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University of Athens



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IMANE

**INNOVATIVE
MANUFACTURING
ENGINEERING
& ENERGY**

2024

**23rd-25th
OCTOBER**

Hotel Golden Age, ATHENS

PROGRAM

Always Innovating

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metrology

Scope

- Traceability to SI units of complex measurement systems;
- Measurement theory in a broad context;
- Measurement uncertainty and uncertainty evaluation;
- Considerations on the fundamentals of measurement;
- Error separation methods;
- Novel methods inspired by the redefinition of the SI;
- Cyberphysical systems;
- Artificial intelligence, especially its effect on traceability;
- Machine learning for metrology;
- Precision measurement;
- Digital twins;
- Metrology for sustainable manufacturing;
- Precision manufacturing;
- Measurement techniques and devices;
- Interferometry;
- XCT measurements;
- 3D metrology;
- Frequency metrology;
- Surface metrology;
- Biomedical measurement;
- Virtual measurement;
- Power measurement.

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Program for IManEE 2024

1st day: Wednesday 23rd October 2024 On-site sessions

**Location: NTUA Multimedia Auditorium, Central Library NTUA,
Zografou Campus**

<https://maps.app.goo.gl/QY865siwvqXBfeuL9>

Link: <https://youtube.com/live/IQCX2aPllzQ>

09:30-10:00

Welcome

10:00-10:45

Keynote speech 1

Prof. Nikolaos Michailidis, Aristotle University of Thessaloniki, Greece
Topic: 3D printing multifunctional materials and advanced composites

10:45-11:30

Keynote speech 2

Prof. Spyros Papaefthymiou, National Technical University of Athens, Greece
Topic: From ancient Greece to Industry 4.0

11:30-12:00

Coffee Break

12:00-13:00

Session OS1

Chair: **Prof. N. Michailidis**

- Experimental study on the determination of reduced compressive properties of FFF-printed enhanced PLA specimens

E.L. Papazoglou, P. Karmiris-Obratański, E. Nikolidakis, N.E. Karkalos, A.P. Markopoulos

- Joining of 316L stainless steel with polylactic acid purely by additive manufacturing means and validation under static and dynamic loadings

A. Argyros, G. Maliaris, N. Michailidis

- A novel self-assessment technique of 3D printer accuracy

D. Kryfos, C. Kalligeros, K. Karagiannis, V. Spitas, N. Sapidis

- Fatigue behavior and life prediction of Aluminum AA6060 alloy produced by solid-state (hot extruded) recycled chipss

A. Prospathopoulos, A. Argyros, J. Gebhard, E. Tekkaya, N. Michailidis

13:00-14:00

Light lunch

14:00-15:00

Visit to the Laboratory of Manufacturing Technology (Optional)

1st day: Wednesday 23rd October 2024 On-line sessions

Link: IManEE 2024 Keynote Speech 3 and On-line Session OL1

<https://centralntua.webex.com/centralntua/j.php?MTID=m0cf202506edbdf172fd9bab81497de5>

Meeting number: 2782 073 1204

Password: caRgXZMt247

16:00-16:30

Keynote Speech 3

Dr. Ilias Georgakopoulos-Soares, Penn State University, USA

Topic: From 3D printing to biomedical applications

16:30-18:00

Session OL1

Chair: **Prof. Vasillis Dimitriou**

- Analysis of Al7136 surface roughness in end milling process based on discriminant analysis

A.B. Pop, A.M. Titu

- Realization of prototypes and models using a CNC router

M. Todorova, T. Dovramadjiev, D. Dobрева, V. Markov, G. Zhecheva, K. Cankova

- A study of the micro-geometric errors of tangentially turned surfaces using the Design of Experiments method

I. Sztankovics

- Investigation of the vibrational characteristics of Tzouras top plates

S. Brezas, H. Papadaki, M. Katsipis, D. Grigoriou, Y. Orphanos, M. Bakarezos, N. A. Papadogiannis, E. Kaselouris, V. Dimitriou

- Study of surface roughness variability in end milling of Al7136 alloy using row wise statistics analysis

A.M. Titu, A.B. Pop

1st day: Wednesday 23rd October 2024 On-line sessions

16:30-18:00

Session OL2

Chair: **Assist. Professor E. Kaselouris**

Link: IManEE 2024 On-line Session OL2

<https://centralntua.webex.com/centralntua/j.php?MTID=me5ccef1a71df62983bb32eca9c49e655>

Meeting number: 2788 773 7482

Password: pM2Zt6gXFA4

- Shape parameter optimisation of elliptic tool paths in trochoidal slot milling
A. Jacso, V. Tancsa
- Tools for the incremental deformation of sheet metal using a single point.
Presentation of an innovative new tool
E. Bădulescu, E.L. Nițu, D.M. Iordache
- Methodology for identifying the intersection of mutually intersecting surfaces to optimize sheet material cutting for the fabrication of parts and structures
Z. Tsoneva, D. Spasova
- Laser machining by a CW high-power fiber laser
A. Gosta, E. Kamposos, A. Skoulakis, Y. Orphanos, H. Papadaki, N. A. Papadogiannis, M. Tatarakis, E. Kaselouris, V. Dimitriou
- Axiomatic design theory as a design thinking tool for mastering industrial process variables inventorying
V. Merticaru, M.-A. Mihalache, M.-I. Rîpanu, E. Merticaru, B. Rusu, V. Ermolai

2nd day: Thursday 24th October 2024 On-site sessions

Location: Hotel Golden Age, Athens

09:00-09:30 Registration

09:30-10:15 **Keynote speech 4**

Professor Kai Cheng BEng MSc PhD FIMechE FIET CEng, Brunel University London, UK

Topic: Nanoparticle enhanced fluids: Synthesis, properties and applications in the manufacturing industry

10:15-11:00 **Keynote speech 5**

Prof. Alina Minea, Gheorghe Asachi Technical University of Iasi, Romania

Topic: Nanoparticle Enhanced Fluids: Synthesis, Properties and Applications in the Manufacturing Industry

11:00-11:30 **Coffee Break**

11:30-13:00 **Session OS2**

Chair: **Prof. G.-C. Vosniakos**

- On the automatic real-time detection of chatter onset in turning
G.C. Vosniakos, A. Anastasiadis
- ANOVA and correlation analysis of feed, cutting forces and tool vibration in 11SMn30 steel turning
C. Felhő, T. Namboodri
- Development of algorithm for application for automated selection of a rational technological process
T. Peneva
- Vibration signal and roughness correlation during Ti alloy milling using uncoated and coated Ti-based cutting tools
R.C.M. Sales-Contini, L. Rocha, N.P.V. Sebbe, G. F. Pinto, F.J.G. Silva, H.M. Lopes, F. Fernandes
- Experimental setup for research the turning process by spinning tool
T. Avramova, D. Vasileva, S. Rusev

13:00-14:30 **Lunch**

2nd day: Thursday 24th October 2024 On-site sessions

14:30-16:00

Session OS3

Chair: **Prof. A. Sover**

- Innovative, environmentally friendly decoating of metallised plastic products using laser technology

A. Sover, M. Zink

- Integrating digital twins in metal sink factories: A pathway to smart manufacturing

V. Kappatos, L. Athanasakos, A. Tromaras, A. Krimpenis

- Digital modeling and AI-driven optimization of ball burnishing process parameters

D.M. Dimitrov, S. Slavov, L.S.B. Van

- A computational study on the adiabatic shear banding development during plane-strain uniaxial and angled-biaxial dynamic compression of AISI 1045 steel

K.D. Karantza, D.E. Manolakos

16:00-17:20

Session OS4

Chair: **Assoc. Prof. M. Coteață**

- Effect of wettability on the aeration characteristics of rotating thin films between EDM-prepared surfaces

N. Rogkas, D. Skondras-Giousios, P. Zalimidis, A. Markopoulos, V. Spitas

- Hybrid electrochemical discharge drilling

L. Slătineanu, M. Coteață, O. Dodun, A.M. Mihalache, A. Hrițuc, G. Nagiț

- Experimental investigation of direct co-extrusion for bimetallic tubes

K.D. Karantza, S. Georgiopoulos, P.K. Kostazos, D. E. Manolakos

- Analysis of surface quality and kerf taper in CO₂ laser cutting of stainless steel

S. Olaru, M. Coteata, A. Munteanu, M. Boca

19:30

Dinner

2nd day: Thursday 24th October 2024 On-line sessions

16:30-19:30

Session OL3

Chair: **Dr. E.L. Papazoglou**

Link: [IManeE 2024 On-line Session OL2](#)

<https://centralntua.webex.com/centralntua/j.php?MTID=m044f7ce7892a1a47a8157dc446bdbd43>

Meeting number: 2781 946 1933

Password: PMhVMPAS863

- Simulation to adjust the draft of RO-RO pontoon

A. Halus, I. Severin, N. Acomi

- Studying the ergonomics of office furniture with specific art elements and office equipment

R. Zlateva, P. Zlateva, M. Tachev, G. Staneva, K. Cankova, G. Zhecheva

- Optimization of the 3D visualization process when adding additional elements in the design of an existing interior

T. Todorova, D. Dobрева, T. Murzova, M. Murzova, I. Iliev, V. Markov

- Design and optimization of the centrifugal pump impeller for wastewater

V. Bostan, A. Petco

- Role of parametrised design from development process to product manufacturing

A. Istrate, O. Dodun

- Experimental research on the analysis of the stress and strain state of a pressure pipe

G.C. Ciocoiu, G.D. Flintaşu (Oprea), I. Cherciu

- The effect of surface topography after milling process on tribological properties of 36CrNiMo4 steel

A. Dzierwa, N. Stelmakh, N. Tikanashvili

- Optimization of the CNC machining process using digital twins

D. Vasileva, M. Konsulova-Bakalova, I. Stoyanova

- Enhancing vocational education through digital training materials: A case study on CNC lathe training

M. Bilgin, Ş. Karabulut, A.P. Markopoulos

2nd day: Thursday 24th October 2024 On-line sessions

16:30-19:30

Session OL4

Chair: **Dr. N.E Karkalos**

Link: IManEE 2024 On-line Session OL4

<https://centralntua.webex.com/centralntua/j.php?MTID=ma4ec05d202f906d9d72eab628df8917a>

Meeting number: 2731 785 4340

Password: 2ifXDjKmN63

- Investigation of T6 heat treatment parameters for AA6061 matrix composite reinforced with 15% B4C

H. Karakoç, Ş. Karabulut

- Investigation of the wear resistance of surface layered by MMA and carbonitriding layers on structural alloy steel

A. Ucherdzhev, T. Mechkarova, D. Mincheva, N. Valchev

- Wear resistance of surface layers with subsequent diamond burnishing applied to 40X steel

D. Mincheva

- Peculiarities of the evolution of the microstructure and mechanical properties depending on the correction of the focal length in parts made by laser melting in a powder layer

S. Adjamsky, B. Dovggy, G. Kononenko, P. Karmiris-Obratański, R. Podolskyi

- Wear resistance of as-cast ZnMg-Y biodegradable alloy

A.T. Şutic, C. Panaghie, V. Paleu, R. Cimpoeşu, A.M. Roman, M. Coteaţă, L. Andruşcă, G. Bădărău, P. Paraschiv, N. Cimpoeşu

- An industrial environment background noise reduction technique used in the measurements of the tapered roller bearings

B. A. Sabo, Ş. Voloacă

- Fabrication and characterization of TiO₂-ABS composite filaments for 3D printing: Structural analysis and evaluation of antibacterial properties

I.V. Tudose, M. Orfanou, C. Romanitan, C. Pachiou, O. Brincoveanu, I. Rosca, P. Pascariu, S. Bucur, Z. Viskadourakis, G. Kenanakis, M.P. Sucheas, E. Koudoumas

2nd day: Thursday 24th October 2024 On-line sessions

- Analysis of the efficiency of pneumatic actuator regulation in selected production processes using artificial intelligence, graph algorithms, and probabilistic methods, taking into account failure rates and return on investment costs

P. Skudlik, A. Wróbel

- Sustainability considerations in project management of new product development: Case study

M. Nicolau



3rd day: Friday 25th October 2024 On-site sessions

Location: Hotel Golden Age, Athens

09:00-09:30

Registration

09:30-10:15

Keynote speech 6

Prof. Panagiotis Kyratsis, University of Western Macedonia, Greece
Topic: Manufacturing computationally designed wearables via 3D printing

10:15-10:30

Coffee Break

10.30-12.00

Session OS5

Chair: **Prof. N. Vaxevanidis**

- Research of precessional transmission used for submersible mechanical systems

M. Vaculenco, I. Bodnariuc, I. Malcoci, N. Trifan

- Studies on the Optimization of Recovery Equipment within the Deposit-Return System

M. Iorga, A. Semenescu, D.F. Marcu, B. Florea

- Analysis and topology optimization of a car's suspension lower control arm

N. Maninas, I. Papantoniou, N. Vaxevanidis

- Application of recycled carbon fibre to develop new products

R.C.M. Sales-Contini, H. H. Bernardi, J. T. Matsushima, F. J.G. Silva,

W. M. M. Menezes

- A digital twin framework for prediction, monitoring, and diagnosis in copper tube extrusion

K. Sabatakakis, P. Stavropoulos, A. Kaimenopoulos, D. Karatasios

12:00-12:30

Coffee Break

3rd day: Friday 25th October 2024 On-site sessions

12:30-14:00

Session OS6

Chair: **Assoc. Prof. P. Benardos**

- Effect of deep cryogenic treatment on the mechanical properties of AlSi7Mg casting alloy

D. Spasova, P. Stoyanov, P. Petrov, N. Atanasov, R. Yankova

- New solution and management of coating rolls used in industry

B. Florea, D.F. Marcu, O. R. Chivu, V. Pasăre, D.F. Nițoi, A. Semencescu

- Experimental insights into PEG based new fluids thermal effusivity

N. Cojocariu, E. I. Cherecheș, A. A. Minea

- Effect of orientation on the bending properties of a carbon fibre reinforced thermoplastic

K. Monkova, P. P. Monka, G. Szabo, K. Mehdi

- A deep learning approach for automated inspection of 3D printed orodispersible films

E. Tsintavi, E. Stathatos, P. Benardos, D.M. Rekkas

14:00-15:00

Lunch

15:00-16:00

Session OS7

Chair: **Dr. M.A. Mihalache**

- XYZ calibration cube - a misleading tool for achieving print accuracy

V. Ermolai, M.I. Rîpanu, V. Merticar Jr., A.I. Irimia, M.A. Mihalache, I.M. Pișta

- Shape accuracy and roughness optimization of a fashion button by utilizing 3D printing

J. D. Kechagias, N. A. Fountas, S. Zaoutsos, D. Chaidas, N. M. Vaxevanidis

- Addressing surface quality via seam alignment parametrization

A.I. Irimia, V. Ermolai, G. Nagîț, M. A. Mihalache, M.I. Rîpanu, R.C. Stavarache

- Design of a device for cold plastic deformation processing using the ideas diagram method

M. Boca, T. Gueorguiev, L. Slatineanu

16:00-16:30

Closing ceremony

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