chairs: Prof. Dr. Julietta V. Rau and Prof. Dr. Gulsen Akin Evingur

- 09:30-09:50 **Plenary Speaker**  
 Prof. Dr. Julietta V. Rau - Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche (ISM-CNR), Italy  
 Bioactive & Antimicrobial Biomaterials: Bridging the Gap Between Innovation and Clinical Need
- 09:50-10:10 **Plenary Speaker**  
 Prof. Dr. Gulsen Akin Evingur - Piri Reis University, Türkiye, İstanbul, Türkiye  
 Effects of Nanoparticles, Seawater, and Biocides on the Antifouling Composites
- 10:10-10:30 **Plenary Speaker**  
 Prof. Dr. Stefan Voicu - National University of Science and Technology Politehnica Bucharest, Romania  
 Green Polymers-Based Membranes for Improved Osseointegration and Biomineralization
- 10:30-10:50 **Plenary Speaker**  
 Prof. Dr. Petrica Vizureanu - Technical University of Iasi, Romania  
 Innovations on of  $\beta$ -Titanium Alloys in Biomedical Applications: Recent Developments and Future Directions

10:50-11:10 **COFFEE BREAK**

## Biomaterials, Biotechnology and Drug Delivery Systems

Main Hall

Session Chairs: Assoc. Prof. Dr. Seiji Yamaguchi and Prof. Dr. Catalin Popa

- 11:10-11:30 **Plenary Speaker**  
 Assoc. Prof. Dr. Seiji Yamaguchi - College of Life and Health Sciences, Chubu University, Japan  
 Bioactive Surface Chemical Modification of Gradient-Structured Porous Titanium Fabricated via Additive Manufacturing: Enhancing Bone Ingrowth and Antibacterial Activity
- 11:30-11:50 **Plenary Speaker**  
 Prof. Dr. Catalin Popa - Technical University of Cluj-Napoca, Romania  
 Wholistic improvement of the functional biocompatibility of titanium endosseous implants
- 11:50-12:05 Aysen Akturk - Istanbul Technical University, İstanbul, Türkiye  
 Antibacterial Cellulose Acetate/Gelatin Nanofibers Enriched with Hypericum Perforatum Essential Oil
- 12:05-12:20 Mustafa Sertbas - Istanbul Technical University, İstanbul, Türkiye  
 Multi-Walled Carbon Nanotube and Copper Nanoparticle Doped Thermoplastic Polyurethane Electrospun Scaffold for Skeletal Muscle Tissue Application

12:35-13:30 **LUNCH**

**Session Chairs: Prof. Dr. Buruiana Daniela Laura and Prof. Dr. Corrado Piconi**

**13:30-13:50 Plenary Speaker**

Prof. Dr. Buruiana Daniela Laura - University of Galati, Romania  
Impact of Artificial Saliva Chemistry on 316L Stainless Steel Integrity

**13:50-14:10 Plenary Speaker**

Prof. Dr. Corrado Piconi - Orthopedics and Traumatology, Catholic University "Sacro Cuore",  
Roma, Italy.  
Ceramics in Total Knee Replacements

**14:10-14:30 Plenary Speaker**

Assoc.Prof. Dr. Batur Ercan - Middle East Technical University , Ankara, Türkiye  
The Use of Anodization for Biomedical Applications

**14:30-14:45** Marian Miculescu - National University Of Science And Technology Politehnica, Bucharest,  
Romania  
Preliminary Research on Hydroxyapatite Depo-Sition on Ti Alloys by Aluminides Binding Zone  
Formation

**14:45-15:00** Sila Kilic Cevirgel - Istanbul Technical University, Yeditepe University, İstanbul, Türkiye  
Extraction of Cellulose from Agricultural Wastes for Application in Biomaterial-Based  
Formulations

**15:00-15:15** Obada Abdülhalik - Istanbul Technical University, İstanbul, Türkiye  
Optimization of Silicate–ZrO<sub>2</sub> Micro-Arc Oxidation Coatings on Az31 Magnesium Alloy for  
Bioresorbable implants

**15:30 CLOSING CEREMONY**

## Nanomaterials and Advanced Materials

Hall 1

Session Chairs: Prof. Dr. Burc Mısırlıoğlu and Prof. Dr. Hasan Gocmez

## 09:30-09:50 Plenary Speaker

Prof. Dr. Burc Mısırlıoğlu - Sabanci University, İstanbul, Türkiye

The Role of Boundaries and Interfaces in Phase Transitions of Nanoscale Stacks

## 09:50-10:10 Plenary Speaker

Prof. Dr. Hasan Gocmez - Department of Metallurgical and Materials Engineering at Kutahya Dumlupınar University, Türkiye

High-Entropy Boride Materials for Energy Storage Devices

## 10:10-10:25 Mehmet Fatih Akcel - Samsun University, Samsun, Türkiye

Tunable Magnetic-Luminescent Tb:Sio<sub>2</sub>@Fe<sub>3</sub>O<sub>4</sub> Nanoparticles for Theranostic Applications

## 10:25-10:40 Serkan Kılıçtekin - Yıldız Technical University, İstanbul, Türkiye

Electrochemical Analysis and Investigation of Energy Storage Capacity of WO<sub>3</sub> with Active Carbon Additives with Different Morphologies

## 10:40-10:55 Vecihe Elif Imamoglu - Yıldız Technical University, İstanbul, Türkiye

Impact of Surface Pre-Treatment on Electrochemical Performance of B<sub>4</sub>C-Coated Nickel Foam Electrodes

## 10:55-11:10 COFFEE BREAK

## Coatings

Hall 1

Session Chairs: Prof. Dr. Julia Claudia Mirza Rosca and Assist.Prof.Dr. Erkan Kacar

## 11:10-11:30 Plenary Speaker

Prof. Dr. Julia Claudia Mirza Rosca - Universidad de Las Palmas de Gran Canaria, Canary Islands, Spain

Corrosion Behavior of New Industrial Materials

## 11:30-11:45 Erkan Kacar - Hakkari University, Hakkari, Türkiye

Fabrication and Characterization of High Entropy Motiwzr Alloys by Magnetron Sputtering

## 11:45-12:00 Bogdan Istrate - Gheorghe Asachi Technical University of Iasi, Romania

Microstructural and Electrochemical Evaluation of APS-deposited Layers on Disk Harrow Agricultural Components

## 12:00-12:15 Streza Alexandru - The National University of Science and Technology Politehnica Bucharest, Bucharest, Romania

Evaluation of the Cellulose-Acetate-Based Composite Used as Coatings for Biodegradable Magnesium Implants

## 12:15-12:30 Berfin Kaya - Yıldız Technical University, İstanbul, Türkiye

Investigation of Wear Resistance and Surface Characterization of Manganese Phosphate Coated Crankshafts Under Various Mnp Bath Conditions

## 12:30-13:30 LUNCH

**Session Chairs: Prof. Dr. Ali Ercin Ersundu and Prof. Dr. Sedat Alkoy****13:30-13:50 Plenary Speaker**

Prof. Dr. Ali Ercin Ersundu - Yıldız Technical University, İstanbul, Türkiye  
Shaping Light: Glass-Based Materials for Spectrum-Tunable Opto-Electronics

**13:50-14:10 Plenary Speaker**

Prof. Dr. Sedat Alkoy - Gebze Technical University, Kocaeli, Türkiye.  
Textured Piezoelectric Materials and their Device Applications

14:10-14:25 Mustafa Yunus Kaya - Bursa Technical University, Bursa, Türkiye  
Effect of Sintering Atmosphere on Eco Friendly Nbt-St Ceramics

14:25-14:40 Ayse Berksoy Yavuz - İstanbul Gedik University, İstanbul, Türkiye  
Investigation of The Effect of Doping on Dielectric Response and Energy Storage Performance of Lead-Free Nbt-Bt-St System

14:40-14:55 Habib Yazici - Istanbul Technical University, İstanbul, Türkiye  
Design and Optimization of inorganic Multilayer Films for Transparent Radiative Cooling Coatings

14:55-15:10 Busra Osma - Yıldız Technical University, İstanbul, Türkiye  
Mechanical and Optoelectronic Response of Polyacrylamide- Graphene Oxide Composite Hydrogels

**15:30 CLOSING CEREMONY (at the Main Hall)**

**Session Chairs: Assoc.Prof.Dr. Mustafa Guven Gok**

- 09:30-09:45 Mustafa Guven Gok - Gaziantep University, Department of Metallurgical and Materials Engineering, Gaziantep, Türkiye  
Investigation of Hot Corrosion Resistance of High Manganese Steels
- 09:45-10:00 Marian Staicu - “Dunarea de Jos” University of Galati, Romania  
Integration of Cold Stretch Testing and FEM Analysis in the Development of a Cryogenic Tank for Industrial Storage of Cryogenic Fluids
- 10:00-10:15 Mohammad ikhsan Bin Zakaria - Istanbul Sabahattin Zaim University, İstanbul, Türkiye  
Deep Learning and Novel Sensor Architectures for Structural Health Monitoring
- 10:15-10:30 Zeynep Atasayar - Mimar Sinan Fine Arts University, İstanbul, Türkiye  
Compositional Diversity in Medieval Glass Bracelets from Yumuktepe: A Broader Sample Perspective
- 10:30-10:45 Nicanor Cimpoesu - Gheorghe Asachi Technical University Of iasi, Romania  
Micro-Arc Oxidation-induced Surface Modification of Znmg-Zr Alloys
- 10:45-11:00 Emin Orhun Bastekeli - Istanbul Technical University, İstanbul, Türkiye  
Investigation of the Effects of Laser Parameters on Surface Roughness in the Laser Turning of AISI 308L Stainless Steel
- 11:00-11:10 COFFEE BREAK**



**Session Chairs: Assoc. Prof. Dr. Nermin Demirkol and Assoc. Prof. Dr. Cem Ornek**

**11:10-11:30 Plenary Speaker**

Assoc. Prof. Dr. Nermin Demirkol - Kocaeli University, Kocaeli, Türkiye.  
Utilization of İzmit Gulf Bottom Mud in Artistic Ceramic Production and Characterization of Produced Ceramics

**11:30-11:50 Plenary Speaker**

Assoc. Prof. Dr. B.Deniz Karahan - Istanbul Technical University, İstanbul, Türkiye  
Materials Matter: Building a Sustainable Energy Storage Future

**11:50-12:05 Cem Ornek - Istanbul Technical University, İstanbul, Türkiye**

Advancing Hydrogen Permeation Testing: in Situ Xrd Microscopy for Mapping Diffusivity and Concentration in Complex Microstructures

**12:05-12:20 Serra Ersoy - Yildiz Technical University, İstanbul, Türkiye**

Investigation of The Influence of Tartaric Acid Quantity and Calcination Temperature on The Morphology, Crystal Structure, and Photocatalytic Activity of Zinc Oxide Nanoparticles

**12:20-12:35 Bilge Betul Ozcelik - Istanbul Technical University, İstanbul, Türkiye**

Development of Nanofiber Membranes for Gas Separation and Purification

**12:35-13:30 LUNCH**

**Advanced Ceramics and Composites**

**Hall 2**

**Session Chair: Prof. Dr. Esra Ozkan Zayim**

**13:30-13:50 Plenary Speaker**

Prof. Dr. Esra Ozkan Zayim - Istanbul Technical University, İstanbul, Türkiye  
Detection of Volatile Organic Compounds Using P3HT and P3HT/WO<sub>3</sub> Composites: End-to-End Sensor Fabrication

**13:50-14:05 Alberto Daniel Rico-Cano - Universidad De Las Palmas De Gran Canaria, Canary Islands, Spain**

High-Entropy-Alloy Doping's Effect on B4C Ceramic's Mechanical and Electrochemical Properties

**14:05-14:20 Yigit Tazegul - Yildiz Technical University, İstanbul, Türkiye**

Synthesis and Consolidation of Bn Nanoplate Reinforced B4C Composites

**14:20-14:35 Buse Ortac Bastekeli - Istanbul Technical University, İstanbul, Türkiye**

Impact of Laser Power on Surface Topography and Material Response During The Laser Texturing of Tungsten Carbide

**15:30**

**CLOSING CEREMONY (at the Main Hall)**

**Session Chairs: Prof. Dr. Nese Sahin Yesilbucuk and Prof. Dr. Mustafa Eginligil**

09:30-09:50 **Plenary Speaker**

Prof. Dr. Nese Sahin Yesilbucuk - Istanbul Technical University, İstanbul, Türkiye  
Valorization of Olive Oil Production Waste Products into Sustainable Packaging Materials

09:50-10:10 **Plenary Speaker**

Prof. Dr. Mustafa Eginligil - Nanjing Tech University- China  
Polymer Nanofibers-based Nanogenerators: Remarkable Performance for Wearable Electronics

10:10-10:25 Zeynep Kaya - Yildiz Technical University, İstanbul, Türkiye

Extrusion Processing and Thermo-Mechanical Characterization of Polypropylene Composites Reinforced with Agricultural Waste

10:25-10:40 Aydin Bayram - Mehmet Akif Ersoy University, Burdur, Türkiye

The Effect of Reinforcement on the Mechanical Properties of Polymer Matrix Composite Reinforced with Palm Tree Fiber

10:40-10:55 Kadir Aslan - Mehmet Akif Ersoy University, Burdur, Türkiye

Evaluation of Brazilian Espresso Waste as A Reinforcement Material in The Production of Wood-Like Polyurethane Matrix Composites

10:55-11:10 Deniz Aktas - Istanbul Technical University, İstanbul, Türkiye

Mechanical Properties and Environmental Aging Behavior of Nanoclay Reinforced Polymer Composites

**10:55-11:10 COFFEE BREAK**

**Session Chair: Assoc. Prof. Dr. Ahmet Turan****11:10-11:30 Plenary Speaker**

Assoc. Prof. Dr. Ahmet Turan - Yeditepe University, İstanbul, Türkiye  
Decarbonizing the Metallurgical Industry through CCUS Technologies

11:30-11:45 Zeynep Yaren Toy - Istanbul Technical University, İstanbul, Türkiye  
Hot Deformation Behaviour and Microstructural Evolution of Al-Cu-Li Alloys Processed Under Varying Thermomechanical Conditions

11:45-12:00 Ibrahim Yildirim - Istanbul Technical University, İstanbul, Türkiye  
Sustainable Evaluation of EAF Slag via Metallothermic Reduction

12:00-12:15 Irem Nur Ayar - Istanbul Technical University, İstanbul, Türkiye  
Hydrogen Reduction of Eaf Slag and Mill Scale

12:15-12:30 Ogulcan Gungor - Istanbul University-Cerrahpasa, İstanbul, Türkiye  
Hydrometallurgical Metal Recovery from Lithium Ion Battery Through Co-Processing of Nmc and Lfp

12:30-12:45 Onur Ucar - Istanbul Technical University, İstanbul, Türkiye  
Circular Economy Approach for EAF Slag Via Carbothermic Reduction

**12:45-13:30 LUNCH**

**15:30 CLOSING CEREMONY (at the Main Hall)**

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