



INTERNATIONAL MATERIALS,
APPLICATIONS & TECHNOLOGIES
2024

29th IFHTSE World Congress

SEPTEMBER 30 – OCTOBER 3, 2024
CLEVELAND, OHIO

SEPTEMBER 30 – OCTOBER 3, 2024
CLEVELAND, OHIO

**ADVANCED MATERIALS AND
MANUFACTURING TECHNOLOGIES**

**DRIVING THE FUTURE OF
THERMAL PROCESSING**

FINAL PROGRAM

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ADVANCING
INDUCTION
TECHNOLOGIES

Magnetic Flux Control
Inductor Design
Modeling + Optimization

IMAT | IFHTSE World Congress Conference & Expositions! | 2024

September 30 — October 3

Huntington Convention Center of Cleveland | Exhibit Hall C

Visit us at Booth 219

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IMAT WELCOME

ASM International and its Affiliate Societies cordially welcome all participants to IMAT 2024—the International Materials, Applications & Technologies Conference and Exhibition. This industry-focused technical conference emphasizes the practical implementation of materials research and cutting-edge technologies, with this year's central theme focusing on Materials for Energy Storage.

The event features a dynamic agenda, including keynote presentations, engaging panel discussions, and a wide range of technical sessions dedicated to the latest developments in the field of materials science. In addition to the sessions, attendees will have opportunities to network and explore the exhibition floor. Our primary goal is to promote collaboration among professionals from various sectors, including industry, academia, and government, to share recent advancements in materials research and technological innovations. We aim to encourage the transfer and application of these breakthroughs to industrial settings.

ASM International is joined by its affiliate societies, including the Heat Treating Society, Failure Analysis Society, Electronic Device Failure Analysis Society, International Metallographic Society, Thermal Spray Society, and Shape Memory and Superplastic Technologies. Participants of the panel discussions will offer their insights on the wide-ranging impacts of advanced solutions for energy storage and advanced manufacturing technologies in their fields. The exposition will showcase leading OEMs, materials suppliers, producers, and corporate partners, highlighting the latest technologies.

Additionally, attendees can participate in educational workshops and pre and post-conference educational courses that provide opportunities for professional development and practical solutions to materials-related challenges. The event will cover core areas such as metals, ceramics, coatings, and composites, while also addressing emerging technologies, energy materials, and renewable energy for power and transportation. Advanced topics such as additive manufacturing, materials informatics, biomaterials, and sustainability will also feature prominently in the technical sessions.

We look forward to welcoming you to IMAT 2024 and engaging with you in the shared pursuit of materials innovation and technological advancement.

IMAT Co-Chairs

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Vice President

Testing, Applied Technical Services

Andrzej Wojcieszynski, FASM

Consultant

Wingens Consulting LLC

#IMAT2024



IFHTSE WORLD CONGRESS WELCOME

Welcome to the 29th IFHTSE World Congress!

On behalf of the ASM Heat Treating Society and the International Federation for Heat Treatment and Surface Engineering (IFHTSE), we're delighted to welcome you to Cleveland, Ohio, for the 29th IFHTSE World Congress. This premier event is dedicated to advancing heat treatment and surface engineering for a sustainable future.

As you explore the dynamic program, you'll discover a wealth of knowledge and innovation. From ground-breaking research to practical applications, our sessions, workshops, and networking opportunities are designed to inspire and inform.

We are honored to feature the following keynote speakers who will share insights on critical topics in our field: IFHTSE 2024 Medalist Professor Tadashi Furuhashi, Institute for Materials Research; Professor Sabine Denis, Université de Lorraine; and Professor Thomas L. Christiansen, Worcester Polytechnic Institute. Additionally, don't miss our special workshop on The Future of Heat Treating, where we'll explore Data/IoT, Sustainability, and Education.

Beyond the educational sessions, we encourage you to take part in the networking events at the iconic ASM International Dome and the Rock & Roll Hall of Fame. If you didn't purchase tickets in advance, check in at the registration desk for availability.

The co-location with IMAT provides a unique opportunity to connect with a broader community of materials scientists and engineers, explore new technologies on the co-located expo show floor, and stay updated on industry trends.

We invite you to fully engage in the conference, connect with peers, and explore new opportunities for growth and collaboration. Thank you for being here—we look forward to a memorable and impactful event.

Sincerely,

29th IFHTSE World Congress Co-Chairs

Dr. Lesley Frame
University of Connecticut

Dr. Scott MacKenzie, FASM
Quaker Houghton

#IFHTSE2024





ISTFA/2024

OCTOBER 28-NOVEMBER 1, 2024 | SAN DIEGO, CA
RIDING THE WAVE OF ARTIFICIAL INTELLIGENCE

REGISTRATION OPEN

The International Symposium for Testing and Failure Analysis (ISTFA) is the premier event for the microelectronics failure analysis community. Join us in celebrating a remarkable milestone: the 50th anniversary of ISTFA! As we commemorate this golden occasion, we cordially invite you to be part of the pinnacle event for the microelectronics failure analysis community this November in San Diego. This year's theme is Artificial Intelligence (AI). AI has been integrated into design, manufacture, process optimization, quality, reliability, and failure analysis (FA). Embracing and effectively using AI in fault isolation (FI) and FA is crucial for new technology development and high-volume mass production in the semiconductor industry. Although numerous AI applications in FI and FA have been demonstrated, there are still many unaddressed challenges, unestablished standards, and unexplored areas to be resolved.



MEET THE 2024 KEYNOTE SPEAKER:

Dr. James Chambers
Vice President of Silicon Engineering and Sourcing, Nvidia Corp.
Wednesday, October 30 | 8:30 - 9:30 a.m.



FA TECHNOLOGY ROADMAP KEYNOTE:

Marla Dowell, Director of CHIPS Metrology Program
and NIST Boulder Laboratory
Tuesday, October 29 | 10:00 - 10:45 a.m.

Education Workshop: Failure Analysis of Electronic Devices
Sunday, October 27 | 8:30 a.m. – 12:30 p.m.
Instructor: Martine Simard-Normandin, MuAnalysis Inc.

Education Workshop: Beam Based Defect Localization
Sunday, October 27 | 1:30 – 5:30 p.m.
Instructor: Ed Cole, Sandia National Labs

Education Workshop: Materials Science in Physical Failure Analyses for Root-cause Finding
Sunday, October 27 | 8:30 a.m. – 12:30 p.m.
Instructor: Wentao Qin, Microchip Technology Inc.



ORGANIZED BY:



ISTFAEVENT.ORG

TABLE OF CONTENTS

Welcome	5	Exhibitor List.....	34
Organizing Committees	10	Floor Plan	35
General Information.....	16	Company Descriptions.....	36
Schedule at a Glance.....	18		
Keynote Speakers.....	22		
Technical Program	23		
Guest Lecture	27		
Panel Discussion	27		
General Membership Meetings.....	28		
Special Events	29		
Student & Emerging Professionals.....	30		
ASM Materials Education Foundation.....	31		
Show Directory.....	32		
Thank You to Our Sponsors	33		

SAVE THE DATE



SMST2025

Shape Memory and Superelastic Technologies
Conference and Exposition

TOPICAL EVENT

2ND SMST IRELAND 2025

MAY 22, 2025

GALWAY, IRELAND



SMST2026

Shape Memory and Superelastic Technologies
Conference and Exposition

MAY 4-8, 2026

HILTON LA JOLLA TORREY PINES

CALIFORNIA

THREE EVENTS. ONE LOCATION. GREATER EXPOSURE.

Reach Aerospace, Thermal Spray AND Heat Treating industries all under ONE roof! These co-located events are an outstanding opportunity to meet with qualified global prospects looking to buy products or services. For the price of exhibiting at one exposition, you get exhibitor exposure to THREE audiences! Over a THOUSAND industry professionals will be on hand to see and hear about your latest advances!

AEROMAT | 2025

ITSC 2025
INTERNATIONAL THERMAL SPRAY
CONFERENCE & EXPOSITION

QDE

AEROMAT | 2025

The integration of novel materials and cutting-edge technologies is poised to revolutionize the aerospace industry, offering unparalleled advancements in performance, cost-effectiveness, and sustainability. The 2025 technical program will be dedicated to showcasing the latest developments in aerospace materials and processes, emphasizing research and development initiatives, as well as fostering collaborations within the global materials community.

AeroMatEvent.org

ITSC 2025
INTERNATIONAL THERMAL SPRAY
CONFERENCE & EXPOSITION

The International Thermal Spray Conference (ITSC25) stands as the premier event for thermal spray professionals, attracting global innovators, influencers and decision makers from across the globe. ITSC 2025 will feature: information-packed technical sessions, a diverse exposition, an Industrial Forum within the Exhibit Hall, a Young Professionals Session, dedicated networking time, and much more!

ITSCEvent.org

QDE
QUENCHING AND DISTORTION ENGINEERING

The 3rd International Conference on Quenching and Distortion Engineering (QDE 2025) – the global gathering for professionals and researchers in the field of quenching and distortion engineering. Join us for May 5-8, 2025 in Vancouver, Canada for an immersive experience filled with cutting-edge research presentations, insightful discussions, and unparalleled networking opportunities

QDEEvent.org

WHY YOU NEED TO BE HERE

Be among leaders of the Aerospace and Thermal Spray Industries by signing up to Exhibit Today!

- Over 1,000 Attendees
- Over 200 Technical Presentations, Keynotes, and Panel Discussions
- Over 100 Exhibits
- 3 Days of Technical Programming
- 2 Days of Expo
- Multiple Networking Events, Awards, and Competitions
- Education on the Show Floor

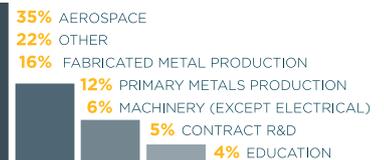
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Roger Jones, FASM

Solar Atmospheres

Olga Rowan

Caterpillar (T&P Committee Chair)

Emerging Professionals Competitions

Rob Goldstein, FASM

*Fluxtrol Incorporated (Fluxtrol Student
Research Competition Chair)*

Michael Nappi

Bodycote (HTS Strong Bar Co-Chair)

Doug Puerta

StackMet (HTS Strong Bar Co-Chair)

GENERAL INFORMATION

CONFERENCE REGISTRATION HOURS

Huntington Convention Center of Cleveland, Exhibit Hall C Foyer

Monday, September 30	7:00 a.m. – 5:00 p.m.
Tuesday, October 1	7:00 a.m. – 5:30 p.m.
Wednesday, October 2	7:00 a.m. – 5:30 p.m.
Thursday, October 3	7:30 – 11:00 a.m.

EXHIBITION DATES AND TIMES

Huntington Convention Center of Cleveland, Exhibit Hall C

Tuesday, October 1	9:00 a.m. – 5:30 p.m.
Wednesday, October 2	9:00 a.m. – 5:00 p.m.

REFRESHMENT BREAKS AND LUNCHES

Mid-morning and afternoon refreshment breaks will be provided each day. Lunch can be purchased on Monday. Lunch is provided for Full Conference registrants on Tuesday and Wednesday.

Monday, September 30

Refreshment Break Open	10:00 – 10:30 a.m.
Meeting Room Foyer	
Lunch Concessions	11:30 a.m. – 1:30 p.m.
(Available for Purchase in Ballroom B)	
Refreshment Break Open	2:30 – 3:00 p.m.
Meeting Room Foyer	

Tuesday, October 1

Refreshment Break Open	9:30 – 10:30 a.m.
Exhibit Hall C	
Lunch Open	11:30 a.m. – 1:30 p.m.
Exhibit Hall C	
Refreshment Break Open	1:45 p.m. – 2:30 p.m.
Exhibit Hall C	

Wednesday, October 2

Refreshment Break Open	9:30 – 10:30 a.m.
Exhibit Hall C	
Lunch Open	11:30 a.m. – 1:30 p.m.
Exhibit Hall C	
Refreshment Break Open.....	2:30 – 3:30 p.m.
Exhibit Hall C	

Thursday, October 3

Refreshment Break Open	9:30 – 10:30 a.m.
Meeting Room Foyer	

SPECIAL NOTE: the Huntington Convention Center is a cashless location. Any concessions or purchases require a debit or credit card.

MOBILE APP

Download the official event app for Apple and Android devices by searching 'IMAT/IFHTSE'.

SPECIAL NOTE

The only way to view the full IMAT and IFHTSE World Congress technical program is via the mobile app or via the IMAT or IFHTSE World Congress 2024 websites.

Access all the following features on your smart phone:

- Search for exhibitors, read their company profiles, and request meetings
- Locate the booths of your favorite exhibitors on the exhibit hall floor plan
- View the technical schedule and search for presentations that interest you
- Create an itinerary and review your saved presentations and exhibitors
- Search for speakers and connect with other attendees at the event

STAY CONNECTED AT THE SHOW

Follow show news on Twitter, Facebook and LinkedIn. Share your photos and videos by using #IMAT2024 and #IFHTSE2024.

INTERNET ACCESS

Complimentary Wi-Fi access for attendees is available throughout the Convention Center.

IMAT & IFHTSE WORLD CONGRESS SPEAKERS

REMINDER: All speakers should plan to meet in the room of your presentation 30 minutes prior to the start of your session in order to upload your presentation. This will allow all speakers the opportunity to meet their session chair and go over any final conference details and any audio-visual concerns.

IMAT SPEAKERS & SESSION CHAIRS

Authors' Coffee will be available in Grand Ballroom C on Monday, September 30 from 8:30 – 10:30 a.m. and Tuesday, October 1 through Thursday, October 3 from 7:00 – 9:00 a.m. Presenters should only attend on the day of their scheduled presentation.

IFHTSE WORLD CONGRESS SESSION CHAIRS BRIEFING

Session Chairs may pick up their packets from 7:00 – 8:00 a.m. on Tuesday, October 1 – Wednesday, October 2; and Thursday, October 3 from 7:30-8:30 a.m. in Room 12. All session chairs should plan to attend the Session Chair Briefing on the day you are chairing a session. These briefings will review instructions and program information relevant to the day for you to pass along to your speakers.

SCHEDULE AT A GLANCE

IMAT AND HEAT TREAT SCHEDULE AT A GLANCE, SPECIAL EVENTS, ASM MEETINGS AND PROTOCOL EVENT LISTING

Sunday, September 29		
7:00 - 8:00 a.m.	ASM International Metallographic Society (IMS) Board and Judges Breakfast	Room 2
8:00 a.m. - 5:00 p.m.	ASM International Metallographic Society (IMS) Judging for IMC Contest	Room 3
8:30 a.m. - 12:00 p.m.	ASM International Metallographic Society (IMS) Board, Committee and Subcommittee Chair Meeting	Room 1
10:00 a.m. - 1:00 p.m.	Action in Education Committee	Room 9
11:00 a.m. - 2:00 p.m.	REHEARSAL - Annual Meeting/Awards Dinner Reception	Hilton - Superior B
12:00 - 1:30 p.m.	Lunch for IMS Board and IMC Contest Judges	Room 2
1:00 - 4:00 p.m.	ASM Heat Treating Society (HTS) Board, Committee and Subcommittee Chair Meeting	Room 1
3:00 - 6:00 p.m.	ASM Foundation Board Meeting	Room 10
5:00 - 8:00 p.m.	ASM Technical Committees Summit	Room 9
6:00 - 9:00 p.m.	ASM Foundation Board/Guest Dinner	Room 7
6:00 - 9:00 p.m.	IMS Awards Dinner and General Membership Meeting (Ticketed Event)	Room 6
7:00 - 10:00 p.m.	International Materials Reviews (IMR) Committee	Room 8
Monday, September 30		
7:00 a.m. - 5:00 p.m.	Registration Open	Exhibit Hall C Foyer
8:00 - 9:30 a.m.	Metallography, Microstructure, and Analysis (MMA) Editorial Board	Room 1
8:30 - 10:00 a.m.	ASM Handbook and Technical Book Committee Meeting	Room 9
8:00 a.m. - 4:00 p.m.	Exhibitor Set-up	Exhibit Hall C
8:30 - 10:30 a.m.	IMAT Authors Coffee	Grand Ballroom C
8:30 - 11:00 a.m.	ASM Finance Committee Meeting	Room 10
9:00 - 10:00 a.m.	IMAT Keynote Session: Linda Horton, FASM, Department of Energy, Office of Science	Room 19
9:00 - 11:30 a.m.	IFHTSE Executive Committee / General Assembly Meeting	Room 8
10:00 - 10:30 a.m.	Refreshment Break Open	Meeting Space Foyer
10:30 - 11:50 a.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
11:30 a.m. - 1:30 p.m.	ASM Leadership Awards Luncheon (Ticketed Event)	Grand Ballroom A
11:30 a.m. - 1:30 p.m.	Lunch Concessions - Lunch available for purchase (cashless)	Grand Ballroom B
1:00 - 2:40 p.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
1:30 - 2:30 p.m.	IFHTSE Keynote Session: IFHTSE 2024 Medalist, Tadashi Furuwara, Institute for Materials Research (IMR), Tohoku University	Room 15
2:00 - 3:00 p.m.	ASM Awards Policy Committee Meeting	Room 9
2:00 - 3:00 p.m.	ASM Investment Committee Meeting	Room 10
2:00 - 5:00 p.m.	ASM Failure Analysis Society (FAS) Board, Committee, and Subcommittee Chair Meeting	Room 1
2:30 - 3:00 p.m.	Refreshment Break Open	Meeting Space Foyer
3:00 - 5:00 p.m.	IFHTSE Workshop: The Future of Heat Treating	Room 14, 15, 16
3:00 - 5:20 p.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
4:00 - 5:00 p.m.	ASM 111th Annual Society Meeting	Room 7

AEROMAT | 2025

36th AeroMat Conference and Exposition
MAY 6-8, 2025 | VANCOUVER, CANADA

**“INNOVATIONS IN MATERIALS ENGINEERING:
SHAPING THE FUTURE OF THE AEROSPACE INDUSTRY”**

CALLING ALL AUTHORS

New innovations in materials engineering are required in order to deliver improvements in the performance, cost, and environmental impact of aerospace structures and engines. The 2025 technical program will focus on the latest aerospace materials & process developments, with keynotes and panels to feature Canadian-centric projects and collaborations with the global materials community.

Deadline is October 25, 2024

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Abstracts are currently being solicited for (but not limited to) the following topics:

- Additive Manufacturing
- Advanced Coatings for Aerospace and Industrial Gas Turbines (IGTs)
- Advanced Forming and Thermomechanical Processing
- Advances in Coatings and Surface Modification
- Composite Materials & Structures
- Emerging Materials & Processes
- High Temperature & Gas Turbine Materials
- Hydrogen Storage and Propulsion
- Integrated Computational Materials Engineering
- Light Alloy Technology
- Low Cost Manufacturing and Affordable Structures
- Material compatibility in aerospace environments
- Materials Characterization & Failure Analysis
- Modeling & Simulation of Manufacturing Processes
- Non-Destructive Inspection Techniques
- Space Materials & Applications
- Sustainability and Recycling
- Titanium Alloy Technology
- Tribology and Wear of Aerospace Materials
- Residual Stress of Aerospace Components
- Welding & Joining

SUBMIT TODAY!

AeroMat 2025 will only accept online abstract submissions of 300 words or less in English via our online abstract service. Please go to aeromatevent.org to begin your submission process. The system is self-explanatory and will allow you return access once you have signed up so that you may edit your abstract as needed before submitting.

**To maintain the integrity of AeroMat, please obtain pre-approval to present your work at the conference before submitting your abstract. All costs associated with your participation will be at your expense (travel, housing, and registration fee).*

aeromatevent.org

SCHEDULE AT A GLANCE

IMAT AND HEAT TREAT SCHEDULE AT A GLANCE, SPECIAL EVENTS, ASM MEETINGS AND PROTOCOL EVENT LISTING

5:45 p.m.	Shuttles Depart for ASM International Dome	Huntington Convention Center of Cleveland – 300 Lakeside Avenue Entrance
6:30 - 9:30 p.m.	Materials Celebration: A Special Networking Evening at the Iconic ASM International Dome (Ticketed Event)	ASM International Headquarters 9639 Kinsman Road, Materials Park, OH, 44073
Tuesday, October 1		
7:00 a.m. - 5:30 p.m.	Registration Open	Exhibit Hall C Foyer
7:00 - 8:00 a.m.	IFHTSE Session Chair Briefing	Room 12
7:00 - 8:30 a.m.	Journal of Failure Analysis and Prevention (JFAP) Editorial Board	Room 9
7:00 - 9:00 a.m.	ASM Women in Materials Engineering Breakfast (Ticketed Event)	Grand Ballroom A
7:00 - 9:00 a.m.	IMAT Authors Coffee	Grand Ballroom C
8:00 - 10:00 a.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
8:15 - 11:45 a.m.	IFHTSE Technical Programming	Rooms 13, 14, & 15
9:00 - 10:00 a.m.	Alpha Sigma Mu Lecturer: Brajendra Mishra, FASM, Worcester Polytechnic Institute	Room 23
9:00 - 10:00 a.m.	Mocktail Meet-up: LGBTQ+ Book Club Edition	Grand Ballroom A
9:00 - 10:30 a.m.	Education Mini Course: Metallurgy for the Non Metallurgist (Separate Registration Required)	Exhibit Hall C - Education Exchange
9:00 a.m. - 5:30 p.m.	Exhibit Hall Open	Exhibit Hall C
9:00 a.m. - 2:00 p.m.	ASM Foundation Mini-Materials Camp	Exhibit Hall C
9:00 a.m. - 2:00 p.m.	ASM DomesDay Competition	Exhibit Hall C
9:30 - 10:30 a.m.	ASM Foundation Informational Session	Room 11
9:30 - 10:30 a.m.	Refreshment Break Open in Exhibit Hall	Exhibit Hall C
10:00 - 11:00 a.m.	ASM IDEA Committee Meeting	Room 3
10:30 - 11:30 a.m.	2024 Edward DeMille Campbell Memorial Lecture: Christopher A. Schuh, FASM, Northwestern University	Room 23
10:30 - 11:50 a.m.	Emerging Professionals: Office Hours for Student Attendees: Resume Review, Career/Grad School Consulting, and Networking	Room 25A
10:30 - 11:50 a.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
10:45 a.m. - 12:15 p.m.	Education Mini Course: General Heat Treating (Separate Registration Required)	Exhibit Hall C - Education Exchange
11:30 a.m. - 1:30 p.m.	Lunch Open on the Show Floor	Exhibit Hall C
11:45 a.m. - 1:00 p.m.	Joining of Advanced Specialty Material (JASM) Committee Meeting	Room 8
11:45 a.m. - 2:00 p.m.	Journal of Materials Engineering & Performance (JMPE) Committee	Room 1
12:00 - 2:30 p.m.	ASM Past Presidents Meeting	Room 10
1:00 - 2:00 p.m.	2024 IMS Henry Clifton Sorby Lecture: Luiz Henrique de Almeida, Federal University of Rio de Janeiro, Brazil	Room 26A
1:00 - 2:15 p.m.	IFHTSE Technical Programming	Rooms 13, 14, & 15
1:00 - 2:00 p.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
1:45 - 2:30 p.m.	Refreshment Break Open in Exhibit Hall	Exhibit Hall C
2:30 - 3:15 p.m.	Joint Keynote Session - IMAT Keynote: Gabriel Veith, Oak Ridge National Laboratory	Exhibit Hall C - Industry Forum
2:30 - 4:00 p.m.	Education Mini Course: Critical Thinking in the Application of A.M. Processes (Separate Registration Required)	Exhibit Hall C - Education Exchange



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11 Na 22.98976928 Sodium	12 Mg 24.305 Magnesium											13 Al 26.9815386 Aluminum	14 Si 28.0855 Silicon	15 P 30.973762 Phosphorus	16 S 32.065 Sulfur	17 Cl 35.453 Chlorine	18 Ar 39.948 Argon																												
19 K 39.0983 Potassium	20 Ca 40.078 Calcium	21 Sc 44.955912 Scandium	22 Ti 47.867 Titanium	23 V 50.9415 Vanadium	24 Cr 51.9961 Chromium	25 Mn 54.938045 Manganese	26 Fe 55.845 Iron	27 Co 58.933195 Cobalt	28 Ni 58.6934 Nickel	29 Cu 63.546 Copper	30 Zn 65.38 Zinc	31 Ga 69.723 Gallium	32 Ge 72.64 Germanium	33 As 74.9216 Arsenic	34 Se 78.96 Selenium	35 Br 79.904 Bromine	36 Kr 83.798 Krypton																												
37 Rb 85.4678 Rubidium	38 Sr 87.62 Strontium	39 Y 88.90585 Yttrium	40 Zr 91.224 Zirconium	41 Nb 92.90638 Niobium	42 Mo 95.96 Molybdenum	43 Tc (98.0) Technetium	44 Ru 101.07 Ruthenium	45 Rh 102.9055 Rhodium	46 Pd 106.42 Palladium	47 Ag 107.8682 Silver	48 Cd 112.411 Cadmium	49 In 114.818 Indium	50 Sn 118.71 Tin	51 Sb 121.76 Antimony	52 Te 127.6 Tellurium	53 I 126.90447 Iodine	54 Xe 131.293 Xenon																												
55 Cs 132.9054 Cesium	56 Ba 137.327 Barium	57 La 138.90547 Lanthanum	72 Hf 178.48 Hafnium	73 Ta 180.9488 Tantalum	74 W 183.84 Tungsten	75 Re 186.207 Rhenium	76 Os 190.23 Osmium	77 Ir 192.217 Iridium	78 Pt 195.084 Platinum	79 Au 196.966569 Gold	80 Hg 200.59 Mercury	81 Tl 204.3833 Thallium	82 Pb 207.2 Lead	83 Bi 208.9804 Bismuth	84 Po (209) Polonium	85 At (210) Astatine	86 Rn (222) Radon																												
87 Fr (223) Francium	88 Ra (226) Radium	89 Ac (227) Actinium	104 Rf (267) Rutherfordium	105 Db (268) Dubnium	106 Sg (271) Seaborgium	107 Bh (272) Bohrium	108 Hs (270) Hassium	109 Mt (270) Meitnerium	110 Ds (281) Darmstadtium	111 Rg (280) Roentgenium	112 Cn (285) Copernicium	113 Nh (284) Nihonium	114 Fl (289) Flerovium	115 Mc (288) Moscovium	116 Lv (293) Livermorium	117 Ts (294) Tennessine	118 Og (294) Oganesson																												
<table border="1"> <tr> <td>58 Ce 140.116 Cerium</td> <td>59 Pr 140.90765 Praseodymium</td> <td>60 Nd 144.242 Neodymium</td> <td>61 Pm (145) Promethium</td> <td>62 Sm 150.36 Samarium</td> <td>63 Eu 151.964 Europium</td> <td>64 Gd 157.25 Gadolinium</td> <td>65 Tb 158.92535 Terbium</td> <td>66 Dy 162.5 Dysprosium</td> <td>67 Ho 164.93032 Holmium</td> <td>68 Er 167.259 Erbium</td> <td>69 Tm 168.93421 Thulium</td> <td>70 Yb 173.054 Ytterbium</td> <td>71 Lu 174.9668 Lutetium</td> </tr> <tr> <td>90 Th 232.03806 Thorium</td> <td>91 Pa 231.03688 Protactinium</td> <td>92 U 238.02891 Uranium</td> <td>93 Np (237) Neptunium</td> <td>94 Pu (244) Plutonium</td> <td>95 Am (243) Americium</td> <td>96 Cm (247) Curium</td> <td>97 Bk (247) Berkelium</td> <td>98 Cf (251) Californium</td> <td>99 Es (252) Einsteinium</td> <td>100 Fm (257) Fermium</td> <td>101 Md (258) Mendelevium</td> <td>102 No (259) Nobelium</td> <td>103 Lr (262) Lawrencium</td> </tr> </table>																		58 Ce 140.116 Cerium	59 Pr 140.90765 Praseodymium	60 Nd 144.242 Neodymium	61 Pm (145) Promethium	62 Sm 150.36 Samarium	63 Eu 151.964 Europium	64 Gd 157.25 Gadolinium	65 Tb 158.92535 Terbium	66 Dy 162.5 Dysprosium	67 Ho 164.93032 Holmium	68 Er 167.259 Erbium	69 Tm 168.93421 Thulium	70 Yb 173.054 Ytterbium	71 Lu 174.9668 Lutetium	90 Th 232.03806 Thorium	91 Pa 231.03688 Protactinium	92 U 238.02891 Uranium	93 Np (237) Neptunium	94 Pu (244) Plutonium	95 Am (243) Americium	96 Cm (247) Curium	97 Bk (247) Berkelium	98 Cf (251) Californium	99 Es (252) Einsteinium	100 Fm (257) Fermium	101 Md (258) Mendelevium	102 No (259) Nobelium	103 Lr (262) Lawrencium
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SCHEDULE AT A GLANCE

IMAT AND HEAT TREAT SCHEDULE AT A GLANCE, SPECIAL EVENTS, ASM MEETINGS AND PROTOCOL EVENT LISTING

3:15 - 4:00 p.m.	Joint Keynote Session - IFHTSE Keynote: Sabine Denis, Université de Lorraine	Exhibit Hall C - Industry Forum
4:00 - 5:00 p.m.	ASM Emerging Professionals Committee Meeting	Room 9
4:00 - 5:30 p.m.	Fluxtrol Student Research Competition: Phase 1 - Poster Presentation	Exhibit Hall C - Student Poster Area
4:00 - 5:30 p.m.	HTS Strong Bar Competition: Phase 1 - Poster Presentation	Exhibit Hall C - Student Poster Area
4:00 - 5:30 p.m.	Welcome Reception with Exhibitors and Poster Session	Exhibit Hall C
6:00 - 7:00 p.m.	ASM Awards Cocktail Reception (Ticketed Event)	Hilton - Superior AB
7:00 - 9:30 p.m.	ASM Awards Dinner (Ticketed Event)	Hilton - Superior CD
9:30 - 11:00 p.m.	ASM President's Reception	Hilton - Veterans ABCD
Wednesday, October 2		
7:00 a.m. - 5:30 p.m.	Registration Open	Exhibit Hall C Foyer
7:00 - 8:00 a.m.	IFHTSE Session Chair Briefing	Room 12
7:00 - 9:00 a.m.	IMAT Authors Coffee	Grand Ballroom C
7:00 - 8:00 a.m.	Breakfast - ASM Board of Trustees	Room 2
8:00 - 8:45 a.m.	IFHTSE Keynote Session: Thomas L. Christiansen, Worcester Polytechnic Institute	Room 15
8:00 - 10:00 a.m.	AM&P Editorial Committee	Room 9
8:00 - 10:00 a.m.	Materials Property Database Committee Meeting	Room 8
8:00 - 10:00 a.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23,24, 25A, 25B, 25C, 26A, 26B, & 26C
8:00 a.m. - 4:00 p.m.	ASM Board of Trustees Meeting	Room 1
8:55 a.m. - 10:10 a.m.	IFHTSE Technical Programming	Rooms 13, 14, & 15
9:00 a.m. - 5:00 p.m.	Exhibit Hall Open	Exhibit Hall C
9:00 a.m. - 2:00 p.m.	ASM Foundation Mini-Materials Camp	Exhibit Hall C
9:30 - 10:30 a.m.	Refreshment Break Open in Exhibit Hall	Exhibit Hall C
10:30 - 11:30 a.m.	Fluxtrol Student Research Competition: Phase 2 - Oral Presentations	Room 14
10:30 a.m. - 12:00 p.m.	IMAT Panel Session: Materials for Energy Storage	Exhibit Hall C - Industry Forum
11:30 a.m. - 1:30 p.m.	Lunch Open on the Show Floor	Exhibit Hall C
11:45 a.m. - 12:30 p.m.	HTS Strong Bar Competition - Phase 2 - Bend Test	Exhibit Hall C - MTS Booth
12:00 - 2:00 p.m.	Alloy Phase Diagram (APD) Committee	Room 9
12:10 - 1:15 p.m.	ASM Materials Venture Challenge	Exhibit Hall C - Industry Forum
1:00 - 2:40 p.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23,24, 25A, 25B, 25C, 26A, 26B, & 26C
1:15 - 5:10 p.m.	IFHTSE Technical Programming	Rooms 13, 14, & 15
1:30 - 3:00 p.m.	IMAT Panel Session: Artificial Intelligence and Machine Learning for Materials Panel Discussion	Exhibit Hall C - Industry Forum
2:30 - 3:30 p.m.	Refreshment Break Open in Exhibit Hall	Exhibit Hall C
3:00 - 3:30 p.m.	Awards Ceremony for HTS Student Competitions	Exhibit Hall C - Industry Forum
3:00 - 5:20 p.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23,24, 25A, 25B, 25C, 26A, 26B, & 26C
5:00 - 9:00 p.m.	Exhibitors Tear-down	Exhibit Hall C
6:00 - 9:00 p.m.	Networking Event at the Rock and Roll Hall of Fame (Ticketed Event)	Rock & Roll Hall of Fame 1100 Rock & Roll Blvd., Cleveland, OH
9:00 - 9:30 p.m.	ASM Failure Analysis Society (FAS) General Membership Meeting	Room 5
9:30 - 10:30 p.m.	ASM Failure Analysis Society (FAS) Program Committee Meeting	Room 5

SCHEDULE AT A GLANCE

IMAT AND HEAT TREAT SCHEDULE AT A GLANCE, SPECIAL EVENTS, ASM MEETINGS AND PROTOCOL EVENT LISTING

Thursday, October 3		
7:30 a.m. - 11:00 a.m.	Registration Open	Exhibit Hall C Foyer
7:00 - 9:00 a.m.	IMAT Authors Coffee	Grand Ballroom C
7:30 - 8:30 a.m.	IFHTSE Session Chair Briefing	Room 12
8:00 - 10:00 a.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
8:30 - 10:10 a.m.	IFHTSE Technical Programming	Rooms 13, 14, & 15
9:30 - 10:30 a.m.	Refreshment Break Open	Meeting Space Foyer
10:30 - 11:50 a.m.	IMAT Technical Programming	Rooms 19, 20, 21, 22, 23, 24, 25A, 25B, 25C, 26A, 26B, & 26C
10:30 a.m. - 12:35 p.m.	IFHTSE Technical Programming	Rooms 13, 14, & 15
12:35 p.m.	Conference Concludes	

IMAT KEYNOTE SPEAKERS



Linda L. Horton, FASM
U.S. Department of Energy
Office of Science

Monday, September 30 | 9:00 – 10:00 a.m.
Room 19

“Science Pathways for Energy Storage Innovation”



Gabriel Veith
Oak Ridge National Laboratory

Tuesday, October 1 | 2:30–3:15 p.m.
Exhibit Hall – Industry Forum
Joint Keynote Session with IFHTSE

“Adventures in Interface Chemistry: From Atomic Organization to Bulk Powders and How These Determine the Future of Energy Storage”

IFHTSE WORLD CONGRESS KEYNOTE SPEAKERS



**IFHTSE 2024 Medalist
Tadashi Furuhashi**
Institute for Materials Research (IMR)
Tohoku University

Monday, September 30 | 1:30 – 2:30 p.m.
Room 15

“Alloying Effects on Microstructure Development in High Strength Steels – From Bulk to Surface”



Thomas L. Christiansen
Worcester Polytechnic Institute

Wednesday, October 2 | 8:00 – 8:45 a.m.
Room 15

“Current Challenges and Future Opportunities within Heat Treatment of Steel”



Sabine Denis
Université de Lorraine

Tuesday, October 1 | 3:15 – 4:30 p.m.
Exhibit Hall – Industry Forum
Joint Keynote Session with IMAT

“Heat Treatment Numerical Simulations: from the Early Works to Today’s Achievements and Perspectives”

TECHNICAL PROGRAM



SPECIAL NOTE: the only way to view the full IMAT and IFHTSE World Congress technical program is via the mobile app or via the IMAT or IFHTSE World Congress 2024 websites.

TECHNICAL PROGRAM — IMAT

Date	September 30		October 1		October 2	October 3	
Locations	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM
19 Keynote PSDK XIX: Phase Stability and Diffusion Kinetics Sustainable Materials & Processes	9:00 AM - 10:00 AM IMAT Keynote: Linda Horton, FASM, Department of Energy, Office of Science 10:30 AM - 11:50 AM PSDK XIX: J Willard Gibbs Equilibria Award Session Honoring Bo Sundman I	1:00 PM - 2:20 PM PSDK XIX: J Willard Gibbs Equilibria Award Session Honoring Bo Sundman I (Continued) 3:00 PM - 5:00 PM PSDK XIX: J Willard Gibbs Equilibria Award Session Honoring Bo Sundman II	8:20 AM - 9:40 AM PSDK XIX: J Willard Gibbs Equilibria Award Session Honoring Bo Sundman III 10:30 AM - 11:50 AM PSDK XIX: J Willard Gibbs Equilibria Award Session Honoring Bo Sundman III (Continued)	1:00 PM - 1:40 PM PSDK XIX: Phase Stability and Diffusion Kinetics I	8:40 AM - 10:00 AM Sustainable Materials & Processes I	10:30 AM - 11:30 AM Sustainable Materials & Processes II	
20 Advanced Materials Manufacturing	10:30 AM - 11:50 AM Advanced Materials Manufacturing I	1:00 PM - 2:40 PM Advanced Materials Manufacturing II 3:00 PM - 5:00 PM Advanced Materials Manufacturing III	8:20 AM - 10:00 AM Advanced Materials Manufacturing IV 10:30 AM - 11:50 AM Advanced Materials Manufacturing V				
21 Materials for Energy & Utilities Corrosion and Environmental Degradation	11:30 AM Materials for Energy Utilities	1:00 PM - 2:20 PM Corrosion and Environmental Degradation 3:00 PM - 4:00 PM Materials for Energy Utilities: Electrode Materials					
22 Joining of Advance and Specialty Materials (JASM XXII)	10:30 AM - 11:50 AM JASM XXII: Soldering, Brazing and Solid State Joining	1:00 PM - 2:40 PM JASM XXII: Laser Welding and Processing 3:00 PM - 4:40 PM JASM XXII: Resistance, Arc Welding and Metallurgic Fundamentals	8:00 AM - 10:00 AM JASM XXII: Keynotes & Additive Manufacturing 10:30 AM - 11:50 AM JASM XXII: Friction Stir Welding and Processing I	1:00 PM - 1:40 PM JASM XXII: Friction Stir Welding and Processing II	8:20 AM - 10:00 AM JASM XXII: Nanojoining		
23 Materials Behavior & Characterization Special Sessions	10:30 AM - 11:30 AM Mechanical Behavior of Materials I	1:00 PM - 1:40 PM Mechanical Behavior of Materials II 3:00 PM - 3:40 PM Processing and Characterization of Materials	9:00 AM - 10:00 AM Alpha Sigma Mu Lecturer: Brajendra Mishra, FASM, Worcester Polytechnic Institute 10:30 AM - 11:30 AM 2024 Edward DeMille Campbell Memorial Lecture: Christopher A. Schuh, FASM, Northwestern University				

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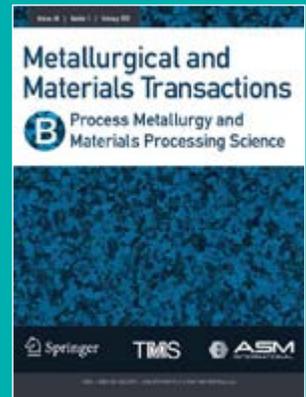
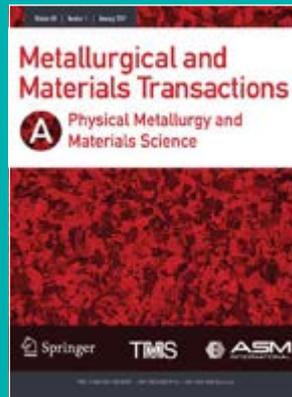
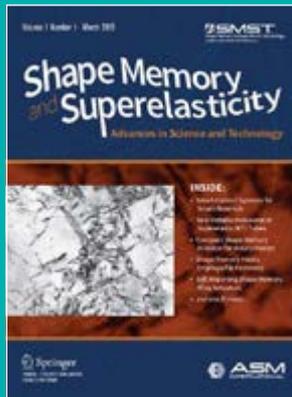
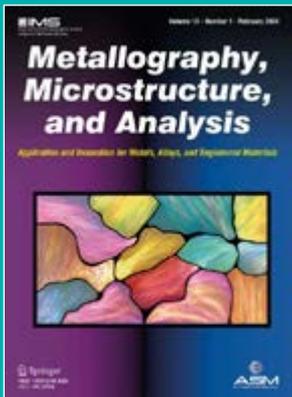
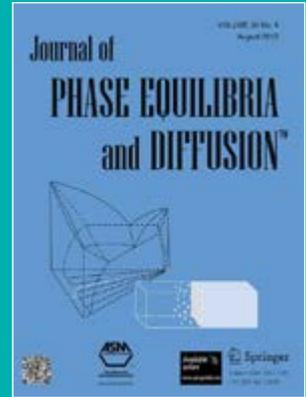
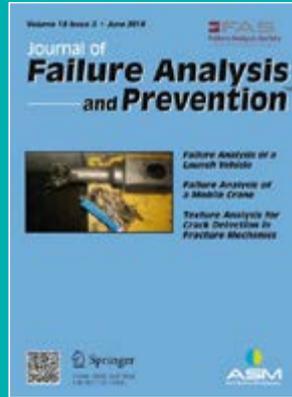
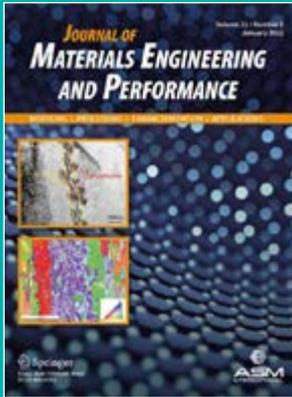
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TECHNICAL PROGRAM — IMAT

Date	September 30		October 1		October 2		October 3
Locations	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM
24 Artificial Intelligence and Machine Learning for Materials		1:00 PM - 3:00 PM Artificial Intelligence and Machine Learning for Materials I 3:00 PM - 5:20 PM Artificial Intelligence and Machine Learning for Materials II					
25 A Light Metal Technology Archaeometallurgy and Ancient Metalworking Medical / Biomaterials: Driving for delivered patient value Archaeometallurgy and Ancient Metalworking Medical / Biomaterials: Driving for delivered patient value			8:20 AM - 10:00 AM Light Metals Technology		8:40 AM - 10:00 AM Archaeometallurgy and Ancient Metalworking	1:00 PM - 2:40 PM Medical / Biomaterials: Driving for Delivered Patient Value	
25 B Residual Stress		1:00 PM - 2:30 PM Tutorial Session: Residual Stress Characterization Using Scattering Techniques	8:20 AM - 10:00 AM Residual Stress I 10:30 AM - 11:50 AM Residual Stress II	1:00 PM - 2:00 PM Tutorial Session: Residual Stress Overview & Panel Discussion			
25 C Additive Manufacturing	10:30 AM - 11:50 AM Process Structure and Properties in Additive Manufactured Metals I	1:00 PM - 2:20 PM Process Structure and Properties in Additive Manufactured Metals II 3:00 PM - 5:20 PM Additive Manufacturing and Powder Based Surface Engineering	8:00 AM - 10:00 AM Process Structure and Properties in Additive Manufactured Metals III 10:30 AM - 11:50 AM Additive Manufacturing Applications	1:00 PM - 2:00 PM Additive Manufacturing and Powder Based Engineering I	8:40 AM - 10:00 AM Additive Manufacturing and Powder Based Surface Engineering II	1:20 PM - 2:20 PM Additive Manufacturing Applications Directed Energy Deposition	
26 A (IMS) Characterization of Materials and Microstructure through Metallography, Image Analysis, and Mechanical Testing - Fundamental and Applied Studies	10:30 AM - 11:50 AM Metallographic Preparation	1:00 PM - 2:40 PM 25 Years of Metallography at the Eisenman Materials Camp 3:00 PM - 3:40 PM Microstructural Characterization I	8:00 AM - 10:00 AM Metallography and Machine Learning I (Joint Session IMS & AI/MI Committee) 10:30 AM - 11:50 AM Metallography and Machine Learning II (Joint Session IMS & AI/MI Committee)	1:00 PM - 2:00 PM 2024 IMS Henry Clifton Sorby Lecture: Luiz Henrique de Almeida, Federal University of Rio de Janeiro, Brazil	8:20 AM - 10:00 AM Microstructural Characterization II	1:00 PM - 2:20 PM Microstructural Characterization III	
26 B Failure Analysis	10:30 AM - 11:50 AM Fundamental Mechanisms & Metallurgy In Failure Analysis I	1:00 PM - 2:40 PM Fundamental Mechanisms & Metallurgy In Failure Analysis II 3:00 PM - 5:20 PM Aerospace Failures	8:20 AM - 10:00 AM Batteries & Energy Storage I 10:30 AM - 11:30 AM Batteries & Energy Storage II	1:00 PM - 2:00 PM Batteries & Energy Storage II (Continued)	8:20 AM - 10:20 AM Joining & Welding Failures	1:20 PM - 2:40 PM Tools & Techniques I 3:00 PM - 5:00 PM Tools & Techniques II	8:20 AM - 10:00 AM Extreme Failures I 10:30 AM - 11:30 AM Extreme Failures II

See more at springernature.com



TECHNICAL PROGRAM — IMAT

Date	September 30		October 1		October 2		October 3
Locations	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM
26 C Failure Analysis	10:30 AM - 11:50 AM Fractography I	1:00 PM - 2:40 PM Fractography II 3:00 PM - 5:20 PM Fastener Failures	8:00 AM - 10:00 AM Non-Metallic Materials I 10:30 AM - 12:30 AM Non-Metallic Materials II		8:00 AM - 10:00 AM Historical, Strange, & Unusual	1:20 PM - 2:40 PM Fatigue & Fracture I 3:00 PM - 5:00 PM Fatigue & Fracture II	8:20 AM - 10:00 AM Corrosion & Embrittlement Failures I 10:30 AM - 11:30 AM Corrosion & Embrittlement Failures II
Exhibit Hall C - Industry Forum (145)				IMAT Keynote: Gabriel Veith, Oak Ridge National Laboratory 3:15 PM - 4:00 PM IFHTSE World Congress Keynote: Sabine Denis, Université de Lorraine	10:30 AM - 12:00 PM Panel Discussion: Materials for Energy Storage	12:10 PM - 1:15 PM ASM Materials Venture Challenge 1:30 PM - 3:00 PM Artificial Intelligence and Machine Learning for Materials Panel Discussion 3:00 PM - 3:30 PM Announcement of Award Winners of the HTS Strong Bar Competition and The Fluxtrol Student Research Competition	
25 A Perspectives for Emerging Professionals	10:30 AM - 11:50 AM Perspectives for Emerging Professionals I	1:00 PM - 2:40 PM Perspectives for Emerging Professionals II 3:00 PM - 4:20 PM Perspectives for Emerging Professionals III	10:30 AM - 11:50 AM Office Hours for Student Attendees: Resume Review, Career/Grad School Consulting, and Networking				
Exhibit Hall C - DomesDay Competition Booth (123)			9:00 AM - 2:00 PM ASM DomesDay Competition				
Exhibit Hall C - HTS Poster Area (331)				4:00 PM - 5:30 PM Fluxtrol Student Research Competition - Phase 1 - Poster Session 4:00 PM - 5:30 PM HTS Strong Bar Competition - Phase 1 - Poster Session			
14					10:30 AM - 11:30 AM Fluxtrol Student Research Competition - Phase 2 - Oral Presentations		
Exhibit Hall C - MTS Booth (223)					11:45 AM - 12:30 PM HTS Strong Bar Competition - Phase 2 - Bent Test		

TECHNICAL PROGRAM — IFHTSE

Date	September 30		October 1		October 2		October 3
Locations	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM
Room 13			8:15 AM - 9:55 AM Sustainability in Heat Treatment 10:30 AM - 11:45 AM Additive Manufacturing I	1:00 PM - 1:50 PM Additive Manufacturing II	9:00 AM - 10:15 AM Heat Treating - Quenching Technologies and Distortion I (Inoue Memorial Symposium)	1:15 PM - 2:55 PM Heat Treating - Quenching Technologies and Distortion II (Inoue Memorial Symposium) 3:30 PM - 5:10 PM Heat Treating - Quenching Technologies and Distortion III (Inoue Memorial Symposium)	8:30 AM - 10:10 AM Materials Durability / Mechanical Testing / Non-Destructive Testing / Characterization - II 10:30 AM - 12:35 PM Surface Engineering: Carburizing, Nitriding, Engineered Coatings II
Room 14		3:00 PM - 5:00 PM IFHTSE World Congress Workshop The Future of Heat Treating (Breakout 2)	8:15 AM - 9:55 AM Surface Engineering: Carburizing, Nitriding, Engineered Coatings I		10:30 AM - 11:30 AM Fluxtrol Student Research Competition (Oral Presentations)		
Room 15	1:30 PM - 2:30 PM Opening Keynote Session: IFHTSE 2024 Medalist, Tadashi Furuhashi, Institute for Materials Research (IMR), Tohoku University	3:00 PM - 5:00 PM IFHTSE World Congress Workshop The Future of Heat Treating (Breakout 3)	8:15 AM - 9:55 AM Simulation and Modeling I 10:30 AM - 11:45 AM Heat Treatment I	1:00 PM - 2:15 PM Heat Treatment II	8:00 AM - 8:45 AM Keynote: Tom Christiansen, WPI	1:15 PM - 2:55 PM Heat Treatment III 3:30 PM - 5:35 PM Materials Durability / Mechanical Testing / Non-Destructive Testing / Characterization I	8:30 AM - 10:10 AM Simulation and Modeling II 10:30 AM - 12:35 PM Heat Treatment IV
Room 16		3:00 PM - 5:00 PM IFHTSE World Congress Workshop The Future of Heat Treating (Breakout 1)					
Exhibit Hall C - Industry Forum (145)			3:15 PM - 4:00 PM IFHTSE Keynote: Sabine Denis, Université de Lorraine				

GUEST LECTURES



Alpha Sigma Mu Lecture
Brajendra Mishra, FASM
 Worcester Polytechnic Institute

Tuesday, October 1 | 9:00 – 10:00 a.m.
Room 23

“Materials Regeneration for Societal Sustainability”



2024 Edward DeMille Campbell Memorial Lecture
Christopher A. Schuh, FASM
 Northwestern University

Tuesday, October 1 | 10:30 – 11:30 a.m.
Room 23

“The Coming Age of Computationally Designed Grain Boundary Chemistry”



2024 IMS Henry Clifton Sorby Lecture
Luiz Henrique de Almeida
 Federal University of Rio de Janeiro, Brazil

Tuesday, October 1 | 1:00 – 2:00 p.m.
Room 26A

“HP GRADE HEAT RESISTANT AUSTENITIC STAINLESS STEELS: 30 years of microstructural evolution and significant performance increase for hydrogen production in steam reforming furnaces.”

PANEL DISCUSSIONS

Materials for Energy Storage

Wednesday, October 2
10:30 a.m.- 12:00 p.m. | Exhibit Hall – Industry Forum

This panel discussion will delve into the current state of science and industry surrounding the development of advanced materials for energy storage. The focus will be on exploring both the technological advancements and the pressing challenges faced by various sectors in meeting the growing demand for innovative energy storage solutions.

Panel Moderator:

Suresh Babu, FASM, Oak Ridge National Laboratory

Panelist:

Don Karner, Electric Applications Incorporated
 Christopher Berndt, FASM, TSS-HoF, Swinburne University of Technology
 John McGann, Exponent

Artificial Intelligence and Machine Learning for Materials

Wednesday, October 2
1:30 – 3:00 p.m. | Exhibit Hall – Industry Forum

Machine learning (ML) and artificial intelligence (AI) are transforming materials science and manufacturing by reducing costs, speeding up processes, and enhancing capabilities. A panel of experts from academia, engineering societies, government labs, and industry will discuss:

- Current applications and benefits of ML/AI in materials and manufacturing
- Future opportunities in the field
- Guidance for adopting these technologies

The session aims to help the materials and manufacturing community understand and integrate ML and AI into their work.

Panel Moderator:

David Furrer, FASM, Pratt & Whitney

Panelists:

Seth Kimble, ASM International
 Joshua Stuckner, NASA-GRC
 James Saal, Citrine Informatics

GENERAL MEMBERSHIP MEETINGS

IMS Awards Dinner and General Membership Meeting*

Sunday, September 29
6:00 – 9:00 p.m. | Room 6

ASM 111th Annual Society Meeting

Monday, September 30
4:00 – 5:00 p.m. | Room 7
 Officers will be elected for the 2024-2025 term, as well as other ASM business transactions. ASM members and guests are welcome.

ASM Failure Analysis Society (FAS) General Membership Meeting & Program Committee Meeting

Wednesday, October 2
9:00 - 10:30 p.m. | Room 5

***Ticketed Event**

SPECIAL EVENTS

IMS Awards Dinner*

Sunday, September 29

6:00 – 9:00 p.m. | Room 6

Join us for an unforgettable evening celebrating excellence in metallography at the 2024 International Metallographic Society (IMS) Awards Dinner during IMAT 2024. Indulge in a night of recognition and camaraderie among industry leaders and innovators.

ASM Leadership Awards Luncheon*

Monday, September 30

11:30 a.m. – 1:30 p.m. | Grand Ballroom A

ASM's Chapter awards, organizational unit awards, as well as awards and scholarships of the ASM Materials Education Foundation will be presented. ASM's incoming committee/council chairs will also be recognized for their leadership.

Materials Celebration: A Special Networking Evening at the Iconic ASM International Dome*

Monday, September 30

6:30 – 9:30 p.m. | ASM International Headquarters

Sponsored By:



Nestled within the picturesque 45-acre expanse of Materials Park lies the iconic ASM International Dome, serving as the headquarters of ASM International since its inception. Conceived by luminaries like William Hunt Eisenman and crafted by architectural visionaries such as John Terence Kelly and R. Buckminster Fuller, this dome symbolizes humanity's mastery of materials. Join us for an evening of celebration and networking in this historic setting, where you'll enjoy cocktails, heavy hors d'oeuvres, and insightful tours of our cutting-edge labs and training facilities. Experience firsthand the innovation and timelessness of Materials Park while engaging in captivating demonstrations led by the ASM Materials Education Foundation master teachers. Don't miss this exclusive opportunity to immerse yourself in the legacy of Materials Park! Roundtrip transportation provided.

Note: Tickets will not be available to purchase onsite.

ASM International Headquarters

9639 Kinsman Road, Materials Park, OH, 44073

Shuttle Schedule:

5:45 p.m.: Shuttle Departs from Huntington Convention Center of Cleveland – 300 Lakeside Avenue Entrance

9:30 p.m.: Shuttle departs from ASM International Headquarters

ASM is in a remote location and Uber/Lyft are not easily accessible.

International Metallographic Society (IMS) IMC Booth

Tuesday, October 1 & Wednesday, October 2

IMC Booth - 622

The International Metallographic Contest draws the interest of metallographers around the world, as they compete for the prestigious ASM-IMS Jacquet Lucas Award of \$3000. The award is endowed by Buehler Ltd. There are five different classes of competition covering all fields of optical and electron microscopy. Visit IMS booth 622 to see the winners of the 2024 competition.

Women in Materials Engineering Breakfast Joint with IMAT & IFHTSE World Congress*

Tuesday, October 1

7:00 – 9:00 a.m. | Grand Ballroom A

Hosted by ASM International's IDEA Committee, this event will feature Robin Gourley, Senior Principal Materials Engineer from Curtiss-Wright. Gourley will describe her nonlinear career journey working in different areas of engineering, from graduate school as a metallurgist to materials development and management. This breakfast is a popular annual event and usually sells out. All are welcome!

Mocktail Meetup: LGBTQ+ Book Club Edition

Tuesday, October 1 – immediately following the ASM Women in Materials Engineering Breakfast

Join us for the "Mocktail Meetup: LGBTQ+ Book Club Edition," where community and conversation come together in a relaxed, welcoming environment. This event is designed to celebrate the diversity within the materials science and engineering community by creating a space for LGBTQ+ professionals and allies to connect, share perspectives, and explore thought-provoking literature.

Whether you're an avid reader or just looking to meet like-minded individuals, this event offers a unique opportunity to build connections, foster understanding, and strengthen our commitment to diversity, equity, and inclusion within our field.

All are welcome — come for the conversation, stay for the community!

Welcome Reception with Exhibitors and Poster Session

Tuesday, October 1

4:00 - 5:30 p.m. | Exhibit Hall C

Attendees will have the opportunity to mix, mingle, and build business relationships with key contacts. This fun-filled event is an attendee favorite featuring light hors d'oeuvres and local beer/wine selections.

ASM Awards Dinner/Reception

Tuesday, October 1

6:00 – 9:30 p.m. | Hilton Superior ABCD

Join ASM in celebrating the accomplishments of ASM'S award recipients. Tickets, which include the President's Reception following the dinner, can be purchased with IMAT registration.

Cocktail Reception: 6:00 – 7:00 p.m. in Hilton Superior AB

Banquet: 7:00 – 9:30 p.m. in Hilton Superior CD

President's Reception: 9:30 – 11:00 p.m. in Hilton Veterans ABCD

SPECIAL EVENTS (CONT.)

Networking Event at the Rock & Roll Hall of Fame*

Wednesday, October 2

6:00 – 9:00 p.m. | Rock & Roll Hall of Fame

Get ready to rock and roll at the networking event of the year! Join fellow attendees from IMAT and the IFHTSE World Congress for this year's gathering at the iconic Rock & Roll Hall of Fame in Cleveland. Expect a night filled with electrifying performances, exciting surprises, and opportunities to connect with industry peers. Don't miss this fantastic chance to mingle with professionals while savoring delicious local cuisine, cocktails, and mind-blowing entertainment in the heart of rock and roll history. Your event ticket includes full access to the museum's exhibits (a \$35 value).

Directions to Rock & Roll Hall of Fame:

1100 Rock & Roll Blvd., Cleveland, OH

The Rock & Roll Hall of Fame is walking distance from Huntington Convention Center and Headquarter Hotel (0.4 miles).

Exit building on E Lakeside Avenue.

Turn right onto E Lakeside Avenue. Go for 0.2 miles.

Turn left onto E 9th Street. Go for 0.2 miles.

Turn left onto Erieside Avenue. Go for 213 ft.

Enter Rock & Roll Hall of Fame.

***Ticketed Event**



STUDENTS & EMERGING PROFESSIONALS

Perspectives for Emerging Professionals Symposium

Monday, September 30

10:30 a.m. – 5:00 p.m. | Room 25A

A full day of talks that will focus on soft skills, professional development, and career paths. A must-attend event for anyone looking for advice on how to maximize their materials science career!

ASM STUDENT PASSPORT PROGRAM

Calling all students! This interactive contest will guide you through key conference stops to encourage you to learn and see more. Simply download the Conference App where you will be able to access instructions and participate. Prizes will be offered.

Future Leaders Reception

(In conjunction with a Materials Celebration: A Special Networking Evening)

Monday, September 30

6:00 – 9:00 p.m. | ASM International Headquarters

Student attendees of IMAT are invited to enjoy refreshments and drinks in this casual social to meet new peers, other emerging leaders within ASM, and current local Chapter leaders. Registration was required.

ASM CAREER CONNECTIONS

This program is a chance to see the variety of careers available in the materials science and engineering industry. Download the conference app to view exhibitors who are hiring and to learn more about their open positions.

Fluxtrol Student Research Competition

Sponsored By  FLUXTROL

The IFHTSE World Congress and IMAT will offer a young innovative scientists/professionals' competition-based award and recognition program, seeking to encourage participation of young scientists in the ASM Heat Treating Society, and to provide attractive offers and opportunities in the worldwide Thermal Processing community. We are soliciting abstract submissions based on thermal processing of metal/metal containing components for this competition. This is a 2-phase competition encompassing a poster competition, as well as an oral presentation competition for semi-finalists.

First Place: \$2500 cash prize

Second Place: \$1000 cash prize

Third Place: \$500 cash prize

Competition Schedule

Phase 1: Student Poster Competition

Tuesday, October 1 | 4:00 – 5:30 p.m.

Exhibit Hall C - Student Poster Area

Phase 2: Oral Presentations

Wednesday, October 2 | 10:30 – 11:30 a.m.

Room 14

Announcement of Award Winners:

Wednesday, October 2 | 3:00 – 3:30 p.m.

Exhibit Hall C – Industry Forum

STUDENTS & EMERGING PROFESSIONALS

HTS Strong Bar Competition

Sponsored By



Student teams will heat treat steel bar to achieve the highest combination of bending strength and bend deflection. Come support and encourage our student teams participating in this competition!

Competition Schedule

Phase 1: Student Poster Competition

Tuesday, October 1 | 4:00 – 5:30 p.m.

Exhibit Hall C - Student Poster Area

Phase 2: Bend Test

Wednesday, October 2 | 3:00 - 3:30 p.m.

Exhibit Hall C – Industry Forum

Announcement of Award Winners:

Wednesday, October 2 | 3:00 - 3:30 p.m.

Exhibit Hall C – Industry Forum

DomesDay Competition

Tuesday, October 1

9:00 a.m. – 2:00 p.m. | Exhibit Hall C

Sponsored By



Can their domes take the weight? Teams designed and built a dome to be judged in various categories, the last of which will see the dome pitted against the compression machine! Come support the ten teams participating in ASM's Geodesic Dome Design Competition, DomesDay, at IMAT.

Open Office Hours For Students

Tuesday, October 1 | 10:30 – 11:50 a.m. | Room 25A

Want to get ahead to join the workforce? Need help with grad school applications or interested in becoming an entrepreneur? We're here to help! Come join us to make some new friends, professional connections, and get some coaching advice for your ambitions. Brought to you by the ASM Emerging Professionals Committee.

ASM Materials Venture Challenge

Wednesday, October 2

12:10 – 1:15 p.m. | Exhibit Hall C – Industry Forum

The first annual Materials Venture Challenge will be held at IMAT 2024, co-located with IFHTSE World Congress in Cleveland, Ohio. Organized by ASM International, this competition gives students, emerging professionals, and startup companies the chance to take their startup venture to the next level. Don't miss out on this amazing opportunity to support the emerging professionals eager to make a real impact in the world of materials science, embrace a challenge, and let their creativity shine!

First Place: \$2500 cash prize

Second Place: \$1500 cash prize

Third Place: \$1000 cash prize



ASM MATERIALS EDUCATION FOUNDATION

Support an ASM Materials Camp: Workforce Development Begins in the Classroom

Tuesday, October 1

9:30 – 10:30 a.m. | Room 11

Whether an ASM Chapter, business or university, partner with ASM Materials Camps Teachers and Student to engage the next generation of materials science professionals.

ASM Foundation Mini Materials Camp

Tuesday, October 1

9:00 a.m. – 2:00 p.m. | Exhibit Hall C

Wednesday, October 2

9:00 a.m. – 2:00 p.m. | Exhibit Hall C

EDUCATION COURSES*

IFHTSE Education Workshop

29th IFHTSE World Congress:

Future of Heat Treating Workshop

Monday, September 30

3:00 – 5:00 p.m. | Rooms 14, 15, 16

IMAT Education Short Courses

Metallurgy for the Non-Metallurgist

Tuesday, October 1

9:00 – 10:30 a.m. | Exhibit Hall – Education Exchange

General Heat Treating

Tuesday, October 1

10:45 a.m. – 12:15 p.m. | Exhibit Hall – Education Exchange

Critical Thinking in the Application of Additive Manufacturing Processes

Tuesday, October 1

2:30 – 4:00 p.m. | Exhibit Hall – Education Exchange



INTERNATIONAL MATERIALS,
APPLICATIONS & TECHNOLOGIES
2024

29th IFHTSE World Congress

SEPTEMBER 30 – OCTOBER 3, 2024
CLEVELAND, OHIO

SEPTEMBER 30 – OCTOBER 3, 2024
CLEVELAND, OHIO

**ADVANCED MATERIALS AND
MANUFACTURING TECHNOLOGIES**

**DRIVING THE FUTURE OF
THERMAL PROCESSING**

THE SHOW GUIDE



SHOW DIRECTORY

Tuesday, October 1

Exhibit Hall Open

9:00 a.m. – 5:30 p.m.

Refreshment Break Open

9:30 a.m. – 10:30 a.m.

Lunch Open on the Show Floor

11:30 a.m. – 1:30 p.m.

Refreshment Break Open

2:30 p.m. – 3:30 p.m.

Welcome Reception with Exhibitors

4:00 p.m. – 5:30 p.m.

Wednesday, October 2

Exhibit Hall Open

9:00 a.m. – 5:00 p.m.

Refreshment Break Open

9:30 a.m. – 10:30 a.m.

Lunch Open on the Show Floor

11:30 a.m. – 1:30 p.m.

Refreshment Break Open

2:30 p.m. – 3:30 p.m.

INDUSTRY PARTNER



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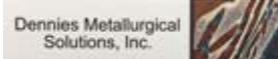
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100% Mexican Technology



Induction coil design, manufacture and repair

Induction heating process and NDT consulting and training

Services

Design 3D modeling
Manufacture Repair

Aplications

Hardening and tempering
Forging Brazing
Fusion Shrink fitting



Ultrasonic NDT



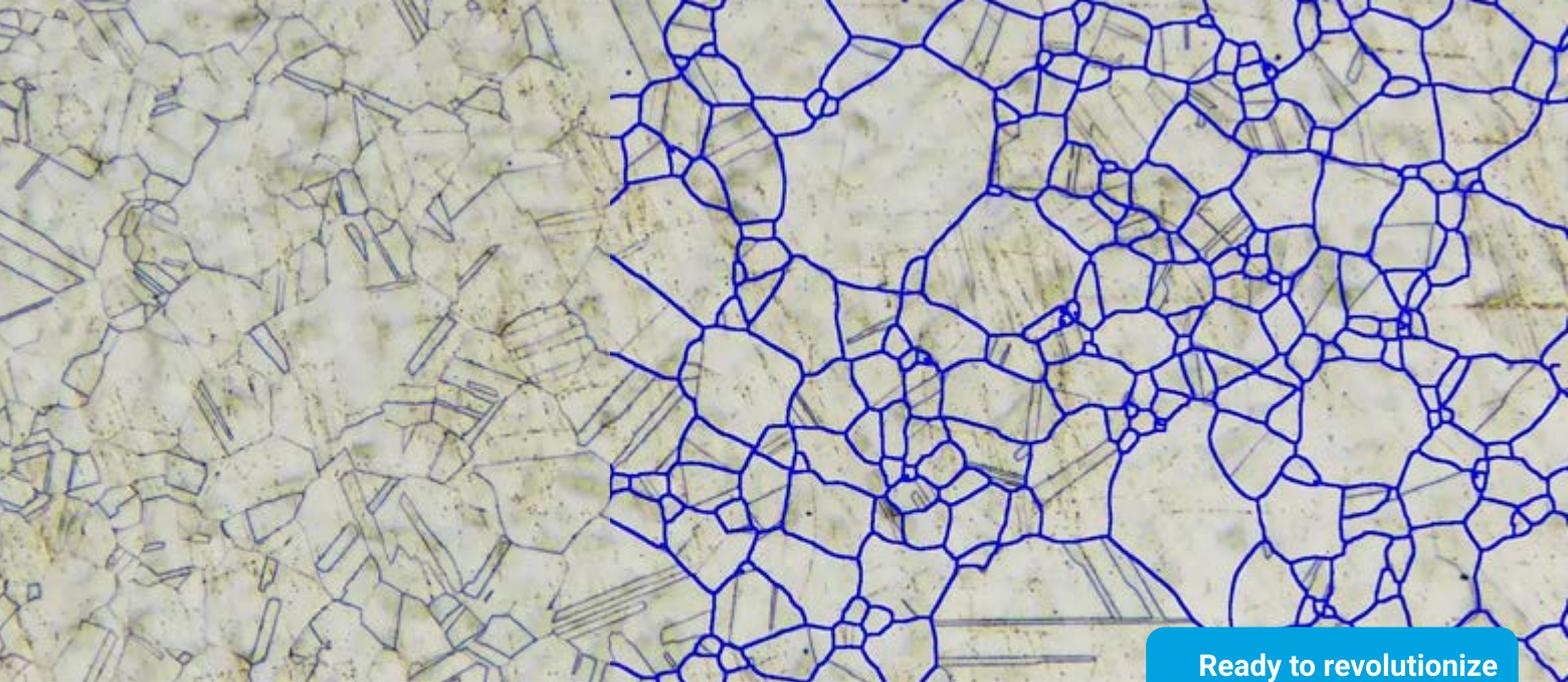
Our Ultrasonic SHD Testing devices can offer a quick and reliable case depth control in induction, flame or laser hardened parts.

IMAT/ IFHTSE WORLD CONGRESS EXHIBITOR LIST

Huntington Convention Center of Cleveland Exhibit Hall C

Allied High Tech Products	323
American Society for Nondestructive Testing (ASNT)	632
American Welding Society (AWS)	630
Applied Test Systems Inc	229
Ardleigh Minerals, Inc.....	522
ASM Materials Education Foundation.....	633
BGRIMM Technology Group	431
BOINSA.....	518
CENOS - Simulation Software.....	314
Cleveland Electric Labs.....	616
CompuTherm	418
Dibolt Automation Systems.....	233
Fluxtrol Inc.	219
Fort Wayne Metals.....	612
Gencoa Ltd.....	313
Heat Treat Today	613
Hitachi High-Tech America, Inc.	524
Inductoheat Group	312
IPG Photonics	412
IVA Schmetz GmbH.....	528
JENTEK Sensors, Inc.	529
Journal of Thermal Spray Technology (JTST).....	531
LECO Corporation	212
LINCOTEK Equipment	416
MAGNET	328
Materials Solutions Network	629
MTS Systems Corporation	223
Palmer Wahl Instruments, Inc	427
Polycontrols.....	413
Preco LLC	513
Proto Manufacturing.....	515
Purdue Heat Treating Consortium	614
Quaker Houghton.....	213
SciAps Inc.....	423
Scientific Forming Technologies Corp.	516
SECO/VACUUM.....	517
SECO/WARWICK.....	519
Springer Nature	617
STEP Lab.....	322
Sun-Tec Corporation	417
Surface Combustion	218
Thermo-Calc Software Inc.	317
Total Materia.....	319
Verichek Technical Services, Inc.....	628
Viking Engineering	533
WS Thermal Process Technology Inc.	216

Orange indicates Sponsor
Exhibitor List as of 9/20/2024



Ready to revolutionize your grain size analysis?

Precision Powered by AI—
Revolutionize Your Grain Size Analysis with Clemex



Leverage the Future of Metallography with AI-driven Accuracy and Efficiency

At Clemex, we're integrating the power of Artificial Intelligence into the world of grain size analysis. Our Universal Grain Size Analysis solution harnesses cutting-edge AI technology to deliver faster, smarter, and more precise results—redefining what's possible in your lab.

Why Choose Clemex's AI-Powered Solution?

- **Universality:** a single parameterless algorithm and method for all microstructures ensuring reproducibility among different microscopes, operators and labs.
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- **Fully Validated:** Stay ahead of the curve with AI-powered software that is validated by metallography experts and complies with the different ASTM E112 methods, giving you the confidence to operate at the forefront of your industry.

With Clemex, AI doesn't just assist—it amplifies your lab's capabilities. Transform your workflow, boost productivity, and experience precision like never before.



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Surface® understands the high volume needs and the required quality standards of the automotive industry and the suppliers who serve it. We offer many large batch and continuous furnace solutions to accommodate your work volume. Vacuum and atmosphere processes including annealing, hardening, carburizing, ferritic nitrocarburizing (FNC), and nitriding are performed on motors and driveline components.

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IMAT & HEAT TREAT COMPANY DESCRIPTIONS

Allied High Tech Products

Booth: # 323

For over 41 years, Allied High Tech Products has provided quality products for metallographic sample preparation & analysis. Allied designs and manufactures sectioning, mounting, grinding/polishing and milling equipment at their US facilities, and distributes a full range of consumable products. Allied's equipment is built in-house to specifications that deliver maximum performance and dependability. All equipment carries a 2-year warranty & prompt service or technical help is always available.

<http://www.alliedhightech.com>

American Society for Nondestructive Testing (ASNT)

Booth: # 632

The American Society for Nondestructive Testing, Inc. (ASNT) is the world's largest technical society for nondestructive testing (NDT) professionals. Through our organization and membership, we provide a forum for exchange of NDT technical information; NDT educational materials and programs; and standards and services for the qualification and certification of NDT personnel. ASNT promotes the discipline of NDT as a profession and facilitates NDT research and technology applications.

<https://asnt.org/>

American Welding Society (AWS)

Booth: # 630

Founded in 1919, the American Welding Society is a nonprofit organization with a global mission: to advance the science, technology, and application of welding and allied joining and cutting processes worldwide, including brazing, soldering, and thermal spraying.

By providing real-world opportunities through scholarships, fellowships, and workforce development, AWS provides the tools to help members succeed—and to inspire future generations of welding professionals.

<https://www.aws.org/>

Applied Test Systems Inc

Booth: # 229

Since 1965, Applied Test Systems (ATS) has been a leading manufacturer of process heating and materials testing equipment. Our diverse product line includes furnaces, ovens, universal testing machines, creep/stress rupture test frames, and additional testing accessories. ATS is known worldwide for the ability to build unique, customized products. Our equipment is backed by a qualified service department, available to assist with installation, training, maintenance, or calibration needs.

<http://www.atspa.com>

Ardleigh Minerals, Inc.

Booth: # 522

Ardleigh Minerals offers a comprehensive recycling program for all surface treating byproducts: dust, grit, sludge, chips, filters, and more! We recycle valuable and non-valuable materials, and offer a ZERO LANDFILL guarantee in a regenerative 'cradle-to-cradle' approach. No materials brought to Ardleigh's facility are placed into landfills, incinerated, or released into the environment. Whatever your recycling needs Ardleigh can help you find a solution.

<http://www.ardleigh.net>

ASM Materials Education Foundation

Booth: # 633

<http://asmfoundation.org>

ASM International

Booth: # 502

ASM International is the world's largest association of materials-centric engineers and scientists. We are dedicated to informing, educating, and connecting the materials community to solve problems and stimulate innovation around the world.

www.asminternational.org

BGRIMM Technology Group

Booth: # 431

BGRIMM Advanced Materials Science & Technology Co., Ltd. (BAMSTC) is high technology enterprise that affiliated to BGRIMM Technology Group. BAMSTC is an advanced materials company focused on surface materials, refractory metals, rare earth metals and thermal spray technology. Mainly serving aviation, aerospace, automotive and metallurgy industries.

<http://english.bgrimm.com/>

BOINSA

Booth: # 518

Boinsa was founded in 1990, we design, manufacture, repair induction coils for hardening, tempering, forge, brazing, etc. and induction heating process and NDT consulting and training. We base our work on the EXPINTEL methodology, developed with 100% Mexican technology with which we provide confidence to our customers. Our Ultrasonic SHD Testing devices can offer a quick and reliable case depth control in induction-, flame - or laser hardened parts.

<https://www.boinsa.com.mx/>

SAVE THE DATES!

The ASM Thermal Spray Society (TSS) is a vibrant, growing technical community made up of the world's foremost experts on thermal spray technology and applications. TSS is where over 900 thermal spray professionals come for the latest information on developments within the industry. Join this ASM affiliate society to be part of a global thermal spray community that actively advances the industry by disseminating information to all.



ASM
INTERNATIONAL



NAVIGATING A GREENER SKY

SYMPOSIUM ON ADVANCES IN THERMAL SPRAY AND
PVD COATINGS FOR THE AEROSPACE INDUSTRIES

NOVEMBER 12-14, 2024

UNIVERSITY OF LIMOGES | LIMOGES, FRANCE

THERMALSPRAYEVENT.ORG

This special symposium is a key event for the aerospace industry, bringing together researchers, manufacturers, and suppliers to focus on developing sustainable solutions through advanced thermal spray and PVD coatings. The event aims to identify industry challenges and opportunities, propose research directions, and create a strategic roadmap for environmentally friendly coatings for a greener future in aviation.



MAY 5-8, 2025

VANCOUVER CONVENTION CENTRE | VANCOUVER, BRITISH COLUMBIA

ITSC EVENT.ORG

ITSC is the world's foremost international conference and exhibition for thermal spray technologists, researchers, manufacturers, and suppliers. The organizing societies are excited to offer a conference filled with new technologies, new market trends, and new market segments! The ITSC 2025 theme is "Sustainable Innovations in Thermal Spray Technology: Pioneering a Greener Future," with symposia focused on Aerospace, Applications, and Research & Development. The conference will offer a variety of activities including technical presentations, education short courses, exhibitions showcasing cutting-edge products, networking opportunities, and a dedicated session for young professionals.

Information related to attending, exhibiting, and sponsoring any of the above events can be found on each of the above event sites.

IMAT & HEAT TREAT COMPANY DESCRIPTIONS

CENOS - Simulation Software

Booth: # 314

CENOS connects proven open source simulation software into the single user-friendly platform to provide an affordable CAE tool for small and medium side companies. We provide access to the smartest algorithms for free, we charge only for the time-saving interaction layer. The current version of CENOS platform supports thermal analysis and induction heating simulation. The platform offers easy customisation opportunity to automate your R&D workflow.

www.cenos-platform.com

Cleveland Electric Labs

Booth: # 616

Get the precision measurements you need with ultra high-temperature thermocouples and industrial sensors from the industry leader, Cleveland Electric Laboratories. For over 100 years, we've specialized in high-temperature sensing technology across industries that need accurate measurement of extreme temperatures.

<http://www.clevelandelectriclabs.com>

CompuTherm

Booth: # 418

CompuTherm LLC is a leading developer of CALPHAD-based modeling tools. These tools are currently used by thousands of ICME practitioners and students worldwide. The products of CompuTherm include Pandat' software and databases for variety of alloy systems including but not limited to Al-, Co-, Cu-, Fe-, Mg-, Mo-, Nb-, Ni-, Ti-, TiAl-based alloys, noble alloys, high-entropy alloys, refractory alloys and permanent magnetic alloys.

<http://www.computherm.com>

Dibolt Automation Systems

Booth: # 233

"Thinking beyond" - to think outside the box is the guiding principle while developing our innovative automated systems. Our main business is optimizing existing technology and automizing complex processes. At Dibolt, we use all our knowledge, experience and common sense to come up with solutions that guarantee real added value for our customers. For more information on our various products and recent projects in automated systems, visit makkon.at & dibolt.com.

www.dibolt.com

Fluxtrol Inc.

Booth: # 219

Fluxtrol Incorporated can partner with you to obtain optimal induction heating solutions using our proprietary magnetic materials, scientific knowledge, engineering experience, and innovative solutions. Fluxtrol is a world leader in the manufacture and supply of soft magnetic materials. Additionally, we provide a wide range of induction heating technology engineering services to a multitude of global industries. We have induction heating experts with a wealth of real Industrial experiences.

<http://www.fluxtrol.com>

Fort Wayne Metals

Booth: # 612

At Fort Wayne Metals, we manufacture precision wire-based materials and components that are used in some of the world's most demanding applications. Our products include custom wire, bar, strands, cables, and mechanical assemblies which are utilized in a range of customer devices, from cochlear implants and coronary stents to satellites and actuators. Additionally, we offer value-added services, including boutique melting for R&D alloys and accredited testing services.

www.fwmetals.com

Genco Ltd

Booth: # 313

Genco provide critical components and expert solutions for all applications in the field of vacuum gas analysis and coating. Pre-treatment and deposition sources are complemented by powerful instruments for process control and gas analysis, including Genco Optix, which is being exhibited at IMAT/IFHTSE in Cleveland.

Optix is a popular gas sensor for use in heat treatment process, with automatic leak checking of chambers during production cycles, optimization of pump-down times, and monitoring of moisture and outgassing from component parts to determine suitability of processing substrates. Accompanying software provides quality control data from each cycle, logging pressure and all gas traces in ppm.

<https://www.genco.com>

Heat Treat Today

Booth: # 613

Heat Treat Today believes that people are happier and make better decisions when they are well informed. That's why it is our passion to find and deliver the best information for manufacturers with in-house heat treat departments through our multiple platforms and initiatives website, magazines, 40 Under 40 recognition, Heat Treat Boot Camp, Heat Treat Buyers Guide, Heat Treat Radio, and webinars. Let us know how we can help you.

www.heatreattoday.com

IMAT & HEAT TREAT COMPANY DESCRIPTIONS

Hitachi High-Tech America, Inc.

Booth: # 524

<http://www.hitachi-hightech.com/us>

Inductoheat Group

Booth: # 312

We design, build, and repair high-quality general-purpose, turn-key, and fully automated induction heating equipment. We provide flexible, long-life solutions for heat treating, forging, shrink fitting, pipe-end heating, and low-frequency applications. We are recognized as a world leader in the industries we service and build products that help our customers succeed. For over 60 years, we have partnered with our customers to develop induction solutions. Our team stands ready to work with you. <http://www.inductoheat.com>

IPG Photonics

Booth: # 412

IPG Photonics is the leading manufacturer of high-performance fiber lasers & systems that offer optimized laser welding, cutting and drilling for industrial applications. Headquartered in Oxford, MA, IPG is the global leader of fiber laser technology, enabling greater precision, higher productivity and more flexible production for diverse markets. www.ipgphotonics.com

IVA Schmetz GmbH

Booth: # 528

IVA Schmetz GmbH is specialized in the production of atmosphere and vacuum furnaces for the heat treatment industry. For almost 80 years, our enthusiasm for industrial furnace systems, coupled with exceptional service, has been based in Menden, Germany. Our qualified service team is intimately familiar with each furnace and stays up to date through continuous training. We provide worldwide support through regular maintenance, modernization, and spare parts replacement. <http://iva-schmetz.de>

JENTEK Sensors, Inc.

Booth: # 529

JENTEK Sensors, Inc. provides performance-leading eddy current array sensing solutions. JENTEK delivers next generation solutions for space and industrial weld, cold spray coatings, bolt-holes, AM parts and other challenging inspections. Our jET[®] and new jETi handheld systems and our GridStation[®] GS9000 backpack portable instruments, along with the proven MWM[®]-Array sensor technology, provide ET array solutions for a wide range of inspections, such as crack detection and corrosion imaging. www.jenteksensors.com

Journal of Thermal Spray Technology (JTST)

Booth: # 531

Critically reviewed scientific papers and engineering articles combine the best of new research with the latest applications and problem solving. Journal of Thermal Spray Technology, the official journal of the ASM Thermal Spray Society, covers contributions on all aspects – fundamental and practical – of thermal spray science, including processes, feedstock manufacture, and testing and characterization. <http://www.asminternational.org>

LECO Corporation

Booth: # 212

LECO has been providing technologically advanced products and solutions for inorganic, organic, and metallographic analysis for more than 85 years, including determinators for carbon, sulfur, hydrogen, nitrogen, and oxygen, and glow discharge spectrometers. Our metallographic product line features a variety of sectioning machines, grinders/polishers, mounting equipment and supplies, microscopes, and hardness testers. <http://www.leco.com>

LINCOTEK Equipment

Booth: # 416

Lincotek, headquartered in Rubbiano, Italy, is a global contract manufacturer for markets including Industrial Gas Turbines, Aviation and Medical Device applications, as much as a leading manufacturer of industrial coating equipment and one of the most respected producers in the Additive Manufacturing field. The group has more than 1,100 employees located in 16 production facilities across Europe, North America and Asia. www.lincotekequipment.com

MAGNET

Booth: # 328

MAGNET is the Northeast Ohio partner of the Ohio Manufacturing Extension Partnership (Ohio MEP), which is part of a national network of MEPs created through the U.S. Department of Commerce's National Institute of Standards and Technology's Manufacturing Extension Partnership. MAGNET and other MEPs are dedicated to helping small and medium-sized manufacturers increase sales, create jobs and generate cost savings through technological innovation, workforce training and improved management practices. This public-private partnership allows MAGNET to offer affordable consulting services to Northeast Ohio manufacturers. Our mission is to drive Northeast Ohio manufacturing growth. We work primarily with small- and medium-sized companies, which make up 98% of the region's nearly 10,000 manufacturers.

<https://www.manufacturingsuccess.org/>

IMAT & HEAT TREAT COMPANY DESCRIPTIONS

Materials Solutions Network

Booth: # 629

The increasing pace of materials technology coupled with declining availability of materials expertise can cause challenges. We have a solution! ASM Materials Solutions acts as extension of a company's R&D capacity through leverage of ASM member organizations. Together we provide collaborative and scalable solutions.

www.asminternational.org/materials-solutions-network/

MTS Systems Corporation

Booth: # 223

Lightweighting initiatives, additive manufacturing, and new composites and alloys present exciting challenges for materials research and testing. Engineers and researchers rely on MTS' testing technology, systems integration expertise and responsive support to test advanced materials, including metals, composites, ceramics and polymers.

<http://www.mts.com>

Palmer Wahl Instruments, Inc

Booth: # 427

Palmer Wahl Instruments, Inc. offers temperature and pressure instruments for industry. Our products include digital RTD & TC thermometers, custom engineered temperature sensors, infrared thermometers, temperature calibrators, thermowells, pressure gauges, temperature recording labels, chart recorders, and handheld RTD & TC meters. "Beyond the Scale" represents our commitment to provide expert knowledge, innovative engineered designs, and support for temperature and pressure measurement.

<http://palmerwahl.com>

Polycontrols Technologies Inc.

Booth: # 413

We build. We repair. We make your metal components durable and sustainable. Our additive manufacturing environment allows for the production and repair of parts and assemblies of various sizes and weights. We design. We integrate advanced surface preparation techniques, metal deposition, robotic machining and surface finishing, heat treatment, and data analytics with machine learning-based process control.

<https://www.polycontrols.com>

Preco LLC

Booth: # 513

Preco is a premier provider of laser, flat bed and rotary die cutting equipment solutions for advanced material processing needs. We are a leading designer and manufacturer of high-speed and high-accuracy automated processing systems. In addition, Preco is a skilled laser integrator offering cutting, perforating, welding and other specialized industrial processing applications.

www.precollc.com

Proto Manufacturing

Booth: # 515

Located in Taylor, Michigan, Proto is a leading local manufacturer of x-ray diffraction systems. Proto specializes in residual stress and retained austenite measurement systems, offering both portable and laboratory-based systems. Proto systems are known for their accuracy, providing data that allows users to make informed decisions about the quality and service life of parts. Proto also offers measurement services through its ISO/IEC 17025:2017 accredited laboratories in the US and Canada.

<http://www.protoxrd.com>

Purdue Heat Treating Consortium

Booth: # 614

The Purdue Heat Treating Consortium is one of several industry-supported research centers in the Purdue School of Materials Engineering. The centers (including surface engineering and casting) address pre-competitive, industry defined problems; industry members vote and define projects carried out by graduate researchers across the College of Engineering.

<https://engineering.purdue.edu/MSE>

Quaker Houghton

Booth: # 213

With a comprehensive product range and unrivalled process expertise and experience, Quaker Houghton provides the complete solution for heat treatment fluids. We supply cold quenching oils, martempering oils, and aqueous quenchants, as well as superior service and fluid maintenance programs. Our solutions are engineered to meet required metallurgical properties and reduce distortion in heat treated components used in automotive, aerospace, bearing, and commercial heat treatment industries.

<https://home.quakerhoughton.com/>

INTERNATIONAL CONFERENCE ON RESIDUAL STRESSES

SAVE THE DATE

**12TH INTERNATIONAL CONFERENCE ON RESIDUAL STRESSES (ICRS-12)
DETROIT, MICHIGAN | OCTOBER 20-23, 2025**

Join us for the 12th edition of the International Conference on Residual Stresses, returning to North America for the first time since 2008! Since its inception in Garmisch-Partenkirchen, Germany in 1986, ICRS has become the premier global conference on residual stress, with past editions in locations like Japan, France, China, and Australia. ICRS-12 will continue the tradition of advancing residual stress research, providing a platform to engage with leading experts and explore groundbreaking advancements in material behavior and stress analysis.

**SHAPE THE FUTURE OF RESIDUAL STRESS
ENGINEERING BY SUBMITTING YOUR
ORIGINAL RESEARCH! ICRS-12 WILL COVER
KEY TOPICS, INCLUDING:**

- Residual Stress Measurement Methods
- Correlation Among Methods
- Residual Stress in Additive Manufacturing
- Impacts on Fatigue, Corrosion & Stress Corrosion Cracking
- Residual Stress Simulation & Modification Techniques

ADDITIONAL HIGHLIGHTS

- Engage with technical sessions led by international experts
- Explore real-world case studies across industries such as automotive and aerospace
- Network with peers and industry leaders
- Visit the co-located exhibition showcasing cutting-edge equipment

Be part of this transformative event shaping the future of residual stress engineering.

ORGANIZED BY:



CO-LOCATED WITH:

HEAT TREAT | 2025



INTERNATIONAL MATERIALS
APPLICATIONS & TECHNOLOGY
2025

ICRSEVENT.ORG

IMAT & HEAT TREAT COMPANY DESCRIPTIONS

SciAps Inc

Booth: # 423

SciAps, Inc., is a Boston-based instrumentation company specializing in portable analytical instruments to measure any element, any place on the planet. Our industry-leading X-ray fluorescence (XRF) and laser-based (LIBS) analyzers are at work across every major industry, including oil/gas, metals and mining, aerospace, battery and strategic metals (lithium, rare-earth elements), scrap metal recycling, chemical and petrochemical, military, forensics and law enforcement.

<https://www.sciaps.com>

Scientific Forming Technologies Corp.

Booth: # 516

Scientific Forming Technologies Corp. (SFTC) was founded three decades ago with a mission to provide state-of-the-art design and analysis technology to the materials forming industry. SFTC develops, markets and supports the DEFORM® system for process simulation. Its staff has extensive experience providing the software and solutions to meet manufacturer's needs. SFTC leads the development of "next generation" simulation capabilities.

<http://www.deform.com>

SECO/VACUUM

Booth: # 517

Manufacturer of advanced vacuum heat treatment solutions.

<http://www.secovacusa.com>

SECO/WARWICK

Booth: # 519

SECO/WARWICK Corporation is the US business unit of SECO/WARWICK SA, with worldwide headquarters in 'wiebodzin, Poland. The US division specializes in atmosphere heat treatment solutions, aluminum melting and heat treating technologies, and controlled atmosphere brazing systems, along with comprehensive engineering and aftermarket support for its customers throughout North America.

<http://www.secowarwick.com>

Springer Nature

Booth: # 617

Springer Nature opens the doors to discovery for researchers, educators, clinicians and other professionals. Every day, around the globe, our imprints, books, journals, platforms and technology solutions reach millions of people. We see it as our responsibility to ensure that fundamental knowledge can be found, verified, understood and used.

<http://www.springernature.com>

STEP Lab

Booth: # 332

STEP Lab offers cutting-edge testing solutions for mechanical analysis. Our products include electrodynamic actuators (ball screw or linear motor-based), drop-weight towers, and customizable systems, all powered by our proprietary electronic platform and in-house software. We excel in both static and dynamic mechanical tests, providing precision and innovation in every solution.

www.step-lab.com

Sun-Tec Corporation

Booth: # 417

Sun-Tec Corporation specializes in Rockwell-type, Brinell, Micro-Indentation, Vickers, Leeb, Tensile/Compression, Ductility testing equipment and Sample Preparation Equipment. We also stock replacement parts, accessories and Hardness Standards. Divisions include Clark Instrument, Detroit Testing Machine, Service Physical Testers and Gogan Machine; offering an extensive product line. We also provide accredited calibration service.

<http://www.sunteccorp.com>

Surface Combustion

Booth: # 218

For over 100 years, Surface Combustion has been the leader in industrial heat treatment and thermal processing solutions. From our signature Allcase® Furnace to proven vacuum furnace options and customized engineered products, Surface is your source. Many industries rely on our experience including agricultural, auto, biomass, oil & gas, and more. We offer rebuild and retrofit services as well as ongoing maintenance.

<http://www.surfacecombustion.com>

Thermo-Calc Software Inc.

Booth: # 317

Thermo-Calc empowers metallurgists and process engineers to: Calculate thermodynamic and phase-based properties as a function of chemistry, temperature, and time. Fill in data gaps while reducing costly, time-consuming experiments. Predict how actual vs nominal chemistries affect processing windows. Accelerate materials development while reducing risk. Troubleshoot issues during materials processing. Databases for Steels, Al-, Ti-, Mg-, Cu-, HEAs, Ni-superalloys and more.

<http://www.thermocalc.com>

IMAT & HEAT TREAT COMPANY DESCRIPTIONS

Total Materia

Booth: # 319

Total Materia helps companies enrich and connect their internal material information to several processes and systems around the organization. Supported by a library of property data on over 700,000 material designations, compliance and sustainability calculations, and machine learning capabilities for predicting material properties.

<http://totalmateria.com>

Verichek Technical Services, Inc.

Booth: # 628

Verichek Technical Services, Inc. is dedicated to serving the metals industry by supplying metal analyzing equipment and ISO17025 accredited Training and Services throughout the United States and Canada. Based on requests by our customers, Verichek has expanded our instrument selection and ISO17025 service capabilities. Verichek is your 'one-stop shop' for your metal testing needs.

www.verichek.net

Viking Engineering

Booth: # 533

Viking Engineering is a team of highly trained and experienced petroleum professionals. Each Viking Principal has over 30 years of hands-on and management experience. This experience covers all phases of petroleum engineering and many technological applications. Our clients include energy companies, independent operators, legal firms and manufacturing companies.

<https://www.gate.energy/viking-engineering>

WS Thermal Process Technology Inc.

Booth: # 216

Manufacturer of industrial gas burners with integrated heat exchangers. WS burners yield the highest efficiency and lowest Nox emissions on the market. The REKUMAT® self recuperative burner is available in both direct-fired and indirect-fired (radiant tube) versions. Each version is available in both metallic and ceramic (SiSiC) types. Capabilities include: sales, applications, engineering, installation assistance, start-up, service and spare parts.

<http://www.flox.com>

As of 9/20/2024

