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Dear Colleagues,

It is our pleasure to welcome you to attend the 9th International Congress on Precision Machining (ICPM 2017), organized by the National Technical University of Athens, which is held in Athens, the capital city of Greece, in September 2017.

The International Congress on Precision Machining is a biennial event, which is developing into a major international happening with a growing number of delegates from around the globe. Scientists and engineers use this platform to share their research findings, exchange ideas, discover novel opportunities, meet with colleagues or acquaint with new friends from abroad, broaden their knowledge and bridge the gap between academia and industry.

Papers on various topics are welcome in the field of precision machining. The different points of view, which will be shared by the academic and industrial practitioners, will contribute significantly to the developments in this area of technology, which is of great importance in contemporary industry.

The topics concern a broad range of issues that are of interest to researchers, manufacturers, businessmen and consumers of engineering materials and their products. However, we hope that the presented topics will contribute to the collaboration of the participants in many aspects, as well as to the enhancement of the contacts between education, science and business, which will be of mutual benefit.

The organizers are proud to be hosting ICPM 2017 for the first time and are looking forward to welcoming you and meeting you in Greece.

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School of Mechanical Engineering
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Professor Junjie Zhang CHN
Thursday 7th September

09:00-09:30  Registration

09:30-10:00  Open Ceremony
Welcome speeches

10:00-11:30  Plenary Lectures

10:00-10:45  Recent Developments in Desktop-Sized Machine Tools
J.C. Aurich, C. Müller, M. Bohley, P. Arrabiye, B. Kirsch

Speaker: Prof. Dr.-Ing. Jan C. Aurich, University of Kaiserslautern, FBK - Institute for Manufacturing Technology and Production Systems, Kaiserslautern, Germany

10:45-11:30  Advanced Metrology and Intelligent Quality Automation for Industry 4.0-based Precision Manufacturing Systems
N.M. Durakbas, J. Bauer, G. Poszvek

Speaker: Ao.Univ. Prof. Dipl.-Ing. Dr. techn. Prof.h.c. Dr.h.c. Numan M. Durakbas, Vienna University of Technology, Faculty of Mechanical and Industrial Engineering, Department for Interchangeable Manufacturing and Industrial Metrology, Wien, Austria

11:30-11:45  Coffee Break

11:45-12:30  Plenary Lectures

11:45-12:30  Integration of Process Mechanics and Materials Mechanics for Precision Machining
S.Y. Liang, Z.P. Pan

Speaker: Steven Y. Liang, Ph.D., Morris M. Bryan, Jr. Professor for Advanced Manufacturing, George W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, U.S.A.

12:30-13:30  Lunch Break
15:00-16:45 **Sessions A and B**

**Session A Precision Machining**

*Chair:* I. Maňková¹, R. Turmanidze²  
¹ Professor, Faculty of Mechanical Engineering, Technical University of Košice, Slovakia  
² Professor, Department of Production Technologies of Mechanical Engineering, Georgian Technical University, Tbilisi, Georgia

**Effect of Cutting Feed and Chip Size Ratio on Cutting Force**  
J. Kundrák, T. Makkai and I. Deszpoth, G. Varga

**Evaluation of Relationship between Cutting Parameters and Torque in Hole Making of Titanium Alloy**  
I. Maňková, M. Vrabel, D. Kottfer, M. Franková, M. Paļo

**Machining Efficiency Increase when Nickel Based Alloy Machining**  
A. Matras, W. Zębala

**Selection Criteria of Optimal Characteristic Material and Technologies for Precision Processing of Basic Working Surface of Human Hip-Joint Implant**  
R. Turmanidze, G. Popkhadze

**Experimental Investigation of Cutting Conditions from the View of Force Load at High Speed Milling**  
J. Řehoř, J. Fulemová, A. Vagaská, M. Gombár, K. Monkova

15:00-16:45 **Session B Engineering Management in Manufacturing Systems**

*Chair:* T. Szalay¹, P. Tamás²  
¹ Associate Professor, Department of Manufacturing Science and Engineering, Budapest University of Technology and Economics, Hungary  
² Associate Professor, Institute of Logistics, University of Miskolc, Hungary

**New Challenges for Quality Assurance of Manufacturing Processes in Industry 4.0**  
B. Illés, P. Tamás, P. Dobos, R. Skapinyecz

**Indirect Impacts of Drastic Scrap Rate Reduction on Costs of Production Process in Precision Machining**  
V. Molnar

**Optimization of In-Plant Production Supply with Black Hole Algorithm**  
P. Veres, T. Bányai, B. Illés

**FEA-Based Comparative Investigation on High Speed Machining of Aluminum Alloys AA6061−T6 and AA7075−T651**  
W. Jomaa, V. Songmene, P. Bocher, A. Gakwaya

**Examining the Integration Possibilities for Lean Tools and Simulation Modeling**  
P. Tamás, B. Illés
Friday 8th September

09:30-10:30  **Registration**

10:00-11:45  **Session C**  
**Session C Micro- and Nano-Machining**  
*Chair:* J. Kundrák¹, W. Zębala²  
¹ Professor, Institute of Manufacturing Science, University of Miskolc, Hungary  
² Professor, Production Engineering Institute, Mechanical Faculty, Cracow University of Technology, Poland  

**Influence Analysis of Micro-Milling Vibrational Phenomena on Workpiece Topomorphy**  
E. Stergianni, D. Sagris, C. Tsiafis, C. David and I. Tsiadis  

**The Effect of Machining Toolpath on Surface Roughness and Dimensional Accuracy for High-Speed Micro Milling**  
A. Dadgari, D.H. Huo, D. Swailes  

**On Time Step in the Molecular Dynamics (MD) Simulation of Nanomachining**  
A.O. Oluwajobi, X. Chen  

**Experimental Study on Micro-Machinability of Hardened Tool Steel in Profile Micro-Milling**  
B. Sredanovic, G. Globocki Lakic  

**Computational Methods for the Assessment of Nanofluids in Abrasive Processes**  
N.E. Karkalos, A.P. Markopoulos  

11:45-12:00  **Coffee Break**

12:00-13:00  **Session C** (continued)  
**Session C Micro- and Nano-Machining**  

**A Method for Determination of the Minimal Thickness of the Cutting Layer during Precision Machining Performed with the Indexable Cutting Tools**  
J. Krajewska-Śpiewak, J. Gawlik  

**Molecular Dynamics Simulation of Nanogrinding with Multiple Abrasive Grains**  
N.E. Karkalos, A.P. Markopoulos  

**The Influence of the Machining Parameters on the Quality of the Holes Made by μEDM in Electrically Conductive Alumina-Oxide**  
B.Z. Farkas, L. Csorba, T. Szalay, V.V. Kuzin, S.Y. Fedorov  

13:00-14:00  **Lunch Break**
10:00-11:45  **Session D**  
**Session D Non-Conventional Machining**  
Chair: F. Holešovsky¹, W.F. Habrat²

¹. Professor, Faculty of Production Technology and Management, J.E.Purkyne University, Usti nad Labem, Czech Republic  
². Dr, Rzeszow University of Technology, Poland

**A New Strategy in Face Milling – Inverse Cutting Technology**  
B. Karpuschewski, J. Kundrák, T. Emmer, D. Borysenko

**Application of New Abrasives and their Quality Parameters**  
F. Holešovsky, M. Bartos, M. Dian, J. Rehor

**Effect of Honing Parameters on Generated Surface Quality of Cylinder Liner within Automotive Engine Production**  
M. Vrabel’, I. Maňková, N.M. Durakbasă

**Experimental Investigation of Effect of the Laser-Assisted Finish Turning of Ti-6Al-4V Alloy on Machinability Indicators**  
W.F. Habrat

**Analysis of Surface Texture of High Aspect Ratio Blind Micro Holes on Titanium Alloy (Ti-6Al-4V) in Micro Electrical Discharge Drilling**  
S. Barman, A.B. Puri, Nagahanumaiah

11:45-12:00  **Coffee Break**

12:00-13:00  **Session D (continued)**  
**Session D Non-Conventional Machining**

**Development of a Polishing Jig for Machining Centres**  
T. Mitropoulos, P. Avrampos, G.C. Vosniakos

**Influence of Ultrasound on Delamination during Machining of GFRP Composite Material**  
M. Kuruc, V. Šimna, M. Necpal, T. Vopát, J. Peterka

**The Effect of Changes in Feed Rate on Surface Integrity during Nickel Coating Grinding**  
M. Marek, M. Novák

13:00-14:00  **Lunch Break**
15:00-16:45  **Session E**  
**Session E Modeling and Simulation**  
Chair: Numan M. Durakbasă¹, P. Kovač²  
¹ Professor, Vienna University of Technology, Austria  
² Professor, Faculty of Technical Sciences, University of Novi Sad, Serbia

**Prediction of Crater Size in Drilling and Texturing by Pulsed Laser Ablation**  
E. Stathatos, G.C. Vosniakos, D. Pantelis

**A Study of Explicit Numerical Simulations in Orthogonal Metal Cutting**  
E. Kaselouris, T. Papadoulis, E. Variantza, A. Baroutsos, V. Dimitriou

**Numerical Investigation of Mechanical Induced Stress during Precision End Milling Hardened Tool Steel**  
A. Reimer, S. Fitzpatrick, X.C. Luo, J. Zhao

**Deformation and FEM Analysis of the Chip Root in Face Milling Process**  
P. Pokorný, R. Zaujec, V. Šimna, T. Vopát

16:45-17:00  **Coffee Break**

17:00-18:30  **Session E** (continued)  
**Session E Modeling and Simulation**

**A Heuristic Approach to Design Discrete Fractional Order Integrators without Using s-to-Z Transform**  
S. Mahata, S.K. Saha, R. Kar, D. Mandal and N. Banerjee

**Development of ANFIS Model for Flow Forming of Solution Annealed H30 Aluminium Tubes**  
B. Podder, P. Banerjee, K.R. Kumar and N.B. Hui

**Discrete Non-Integer Order Differentiator Models Using Moth-Flame Optimization Algorithm**  
S. Mahata, S.K. Saha, R. Kar and D. Mandal

**Application of neuro-fuzzy Systems for modeling surface roughness Parameters for difficult-to-cut-steel**  
P. Kovač, B. Savković, D. Rodić, M. Gostimirović, M. Sekulić and D. Ješić
Session F

Analysis of Surfaces and Machining Accuracy
Chair: P.N. Botsaris¹, G. Varga²

¹ Professor, School of Engineering, Democritus University of Thrace, Greece
² Associate Professor, Institute of Manufacturing Science, University of Miskolc, Hungary

Comparative Analysis between Conventional and Dry Turning
P.N. Botsaris, C. Kyritsi, D. Iliadis

Effects of Technological Parameters on Surface Characteristics in Face Milling
G. Varga, J. Kundrák

Optimization of Nickel Alloy Turning Considering the Tool in Different Wear Phases
W. Zębala

A Method for the Determination of Theoretical Roughness in Face Milling Considering the Run-Out of the Inserts
C. Felho, J. Kundrák

Design and Machining of the Femoral Component of Total Knee Implant

16:45-17:00 Coffee Break

Session G

Manufacturing Systems
Chair: P.G. Benardos
Assistant Professor, Faculty of Engineering, University of Nottingham, UK

Internet of Things and Industrial Applications for Precision Machining
P.G. Benardos, G.C. Vosniakos

A Generic Multi-Axis Post-Processor Engine for Optimal CNC Data Creation and Intelligent Surface Machining
N.A. Fountas, C.I. Stergiou, N.M. Vaxevanidis, R. Benhadj-Djilali

Study on Spindle Vibration and Surface Finish in Turning of Al 7075
A. Şahinoğlu, Ş. Karabulut, A. Güllü

On Systematic CAD/CAM Modeling of Blow Molds for Plastic Bottles
A.A. Krimpenis, J.G. Tsakanikas

20:00 Closing Dinner
Organized by
National Technical University of Athens, School of Mechanical Engineering,
Section of Manufacturing Technology

Congress Dates
September 6th to 9th, 2017

Congress Venue
Best Western Fenix Hotel, 1-3 Artemisiou Str., Glyfada
166 75, Athens Greece, Tel.: +30-210-8914000

Language
The official language of the congress is English and no interpretation will be provided.

Registration & fees
Congress fee  On-site registration
Registration fee  550 €
PhD student  300 €
Accompanying person  200 €

The registration fee (full and PhD students) includes:
• Congress attendance and Materials
• Welcome Cocktail
• Coffee breaks
• Lunch
• Closing Dinner

The Accompanying person registration fee includes:
• Welcome Cocktail
• Lunch
• Closing Dinner

Badge & Congress Material
Upon registration, you will receive your name badge and Congress Material

Refreshments
Coffee will be served in each congress hall and lunch will be served in the hotel’s main restaurant.

Welcome Cocktail
Wednesday, September 6th 2017 from 19:00 to 21:00 at the pool of Best Western Fenix Hotel

Gala Dinner
Friday, September 8th 2017 at 20:00 in the hotel’s restaurant

Certificate of Attendance
All registered participants will receive a certificate of attendance from the secretariat desk at the end of the Congress on Friday, September 8th 2017

Congress Secretariat
E.T.S. Events & Travel Solutions A.E.
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Athens

Athens, the capital and largest city of Greece with equal measures of grunge and grace, is a mix of history and edginess. The City dominates the Attica region and is one of the world’s oldest cities, with its recorded history spanning over 3,400 years. It is also home to two UNESCO World Heritage Sites, the Acropolis of Athens and the medieval Daphni Monastery. Landmarks of the modern era, dating back to the establishment of Athens as the capital of the independent Greek state in 1834, include the Hellenic Parliament and the so-called "architectural trilogy of Athens", consisting of the National Library of Greece, the National and Kapodistrian University of Athens and the Academy of Athens.

All those visiting Athens are impressed by the beauty and harmony of ancient architecture, the atmosphere and the variety of things to see since it is the home to several museums and cultural institutions, such as the National Archeological Museum, featuring the world’s largest collection of ancient Greek antiquities, the Acropolis Museum, the Museum of Cycladic Art, the Benaki Museum and the Byzantine and Christian Museum.

Beyond Athens, down the Attika peninsula, are more spectacular antiquities, such as the Temple of Poseidon at Sounion, as well as very good beaches, such as those near historic Marathon.

Top sights in Athens
- Acropolis and the Parthenon
- Acropolis Museum
- Ancient Agora
- Temple of Olympian Zeus
- Benaki Museum
- Byzantine & Christian Museum
- Odeon of Herodes Atticus
- National Garden
- Archaeological Museum of Athens

Glyfada Area

Glyfada, the most famous suburb of Athens, situated in the southern parts of the Athens Urban Area stretches from the foot of the Hymettus mountain to the Saronic Gulf. This fashion-conscious suburb was established as the heart of Athens’ southern suburbs, because of its prime waterfront location, rich commercial centre, and modern business district. It has been described as the headpoint of the 'Athens Riviera' and features some of Europe’s most opulent seafront residences, gardens and extensive beachfront property, with a modern marina. It is also full of upmarket cafes, well-known restaurants, boutiques and cosmopolitan summer clubs. The area’s shopping district runs across Metaxa Avenue and Grigoriou Labraki Street while both the offices of major businesses and shopping areas also dot the Avenues Voyliagmenis, Goynari and Gennimata.
A. From Athens Airport “El. Venizelos” to the Congress Venue Best Western Fenix Hotel:

1. **By bus**
   - Bus No. X96
   - Direction: Airport Entrance - Piraeus
   - Bus stop: 2nd Glyfadas
   - Ticket Cost: 6 euros
   - Approximate time: 1h

2. **By subway & Tram**
   - Subway: Line 3 (blue)
   - Direction: Airport - Agia Marina
   - Subway stop: Syntagma Square
   - Change for Tram: Line “T5 Platonas”
   - Direction: Syntagma - Asklipio Voulas
   - Tram Stop: Platia Vergoti
   - Ticket Cost: 8 euros
   - Approximate time: 1h 30min

3. **By taxi:**
   - Hotel Best Western Fenix
   - Address: Artemisiou 1-3, Glyfada, Athens
   - Tel.: +30 210 8914000
   - Estimated Cost: 20-30 euros
   - Approximate time: 30-50 minutes depending on traffic

B. From Best Western Fenix Hotel to Athens City Center – Syntagma Square (15.30km)

1. **By Tram**
   - Tram Line “T5 Platonas”
   - Direction: Asklipio Voulas - Syntagma (the closest stop to the hotel is “Platia Vergoti”)
   - Tram Stop: Syntagma Square
   - Ticket Cost: 1.40 euros
   - Approximate time: 1h

2. **By taxi:**
   - Syntagma Square
   - Estimated Cost: 20-25 euros
   - Approximate time: 30 minutes

3. **By Bus:**
   - Bus No. A2
   - Direction: Voula - Acadimias Str. (the closest stop to the hotel is 2nd Glyfadas)
   - Bus stop: Acadimias Str. (then walk 5 minutes to Syntagma)
   - Ticket Cost: 1.40 euros
   - Approximate time: 1h
**Currency & Banking**
Greece is a full member of the European Union since 1981 and its currency is the Euro (€). All major credit cards are widely accepted in Greece. ATMs and Exchange Offices are widely available. Foreign currency may be exchanged to Euros at most Greek and foreign banks and at exchange bureaus located in the city centre. Travelers are kindly requested to bring their passport when exchanging money as they will need it for the transaction. Traveler’s checks and credit cards issued by major companies are also widely recognized and an accepted means of purchasing items in Athens. Banks are open to the public, Monday through Thursday 08:00 to 14:30 and Friday 08:00 to 14:00, except for public holidays. ATMs can be found almost everywhere.

**Insurance & Liability**
The Organizers accept no liability for any personal injury, loss or damage of property or additional expenses incurred to Conference participants either during the Conference or as result of delays, strikes or any other circumstances. Participants are requested to make their own arrangements with respect to health and travel insurance.

**Electricity**
The electricity current in Greece is 220v, 50Hz and the socket type is European Standard.

**Smoking Policy**
Starting from July 1st 2009 smoking is prohibited by the law at all indoor public areas in Greece. Participants are kindly requested to refrain from smoking inside the Congress venue.

**Telecommunications**
The international access code for Greece is +30 and for Athens 210. The outgoing code is 00 followed by the relevant country code.

**Time**
Greece is two hours ahead of Greenwich Mean Time GMT+2
Greece 12:00 - London 10:00 - New York 05:00 - Sydney 20:00

**Emergency Phone Numbers**
- Ambulance: 166
- Fire Brigade: 199
- Police: 100
- Tourist Police: 71
- European Emergency Number: 112
- Athens International Airport: +30 210 3530000
- Poisoning Treatment Centre: +30 210 7793777
- Telephone Directory Service: 11888