AMPT2022

23rd International Conference on Advances in Materials & Processing Technologies

10-14 October 2022 Grand Hotel Bernardin, Portorož, Slovenia

5th Announcement & Conference Program

FOREWARDS

The Advances in Materials and Processing Technologies (AMPT) conference series provides a forum for academics, researchers, and practicing engineers to meet and exchange innovative ideas and information on all aspects of material processing technologies. It was founded in 1990 at the Dublin City University, Dublin, Ireland and since then being held in many different countries around the globe. After being cancelled in 2020 due to COVID pandemic, in 2022 for the first time AMPT conference will be held at the coast of Slovenia, in Portorož, 130 km southwest of Slovenia capital Ljubljana. AMPT Organizing and AMPT Steering Committee welcome colleagues to attend and present their research work at the AMPT2022 conference, international gathering of engineers and researchers.

TOPICS

- **Forming processes;** Bulk forming, Rolling, Stamping, Fine Blanking, Net-Shape Forming, Hydroforming, Casting and Welding, Forming in Near Melt Condition.
- **Machining processes;** Cutting, Grinding and Polishing, Abrasive Machining, EDM Machining, Non-Conventional Machining.
- **Precision Engineering and Metrology;** Surface Measurement and Characterization, In-process and On-line Measurement, Microscopy.
- **Micro/Nano Technology;** MEMS Device and System Design, Micro Forming, Nano materials, Biomimetic, Carbon Based Materials.
- **Materials Science and Processing;** Smart Materials, Biomaterials, Functional and Flexible Materials, HEA, Materials for High Temperature Applications, Metals, Ceramics, Light-Weight Materials, Polymers, Composites, Timber, Renewable Materials.
- **Heat treatment and Surface Engineering;** Heat and thermo-chemical treatments, PVD & CVD Coatings, Thermal Spray Coatings, Surface Modification, High Energy Beam Processing, Tribology.
- **Additive Manufacturing;** Powder Technology, 3D metal printing, Process Control, Design, Printing and Heat Treatment.
- **Modelling and Simulation;** Computer Aided Engineering, Modelling, Simulation, Sensors design, Big Data, Cloud Computing.
- **Smart Manufacturing and Management;** Industry 4.0, Quality and Reliability, Green Manufacturing, Sustainable Manufacturing, Recycling, Biocompatibility and Biodegradability.

CONTACT & MORE INFO

Inform your colleagues. **Register today.**

More information are available at the conference webpage: **www.AMPT2022.org**, or by contacting AMPT2022 organizing committee (ampt2022@imt.si) or conference chairman Prof. B. Podgornik (bojan.podgornik@imt.si; +386 1 4701930).

AMPT2022 23rd International Conference on Advances in Materials & Processing Technologies

Monday 10.10.2022

18:00 – 20:00 Registration and Welcome reception

Tuesday 11.10.2022

8:00 -> Registration

9:00 – 9:20 Opening ceremony

Plenary session 1 (Hall 1)

9:20 – 10:05 ***Invited talk 1: Dermot Brabazon (Ireland), Key challenges and advancements in additive manufacturing***

10:05 – 10:50 ***Invited talk 2: Imre Felde (Hungary), On the Bio-inspired computational methods and AI technics supporting Heat Treatment processes***

10:50 – 11:20 Coffee break & Exhibition

Session 1 – Additive Manufacturing 1 (Hall 1)

11:20 – 11:50 ***Keynote talk 1: Ewald Badisch (Austria), Friction, wear and lubrication functionality for 3D printed lightweight components and tools***

11:50 – 12:10 R. Coelho, Hot stamping tools with conformal channels produced by additive manufacturing: state of the art and critical analysis

12:10 – 12:30 N. Agarwal, Heat Treatment of Nitinol Manufactured via L-PBF For Biomedical Application

12:30 – 12:50 M. Godec, Plasma Nitriding of Various Additive Manufactured Metallic Materials

12:50 – 13:10 Z.A. Zakaria, Development of Functionality Graded Materials (FGM) via Fused Deposition Modelling (FDM) Technique.

Session 2 – Smart Manufacturing & Micro/Nano-technology (Hall 2)

11:20 – 11:50 ***Keynote talk 2: Leszek A. Dobrzański (Poland), Synergy of Dentistry Sustainable Development 4.0 and Design of Engineering Materials and Materials Processing Technologies***

11:50 – 12:10 N. Arunachalam, Coolant life management through a hybrid compact filter and real time monitoring the coolant properties

12:10 – 12:30 A.M. Omer, Heat exchangers Technology and Applications in Heat Exchanger Engineering

12:30 – 12:50 A. Dobrzańska-Danikiewicz, Influence of manufacturing conditions on the structure of C-Re nanocomposites

12:50 – 13:10 I. Gaidan, Response of ZnO / Fe2O3 sensors at room temperature to the breath from individuals with diabetes

13:10 – 14:40 Lunch

Session 3 – Additive Manufacturing 2 (Hall 1)

14:40 – 15:00 A.L. Heuer, Direct foaming with the APF process: Characterization of the influencing parameters on the volume increase

15:00 – 15:20 H. Krishnaswamy, Influence of Melt Pool Geometry on Defect Control in Laser Powder Bed Fusion Processing of Maraging Steel (18Ni300)

15:20 – 15:40 J.C. Chekotu, Investigating the Effect of L-PBF Process Parameters on 3D Printed Nitinol Part Properties

15:40 – 16:00 R. Coelho, NbC-Based Cermet Production Comparison: L-PBF Additive Manufacturing versus Conventional LPS powder metallurgy

16:00 – 16:20 M. Mosayebi, FIB Microscopy and Patterning for Digital Twin Input Data for Modelling Materials Performance

Session 4 – Modelling and Simulation 1 (Hall 2)

14:40 – 15:00 R. Coelho, FEM modeling high cycle fatigue tests for titanium grade 5 orthopaedic prosthesis 3D printed by EBM

15:00 – 15:20 V. Balaji, Formability study of ultrafine-grained aluminium alloy sheets through finite element implementation of dislocation density-based model

15:20 – 15:40 N. Padmapriya, Estimation of Porosity in Aluminium Closed Cell Foam Images using 3D Voronoi Tessellation Models

15:40 – 16:00 M. Pravin Kumar, Optimization of the Process parameters of Magnetic Pulse Welded AA 6061 T6 tubular joints

16:00 – 16:20 A. Elayaperumal, Data Science Approach for the Prediction of Fatigue Strength of Steel from Composition, Grain Size and Processing Parameters

16:00 – 16:30 Coffee break & Exhibition

16:20 – 18:00 Poster session

Wednesday 12.10.2022

8:30 -> Registration

Plenary session 2 (Hall 1)

9:20 – 10:05 ***Invited talk 3: Bekir S. Yilbas (Saudi Arabia), Current and Future Trends in Surface Engineering: Practical Applications of Hydrophobic Surfaces***

10:05 – 10:50 ***Invited talk 4: Cho-Pei Jiang (Taiwan), New direction and novel AM technology development in biomedical applications***

10:50 – 11:30 Coffee break & Exhibition

Session 5 – Surface Engineering 1 (Hall 1)

11:30 – 11:50 L.-M. Berger, State and Development Trends of Thermally Sprayed Hardmetal Coatings

11:50 – 12:10 H. Paschke, Surface modifications to reduce the adhesion of aluminum during twin roll casting

12:10 – 12:30 A. Thewes, Surface modifications to reduce wear in hot extrusion of copper

12:30 – 12:50 P. Verma, Erosive Wear of Some Dual-Phase Steels Developed via Quenching of Low and Medium Carbon Steels

12:50 – 13:10 L.-M. Berger, Application of the High Entropy Concept for Tool Materials and Coatings

Session 6 – Materials Science and Processing 1 (Hall 2)

11:30 – 11:50 G. P. Karmakar, Hydrofracturing Materials for Production of Unconventional Natural Gases

11:50 – 12:10 D. Sam Leo Xavier, Development of Al - TiB2- Mg2 (Si, Sn) hybrid composite by salt melt in-situ reaction: a comparative evaluation of properties

12:10 – 12:30 B. Kılıç, Investigation of hot press joining of glass fiber reinforced PA6 and AISI 304

12:30 – 12:50 Bin Zhu, Novel Semiconductor-ionic materials and advanced applications

12:50 – 13:10 *TBA*

13:30 – 18:00 Lunch box and visit to Škocjan caves

19:00 – 22:00 Conference dinner

Thursday 13.10.2022

8:30 -> Registration

Plenary session 3 (Hall 1)

9:20 – 10:05 ***Invited talk 5: Massimo Pellizzari (Italy), Considerations about cryogenic treatment of tool steel, twenty years after the AMPT'99 conference in Dublin***

Session 7 – Machining and Forming 1 (Hall 1)

10:05 – 10:25 Y. Okude, Development of warm and cold incremental press forming method of titanium alloy sheets

10:25 – 10:45 H. Krishnaswamy, Electro-plastic behaviour of the advanced high strength steel

10:45 – 11:05 M.N. Bassim, Mechanisms of Formation of Adiabatic Shear Bands

Session 8 – Surface Engineering 2 (Hall 2)

10:05 – 10:25 M.K. Mahto, Evaluation of Tungsten Carbide Tool Materials During Friction Stir Cladding of Copper on Steel Substrate

10:25 – 10:45 A. Učakar, Formation of surface layer on strontium hexaferrite magnets during Sintering by Intense Thermal Radiation (SITR)

10:45 – 11:05 T. Aizawa, Convection and Boiling Heat Transfer Control by Acicular Microtexturing

11:05 – 11:40 Coffee break & Exhibition

Thursday 13.10.2022 (cont.)

Session 9 – Machining and Forming 2 (Hall 1)

11:40 – 12:00 T. Ohashi, Detection of Foreign Bodies by Accelerometers Attached to the Stripper Plate of a Blanking Die Set
12:00 – 12:20 K.-J. Fann, Finite Element Study on Forming Cylindrical Springs with Initial Tension by Wire Bending
12:20 – 12:40 R. Yadav, Finite Element Modelling of Burr during Micro-milling of Ti alloy
12:40 – 13:00 A. Chaudhari, Finite element analysis of tangential ultrasonic vibration assisted grinding for AISI D2 tool steel using single cBN abrasive particle
13:00 – 13:20 S. Ganesh, Computer Simulation of Realizability of Tactile Graphics by Vacuum Forming

Session 10 – Materials Science and Processing 2 (Hall 2)

11:40 – 12:00 R. Padmanabhan, A study on sound absorption ability of closed cell aluminium foams
12:00 – 12:20 M. Mejauschek, New Surface Boriding Technologies
12:20 – 12:40 M. Youssef, Microstructure and Phase Transformations in Microalloyed ARMOX 500T Steel during Dilatation Process
12:40 – 13:00 A. Moshkovich, Plastic deformation in surface layers of Ag, Cu, Ni and Al under friction in lubricated conditions
13:00 – 13:20 K. Tsutsumida, Battery Performance of corrosion characteristics of AZ31 magnesium alloy

13:20 – 14:40 Lunch

Session 11 – Machining and Forming 3 (Hall 1)

14:40 – 15:00 Chao-Chang A. Chen, Research on Plasma Electrolytic Polishing of Tiny Metal Tube
15:00 – 15:20 R. Babu Tere, Effect of Textured Cutting Inserts in Micro Turning of Ti-6Al-4V Alloy
15:20 – 15:40 S. Vipparla, Wettability studies on femtosecond laser textured N-Type silicon surfaces
15:40 – 16:00 Sri Phani Sushma, Predicting the optimal parameters by multi-objective decision-making method while machining Al6061 alloy using CBN inserts of different cutting edge geometries
16:00 – 16:20 *TBA*

Session 12 – Modelling and Simulation 2 (Hall 2)

14:40 – 15:00 S. Shabberhussain, Analysis of Multi-Layered Polymer Composite Cylindrical Shells under Internal Pressure and Thermal Loading
15:00 – 15:20 V.S. Chandel, Nonlocal stochastic buckling analysis of porous gradient nanobeams using first order perturbation theory
15:20 – 15:40 V. Balaji, Exploring Stress Relaxation Phenomenon through Finite Element analysis using conventional Elasto – Viscoplastic models
15:40 – 16:00 M. Bahramyan, Atomic-scale study of the effect of composition on the phase transformation temperatures in NiTi shape memory alloy
16:00 – 16:20 *TBA*

16:20 – 17:00 Coffee break & Exhibition

Friday 14.10.2022

8:30 -> Registration

Session 13 – Heat treatment & Surface Engineering 3 (Hall 1)

9:20 – 9:40 B. Podgornik, Deep cryogenic treatment - how and when to expect improvement
9:40 – 10:00 M. Sedlaček, Tribological properties of different combination of polymer films rubbing against polymer balls
10:00 – 10:20 M. Hočevar, Laser Surface Functionalization of Biomaterials
10:20 – 10:40 M. Conradi, *Water versus oil lubrication of laser-textured Ti6Al4V alloy upon addition of MoS2 nanotubes for green tribology*
10:40 – 11:00 B. Šetina, *TBA*

Session 14 – Materials Science and Processing 3 (Hall 2)

9:20 – 9:40 S. Yadav, An investigation of the effects of high amplitude vibrations on the microstructure, mechanical and fracture behaviour of LM4 alloy
9:40 – 10:00 J. Burja, Microbiologically assisted corrosion of a stainless steel turbine in a hydroelectric power plant
10:00 – 10:20 B. Žužek, Importance of analyzing approach and methods utilization on failure analysis results
10:20 – 10:40 A. Bajželj, Effect of austenitisation time and temperature on crystal grain size, carbide dissolution and martensitic phase transformation of 51CrV4 steel
10:40 – 11:00 Mahesh Unnam, Effect of Montmorillonite Nano Clay on the Morphological, Mechanical and Thermal properties of Epoxy-Polypropylene Shape Memory Materials

11:00 – 11:30 Coffee break

Session 15 – Additive Manufacturing 3 (Hall 1)

11:30 – 11:50 C. Massey, Influence of power, scanning speed and layer thickness on solidification and the strength of SLM ALSi10Mg alloys
11:50 – 12:10 S. Kumar, 3D Printing of Clay Ceramics Using The Direct Ink Writing (DIW) Technique
12:10 – 12:30 S. Malej, Hybrid additive manufacturing of Ti6Al4V parts by powder bed fusion and direct energy deposition.
12:30 – 12:50 D.A. Skobir Balantič, Low-Temperature Plasma Nitriding of Additive Manufactured 316L Stainless Steel for Improved Surface Properties
12:50 – 13:10 T. Mede, Modelling the Heat Transfer in Selective Laser Melting

Session 16 – Modelling and simulation 3 (Hall 2)

11:30 – 11:50 A. Vishwakarma, Design of a Smart-Phone Self-Charging Device Based on Permanent Magnets
11:50 – 12:10 J. Adhikari, Modelling and simulation of functionally graded graphene reinforced piezoelectric tile
12:10 – 12:30 A. Guštin, Creep-life data extrapolation
12:30 – 12:50 F. Vode, Automatic analysis of thermal cracks propagation
12:50 – 13:10 *TBA*

13:10 – 13:30 Closure of the Conference (Hall 1)

Poster session, Tuesday 11.10.2022 (16:20 – 18:00)

P1 Zong-Ru Yu, et al., Construction of a Feedrate-based Iterative Algorithm for CNC Bonnet Polishing Process
P2 Ali Kursun, et al., Static and Dynamic Behaviour of Recycled Thin Sheet "Ti-Al/Ni-Al" based Composites reinforced with Scrap AA1050 and Nb produced by Hot-Forged Bonding
P3 Habil Hadi Mohammed, Roadblocks to Continuous FGM Implementation in Open-Source Extrusion-Based Additive Manufacturing
P4 A. Kowalski, et al., Manufacturing technology of the Cu-Ni-Si feedstock for WAAM technology
P5 M. Łagoda, et al., Influence of titanium on the mechanical properties of CuMgAl alloy after rolling
P6 M. Maleta, et al., Influence of heat treatment on the properties and structure of CuMg alloy with the addition of zircon
P7 Ž. Meral et al., Surface characterization of polymer material using the touch method
P8 U. Župerl, Modeling of cutting forces in end milling of metallic multilayer material
P9 D. Kubátová et al., Experimental verification of the influence of part temperature when measuring selected dimensional parameters
P10 R. Coelho et al., NbC-Based Cermet Production Comparison: L-PBF Additive Manufacturing versus Conventional LPS powder metallurgy
P11 V. Yarasu et al., A comparative study on wear behaviour of conventionally and cryogenically treated cold work tool steel
P12 J. Kulasa et al., Prototype of the propellers manufactured using 3D Metal Printing process and quality verification in non-destructive tests
P13 A. Brudny et al., Optimization of WAAM 3D printing parameters for the production of elements made of multi-component aluminium bronzes
P14 Jhy-Cherng Tsai et al., Prediction of Cutting Forces Via Motor Current in Metal Milling
P15 Dhurata Katundi et al., Design of Ti-Al/Nb2Al/Al2O3 Fibre based Composites for Aircraft Engine Applications produced by combined method: Sintering + Forging
P16 Maamar Hakem, et al., Effect of microstructure and intermetallic precipitates on the electrochemical behavior of dissimilar AA6061-T6/ER5183/AA5086-H32 aluminum TIG-weld
P17 Sahil Bharti, et al., Evaluation of formability in ISF for feature based and face filling toolpath strategies
P18 H. H. Teo, et al., Enhancement of Hydrophilic Modified Polyvinylidene Fluoride Membranes Tailored by Copper(I) Oxide Inorganic Nanoparticles using New Hybrid Membrane Manufacturing System
P19 S. Sreenivasan, et al., Influence of Fiber Content and Fiber Length on the thermal and Electrical Properties of Kenaf Short Fiber Reinforced Bulk Moulding Compounds (BMC) For Compression Moulding
P20 R. Padmananbhan, Study on a novel asbestos-free phenolic resin composite material for friction applications
P21 Y. H. Seo, et al., Development and application of die limit life prediction system utilizing manufacturing data of forging process
P22 H.R. Lee, et al., Investigation on tube end forming behaviour of STS430 0.7t sheet based on two-point incremental forming process
P23 M. Kim, et al., Correlation of Electromagnetic Properties to Springback for Real-time Prediction of Shape Quality in Forming Process

Sponsors & Exhibitors

AMPT2022 23rd International Conference on Advances in Materials & Processing Technologies

10-14 October 2022 Grand Hotel Bernardin, Portorož, Slovenia

5th Announcement & Conference Program

CONFERENCE VENUE

Conference will be held along the beautiful Adriatic – Mediterranean coast of Slovenia in Congress Centre Bernardin, located in the municipality of historical-Venetian style town of Piran. It is located 130 km southwest of Slovenia capital Ljubljana and can be easily reached from EU main capitals.

INVITED SPEAKERS

Prof.dr. Dermot Brabazon (Ireland): ***Key challenges and advancements in additive manufacturing***
Prof.dr. Imre Felde (Hungary): ***On the Bio-inspired computational methods and AI technics supporting Heat Treatment processes***
Prof.dr. Chao-Pei Jiang (Taiwan): ***New direction and novel AM technology development in biomedical applications***
Prof. dr. Massimo Pellizzari (Italy): ***Considerations about cryogenic treatment of tool steel, twenty years after the AMPT'99 conference in Dublin***
Prof. dr. Bekir Yilbas (Saudi Arabia): ***Current and Future Trends in Surface Engineering: Practical Applications of Hydrophobic Surfaces***

KEY DATES

- **Registration & Fee deadline:**
  September 20, 2022
- **Conference start:**
  October 10, 2022
- **Full Paper Submission:**
  November 18, 2022
- **Full Paper Journal Notification:**
  September 30, 2022

PROGRAM

	Monday	Tuesday	Wednesday	Thursday	Friday
	10th Oct.	11th Oct. 2022	12th Oct. 2022	13th Oct. 2022	14th Oct. 2022
	Conference Registration				
Morning		**Invited lectures**	**Invited lectures**	**Invited lectures**	**Parallel sessions**
		Coffee break	Coffee break	Coffee brake	Coffee brake
		Parallel sessions	**Parallel sessions**	**Parallel sessions**	**Parallel sessions**
		Lunch	Lunch	Lunch	**Conference closure**
Afternoon		**Parallel sessions**	**Excursion**	**Parallel sessions**	
		Coffee break		Coffee break	
		Poster Session		**Parallel sessions**	
Evening	**Registration & Welcome reception**		**Conference Dinner**		

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