7th INTERNATIONAL THERMAL SPRAYING AND HARDFACING CONFERENCE

ITSHC Wrocław, 11th to 12th of September 2025

CONFERENCE AGENDA

The Conference under the auspices of:
ETSA (European Thermal Spray Association)
Wrocław University of Science and Technology,
Faculty of Mechanical Engineering and SIMP association

Wrocław University of Science and Technology

CONFERENCE ORGANIZERS

Department of Metal Forming, Welding and Metrology
Faculty of Mechanical Engineering Wroclaw University of Science and Technology

SCOPE OF ITSHC CONFERENCE

The aim of the conference is to present the latest researches and developments in the field of thermal spraying, hardfacing and additive manufacturing.
The submitted presentations will focus on new feedstock materials, properties of coatings and weld deposits, novel deposition processes, advanced characterization methods as well as new industrial applications under different operating conditions. In addition, the problems related to training of specialists, quality and certification system at thermal spraying, hardfacing and additive manufacturing technologies will be discussed.

LOCATION

The conference will be held at the **Congress Center of the Wrocław University of Science and Technology (bldg. D20)**, located at 8 Janiszewskiego Street.
The congress center is closely located to a large public transport junction, *PLAC GRUNWALDZKI or RONDO REAGANA*.

SPONSORS

CERTECH	**CERTECH Sp. z o. o.** Wilamowice, Poland certech.pl	Gold Sponsor
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THURSDAY, 11th of SEPTEMBER – conference program

8^{30}	**REGISTRATION AND REFRESHMENT BREAK (LOBBY)**
	ROOM 10AC
9^{30}	**OPENING CEREMONY** **Paweł Sokołowski and Leszek Łatka**
10^{00}	**EXHIBITORS AND SPONSORS** *Short presentations of exhibitors and sponsors*
10^{30}	**PLENARY LECTURES** **Chairman: Lech Pawłowski**
	HVOF coating of additive manufactured parts: exploring the effect of surface pre-treatments and surface topography  Associate Professor at the University of Modena and Reggio Emilia, Italy. His research is dedicated to thermal spray technologies, wear- and corrosion-resistant coatings, and advanced materials characterization. He teaches materials science and engineering, has published widely in the field, and is actively involved in international societies, conference committees, and editorial boards. **Giovanni Bolelli**
	Advanced methods for characterization of cold sprayed materials  Head of the Cold Spray Research Group at the Institute of Plasma Physics of the Czech Academy of Sciences, Prague. His research focuses on thermal spray technologies, particularly cold spray, as well as biomaterials and plasma-facing materials. He has supervised over 60 PhD and diploma theses, serves on international conference committees, and is an active reviewer and editor for leading scientific journals. **Jan Cizek**

11^{40}	**REFRESHMENT BREAK - EXHIBITION AND POSTER SESSION (LOBBY)**	
	ROOM 10B	**ROOM 10D**
	PLASMA SPRAYING **Chairman: Lutz-Michael Berger**	**ADDITIVE MANUFACTURING** **Chairman: Jan Cizek**
12^{10}	<u>*Keynote speaker*</u> *Conductivity, viscosity, enthalpy: the relevance of nitrogen-based plasmas for effective feedstock treatment in thermal spraying* **Georg Mauer** et al.	<u>*Keynote speaker*</u> *Cavitation erosion resistance of DMLS additive manufactured 17-4PH steel after heat treatment and shot peening process* **Mirosław Szala** et al.
12^{35}	*Microstructure and electrical insulation properties of atmospheric plasma-sprayed alumina (Al_2O_3) and magnesium aluminate spinel ($MgAl_2O_4$) coatings* **Serhii Tkachenko** et al.	*Fatigue life of HVOF-coated additively manufactured parts* **Maria Francesca Bonilauri** et al.
12^{55}	*Influence of Mechanical Pretreatment on the Properties of APS-Deposited Hadfield Steel* **Aleksandra Malachowska** et al.	*Laser metal deposition for the additive manufacturing of tools used in hot forging, aluminum extrusion, and high-pressure die casting* **Paweł Widomski** et al.
13^{15}	**LUNCH BREAK - EXHIBITION AND POSTER SESSION (LOBBY)**	
	ROOM 10B	**ROOM 10D**
	HVOF SPRAYING **Chairman: Georg Mauer**	**HARDFACING PROCESSES** **Chairman: Giovanni Bolelli**
14^{30}	<u>*Keynote speaker*</u> *Effects of a nitrogen atmosphere on Cr_3C_2-containing hardmetal coatings at high temperatures* **Lutz-Michael Berger** et al.	<u>*Keynote speaker*</u> *Microstructure and erosive wear behaviour of in situ NbC and (Nb, Ti)C-reinforced Inconel 625-based composite coatings produced by laser cladding* **Damian Janicki**
14^{55}	*Effect of HVOF spray parameters on the microstructure and mechanical characteristics of high-entropy alloy coatings* **Acacio Rincon** et al.	*Application of titanium diboride in plasma surfacing process of nickel matrix surface layers* **Mateusz Sowa**
15^{15}	*Potentials of environmentally friendly NbC-Fe-based coatings for wear and corrosion protection* **Lukas Tegelkamp** et al.	*What are the differences between self-shielded flux cored hardfacing wires with similar weld metal chemical composition?* **Michał Szymura** et al.
16^{00}	**GUIDED TOUR OF WROCŁAW**	
18^{00}	**TRIP ON THE ODRA RIVER AND DINNER**	

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FRIDAY, 12th of SEPTEMBER– conference program

<table>
<tr><td></td><td colspan="2">ROOM 10AC</td></tr>
<tr><td>9⁰⁰</td><td colspan="2">PLENARY LECTURE
Physical deposition methods for films and coatings
 
Emeritus Professor at The University of Limoges. He has been active in industry and academia field of surface engineering. Author and co-author of 144 scientific papers, as well as 3 books and 3 books chapters. He was awarded the honoric PhD title by Technical University of Chemnitz (2013) and introduced into the Thermal Spray Hall of Fame (2015). He is an inventor of the RIPT conference since 2003.
Lech Pawłowski</td></tr>
<tr><td></td><td>ROOM 10B</td><td>ROOM 10D</td></tr>
<tr><td></td><td>THERMAL SPRAY PROCESSES (1)
Chairman: Ladislav Celko</td><td>THERMAL SPRAY DIAGNOSTICS
Chairman: Thomas Lindner</td></tr>
<tr><td>9³⁰</td><td><u>Keynote speaker</u>
Microstructure, mechanical properties and wear resistance of Fe-based metallic glass coatings cold sprayed on different substrates
Anna Góral et al.</td><td><u>Keynote speaker</u>
Spatial resolved insights into surfaces - New evaluation strategies for large-volume measurements with non-destructive and automated surface acoustic wave spectroscopy
Stefan Makowski et al.</td></tr>
<tr><td>9⁵⁵</td><td>Advanced thermal spraying in monosilane atmospheres:towards oxide-free and cohesively bonded coatings
Manuel Rodriguez Diaz et al.</td><td>Increasing durability of the outer air seal coating in the high pressure turbine by using a NiCoCrAlY/NiAl bond coat
Martin Nicolaus et al.</td></tr>
<tr><td>10¹⁵</td><td>Low pressure cold spraying of H_2O_2-modified TiO2 coatings
Anna Gibas et al.</td><td>Investigation of plasma-sprayed tungsten coatings under plasma exposure
Gunnar Schmidtmann et al.</td></tr>
<tr><td>10³⁵</td><td>Structure and properties of hybrid plasma sprayed TiO_2-ZnO coatings
Karolina Płatek et al.</td><td>Toward real-time trajectory prediction of powder and suspension feedstocks in plasma spraying
Tomasz Kiełczawa et al.</td></tr>
<tr><td>10⁵⁵</td><td colspan="2">REFRESHMENT BREAK - EXHIBITION AND POSTER SESSION (LOBBY)</td></tr>
</table>

	ROOM 10B	ROOM 10D
	THERMAL SPRAY PROCESSES (2) **Chairman: Grzegorz Moskal**	**DEVELOPMENTS IN MATERIALS** **Chairman: Sergi Dosta**
11^{30}	*Keynote speaker* *Towards sustainable coatings: process optimization and performance evaluation of HVAF sprayed Fe-based BMG coatings* **Rahul Jude Alroy** et al.	*Keynote speaker* *Flowability of yttria-stabilized zirconia powder produced for atmospheric plasma spraying* **Ladislav Celko** et al.
11^{55}	*Functionalized thermally sprayed coatings for biomedical applications* **Martin Nicolaus** et al.	*Work hardening behavior of casted, sintered and sprayed high manganese steels* **Thomas Lindner** et al.
12^{15}	*Influence of manufacturing methods on selected Fe-based amorphous/nanocrystalline coatings* **Inez Kredowska** et al.	*Tailoring spherical powder composition and size for thermal spraying by ultrasonic atomization* **Bartosz Morończyk** et al.
12^{35}	*The influence of spray distance on the properties of double carbides coatings deposited on AZ31 by HVOF* **Leszek Łatka** et al.	*New perspectives in metal powder manufacturing: analysis of the ultrasonic atomization process of 316L Steel* **Adam Sajbura** et al.
12^{55}	**REFRESHMENT BREAK - EXHIBITION AND POSTER SESSION (LOBBY)**	
	ROOM 10B	**ROOM 10D**
	THERMAL SPRAY PROCESSES (3) **Chairman: Leszek Łatka**	**SURFACE ENGINEERING PROCESSES** **Chairman: Damian Janicki**
13^{25}	*Keynote speaker* *Comparison between intermetallic reinforced coatings obtained by thermal spray* **Sergi Dosta** et al.	*Keynote speaker* *Dual-phase $Ln_2Zr_2O_7$ + 8YSZ composite thermal barrier coatings – thermal insulation properties and microstructural degradation* **Grzegorz Moskal**
13^{50}	*Photocatalytic properties of suspension plasma sprayed sub-stoichiometric TiO_2 coatings* **Afrodyta Daskalakis** et al.	*Laser surface polishing of CVD microcrystalline diamond coatings* **Maurycy Kempa** et al.
14^{10}	*Application of laser texturing as a method for substrate preparation in thermal spraying* **Pawel Sokolowski** et al.	*Cavitation erosion mechanisms of nickel-based overlays deposited via powder plasma transferred arc method* **Mirosław Szala** et al.
14^{30}	**CLOSING CEREMONY (ROOM 10AC)**	
14^{40}	**LUNCH BREAK (LOBBY)**	

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POSTER PROGRAMME

Posters are displayed for the whole conference duration
Three best posters will be awarded during the conference dinner
Please vote for the best poster by voting ballots

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No.	POSTER TITLE
P1	*Mechanical and biological properties of hydroxyapatite-zirconium bilayer coatings deposited by microplasma spraying* **S. Voinarovych**, S. Maksimov, S. Kaliuzhnyi, O. Kyslytsia, D. Alontseva, L. Łatka
P2	*Evaluation of the influence of material configuration on the tribological wear of mechanical systems of cooperating elements in a scraper conveyor for cullet discharge transport* **A. Czupryński**, M. Musztyfaga-Staszuk, A. Woźniak
P3	*Influence of TiC addition on microstructure and mechanical properties of Inconel 625 laser cladding overlayers* **E. Jonda**, T. Poloczek, L. Łatka, M. Godzierz, A. Lont
P4	*Attempts to modify nickel-based welds using carbon nanotubes* **J. Górka**
P5	*Development of additive manufacturing of internal cooling channels using Cold Spray for optimal heat dissipation in injection molds* **S. Stanco**, V. Nemcova
P6	*Corrosion resistance of plasma-sprayed iron-based metallic glass coatings* **A. Małachowska**, M. Lachowicz, P. Sokołowski
P7	*Image-Based Microstructural Assessment of Plasma-Sprayed Coatings on Hadfield Steel* **A. Małachowska**, K. Morozik, M. Korzeniowski
P8	*Corrosion mitigation in TES through surface engineering* **Sergi Dosta** et al.

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No.	POSTER TITLE
P9	*H_2O_2 -modified TiO_2 for low pressure cold-spraying* **P. Słota,** A. Gibas
P10	*Splat-to-splat heat transfer coefficient determination in dual-phase $Ln_2Zr_2O_7$ + 8 wt%Y_2O_3×ZrO_2 thermal barrier coatings* **G. Moskal** et al.
P11	*Development and validation of a laser polishing technique employing ultra-short pulse lasers for nanocrystalline diamond coatings applied to deep drawing tools* **M. Frankiewicz,** M.Kempa, J.Reiner, A.Zakrzewski, P.Scholz, C.Stein, M.Hofer, K.Weigel
P12	*Deposition of HKUST-1 via low pressure cold spraying (LPCS)* **M. Ozga,** M. Winnicki, A. Baszczuk, M. Jasiorski
P13	*Development of wear-resistant Hadfield steel–based coatings by low-pressure cold spray* **M. Winnicki**, A. Małachowska, W. Seremak, P. Bigott
P14	*Regenerative Laser Cladding of Tooling in Aerospace Manufacturing – Implementation Analysis* **P. Koruba**, M. Pawlicki, J. Reiner

HOW TO REACH CONFERENCE

For easy navigation for the ITSHC conference please see the map:

CONGRESS CENTER – building D20, 8 Janiszewskiego Street, 50-372 Wrocław

CAR PARK – the parking places are provided for conference participants. Please, remember to print parking plate if you plan to use parking (available on the ITSHC website)

PLAC GRUNWALDZKI* or *RONDO REAGANA – the closest public transportation station (tram + bus), just next to the congress center. Tickets may be purchased directly inside the tram or bus

CABLE CAR *POLINKA* – closed for repair for the conference duration. If you are accommodated in Hotel Wodnik or nearby, please access the congress center by Grunwaldzki Bridge

LAB TOUR – possibility to visit laboratories at Faculty of Mechanical Engineering. Please contact conference organizers if you would like to visit the laboratories. Possible slots: Wednesday afternoon and Friday afternoon. Laboratories located 10 minutes by walk from the congress center, in building B9, Łukasiewicza 7-9 street, 50-371 Wrocław

SCIENTIFIC COMMITTEE

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Chairman of Scientific Committee

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