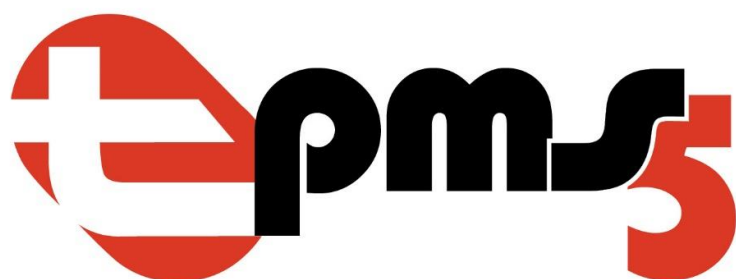




**4th Mediterranean Conference on
Heat Treatment and Surface Engineering**



**International Conference on
Thermal Process Modeling and Simulation**

LECCE • ITALY • 17-19 APRIL 2024

Organised by



**ASSOCIAZIONE
ITALIANA DI
METALLURGIA**



**UNIVERSITÀ
DEL SALENTO**

www.aimnet.it/mc-tpm.htm

Wednesday 17 April


	Y2 room
13:30	Registration
14:00	OPENING SESSION
15:30	COFFEE BREAK
15:50	HEAT TREATMENT OF IRON AND STEELS I
16:50	GEFRAN SPONSOR TECH TALK
17:00	TESTING & CHARACTERIZATION OF HEAT & SURFACE TREATED COMPONENTS
20:00	Welcome reception at Palazzo BN - Via XXV Luglio, Lecce

Thursday 18 April

	Y2 room	Y3 room
09:00	HEAT TREATMENT OF IRON AND STEELS II	MODELLING AND SIMULATION OF THERMAL PROCESSES AND SURFACE ENGINEERING I
10:40	COFFEE BREAK	
11:00	HEAT TREATMENT OF NON-FERROUS ALLOYS	MODELLING AND SIMULATION OF THERMAL PROCESSES AND SURFACE ENGINEERING II
12:00	SURFACE ENGINEERING I	PHASE TRANSFORMATION & ALLOY DESIGN
13:00	LUNCH	
14:00	SURFACE ENGINEERNG II	DEFORMATION & RECRYSTALLIZATION
15:00	PHYSICAL METALLURGY IN HEAT TREATMENT	
15:20		G.N.R. SPONSOR TECH TALK
15:40	COFFEE BREAK	
16:00	HEAT TREATMENT IN ADDITIVE MANUFACTURING I	MELTING & CASTING
17:30	Transfer to Otranto	
	Guided visit and Conference dinner in Otranto	

Friday 19 April

	Y2 room	Y3 room
09:00	HEAT TREATMENT IN ADDITIVE MANUFACTURING II	SPECIAL TREATMENTS
10:00		ENVIRONMENTAL ASPECTS IN HEAT TREATMENT AND SURFACE ENGINEERING
11:10	COFFEE BREAK	
11:30	COATING	ADDITIVE MANUFACTURING
12:10		RESIDUAL STRESS & DISTORTION
12:50		ARTIFICIAL INTELLIGENCE, PROCESS CONTROL AND RELIABILITY IN THERMAL PROCESSING AND SURFACE ENGINEERING
13:50		Closing remarks
14:00	End of the Conference	



AIM is pleased to announce the 4th Mediterranean Conference on Heat Treatment and Surface Engineering (MCHTSE 2024) and the 5th International Conference on Thermal Process Modeling and Simulation (TPMS-5), which will be held together in Lecce – Italy on 17-19 April 2024.

The two conferences aim at providing a forum within which engineers, scientists, researchers and production managers can review and discuss fundamentals, new challenges, recent progress and emerging topics in the fields of advanced heat treatment and surface engineering technology.

ORGANIZING COMMITTEE

Federica Bassani - AIM, Italy

Sabrina De Donato - AIM, Italy

Lorena Emanuelli - Università di Trento, Italy

Giuseppe Grassi - Università del Salento, Italy

Paola Leo - Università del Salento, Italy

Claudio Mele - Università del Salento, Italy

Enrico Morgano - Silco, Italy

Silvano Panza - AIM, Italy

Massimo Pellizzari - Università di Trento, Italy

Gilda Renna - Università del Salento, Italy

Neetesh Soni - Università del Salento, Italy

Cinzia Todisco - Università del Salento, Italy

Marta Verderi - AIM, Italy

CONFERENCE CHAIRPERSON

Massimo Pellizzari (IT)

CO- CHAIRPERSON

Bojan Podgornik (SI)

Božidar Matijević (HR)

SCIENTIFIC COMMITTEE

Anja Buchwalder (CH)

Pasquale Cavaliere (IT)

Rafael Colas (MX)

Imre Felde (HU)

Carlos Garcia Mateo (ES)

Adam Grajcar (PL)

Jianfeng Gu (CN)

Stefan Hock (DE)

Patrick Jacquot (FR)

Peter Jurči (CZ)

Bernard Kuntzmann (CH) Mufu Yan (CN)

Paola Leo (IT)

Klaus Löser (DE)

Thomas Lübben (DE)

Scott MacKenzie (US)

Enrico Morgano (IT)

Masahiro Okumiya (JP)

Larisa Petrova (RU)

Danilo Petta (IT)

Reinhold Schneider (AT)

Till Schneiders (DE)

Marcel Somers (DK)

Eva Troell (SE)

Daniele Ugues (IT)

Bernard Vandewiele (BE)

Valentina Vicario (IT)

Matteo Villa (DK)

Veronique Vitry (FR)

Filip Vráblik (CZ)

Thomas Waldenmaier (DE)

CONFERENCE CHAIRPERSON

Massimo Pellizzari (IT)

CO-CHAIRPERSONS

Imre Felde (HU)

Masahiro Okumiya (JP)

SCIENTIFIC COMMITTEE

Kyozo Arimoto (JP)

Silvia Barella (IT)

Pasquale Cavaliere (IT)

Valentina Colla (IT)

Sabine Denis (FR)

Lynn Ferguson (US)

Paolo Ferro (IT)

Marcello Gelfi (IT)

Arianna Gotti (FR)

Nicola Gramegna (IT)

Jianfeng Gu (CN)

Hakan Gur (TR)

Stefan Hock (DE)

Paola Leo (IT)

Thomas Lübben (DE)

Carlo Mapelli (IT)

Lucia Nicola (IT)

Annalisa Pola (IT)

Božo Smoljan (HR)

Marcel Somers (DK)

Eva Troell (SE)

Cristian Viscardi (IT)

Thomas Waldenmaier (DE)

SEPT.
30
—
OCT.
02

TISD 2024

40TH ANNIVERSARY

SEPT. 30 - OCT. 02
CANNES - MANDELIEU

40th
ANNIVERSARY

You're invited to celebrate
40 years of dedication to
material forming,
collaborations, and
pioneering solutions.

WWW.TISD.TRANSVALOR.COM



 **TRANSVALOR**

I N T E R N A T I O N A L S I M U L A T I O N D A Y S

Wednesday, 17 April 2024 – Y2 room

13:30 Registration

OPENING SESSION

Chairperson: M. Pellizzari

14:00 Welcome addresses
IFHTSE Fellowship for Bojan Podgornik and Patrick Jacquot

14:30 **M4_022** *Opening lecture - 4th Mediterranean Conference on Heat Treatment and Surface Engineering (MCHTSE 2024) - Self-lubricating surfaces for hot forming of light-weight alloys*

B. Podgornik, M. Sedlaček, B. Šetina Batič - Institute of Metals and Technology, Slovenia

M. Čekada - Institut "Jožef Stefan", Slovenia

M. Rodriguez Ripoll - AC2T research GmbH, Austria

15:00 **T5_024** *Opening lecture - 5th International Conference on Thermal Process Modeling and Simulation (TPMS-5) - Physics-informed neural networks for heat treatment operations*

I. Felde - Óbuda University, Hungary

15:30 Coffee break

HEAT TREATMENT OF IRON AND STEELS I

Chairpersons: A. Grajcar, M. Villa

15:50 **M4_038** **Exploring the influence of pre-quenched martensite on bainitic transformation kinetics and microstructure in high silicon steel**
C. Garcia-Mateo, L. Morales-Rivas, J. A. Jimenez - MATERIALIA-Steel Research Group, National Center for Metallurgical Research, Spain
T. Sourmail, A. Philippot - Swiss Steel Group, Ascometal CREAS, France

16:10 **M4_040** **Microstructure evolution and mechanical properties of medium-Mn Quenching and Partitioning steels for automotive sheets and plates**
A. Grajcar, A. Kozłowska, A. Wojtacha - Silesian University of Technology, Poland

16:30 **M4_009** **Study of the effects of rapid tempering on 0.4 wt%C, Boron containing martensitic press hardening steel**
M. E. Palmieri, L. Tricarico - Polytechnic University of Bari, Italy
M. Villa - Technical University of Denmark, Denmark

16:50 **STT_001** **Sponsor Tech Talk Smart solutions for electric heat treatment processes**
P. Buzzi - Gefran, Italy

Wednesday, 17 April 2024 – Y2 room

TESTING & CHARACTERIZATION OF HEAT & SURFACE TREATED COMPONENTS

Chairpersons: B. Podgornik, C. Menapace

- 17:00
M4_028 **Effect of solution treatment on the microstructure and mechanical properties of UNS S32750 / F53 / 1.4410 Super Duplex Stainless Steel (SDSS) alloy**
V.D. Cojocaru, N. Serban, N. Zarnescu-Ivan, E.M. Cojocaru - University Politehnica of Bucharest, Romania
- 17:20
M4_033 **Exploring nitrated compound layers: characterization of the pore seam and effects of process parameters on its structure**
M. Sommer, S. Hoja, R. Fichte-Heinen - Leibniz-Institut für Werkstofforientierte Technologien – IWT, Germany
W.A. Kahl - Mapex, University of Bremen, Germany
- 17:40
M4_035 **Influence of post-process heat treatments on the friction and wear behavior under dry sliding condition of a hot work tool steel produced by PBF-LB**
L. Tonelli, C. Martini, L. Ceschini - Università di Bologna, Italy
- 18:00
M4_018 **Comparison of As Cast and T6 heat treatment on high end-of-life-scrap secondary aluminium alloy for High-Pressure Die Casting automotive structural components**
A. Bongiovanni, A. Castellero - Università di Torino, Italy
M. Da Silva - Fundació Eurecat, Spain
- 20:00 Welcome reception
at Palazzo BN - Via XXV Luglio, Lecce

Thursday, 18 April 2024 – Y2 room**HEAT TREATMENT OF IRON AND STEELS II**

Chairpersons: C. Garcia-Mateo, M. Franceschi

- 09:00
M4_014 **Effect of Ce addition on SAF2507 SDSS on Sigma phase precipitation and mechanical properties**
F. Sordetti, M. Miorini, M. Magnana, L. Fedrizzi, A. Lanzutti -
Università di Udine, Italy
C. Maranzana - Acciaieria Fonderia Cividale S.p.A., Italy
- 09:20
M4_027 **Effect of thermo-mechanical treatment on EUROFER97 steel properties**
G. Stornelli, A. Di Schino - Università di Perugia, Italy
R. Montanari, A. Varone - Università di Roma "Tor Vergata", Italy
C. Testani - CALEF-ENEA CR Casaccia, Italy
- 09:40
M4_032 **Strategic approaches to enhance quenching and partitioning applicability: optimizing mechanical properties and microstructure of commercial low-silicon 20MnB5 steel**
M. Belfi, S. Barella, A. Gruttadauria, P. Cetto, T. Carrara - Politecnico di Milano, Italy
- 10:00
M4_002 **Microstructural characterization of a novel Si,Al-based medium carbon steels treated by quenching & partitioning**
M. Franceschi, L. Pezzato, M. Dabalà - Università di Padova, Italy
A. Di Schino, G. Stornelli - University of Perugia, Italy
- 10:20
M4_050 **Influence of hot forging on the precipitation kinetics of secondary phases in UNS S32760 super duplex stainless steels**
M. Pigato, L. Pezzato, C. Gennari, I. Calliari - Università di Padova, Italy
- 10:40 Coffee break

Thursday, 18 April 2024 – Y3 room

MODELLING AND SIMULATION OF THERMAL PROCESSES AND SURFACE ENGINEERING I

Chairpersons: S.D. Catteau, V. Colla

- 09:00
T5_025 **Modeling of gas carbonitriding of 100Cr6: from atmosphere to microstructure**
S. Thibault - NTN-Europe, Research & Innovation Direction, France
J. Dulcy, O. Skiba - Matériaux, Métallurgie et Procédés (IRT-M2P), France
J. Barlier, - Transvalor, France
- 09:20
T5_018 **Kinetics of strain aging in grade EN 1.4003 ferritic stainless steel**
T. Manninen - Outokumpu, Finland
P. Peura - Tampere University, Finland
- 09:40
T5_002 **Fixture hardening of aerospace gears: quenching and distortion analysis**
H. Birkhofer, D. Münster, M. Vidoni - Liebherr-Aerospace Lindenberg GmbH, Germany
M. Jordan - Wickert Maschinenbau GmbH, Germany
- 10:00
T5_009 **Thermo-fluid dynamic simulation of Hot Isostatic Pressure Quench (HIPQ) applied to aeronautical blades**
P. Brambilla, L. Bucchieri, N. Gramegna – EnginSoft, Italy
I. Mondino, M. Coppola, M. Sabella – GE Avio, Italy
- 10:20
T5_029 **Induction heat treatment development based on simulation and its effects during fatigue testing**
H. Torres, M. A. Delgado - Centro de Desarrollo Tecnológico y Humano CDTH, SISAMEX, México
O. Zapata, R. Colás - Facultad de Ingeniería Mecánica y Eléctrica, México
- 10:40 Coffee break

Thursday, 18 April 2024 – Y2 room

HEAT TREATMENT OF NON-FERROUS ALLOYS

Chairpersons: P. Leo, D. Ugues

- 11:00
M4_008 **Effect of different type of aging cycles on the tensile properties of a commercial 6060 Al alloy**
C. Menapace, F. Bernard, M. Lusa – Università di Trento, Italy
- 11:20
M4_011 **Impact of treatment time on single annealing thermal cycle performed on Ti-6Al-4V Titanium alloy specimens obtained using LPBF technology**
E. Ferrari, S. Gaiani, M. Gozzi, M. T. Di Giovanni, M. Lassinantti Gualtieri, F. Mantovani, G. Ponzoni, P. Veronesi - Università degli Studi di Modena e Reggio, Azienda Veca SpA, Italy
- 11:40
M4_047 **Effect of post processing heat treatments on the mechanical and corrosion behaviour of additively manufactured high strength aluminium alloys**
M. Cabrini, S. Lorenzi, D. Aspertì, L. Nani, T. Pastore - Università degli Studi di Bergamo, Italy

SURFACE ENGINEERING I

Chairpersons: M. Okumiya, S. Thibault

- 12:00
M4_048 **Effect of the carburizing route on microstructure, mechanical properties, residual stresses and distortion for transmission shafts**
M. A. Delgado, J. J. Ramirez, H. Torres - Centro de Desarrollo Tecnológico y Humano CDTH, SISAMEX, México
R. Colás - Facultad de Ingeniería Mecánica y Eléctrica, México
- 12:20
M4_025 **3D-printed 316 L stainless steel: optimization of low temperature plasma assisted carburizing**
A. Palombi, R. Montanari, A. Varone, C. Verona - Università di Roma "Tor Vergata", Italy
E. Bolli, S. Kaciulis, A. Mezzi - ISMN-CNR, Italy
A. Lanzutti, F. Sordetti, E. Vaglio - Università di Udine, Italy
- 12:40
M4_049 **Optimizing release properties in injection moulding: comprehensive study of PVD coatings for biobased polymers**
F. S. Gobber, D. Ugues, D. Battezzatore, A. Frache - Politecnico di Torino, Italy
A. Berté, P. Civardi – Lafer, Italy
- 13:00 Lunch

Thursday, 18 April 2024 – Y3 room

MODELLING AND SIMULATION OF THERMAL PROCESSES AND SURFACE ENGINEERING II

Chairpersons: H. Birkhofer, N. Gramegna

- 11:00
T5_011 **DFT Investigation of carbon-expanded α phase with different alloying element**
R.L. Liu, T.Y. Song - Chongqing Wangjiang Industrial Co., China
YX. Zhang, M.F. Yan - Harbin Institute of Technology, China
- 11:20
T5_015 **An integrated CFD-FEA approach for the service life extension of radiant tubes in galvanising plants**
M. Bertoli, J. Ferino, A. Meleddu - Astarte Strategies, Italy
M. Cocco, A. Ferraiuolo, S. Pantarotto - Marcegaglia Ravenna, Italy
- 11:40
T5_026 **Diffusion and precipitation of carbon and nitrogen during carbonitriding of hyper-eutectoid steels for automotive bearing applications**
S.D. Catteau - Ascometal CREAS, France – Institut de Recherche Technologique – Matériaux, Métallurgie et Procédés (IRT-M2P), France
L. Freund, F. Fovet - Ascometal CREAS, France
J. Dulcy, O. Skiba - Institut de Recherche Technologique – Matériaux, Métallurgie et Procédés (IRT-M2P), France
S. Thibault - Institut de Recherche Technologique – Matériaux, Métallurgie et Procédés (IRT-M2P), France – NTN Europe, France

PHASE TRANSFORMATION & ALLOY DESIGN

Chairpersons: G. Valsecchi, A. Gotti

- 12:00
T5_017 **Dependence of the residual deformations on the inherent strain parameters for simulated additive manufacturing of MS1 and 316L steel parts**
V. Gonda, I. Felde, R. Horváth, M. Réger, P. Varga - Óbuda University, Hungary
- 12:40
T5_013 **Multi-scale modeling of aging of waspaloy superalloy: prediction of microstructure evolution and coupling with mechanical properties**
B. Gövercin, C. Şimşir - Middle East Technical University - Simultura Material Technologies, Turkey
- 13:00 Lunch

Thursday, 18 April 2024 – Y2 room**SURFACE ENGINEERING II**

Chairpersons: S. Hoja, M. A. Delgado

- 14:00
M4_007 **Thickness control of nitriding layer for creation of aluminum nitride powder for sintering**
M. Okumiya, R. Sakaguchi - Toyota Technological Institute, Japan
K. Nambu - Osaka Sangyo University, Japan
M. Yoshida, J. Miyamoto - Daido University, Japan
- 14:20
M4_034 **Impact of different quenching medias and its parameters: salt bath quenching, gas quenching and oil quenching at different temperatures, on the part microstructure, hardening and geometrical distortion. Application to an automotive part in 16MC5 and 20MnB5, previously carbonitrided or carburized**
V. Woimbee - Faurecia Forvia, France
- 14:40
M4_005 **Recent progress in advanced plasma-assisted thermochemical treatments of steels**
S. M. Jafarpour, A. Dalke, H. Biermann - Technische Universität Bergakademie Freiberg, Germany

PHYSICAL METALLURGY IN HEAT TREATMENT

Chairpersons: A. Di Schino, M. Belfi

- 15:00
M4_010 **Thermally activated martensite formation: an essential revision of the physical metallurgy of steel**
M. Villa, B. Ali, M. A. J. Somers - Technical University of Denmark, Denmark
- 15:20
M4_015 **Investigation of martensitic transformations in Ti-Nb-Zr alloys**
K. G.S. Souza, K. Pantleon, M. Villa - Technical University of Denmark, Denmark
M. Pellizzari - University of Trento, Italy
R. Caram - University of Campinas, Brazil
- 15:40 Coffee break

Thursday, 18 April 2024 – Y3 room

DEFORMATION & RECRYSTALLIZATION

Chairpersons: T. Manninen, C. Viscardi

- 14:00
T5_006 **Heterogeneous intragranular nucleation of ferrite in high strength low alloy steels**
V. Colla - Scuola Superiore Sant'Anna, TeCIP Institute, Italy
R. Valentini, M. De Sanctis, R. A. Ishak Nakhla, M. Castagnini - Università di Pisa, Italy
- 14:20
T5_022 **Microstructure prediction during thermo-mechanical processes of metallic alloys with a full-field approach based on the level set method**
P. De Micheli, N. El Kosseifi, A. Gotti, M. Moreno - Transvalor, France
M. Bernacki - MINES ParisTech, PSL Research University, CEMEF-Centre de mise en forme des matériaux, France
- 14:40
T5_012 **Heat treatment guidelines of supermartensitic steel forgings by metallurgical modeling**
E. Anelli, S. Colosio - Franchini Acciai, Italy
P. E. Di Nunzio - RINA Consulting, Centro Sviluppo Materiali, Italy
- 15:00
T5_010 **Digitizing heat treatment with DEFORM software**
C. Viscardi - ECOTRE Valente, Italy
-
- 15:20
STT_002 **Sponsor Tech Talk Retained austenite and residual stress: non-destructive analysis by using X-ray diffraction (XRD)**
A. Torboli - G.N.R., Italy
- 15:40 Coffee break

Thursday, 18 April 2024 – Y2 room

HEAT TREATMENT IN ADDITIVE MANUFACTURING I

Chairpersons: L. Emanuelli, L. Tonelli

- 16:00
M4_046 **On the impact toughness of heat-treated AISI 430 stainless steel fabricated by laserpowder bed fusion**
M. Merlin, C. Morales, A. Fortini, C. Soffritti, G. L. Garagnani - Università di Ferrara, Italy
- 16:20
M4_037 **Influence of heat treatment conditions on the microstructure and mechanical properties of Inconel 738 alloy by EHLA 3D**
M. Sale, R. Sola - Tec Eurolab, Italy
T. Lorusso, E. Colombini, P. Veronesi, A. Mercati, A. Morri, L. Ceschini - Università di Modena e Reggio Emilia – Unimore, Italy
- 16:40
M4_019 **Coupled microstructural and thermal analysis investigation to study the aging behaviour of 12.2Cr-10Ni-1Mo-1Ti-0.6Al PH-SS manufactured by Laser Powder Bed Fusion**
F. Russo, M. Pellizzari - Università di Trento, Italy
M. Zanni, A. Fortunato, A. Morri, L. Ceschini - Alma Mater Studiorum - Università di Bologna, Italy
- 17:00
M4_012 **Additive manufacturing of carbide reinforced β titanium alloys for biomedical applications via in-situ alloying**
A. Ayiotis, M. Bourrigault, Z. Pan, K. G. de Souza, W. Tsitsishvili, V. K. Nadimpalli, M.A.J. Somers, M. Villa - Technical University of Denmark, Denmark
L. Emanuelli, M. Pellizzari - Università di Trento, Italy
T. L. Christiansen - Worcester Polytechnic Institute, USA
- 17:30 Transfer to Otranto
Guided visit and Conference dinner in Otranto

Thursday, 18 April 2024 – Y3 room

MELTING & CASTING

Chairpersons: A. Del Prete, S. Barella

- 15:40
T5_023 **Microsegregation and fluid interaction with the electromagnetic field: essential features for realistic numerical simulation of industrial casting processes of metallic alloys**
S. Zhang, G. Puaux, F. Costes, A. Gotti - Transvalor, France
- 16:00
T5_003 **Comparison of mechanical performance and cracking mechanisms between primary and secondary (recycled) HPDC AlSi10Mg aluminum alloys**
R. Arcaleni, L. Ceschini - Università di Bologna, Italy
L. Girelli, A. Pola - Università di Brescia, Italy
T. Bogdanoff - Jönköping University, Sweden
- 16:20
T5_005 **Preliminary investigation on a 36-ton steel ingot: evaluation and analysis of defects by using numerical simulation**
A. Mantelli, A. Pola, M. Gelfi - Università di Brescia, Italy
F. Ricchini - ECOTRE Valente, Italy
M. Svanera, F. Bergamaschi - ASONEXT, Italy
- 16:40
T5_016 **Leakage of impregnated castings**
M. Reger, R. Horvath, I. Felde, V. Gonda - Óbuda University, Hungary
- 17:30 Transfer to Otranto
Guided visit and Conference dinner in Otranto

Friday, 19 April 2024 – Y2 room

HEAT TREATMENT IN ADDITIVE MANUFACTURING II

Chairpersons: S. Amirabdollahian, M. Merlin

- 09:00
M4_004 **Improving multi-material structures of tool steel/copper-beryllium alloy via post-heat treatment in metal additive manufacturing**
Z. Zhao, M. Pellizzari - Università di Trento, Italy
M. Perini - PROM Facility, Italy
- 09:20
M4_023 **Heat treatment effect on FeSi steel by Laser Powder Bed Fusion technology for ferromagnetic cores application**
A. Di Schino, B. Ramiro Rodriguez-Vargas, G. Stornelli - Università degli studi di Perugia, Italia
R. Montanari, A. Varone - Università di Roma "Tor Vergata", Italia
M. Sgambetterra - Italian Air Force - Aeronautical and Space Test Division, Italy
- 09:40
M4_016 **Dilatometric study of the phase transformations in two different titanium alloys produced by Laser Powder Bed Fusion**
L. Emanuelli - INSTM, Italy and Università di Trento, Italy
M. Pellizzari, D. Lonardi, L. Pasquini - Università di Trento, Italy
- 10:00
M4_013 **Evaluation of electrochemical behaviour and wet tribological resistance of Co based dental alloy produced by L-PBF**
A. Lanzutti, F. Andreatta, M. Magnan, E. Vaglio, G. Totis, M. Sortino, L. Fedrizzi - Università di Udine, Italy
- 10:20
M4_036 **Repairing and surface modification of metal sheet bending tools through powder laser directed energy deposition**
S. Amirabdollahian, M. Perini - ProM Facility of Trentino Sviluppo, Italy
- 10:40
M4_030 **Characterization of AlCrN films deposited onto Selective Laser Melted Ti6Al4V substrates**
E. Cerri, E. Ghio - Università di Parma, Italy
G. Bolelli - University of Modena and Reggio Emilia, Italy
A. Bertè, P. Colombi - LAFER, Italy
- 11:00 Coffee break

Friday, 19 April 2024 – Y3 room**SPECIAL TREATMENTS**

Chairpersons: A. Lanzutti, P. Jurci

- 09:00
M4_017 **Surface quality improvement of hot strip mill looper rolls by a new highly alloyed Fe-based coating**
M. Hajhashemi, F. F. Amineh Mobarakeh - Steel Company (M.S.Co), Iran
- 09:20
M4_020 **Shot-peening – an effective tool for managing surface characteristics of aircraft parts operating under extreme conditions**
N. Șerban, M. L. Angelescu, V. D. Cojocaru, D. M. Șerban, E. M. Cojocaru - National University of Science and Technology Politehnica Bucharest, Romania
B. I. Văduva, E. Panainte, R. Crăciun - Turbomecanica, Romania
- 09:40
M4_044 **Exploring potential beneficial effects of cyclic cryogenic treatment on the microstructure and properties of AISI D2 tool steel**
V. Yarasu, B. Podgornik, M. Sedacek, B. S. Batic - Institute of Metals and Technology IMT, Slovenia

ENVIRONMENTAL ASPECTS IN HEAT TREATMENT AND SURFACE ENGINEERING

Chairpersons: A. Acquesta, E. Morgano

- 10:00
M4_006 **A comparison of modern vacuum furnaces designs for improved energy savings and CO2-reduction**
G. Valsecchi - TAV VACUUM FURNACES, Italy
- 10:20
M4_024 **The role of thermal and mechanical processes in sustainability and ecological transition**
E. Morgano - SILCO, Italy
- 10:40
M4_041 **Austempering as a sustainable and efficient alternative to QT-Treatment in nitriding of heat-treatable steels - influence of different bainitic pretreatment structures on the nitriding response of EN42CrMo4 and EN31CrMoV9**
S. Hoja - Leibniz-Institut für Werkstofforientierte Technologien - IWT, Germany - Universität Bremen, Germany
M. Brandt - Universität Bremen, Germany
M. Hunkel - Leibniz-Institut für Werkstofforientierte Technologien - IWT, Germany
M. Hunkel - Leibniz-Institut für Werkstofforientierte Technologien - IWT, Germany
R. Fechte-Heinen - Leibniz-Institut für Werkstofforientierte Technologien - IWT, Germany - Universität Bremen, Germany - MAPEX Center for Materials and Processes, Universität Bremen, Germany
- 11:00 Coffee break

Friday, 19 April 2024 – Y2 room

COATING

Chairpersons: E. Cerri, L. Pezzato

- 11:30
M4_003 **Wear and corrosion properties of glass-containing plasma electrolytic oxidation coatings produced on 6061 aluminum alloy**
L. Pezzato, L. Kostelac, H. S. Abdelwahab Elsayed, M. Dabala', E. Bernardo,
K. Brunelli - Università di Padova, Italy
L. Tonelli, C. Martini – Università di Bologna, Italy
D. Kajanek - University of Zilina, Slovak Republic
- 11:50
M4_001 **Modification of Diamond Like Carbon (DLC) to improve specific tribological characteristics for automotive applications**
D. Romagnoli, F. Lavallo - STS, Italy "
- 12:10
M4_026 **Synthesis, characterizations, and applications of LDHs grown on metals. A review**
M. Richetta, R. Montanari - Università di Roma Tor Vergata, Italy
- 12:30
M4_029 **Nanocomposite Cr₂N-Ag thin films for tribological applications at elevated temperatures**
P. Jurci - Slovak University of Technology, Slovakia
- 12:50
M4_021 **Green surface treatment of additive manufacturing parts**
T. Monetta, A. Acquesta – Università di Napoli Federico II, Italy
- 13:10
M4_039 **Innovative coating for Electroplated Hard Chromium replacement in severe environments**
L. Fabiocchi, N. Lecis, K. Mounir - Politecnico di Milano, Italy
- 13:30
M4_042 **A comparative study on Aluminum-Silicon coatings fabricated by ElectroSpark Deposition**
G. Renna, P. Leo - Università del Salento, Italy
- 13:50 Closing remarks
- 14:00 End of the Conference

Friday, 19 April 2024 – Y3 room**ADDITIVE MANUFACTURING**

Chairpersons: M. Perini, Z. Zhao

11:30 **Microstructural simulation of components manufactured by SLM**
T5_008 A. Del Prete, T. Primo - Università del Salento, Italy

11:50 **Layer-scale finite element model for laser powder bed fusion**
T5_004 M. Vanini, S. Saerle - B. Vrancken - KU Leuven, Belgium and Flanders
Make@KU Leuven, Belgium
K. Vanmeensel - KU Leuven, Belgium

RESIDUAL STRESS & DISTORTION

Chairpersons: D. Tong, V. Gonda

12:10 **Macro-segregations and their role in distortions in case-hardened ring gears**
T5_028 E. Stålnacke - Swerim, Sweden
A. Olofsson - Scania, Sweden
J. Wendel - RISE, Sweden
P. Holm - Ovako Sweden AB, Sweden

12:30 **Modeling and Simulation of quenching crack of steel parts by FEM method**
T5_031 J. Gu, D. Tong, M. Gong - Shanghai Jiao Tong University, China

ARTIFICIAL INTELLIGENCE, PROCESS CONTROL AND RELIABILITY IN THERMAL PROCESSING AND SURFACE ENGINEERING

Chairpersons: V. Gonda, R. Sola

12:50 **Research on real-time simulation of heat treatment for digital twin application**
T5_021 D. Tong, J. Gu, J. Xu - Shanghai Jiao Tong University, China

13:10 **Data-driven digital twin applied to brazing, additive manufacturing and welding**
T5_020 D. Stocchi, S. Tiberi, A. Chiarello – Gruppo Ecor International, Italy
N. Gramegna, G. Borzi – EnginSoft, Italy

13:50 Closing remarks

14:00 End of the Conference

POSTER SESSION

- M4_031** **Determination of porosity map by destructive and non-destructive methods**
R. Horvath, M. Rager, I. Felde - Óbuda University
- M4_043** **Deformation behavior and predictive models of intercritically heat treated AISI 8620 steel**
P. Juijerm, V. Phatiwach - Kasetsart University, Thailand
- M4_045** **On the microstructural evolution and phase transformation in two medium carbon high silicon carbide free bainitic steels**
M. Franceschi, M. Dabalà - Università di Padova, Italy
L. Morales-Rivas, C. Garcia-Mateo - CENIM-CSIC, Spain
- M4_051** **Triplehard® – drop-in-replacement of hexavalent hard chrome**
O. Jahkola – Savroc, Finland
- M4_052** **Cr-free no-rinse conversion coatings of Aluminum alloys**
T. Monetta, A. Acquesta - Università di Napoli Federico II, Italy
- M4_053** **Enhancing SLM for 17-4 PH: Influence of Scanning Approaches and Ultrasonic Peening Treatment on Residual Stresses and Corrosion Resistance**
N. Soni, P. Leo, G. Renna, R. Nobile - Università del Salento, Italy
- M4_054** **Microstructure and corrosion behaviour of Al-Si10-Mg powder processed by Selective Laser Melting considering building orientation effect and surface treatment**
P. Leo, G. Renna, N. Soni, C. Mele, S. Bagheri, R. Nobile - Università del Salento, Italy
- T5_032** **Increase wear resistance of ferritic stainless steel with the improved corrosion resistance**
R.L. Liu, L.Z. Li, T.Y. Song - Chongqing Wangjiang Industrial Co., China
L.Z. Li, M.F. Yan - Harbin Institute of Technology, China

POSSIBLE CHANGES TO THE PROGRAMME WILL BE COMMUNICATED DURING THE CONFERENCE

PID CONTROLLER

RELIABLE, PRECISE AND EASY



**UP TO 16 PID
CONTROL LOOPS**



**AMS2750 / CQI-9
CONFORMANT**



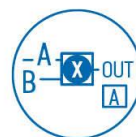
**REMOTE
CONNECTION**



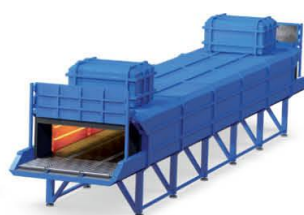
**SETPOINT
PROFILE**



**LOGIC
FUNCTIONS**



**MATH
FUNCTIONS**



GEFRAN

BEYOND TECHNOLOGY

CONFERENCE VENUE

The Conference will be held in Lecce at the University of Salento - Engineering School "Angelo Rizzo" building - Corpo Y.

Conference Registration fees include:

- ✓ ADMITTANCE TO BOTH CONFERENCES' TECHNICAL SESSIONS
- ✓ CONFERENCE BAG WITH BOTH CONFERENCES' DIGITAL PROCEEDINGS
- ✓ COFFEE BREAKS
- ✓ LUNCHES
- ✓ SOCIAL EVENTS (Welcome reception in Lecce on April 17 and Conference dinner in Otranto on April 18, 2024)

Non-member fees include AIM Membership for the year 2024.

Additional ticket for social events for accompanying persons: € 150 (plus 22% VAT) (Includes only Social events: Welcome reception in Lecce on April 17 and Conference dinner in Otranto on April 18, 2024)

SOCIAL PROGRAMME

In order to give delegates the opportunity to meet informally, AIM has organized two Social events:

- **Welcome reception** in the evening of on **April 17th, 2024**, at Palazzo BN - Via XXV Luglio, Lecce (dress code: business / business casual);
- **Conference dinner** in the evening of **April 18th, 2024**, in Otranto, preceded by a guided visit of the city on foot (dress code: business casual – comfortable shoes are highly recommended). A roundtrip transfer service will be provided.

LECCE

Called "the Florence of the South", Lecce is the provincial capital of the Salento area. The city enchants visitors with its stunning Baroque historic centre and the splendid sea right on its doorstep.



AREX

RETAINED AUSTENITE ANALYZER



AREX L



AREX D



ANALYTICAL INSTRUMENTS GROUP

G.N.R. S.r.l. - Via Torino, 7 - 28010 Agrate
Conturbia (NO) - Italy
Tel. +39 0322 882911 - Fax +39 0322 882930
gnrcomm@gnr.it - gnrtech@gnr.it

follow us 

www.gnr.it



Sponsored by



Media partners



LECCE • ITALY • 17-19 APRIL 2024

Organised Secretariat



**ASSOCIAZIONE
ITALIANA DI
METALLURGIA**

Via Filippo Turati 8 - Milano

t. +39 0276021132

t. +39 0276397770

met@aimnet.it - www.aimnet.it