OCTOBER 17–19, 2023
HUNTINGTON PLACE  |  DETROIT, MI

2023 INTERNATIONAL MATERIALS, APPLICATIONS & TECHNOLOGIES

ORGANIZED BY:

OFFICIAL MEDIA SPONSOR:

ORGANIZING PARTNER:

OCTOBER 16–19, 2023
HUNTINGTON PLACE  |  DETROIT, MI

ADVANCED MATERIALS AND MANUFACTURING TECHNOLOGIES

DRIVING THE FUTURE OF THERMAL PROCESSING

FINAL PROGRAM

ORGANIZED BY:

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Experts in the Principles and Practices of Quenching

Quaker Houghton delivers superior industrial solutions to meet required metallurgical properties and reduce distortion in heat treated components to the automotive, aerospace, bearing and commercial heat treatment industries. Visit us at Booth 2006 to learn about our heat treatment solutions, including:

- Aqueous Polymers
- Cold Quenching Oils
- Heat Treatment Salts
- Martempering Oils
- Pack Carburizers
- Vacuum Quench Oils

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ASM International and its Affiliate Societies warmly welcome all participants to IMAT 2023 – the International Materials Applications and Technologies Conference and Exhibition. This industry-focused technical conference places a strong emphasis on the practical implementation of materials research and emerging technologies. The central themes of this year’s conference revolve around Advanced Materials and Advanced Manufacturing Technologies. It’s worth noting that IMAT 2023 is co-located with the Heat Treat 2023 Conference, enabling attendees to benefit from the combined technical programming of both conferences, as well as explore the exhibit hall, which will also house the Motion + Power Technology Expo.

The event’s agenda comprises a range of enlightening keynotes, engaging panel discussions, and a comprehensive array of technical sessions dedicated to the latest advancements in the materials field. Alongside these sessions, attendees can partake in networking events and peruse the exhibit floor. Our primary objective is to foster collaboration among professionals from diverse branches of the materials realm—be it industry, academia, or government. This collaborative atmosphere aims to facilitate the sharing of recent accomplishments in materials research and technological developments, while also fostering the transfer and application of these breakthroughs within industrial contexts.

Participating alongside ASM International are a number of its affiliates, 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. Representatives from each society will contribute to panel discussions, offering insights into the far-reaching impacts of advanced materials and manufacturing technologies within their respective domains. The exposition itself will feature prominent OEMs, materials suppliers, producers, and corporate partners, presenting cutting-edge technologies. Attendees can also partake in various educational workshops that offer opportunities for professional development and practical solutions to materials-related challenges. Workshops will cover an array of topics, including Alloy Development for Additive Manufacturing, Residual Stresses, Metallography and Failure Analysis, and Heat Treating of Materials. Encompassing core areas such as metals, ceramics, coatings, and composites, the event’s scope will extend to encompass emerging technologies, energy materials, and renewables for power and transportation. Advanced subjects like additive manufacturing, materials informatics, biomaterials, and sustainability will also feature prominently in the technical sessions.

We are eagerly anticipating your presence at IMAT 2023 and the opportunity to engage with you in the shared pursuit of materials innovation and technological advancement.

**IMAT Co-Chairs**

**Burak Akyuz**  
Vice President  
Testing, Applied Technical Services

**Andrzej Wojcieszynski**  
Consultant  
Wingens Consulting LLC
Welcome to Detroit and Heat Treat 2023, where we’re “Driving the Future of Thermal Processing”! This year’s conference and expo is co-located with ASM’s annual meeting, IMAT 2023, and AGMA’s MPT Expo. This powerful collaboration brings to you three events in one location, offering more content, networking, and ROI.

Over the next 2.5 days, we hope you will take advantage of all that Heat Treat 2023 has to offer (and a few bonus activities), including a fully packed technical program, distinguished keynote speakers, ASM and HTS awards ceremonies, student competitions, and a bustling exhibition with 350+ companies represented across all 3 expos. In addition, Heat Treat attendees can attend all IMAT technical programming and keynote sessions at no additional charge.

One of the standout features of Heat Treat 2023 is undoubtedly the impressive lineup of keynote speakers we have secured, including:

- Dr. Stefanie Tompkins, Director, Defense Advanced Research Projects Agency, “Materials Science and Thermal Processing at DARPA – On the Road to Discovery”
- Dr. Iver Anderson, FASM, Senior Metallurgist, Division of Materials Sciences and Engineering at Ames Laboratory, “Heat Treatment Effects on Sintering of Highly Grain-refined Dy-free Nd-Fe-B Anisotropic Magnets”
- Dr. Marvin Barnes, Branch Chief, Advanced Propulsion Research and Development at NASA, “Ordinary Materials, Extraordinary Applications”

Throughout the week, there will be numerous opportunities for networking with colleagues and exhibitors, from the welcome reception with exhibitors on Tuesday to a special networking event on Wednesday evening to coffee breaks and lunches in the exhibit hall. These interactions will allow attendees to expand their professional networks and cultivate relationships with key contacts across the thermal processing, materials science and gear industries.

Lastly, please join us in extending our gratitude to the Heat Treat 2023 organizing committee (listed on page 6) who have worked tirelessly to make this conference possible.

Thank you for your support of Heat Treat 2023. We hope you enjoy and make the most of your time in Detroit and Heat Treat 2023.

**Heat Treat 2023 Core Organizing Committee**

**Andrew Banka**
Airflow Sciences Corp
Technical Program Chair

**Tim DeHennis**
Boeing Research & Technology
Expo Co-Chair

**Chuck Faulkner**
Quaker Houghton
Expo Co-Chair

**Trisha Rouse**
General Motors
Technical Program Vice Chair

#ht2023
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WHY ADVERTISE WITH ASM?

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Partnerships provide ROI: American Gear Manufacturers, IFHTSE, AMPP and SAE bring new prospects, more opportunities, more visibility
Trusted and Established for over 100 years, ASM is dedicated to the advancement of the materials industry with dedicated content and editorial writers

Education: ASM Headquarters is base to a state of the art labs and top of the line equipment for hands-on cutting edge learning
Metrics: with over 20,000 subscribers and over 25,000 social media followers we can expand your reach
Engagement: targeted, quality leads that matter.

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Luc Pouliot, FASM
Polycontrols Technologies

Lesley Frame
University of Connecticut

Rajeev Gupta
North Carolina State University

Jake Auliff
PH2 LLC

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TST Engineered Coating Solutions
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NASA

Richard Otis
Caltech / JPL

Madilyn Jerke
Boeing

Joseph Quinn
Materials FACT

Jay Demarest
IBM

Greta Lindwall
KTH Royal Institute of Technology

Dan Dennies
DMS Inc.
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Chair  
Air Flow Sciences  

Trisha Rouse  
Vice Chair  
GM  

Expo

Tim DeHennis  
Boeing  

Chuck Faulkner  
Quaker Houghton  

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Olga Rowan  
Caterpillar  

Dennis Beauchesne  
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Robert Cryderman  
Colorado School of Mines  
(retired)  

Robert Madeira  
Inductotherm Group  

Lesley Frame  
University of Connecticut  

Jason Orosz  
Nitrex
CONFERENCE REGISTRATION HOURS
Huntington Place Convention Center, Hall A Foyer
Sunday, October 15 ...........................................3:00 – 5:00 p.m.
Monday, October 16 ...........................................7:00 a.m. – 5:00 p.m.
Tuesday, October 17 ..........................................7:00 a.m. – 6:00 p.m.
Wednesday, October 18 ......................................7:30 a.m. – 6:00 p.m.
Thursday, October 19 ...........................................7:30 a.m. – 12:00 p.m.

EXHIBITION DATES AND TIMES
Huntington Place Convention Center, Hall A
Tuesday, October 17 ..........................................9:00 a.m. – 6:00 p.m.
Wednesday, October 18 ......................................9:00 a.m. – 5:00 p.m.
Thursday, October 19 ...........................................9:00 a.m. – 12:00 p.m.

GENERAL INFORMATION

MOBILE APP
Download the official event app for Apple and Android devices by searching ‘IMAT/Heat Treat 2023’.

SPECIAL NOTE
The only way to view the full IMAT and Heat Treat technical program is via the mobile app or via the IMAT or Heat Treat 2023 websites.

Access all of 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
- Complete a survey for each tutorial presentation and the Best Paper!

STAY CONNECTED AT THE SHOW
Follow show news on Twitter, Facebook and LinkedIn. Share your photos and videos by using #IMAT2023 and #HT2023.

INTERNET ACCESS
Complimentary WiFi access for attendees is available throughout the Convention Center and the Exhibit Halls. No password necessary.

IMAT & HEAT TREAT 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 Convention Center Room 330AB Monday, October 16 from 8:30 a.m. – 10:30 a.m. and Tuesday, October 17 through Thursday, October 19 from 7:00 a.m. – 9:00 a.m. Presenters should only attend on the day of their scheduled presentation.

HEAT TREAT SESSION CHAIRS BRIEFING
Session Chairs may pick up their packets from 8:00 a.m. – 9:00 a.m. on Tuesday, October 17 – Thursday, October 19 in Convention Center Room 314. 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. Your attendance is very important.
## SCHEDULE AT A GLANCE

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

### Sunday, October 15

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 - 8:00 a.m.</td>
<td>ASM International Metallographic Society (IMS) Board and Judges Breakfast</td>
<td>Convention Center 355</td>
</tr>
<tr>
<td>8:00 a.m. - 5:00 p.m.</td>
<td>ASM International Metallographic Society (IMS) Judging for IMC Contest</td>
<td>Convention Center 354</td>
</tr>
<tr>
<td>8:30 a.m. - 12:00 p.m.</td>
<td>ASM International Metallographic Society (IMS) Board, Committee and Subcommittee Chair Meeting</td>
<td>Convention Center 353</td>
</tr>
<tr>
<td>10:00 a.m. - 1:00 p.m.</td>
<td>Action in Education Committee</td>
<td>Marriott Greco</td>
</tr>
<tr>
<td>11:00 a.m. - 2:00 p.m.</td>
<td>REHEARSAL - Annual Meeting/Awards Dinner Reception</td>
<td>Marriott Mackinac East</td>
</tr>
<tr>
<td>12:00 - 1:30 p.m.</td>
<td>Lunch for IMS Board and IMC Contest Judges</td>
<td>Convention Center 355</td>
</tr>
<tr>
<td>1:00 - 4:00 p.m.</td>
<td>ASM Failure Analysis Society (FAS) Board, Committee and Subcommittee Chair Meeting</td>
<td>Convention Center 353</td>
</tr>
<tr>
<td>3:00 - 5:00 p.m.</td>
<td>Registration Open (HT/IMAT)</td>
<td>Convention Center 355</td>
</tr>
<tr>
<td>3:00 - 6:00 p.m.</td>
<td>ASM Foundation Board Meeting</td>
<td>Marriott Michelangelo</td>
</tr>
<tr>
<td>5:00 - 7:00 p.m.</td>
<td>ASM Technical Committees Summit</td>
<td>Marriott Greco</td>
</tr>
<tr>
<td>6:00 - 9:00 p.m.</td>
<td>ASM Foundation Board/Guest Dinner</td>
<td>Marriott Duluth A&amp;B</td>
</tr>
<tr>
<td>6:00 - 9:00 p.m.</td>
<td>ASM International Metallographic Society Awards Dinner</td>
<td>Marriott Monet</td>
</tr>
<tr>
<td>7:00 - 10:00 p.m.</td>
<td>International Materials Reviews (IMR) Committee</td>
<td>Marriott Michelangelo</td>
</tr>
</tbody>
</table>

### Monday, October 16

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 a.m. - 4:00 p.m.</td>
<td>Chapter Leadership Day</td>
<td>Convention Center 355</td>
</tr>
<tr>
<td>7:00 a.m. - 5:00 p.m.</td>
<td>Registration Open (HT/IMAT)</td>
<td>Convention Center 110AB</td>
</tr>
<tr>
<td>8:00 - 9:30 a.m.</td>
<td>Metallography, Microstructure, and Analysis (MMA) Editorial Board</td>
<td>Marriott Joliet</td>
</tr>
<tr>
<td>8:00 - 10:00 a.m.</td>
<td>ASM Handbook and Technical Book Committee Meeting</td>
<td>Convention Center 113AB</td>
</tr>
<tr>
<td>8:00 - 10:30 a.m.</td>
<td>Guest Hospitality</td>
<td>Marriott Davinci</td>
</tr>
<tr>
<td>8:00 a.m. - 5:00 p.m.</td>
<td>Exhibitor Set-up</td>
<td>Convention Center 330AB</td>
</tr>
<tr>
<td>8:30 - 10:30 a.m.</td>
<td>IMAT Author's Coffee</td>
<td>Convention Center 310B</td>
</tr>
<tr>
<td>9:00 - 10:00 a.m.</td>
<td>IMAT Keynote Speaker: Dr. Evelyn N. Wang, Advanced Research Projects Agency-Energy (ARPA-E) Sponsored by: Weldaloy</td>
<td>Convention Center 310B</td>
</tr>
<tr>
<td>9:30 - 10:30 a.m.</td>
<td>Refreshment Break</td>
<td>Convention Center 320, 321, 331ABC, 332, 333, 336, 337, 338, 411BC, 412AB, 413AB</td>
</tr>
<tr>
<td>10:00 a.m. - 6:00 p.m.</td>
<td>Tuxedo Pickup</td>
<td>Marriott Monet</td>
</tr>
<tr>
<td>10:30 - 11:30 a.m.</td>
<td>ASM-TMS Distinguished Lectureship in Materials and Society: Dr. Viola Acoff, University of Mississippi</td>
<td>Convention Center 310B</td>
</tr>
<tr>
<td>10:30 a.m. - 12:10 p.m.</td>
<td>IMAT Technical Programming</td>
<td>Convention Center 320, 321, 331ABC, 332, 333, 336, 337, 338, 411BC, 412AB, 413AB</td>
</tr>
<tr>
<td>11:30 a.m. - 1:30 p.m.</td>
<td>Lunch (On Own)</td>
<td>Convention Center 2nd Floor Foyer</td>
</tr>
<tr>
<td>11:30 a.m. - 1:30 p.m.</td>
<td>ASM Leadership Luncheon</td>
<td>Convention Center 330AB</td>
</tr>
<tr>
<td>12:00 - 5:00 p.m.</td>
<td>ASM Heat Treating Society (HTS) Board, Committee and Subcommittee Chair Meeting</td>
<td>Convention Center 353</td>
</tr>
<tr>
<td>1:00 - 5:20 p.m.</td>
<td>IMAT Technical Programming</td>
<td>Convention Center 320, 321, 331ABC, 332, 333, 336, 337, 338, 411BC, 412AB, 413AB</td>
</tr>
<tr>
<td>2:00 - 3:00 p.m.</td>
<td>ASM Awards Policy Committee Meeting</td>
<td>Convention Center 111AB</td>
</tr>
<tr>
<td>2:30 - 3:30 p.m.</td>
<td>Refreshment Break</td>
<td>Convention Center Meeting Space Foyer</td>
</tr>
</tbody>
</table>
### SCHEDULE AT A GLANCE

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 - 5:00 p.m.</td>
<td>ASM 110th Annual Society Meeting</td>
<td>Convention Center</td>
<td>114AB</td>
</tr>
<tr>
<td>5:00 - 7:00 p.m.</td>
<td>AM&amp;P Editorial Committee</td>
<td>Convention Center</td>
<td>113AB</td>
</tr>
<tr>
<td>5:00 - 6:00 p.m.</td>
<td>ASM International Metallographic Society (IMS) General Membership Meeting</td>
<td>Convention Center</td>
<td>320</td>
</tr>
<tr>
<td>5:30 - 7:30 p.m.</td>
<td>ASM HTS T&amp;P Committee Meeting</td>
<td>Convention Center</td>
<td>353</td>
</tr>
<tr>
<td>5:30 - 7:00 p.m.</td>
<td>Future Leaders Reception</td>
<td>Convention Center</td>
<td>112ABCD</td>
</tr>
<tr>
<td>6:30 - 7:30 p.m.</td>
<td>ASM Failure Analysis Society (FAS) General Membership Meeting</td>
<td>Marriott</td>
<td>Brule</td>
</tr>
<tr>
<td>7:00 - 9:00 p.m.</td>
<td>Ignite the Night: A Materials Camp Celebration</td>
<td>Marriott</td>
<td>Duluth</td>
</tr>
<tr>
<td>7:30 - 9:30 p.m.</td>
<td>Alloy Phase Diagram (APD) Committee</td>
<td>Marriott</td>
<td>Duluth</td>
</tr>
<tr>
<td>7:30 - 9:00 p.m.</td>
<td>ASM Failure Analysis Society (FAS) Program Committee Meeting</td>
<td>Marriott</td>
<td>Brule</td>
</tr>
</tbody>
</table>

#### Tuesday, October 17

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 - 8:30 a.m.</td>
<td>Journal of Failure Analysis and Prevention (JFAP) Editorial Board</td>
<td>Marriott</td>
<td>Joliet</td>
</tr>
<tr>
<td>7:00 - 9:00 a.m.</td>
<td>Women in Manufacturing and Engineering Breakfast (ticketed event) - Joint with IMAT, HT and MPT</td>
<td>Convention Center</td>
<td>310A</td>
</tr>
<tr>
<td>7:00 - 9:00 a.m.</td>
<td>IMAT Author’s Coffee</td>
<td>Convention Center</td>
<td>330 AB</td>
</tr>
<tr>
<td>7:00 a.m. - 6:00 p.m.</td>
<td>Registration Open (HT/IMAT)</td>
<td>Convention Center</td>
<td>Hall A Foyer</td>
</tr>
<tr>
<td>8:00 - 9:00 a.m.</td>
<td>Heat Treat Session Chair Briefing</td>
<td>Convention Center</td>
<td>314</td>
</tr>
<tr>
<td>8:00 - 10:30 a.m.</td>
<td>Guest Hospitality</td>
<td>Marriott</td>
<td>Davinci</td>
</tr>
<tr>
<td>9:00 - 10:00 a.m.</td>
<td>Alpha Sigma Mu Lecturer: Prof. Robert O. Ritchie, FASM, University of California Berkeley</td>
<td>Convention Center</td>
<td>310B</td>
</tr>
<tr>
<td>9:00 - 11:30 a.m</td>
<td>Heat Treat Technical Programming</td>
<td>Convention Center</td>
<td>311AB, 312AB, 313AB</td>
</tr>
<tr>
<td>9:00 - 11:30 a.m</td>
<td>IMAT Technical Programming</td>
<td>Convention Center</td>
<td>320, 321, 331ABC, 332, 333, 334, 336, 337, 338, 412AB, 413AB</td>
</tr>
<tr>
<td>9:00 a.m. - 6:00 p.m.</td>
<td>Exhibit Hall Open</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>9:00 a.m. - 6:00 p.m.</td>
<td>SECO/VACUUM &amp; SECO/WARWICK Wellness Lounge</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>9:00 a.m. - 6:00 p.m.</td>
<td>GeoCorp Voltage Lounge - Next to GeoCorp Booth</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Booth 1901</td>
</tr>
<tr>
<td>9:00 a.m. - 2:00 p.m.</td>
<td>ASM DomesDay Competition</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>9:00 a.m. - 2:00 p.m.</td>
<td>Mini-Materials Camp</td>
<td>Convention Center</td>
<td>Hall A</td>
</tr>
<tr>
<td>9:15 - 10:45 a.m.</td>
<td>Education Mini Course: Metallurgy for the Non Metallurgist</td>
<td>Convention Center</td>
<td>Exhibit Hall A – Education Exchange</td>
</tr>
<tr>
<td>9:30 - 10:30 a.m.</td>
<td>ASM Education Foundation Session: Make a Material Difference in your Community: How your business or chapter can engage and inspire the next generation of materials science professionals</td>
<td>Convention Center</td>
<td>414AB</td>
</tr>
<tr>
<td>9:30 - 10:30 a.m.</td>
<td>Refreshment Break with the Exhibitors - Open</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>10:00 - 11:00 a.m.</td>
<td>ASM IDEA Committee Meeting</td>
<td>Convention Center</td>
<td>353</td>
</tr>
<tr>
<td>10:30 - 11:30 a.m.</td>
<td>Edward DeMille Campbell Lecturer: Dr. George Gray III, FASM, Los Alamos National Laboratory</td>
<td>Convention Center</td>
<td>310B</td>
</tr>
<tr>
<td>11:00 a.m. - 5:00 p.m.</td>
<td>Tuxedo Pickup</td>
<td>Marriott</td>
<td>Monet</td>
</tr>
<tr>
<td>11:30 a.m. - 1:00 p.m.</td>
<td>Education Mini Course: General Heat Treating</td>
<td>Convention Center</td>
<td>Exhibit Hall A – Education Exchange</td>
</tr>
<tr>
<td>11:30 a.m. - 1:30 p.m.</td>
<td>Lunch Concessions Open on the Show Floor Sponsored by:</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>11:45 a.m. - 1:00 p.m.</td>
<td>IMAT Technical Advisory Board Meeting</td>
<td>Convention Center</td>
<td>113AB</td>
</tr>
<tr>
<td>11:45 a.m. - 1:30 p.m.</td>
<td>Journal of Materials Engineering &amp; Performance (JMEP) Committee</td>
<td>Convention Center</td>
<td>115AB</td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
<td>Location</td>
<td>Room</td>
</tr>
<tr>
<td>--------------</td>
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</tr>
<tr>
<td>11:50 a.m.</td>
<td>Joining of Advanced Specialty Material (JASM) Committee Meeting</td>
<td>Convention Center</td>
<td>111AB</td>
</tr>
<tr>
<td>12:00 - 1:00 p.m.</td>
<td>QuesTek Innovations Lunch &amp; Learn</td>
<td>Convention Center</td>
<td>Exhibit Hall A – Industry Forum</td>
</tr>
<tr>
<td>1:00 - 2:00 p.m.</td>
<td>Henry Clifton Sorby Lecture: Prof. Yuichi Ikuhara, The University of Tokyo</td>
<td>Convention Center</td>
<td>331ABC</td>
</tr>
<tr>
<td>1:00 - 2:20 p.m.</td>
<td>Heat Treat Technical Programming</td>
<td>Convention Center</td>
<td>311AB, 312AB, 313AB</td>
</tr>
<tr>
<td>1:00 - 2:20 p.m.</td>
<td>IMAT Technical Programming</td>
<td>Convention Center</td>
<td>320, 321, 331ABC, 332, 333, 334, 336, 337, 338, 412AB, 413AB</td>
</tr>
<tr>
<td>2:30 - 3:30 p.m.</td>
<td>Refreshment Break with the Exhibitors - Open</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>2:30 - 3:15 p.m.</td>
<td>Heat Treat Keynote Speaker: Dr. Stephanie Tompkins, DARPA</td>
<td>Convention Center</td>
<td>Exhibit Hall A – Industry Forum</td>
</tr>
<tr>
<td>2:45 - 4:00 p.m.</td>
<td>IMAT Keynote Speaker: Bryan W. McEnery, NASA Engineering &amp; Safety Center (NESC) Sponsored by: Weldaloy</td>
<td>Convention Center</td>
<td>Exhibit Hall A – Industry Forum</td>
</tr>
<tr>
<td>3:15 - 4:30 p.m.</td>
<td>ASM Education Foundation Session: Workforce Development Begins in the Classroom: Learn how a Materials Science Camp grows a diversified workforce through its hands-on curriculum</td>
<td>Convention Center</td>
<td>414AB</td>
</tr>
<tr>
<td>4:00 - 5:00 p.m.</td>
<td>ASM Emerging Professionals Committee Meeting</td>
<td>Convention Center</td>
<td>353</td>
</tr>
<tr>
<td>4:00 - 5:30 p.m.</td>
<td>Student Competitions / Poster Phase: Fluxtrol Student Research Competition and HTS Strong Bar Competition</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Heat Treat Student Poster Area</td>
</tr>
<tr>
<td>4:00 - 5:30 p.m.</td>
<td>IMAT and Heat Treat Welcome Reception with Exhibitors</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>6:00 - 7:00 p.m.</td>
<td>ASM Awards Dinner Cocktail Reception</td>
<td>Marriott Joliet</td>
<td>Joliet</td>
</tr>
<tr>
<td>7:00 - 9:30 p.m.</td>
<td>ASM Awards Dinner</td>
<td>Marriott Ambassador</td>
<td>Ambassador</td>
</tr>
<tr>
<td>9:30 - 11:00 p.m.</td>
<td>President’s Reception</td>
<td>Marriott Mackinac East</td>
<td>Mackinac East</td>
</tr>
</tbody>
</table>

**Wednesday, October 18**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 - 8:00 a.m.</td>
<td>Breakfast - ASM Board of Trustees</td>
<td>Marriott Greco</td>
<td>Greco</td>
</tr>
<tr>
<td>7:00 - 9:00 a.m.</td>
<td>IMAT Author’s Coffee</td>
<td>Convention Center</td>
<td>330 AB</td>
</tr>
<tr>
<td>7:00 a.m. - 12:00 p.m.</td>
<td>Tuxedo Drop Off</td>
<td>Marriott Renoir</td>
<td>Renoir</td>
</tr>
<tr>
<td>7:30 a.m. - 6:00 p.m.</td>
<td>Registration Open (HT/IMAT)</td>
<td>Convention Center</td>
<td>Hall A Foyer</td>
</tr>
<tr>
<td>8:00 - 9:00 a.m.</td>
<td>Heat Treat Session Chair Briefing</td>
<td>Convention Center</td>
<td>314</td>
</tr>
<tr>
<td>8:00 - 9:00 a.m.</td>
<td>ASM Heat Treating Society (HTS) General Membership Meeting</td>
<td>Convention Center</td>
<td>310A</td>
</tr>
<tr>
<td>8:00 - 10:00 a.m.</td>
<td>IMAT Technical Programming</td>
<td>Convention Center</td>
<td>320, 321, 331ABC, 332, 336, 337, 338, 412AB</td>
</tr>
<tr>
<td>9:00 a.m. - 2:00 p.m.</td>
<td>Mini-Materials Camp</td>
<td>Convention Center</td>
<td>Hall A</td>
</tr>
<tr>
<td>9:00 a.m. - 5:00 p.m.</td>
<td>Exhibit Hall Open</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>9:00 a.m. - 5:00 p.m.</td>
<td>SECO/VACUUM &amp; SECO/WARWICK Wellness Lounge</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>9:00 a.m. - 5:00 p.m.</td>
<td>GeoCorp Voltage Lounge - Next to GeoCorp Booth</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Booth 1901</td>
</tr>
<tr>
<td>9:15 - 10:00 a.m.</td>
<td>Heat Treat Keynote: Dr. Iver Anderson, FASM, Ames Laboratory</td>
<td>Convention Center</td>
<td>Exhibit Hall A – Industry Forum</td>
</tr>
<tr>
<td>9:30 - 10:30 a.m.</td>
<td>Refreshment Break with the Exhibitors - Open</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>10:30 - 11:30 a.m.</td>
<td>Fluxtrol Student Research Competition - Phase 2 - Oral Presentations</td>
<td>Convention Center</td>
<td>313AB</td>
</tr>
</tbody>
</table>
## SCHEDULE AT A GLANCE

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Location</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30 a.m. - 12:00 p.m.</td>
<td>IMAT Panel Session: Advanced Materials and Manufacturing Technologies</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Industry Forum</td>
</tr>
<tr>
<td>11:30 a.m. - 1:30 p.m.</td>
<td>Lunch Concessions Open on the Show Floor</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>11:45 a.m. - 12:30 p.m.</td>
<td>HTS Strong Bar Competition - Phase 2 - Testing</td>
<td>Convention Center</td>
<td>Exhibit Hall A - MTS Booth</td>
</tr>
<tr>
<td>12:00 - 1:00 p.m.</td>
<td>ASM Programming Committee Meeting</td>
<td>Convention Center</td>
<td>113AB</td>
</tr>
<tr>
<td>12:30 - 2:00 p.m.</td>
<td>Education Mini Course: Critical Thinking in the Application of Additive Manufacturing Processes</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Education Exchange</td>
</tr>
<tr>
<td>1:00 - 5:10 p.m.</td>
<td>Heat Treat Technical Programming</td>
<td>Convention Center</td>
<td>311AB, 312AB, 313AB</td>
</tr>
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<td>Convention Center</td>
<td>320, 321, 331ABC, 332, 336, 337, 338, 412AB</td>
</tr>
<tr>
<td>2:30 - 3:30 p.m.</td>
<td>Break with Exhibitors/Dessert Reception</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>Winner of the Walking Challenge Announced. You must be present to win!</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Industry Forum</td>
</tr>
<tr>
<td>3:00 - 3:30 p.m.</td>
<td>HTS Student Competitions - Award Presentations</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Industry Forum</td>
</tr>
<tr>
<td>3:30 - 4:30 p.m.</td>
<td>VIP Industry Tour (Featuring stops at the Data Ecosystem Booths)</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>6:00 - 9:00 p.m.</td>
<td>Networking Event at the Waterview Loft</td>
<td>Waterview Loft</td>
<td>Waterview Loft</td>
</tr>
</tbody>
</table>

### Thursday, October 19

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>7:00 - 9:00 a.m.</td>
<td>IMAT Author's Coffee</td>
<td>Convention Center</td>
<td>330 AB</td>
</tr>
<tr>
<td>7:30 a.m. - 12:00 p.m.</td>
<td>Registration Open</td>
<td>Convention Center</td>
<td>Hall A Foyer</td>
</tr>
<tr>
<td>8:00 - 9:00 a.m.</td>
<td>Heat Treat Session Chair Briefing</td>
<td>Convention Center</td>
<td>314</td>
</tr>
<tr>
<td>8:00 a.m. - 12:20 p.m.</td>
<td>IMAT Technical Programming</td>
<td>Convention Center</td>
<td>320, 321, 338</td>
</tr>
<tr>
<td>8:00 a.m. - 5:00 p.m.</td>
<td>Education Course: Materials Selection and Heat Treatment of Gears (joint with AGMA)</td>
<td>Convention Center</td>
<td>250B</td>
</tr>
<tr>
<td>9:00 a.m. - 12:00 p.m.</td>
<td>Exhibit Hall Open</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>9:00 a.m. - 12:00 p.m.</td>
<td>SECO/VACUUM &amp; SECO/WARWICK Wellness Lounge</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
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<td>9:00 a.m. - 12:00 p.m.</td>
<td>GeoCorp Voltage Lounge - Next to GeoCorp Booth</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Booth 1901</td>
</tr>
<tr>
<td>9:15 a.m. - 10:00 a.m.</td>
<td>Heat Treat Keynote: Dr. Marvin Barnes, NASA</td>
<td>Convention Center</td>
<td>Exhibit Hall A - Industry Forum</td>
</tr>
<tr>
<td>9:30 - 10:30 a.m.</td>
<td>Refreshment Break with the Exhibitors - Open</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
<tr>
<td>10:30 a.m. - 12:30 p.m.</td>
<td>Heat Treat Technical Programming</td>
<td>Convention Center</td>
<td>311AB, 312AB, 313AB</td>
</tr>
<tr>
<td>12:00 - 8:00 p.m.</td>
<td>Exhibitor Tear Down</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
</tbody>
</table>

### Friday, October 20

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Location</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 a.m. - 12:00 p.m.</td>
<td>Exhibitor Tear Down Huntington Place Convention Center</td>
<td>Convention Center</td>
<td>Exhibit Hall A</td>
</tr>
</tbody>
</table>
Surface contaminations during heat treatment can greatly impact the quality of the end products, especially when it comes to demanding processes such as nitriding, brazing, vacuum treating and PVD-coating. This is why quality cleaning – both prior and after hardening – has such a key role to play.

With both non-polar and polar properties, our virgin-grade, proven modified alcohols DOWCLENE™ 1601, DOWCLENE™ 1621 and DUALENE™ 1601 S can effectively remove oils and greases as well as certain polar contaminations. With low toxicity, they are chemically highly stable and can meet the maximum requirements of high-precision cleaning.

The making or breaking of heat treat process may lie in your metal cleaning. Are you making a conscious choice today?

www.safechem.com
Heat Treatment Effects on Sintering of Highly Grain-refined Dy-free Nd-Fe-B Anisotropic Magnets

Wednesday, October 18, 2023
9:15 – 10:00 a.m. | Convention Center: Exhibit Hall A - Industry Forum

Dr. Iver Anderson, FASM, Senior Metallurgist, Division of Materials Sciences and Engineering, Ames Laboratory

ARPA-E Advances High-Potential, High-Impact Energy Technology

Monday, October 16, 2023
9:00 – 10:00 a.m. | Convention Center: 310B

Dr. Evelyn N. Wang, Director, Advanced Research Projects Agency-Energy (ARPA-E)

The Challenges of Insertion of Advanced Materials & Processes for Spaceflight

Tuesday, October 17, 2023
3:15 – 4:00 p.m. | Convention Center: Exhibit Hall A - Industry Forum

Bryan W. McEnerney
NASA Technical Fellow, Materials, NASA Engineering & Safety Center (NESC)

Materials Science and Thermal Processing at DARPA – On the Road to Discovery

Tuesday, October 17, 2023
2:30 p.m. | Convention Center: Exhibit Hall A - Industry Forum

Dr. Stefanie Tompkins, Director, Defense Advanced Research Projects Agency (DARPA)

Sponsored By:
weldaloy
metallurgical laboratory

Ordinary Materials, Extraordinary Applications

Thursday, October 19, 2023
9:15 – 10:00 a.m. | Convention Center: Exhibit Hall A - Industry Forum

Dr. Marvin Barnes, Branch Chief, Advanced Propulsion Research and Development, NASA
ASM-TMS Distinguished Lectureship in Materials and Society
*Reimagining the Development of a 21st Century Workforce to Address Society’s Need for Materials Engineering and Technology*
Monday, October 16
10:30 – 11:30 a.m.  | Convention Center: Room 310B

**Dr. Viola Acoff**
Dean of the School of Engineering, Professor of Mechanical Engineering, University of Mississippi
Oxford, Mississippi

**Henry Clifton Sorby Lecture 2023**
*Grain Boundary Atomic Structures, Segregation, Dynamics in Ceramics*
Tuesday, October 17
1:00 – 2:00 p.m.  | Convention Center: Room 331ABC

**Prof. Yuichi Ikuhara**
Director
Institute of Engineering Innovation
School of Engineering
The University of Tokyo

**Alpha Sigma Mu Lecture**
*Deformation and Fracture of Biological and Engineering Materials*
Tuesday, October 17
9:00 a.m. – 10:00 a.m.  | Convention Center: Room 310B

**Prof. Robert O. Ritchie**
Materials Sciences Division, Lawrence Berkeley National Laboratory, and Department of Materials Science & Engineering, University of California Berkeley, California, USA

**Edward DeMille Campbell Memorial Lecture**
*Dynamic Behavior of Additively Manufactured Materials*
Tuesday, October 17
10:30 – 11:30 a.m.  | Convention Center: Room 310B

**Dr. George Gray III, FASM**
Laboratory Fellow
Los Alamos National Laboratory

ASM MATERIALS EDUCATION FOUNDATION

**ASM Foundation Informational Session: Workforce Development Begins in the Classroom**
Tuesday, October 17
3:30 a.m. – 4:30 p.m.  | Convention Center: Room 414AB
Learn how a Materials Science Camp grows a diversified workforce through its hands-on curriculum
Carrie Wilson, ASM Materials Education Foundation
Kristie Maravalli, ASM Materials Education Foundation

**Mini Materials Camp**
Tuesday, October 17
9:00 a.m. – 2:00 p.m.  | Convention Center: Exhibit Hall A
Wednesday, October 18
9:00 a.m. – 2:00 p.m.  | Convention Center: Exhibit Hall A

**ASM Foundation Informational Session: Make a Material Difference in your Community**
Tuesday, October 17
9:30 a.m. – 10:30 a.m.  | Convention Center: Room 414AB
How your business or chapter can engage and inspire the next generation of materials science professionals.
HEAT TREAT FURNACES

DESIGN | FABRICATION
TESTING | INSTALL | START-UP

LET US HELP YOU:
• BEST FURNACE FOR YOUR APPLICATION
• REPLACE AN OBSOLETE FURNACE
• SOLVE UNIFORMITY PROBLEMS
• IMPLEMENT A NEW PRODUCT
• DEVELOP A NEW PROCESS
• EXPAND PRODUCTION

• ATMOSPHERE
• BATCH
• BELL
• BOX
• CAR BOTTOM
• CONTINUOUS
• DROP BOTTOM
• MOVING
• PIT
• QUENCHING
• ROLLER
• TIP-UP

VISIT US AT
BOOTH #2144
IMAT Panel Discussion
Wednesday, October 18 | 10:30 a.m -12:00 p.m | Exhibit Hall A - Industry Forum
Advanced Materials and Manufacturing Technologies

Moderator:
David Furrer, Dr.-Eng., FASM
Principal Technical Fellow and Discipline Lead – Materials and Processes, Pratt & Whitney

Panelists:
Christopher J. Misorski, FASM, Product Development & Engineering, Mercury Marine – ASM Representative
Jay Demarest, FASM, IBM – EDFAS Society
Marvin Barnes, NASA - HT Society
Thomas Ackerson, Blue Origin – FAS Society
Arvind Agarwal, College of Engineering and Computing, Florida International University – TSS Society
Laura E. Moyer, PhD, FASM, Lehigh University – IMS Society

The “Advanced Materials and Manufacturing Technologies” panel is a debate of experts from various material societies who convene to share their insights on the impact of new materials and manufacturing technologies in their respective fields. This panel provides a platform for attendees to give feedback and discuss the latest advancements in materials science, engineering, and technology. The discussion topics will include materials for high performance and critical applications such as materials for aerospace and automotive, smart materials, and will provide an update on the development status of advanced manufacturing technologies including additive manufacturing, among others. It will begin with an opening statement/comment by each panelist, which will be followed by questions to the panelists from the audience. By bringing together a diverse group of experts, the panel aims to foster collaboration, share knowledge, and identify areas for future research and development. Ultimately, the goal of this panel is to advance the field of materials science and engineering and improve an understanding of the impact of materials on the quality of life.

Heat Treat Panel Discussion
Wednesday, October 18 | 2:20 p.m. | 313AB
Residual Stress Panel Session

Moderator:
David Furrer, Dr.-Eng., FASM
Principal Technical Fellow and Discipline Lead – Materials and Processes, Pratt & Whitney

How Manufacturing can Induce Residual Stress (HT of greatest interest for this conference) – Dr. Nihad Ben Sala, NBS – M&P Consulting
How Residual Stresses are Measured – Dr. Iuliana Cernatescu, Pratt & Whitney
Methods to model and predict Residual Stresses – Dr. Charlie Li, DANTE Solutions
Designing with and Specifying Product Residual Stresses – Mr. TJ Spradlin, United States Air Force
**EDUCATION COURSES**

*Pre-registration Required

**Materials Selection and Heat Treatment of Gears**
Thursday, October 19
8:00 a.m. – 5:00 p.m. | Convention Center: 250B

**EDUCATION ON THE EXPO SHOW FLOOR**

**Metallurgy for the Non-Metallurgist — Short Course**
Tuesday, October 17
9:15 – 10:45 a.m. | Convention Center: Exhibit Hall A – Education Exchange

Heat treating is considered the least understood, but the most integral part within manufacturing. An efficient heat treating process reduces the overall manufacturing costs associated with energy use, scrap, re-work, and quality issues. This introduction is for personnel that require a basic education in heat treating and need to learn how to “speak the language”. Participants will learn about the effects that time, temperature, and atmospheres have on the heat treating process and the links between microstructure and mechanical properties.

**General Heat Treating — Short Course**
Tuesday, October 17
11:30 a.m. – 1:00 p.m. | Convention Center: Exhibit Hall A – Education Exchange

Metals and alloys are used in the greatest variety of applications of all engineering materials and drive your products success. That is why it’s crucial to have knowledge about what metals are, how they behave, and why they behave differently than ceramics, glass, and plastics. This course will provide you with essential knowledge about metallurgy and how to apply it your business or industry.

**QuesTek Innovations Lunch & Learn**
Tuesday, October 17
12:00 – 1:00 p.m. | Exhibit Hall A – Industry Forum

Digital transformation is here, the future of materials engineering is ICMD®
Learn how QuesTek’s expertise in Integrated Computational Materials Engineering (ICME) technologies has been used to accelerate design, development, and deployment of materials. We’ll discuss how physics-based modeling can enhance alloy chemistry to improve material properties. Our newly released ICMD® materials design and engineering software will be showcased during our presentation where we will focus on several toolkits and their associated methodologies such as alloy design and optimization, sensitivity analysis, uncertainty qualification, and accelerated insertion of materials (AIM).
*Free to attend. Sign up within registration process.

**Critical Thinking in the Application of Additive Manufacturing Processes — Short Course**
Wednesday, October 18
12:30 – 2:00 p.m. | Convention Center: Exhibit Hall A – Education Exchange

This course introduces the metal AM processes and discusses the potential sources of failure that are currently known, or should be anticipated, for metal AM processed hardware. In addition, the course discusses the effect of the metal AM processes on the failure analysis process. Lastly, this course discusses areas of consideration when using metal AM processes including design, metallurgy, production, quality, supplier management, and failure investigation, as well as providing some potential solutions.
AMERICARB engineers and custom manufactures all of our own advanced composites from raw materials to finished goods using patented densification technology. Our ultra-high strength composites can be used in applications exceeding 2,500°C with sheet sizes available up to 25mm thick x 1820mm x 1820mm. These composites are stiffer and lighter than metals, and possess excellent strength properties that make them a more effective alternative and a better solution for different components.

Product Advantages Include:
- Exemplary strength and stiffness to very high temperatures in non-oxidizing atmosphere
- Very lightweight (1.5 to 2.0 grams/cc)
- Can be produced with low or high thermal conductivity
- When graphitized has excellent electrical conductivity
- High modulus and stiffness
- High corrosion resistance (with the exception of oxygen at high temperatures)
- Low coefficient of thermal expansion

Current Applications Include:
- Protective liners and melt covers
- "L" and "U" channels
- Reflectors and heat shields for CZ pullers
- Fasteners (nuts and bolts)
- Leading edge components for aerospace
- Hot pressing advanced ceramics
- Heat Treat Fixtures Grids

MADE IN THE USA
Contact us for the fastest deliveries in the industry!
SPECIAL EVENTS

ASM Leadership Awards Luncheon
Monday, October 16
11:30 a.m. – 1:30 p.m. | Convention Center: Room 330 AB
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. Cost: $60.00 per person

ASM 110th Annual Society Meeting
Monday, October 16
4:00 – 5:00 p.m. | Convention Center: Room 114AB
Officers will be elected for the 2023-2024 term, as well as other ASM business transactions. ASM members and guests are welcome.

Ignite the Night: A Celebration of Materials Camp
Monday, October 16
7:00 – 9:00 p.m. | Marriott: 42 Degrees North
Experience the ultimate fusion of science and fun at the AMEF Materials Camp Celebration! Join us for a special reception that blends materials science with campfire delights. Sip on themed drinks like the Mosquito Mojito, indulge in camp-inspired treats, and ignite your curiosity with captivating materials demonstrations. Discover the magic that shapes our world and spark new connections in an unforgettable night of celebration and exploration.

International Metallographic Society (IMS) IMC Booth
Tuesday, October 17 | Convention Center: IMC Booth
The International Metallographic Contest draws the interest of metallographers around the world, as they compete for the prestigious ASM-IMS Jacquet Lucas Award of $3,000. 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 # to see the winners of the 2023 competition.

Women in Manufacturing and Engineering Breakfast
Joint with IMAT, Heat Treat & AGMA
Tuesday, October 17 | Convention Center: Room 310A
Hosted by ASM International, AGMA, and the ASM Heat Treating Society, this event features speakers who will describe how to navigate your career while avoiding pitfalls and complacency. This breakfast sells out each year, so make sure to reserve your tickets ahead of time with your IMAT or Heat Treat 2023 registration. All are welcome!

Welcome Reception with Exhibitors and Poster Session
Tuesday, October 17
4:00 - 5:30 p.m. | Convention Center: Exhibit Hall A
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 17
6:00 – 9:30 p.m. | Marriott Room: Ambassador
Join ASM in celebrating the accomplishments of ASM’S 2023 award recipients. Tickets, which include the President’s Reception following the dinner can be purchased with IMAT registration.
- Cocktail Reception: 6:00 p.m. – 7:00 p.m. in Marriott Room: Ambassador
- Banquet: 7:00 p.m. – 9:30 p.m.
- President’s Reception: 9:30 – 11:00 p.m. in Marriott Room: Mackinac East
Cost: $150.00 per person

Social Networking Event at Waterview Loft
Wednesday, October 18
6:00 – 9:00 p.m. | Waterview Loft
130 Atwater Street
Detroit, Michigan
Get ready for the ultimate networking event of the year! Join IMAT, Heat Treat, and MPT attendees for this year’s event at the Waterview Loft at Port Detroit. Prepare to be entertained throughout the night with captivating performances and surprises that will keep you on the edge of your seat. Don’t miss out on this incredible opportunity to connect with industry professionals while indulging in delectable local cuisine, cocktails, and mind-blowing entertainment. Ticket Required. Must be purchase in advance.
Cost: $90 per person

GeoCorp Voltage Lounge - Next to GeoCorp Booth (1901)
Be sure to stop by throughout each day for a hot cup of coffee or tea, and don’t miss the opportunity to join us for cocktails and hors d’oeuvres during the Welcome Reception with Exhibitors. Plus, be prepared for daily special surprises that await! Open during exhibit hall hours.
Sponsored by:

Speakers: Nicole Wolter, president of HM Manufacturing
Liz Hoffman, Savanah River National Laboratory
Madilyn Jerke, Boeing
Cost: $40
Student Cost: $25
WELLNESS ACTIVITIES

Wellness Activities
The Conference Organizers have some exciting challenges and activities planned to encourage attendees to engage in healthy activity, enjoy some friendly competition and win prizes.

The IMAT & Heat Treat Walking Challenge!
While you’re stepping up your professional game at IMAT, track your steps to win prizes! The challenge starts on Monday, October 16, 2023 at 12:01 a.m. ET and ends on Wednesday, October 19, 2023 at 12:00 p.m. ET. The top stepper will receive a $250 visa gift card. Challenge participants who reach 20,000 steps and above, will be entered into a raffle to win a $250 visa gift cards. The top stepper and 3 lucky challenge participants will be announced in the Exhibit Hall A - Industry Forum on Wednesday, October 19, 2023 at 3:00 p.m. You must be present to win!

Join the Walking Challenge 🍩
- Download the “Heka Well” Challenge App
- Set up your Challenge account
- Launch the Challenge app and select “IMAT/HEAT TREAT Walking Challenge” from the list
- Complete the in-app registration process
- Pair your step tracker
- Anyone can track their steps using their smartphone* by pairing with Apple Health on iOS or Google Fit on Android
- Heka Well also imports step data from Fitbit, Garmin, Apple Watch
  - View website for clarification
  - asminternational.org/imat-2023/networking/wellness-activities/
- Start stepping!
- To sync your step data to the Challenge app, select “Tap to sync steps” at the top of the Summary screen
- Please make sure you are actively logged into the Challenge app and SYNC YOUR STEP DATA FREQUENTLY, AT LEAST ONE TIME PER DAY as some data sources will not provide step data that is over 24 hours old
- Note that your steps will only count from the time you first pair your tracker
  - View website for clarification
  - asminternational.org/imat-2023/networking/wellness-activities/
- Use Social Connect to Network with other challengers

SECO/VACUUM & SECO/WARWICK Wellness Lounge
Visit the NEW! Wellness Lounge to take a much-needed relaxation break during a jam-packed conference. This special area, located on the exhibit show floor, is designed to provide a moment of Zen to recharge in between sessions. Relax in a comfortable chair, listen to calming music, enjoy infused water, healthy refreshments, and much more. Open during regular exhibit hours.

Thank you to our sponsors:
**DINING IN DETROIT**

1. Mom’s Spaghetti, momsspaghetti.com/, 2131 Woodward Ave, Detroit, MI 48201
2. Basement Burger, basementburgerbar.com/, 1326 Brush St. Detroit, MI 48226
3. Brooklyn St. Local, brooklynstreetlocal.com/, 1266 Michigan Ave, at Brooklyn St. Detroit, MI 48216
4. Fishbones, fishbonesusa.com/, 400 Monroe St #8th, Detroit, MI 48226
5. Loco’s Tex-Mex Grille, nuicreativeagency.wixsite.com/locos, 454 Lafayette St E, Detroit, MI 48226
6. Golden Fleece, goldenfleecedetroit.com/, 525 Monroe Street, Greektown, Detroit 48226
7. Pegasus Taverna, pegasustavernas.com/, 558 Monroe St. Detroit, MI 48226
8. Ottava Via, ottavaviadetroit.com/, 1400 Michigan Ave, Detroit, MI 48216
9. Vicente’s Cuban Cuisine, vicentesdetroit.com/, 1250 Library St, Detroit, MI 48226
10. TABLE NO.2, tablenumber2.com/, 1045 Brush St, Detroit, MI 48226
11. Townhouse Detroit, townhousedetroit.com/, 500 Woodward Ave, Detroit, MI 48226
12. Brass Rail Pizza Bar, brassraildetroit.com/, 18 W Adams Ave, Detroit, MI 48226
13. La Lanterna, lalanternadetroit.com/, 1224 Griswold St, Detroit, MI 48226
14. Mootz Pizzeria + Bar, mootzpizzeria.com/, 1230 Library St, Detroit, MI 48226
15. Redsmoke Barbeque, redsmokebarbeque.com/, 573 Monroe St, Detroit, MI 48226
16. American Coney Island, americanconeyisland.com/, 114 W Lafayette Blvd, Detroit, MI 48226
17. Downtown Louie’s Grill, downtowndouiesgrill.com/, 30 Clifford St, Detroit, MI 48226
18. BESA, besadetroit.com/, 600 Woodward Ave, Detroit, MI 48226
19. Go! Sy Thai, gosythai.com/, 1226 Griswold St, Detroit, MI 48226
20. Union Assembly, unionassembly.com/, 2131 Woodward Ave, Detroit, MI 48201
21. Leila, leiladetroit.com/, 1245 Griswold St, Detroit, MI 48226
22. The Statler French American Bistro, statlerdetroit.com/, 313 Park Ave, Detroit, MI 48226
23. Maru Sushi & Grill, marusushi.com/location/detroit, 160 W Fort St, Detroit, MI 48226
24. Buddy’s Pizza, buddyspizza.com/downtown-detroit, Madison Building, 1565 Broadway St, Detroit, MI 48226
25. Woodward Coney Restaurant, woodwardconeyrestaurant.com/, 616 Woodward Ave, Detroit, MI 48226
ELEMENTS THAT MAKE DETROIT UNIQUE

1. Detroit is home to the Detroit Windsor Tunnel, the first traffic tunnel between two nations.

2. Detroit installed the world’s very first four-way traffic light in 1920 after its invention by local police officer William Potts.

3. Detroit holds the record for most registered bowlers in the country.

4. Detroit is home to a floating post office, the J.W. Westcott II (The only boat in the U.S. with its own zip code), which delivers mail to vessels in the area.

5. Detroit is home to the first mile of concrete highway ever paved.

6. Detroit boasts the nation’s oldest surviving soda: Vernor’s ginger ale, first served in 1866.

7. Detroit’s 987-acre Belle Isle Park—which has a golf course, museum, basketball courts, and baseball fields—is the largest island park in the United States.

8. 1,200 feet underneath Detroit there are 1,400 acres of salt mines. Operated by the Detroit Salt Company, the mine contains more than 100 miles of road.

9. The 72-floor Marriott at the Renaissance Center in Detroit is the tallest hotel in North America. When it opened in 1977, it was the tallest in the world.

10. The city of Detroit is the only major US city that sits directly on the Canada-USA border. And the only US city in the lower 48 states that Canadians would have to drive north to visit.

11. Detroit is the birthplace of the techno music genre in the early 80s.


13. The assembly line, a revolutionary method of mass production, was pioneered by Ransom Olds in Detroit in the early 20th century, transforming the manufacturing landscape and shaping the modern industrial era.

14. The Charles H. Wright Museum of African American History is a renowned cultural institution located in Detroit and is widely recognized as the largest collection of African American history and culture in the world.

15. Detroit is known for having the largest collection of Middle Eastern and Mediterranean restaurants in the United States, offering a diverse and vibrant culinary scene that reflects the city’s rich cultural heritage.

16. Harry Houdini performed his last show in Detroit on Oct. 24, 1926, and died on Halloween at Detroit’s Grace Hospital due to abdomen inflammation and a ruptured appendix.

17. In 1879, Detroit became the first city in the United States to assign telephone numbers.

18. The Detroit International Jazz Festival is the largest free jazz festival in the world.

19. On August 31, 1920, the first news delivered by radio – the returns of a primary local, state and congressional election – was broadcast by 8MK in Detroit.

20. Urban Farming Movement: In recent years, Detroit has gained attention for its urban farming initiatives. The city has repurposed abandoned lots into community gardens and farms, fostering sustainability, providing fresh produce, and revitalizing neighborhoods.
SAVE THE DATE

OCTOBER 21–23, 2025 | DETROIT, MICHIGAN

HEAT TREAT | 2025

ORGANIZED BY:

CO-LOCATED WITH:

SAVE THE DATE
STUDENTS & EMERGING PROFESSIONALS

**Student-Focused Sessions**
Perspectives for Emerging Materials Professionals
Monday, October 16 | 1:00 p.m. – 2:40 p.m.,
3:00 p.m. – 5:20 p.m.
Convention Center: Room 411 BC
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.

**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: 
You won’t want to miss this year’s Fluxtrol Student Research Competition, where young innovative scientists/professionals will go head-to-head for the grand prize of $2,500. Let’s come together to support and cheer on these emerging professionals as they provide attractive offers and opportunities in the worldwide Thermal Processing community. With the generous support of Fluxtrol, this event promises to be an exciting and memorable experience for all.

- **First Place**: $2,500 cash prize
- **Second Place**: $1,000 cash prize
- **Third Place**: $500 cash prize

**Competition Schedule**:

- **Phase 1**: Student Poster Competition
  Tuesday, October 17 | 4:00 p.m. – 5:30 p.m.
  Exhibit Hall A – Heat Treat Student Poster Area – Expo Show Floor

- **Phase 2**: Oral Presentations
  Wednesday, October 18 | 10:30 a.m. – 11:30 a.m.
  Convention Center: Room 313AB

- **Announcement of Award Winners**
  Wednesday, October 18 | 3:00 - 3:30 p.m.
  Exhibit Hall A – Industry Forum

**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 17 | 4:00 p.m. – 5:30 p.m.
  Exhibit Hall A – Student Poster Area – Expo Show Floor

- **Phase 2**: Bend Test
  Wednesday, October 18 | 11:45 a.m. - 12:30 p.m.
  Exhibit Hall A: MTS Booth

- **Announcement of Award Winners**
  Wednesday, October 18 | 3:00 - 3:30 p.m.
  Exhibit Hall A – Industry Forum

**DomesDay Competition**
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.

**Competition Schedule**:

- **Phase 1**: Student Poster Competition
  Tuesday, October 17 | 9:00 a.m. – 2:00 p.m. | Exhibit Hall A

- **Phase 2**: Oral Presentations
  Wednesday, October 18 | 10:30 a.m. – 11:30 a.m.
  Convention Center: Room 313AB

- **Announcement of Award Winners**
  Wednesday, October 18 | 3:00 - 3:30 p.m.
  Exhibit Hall A – Industry Forum
CALL FOR PAPERS

The world is undergoing an energy transformation and the safe, reliable, affordable, and environmentally responsible operation of today and development of tomorrow’s powerplants requires continued advancement of high-temperature materials technology. Materials are the key enabling technology that drives the development of high-efficiency power conversion technology. The Electric Power Research Institute (EPRI) is pleased to continue its partnership with ASM for its 10th Advances in Materials Conference building on EPRI’s initial event in 1987 and rotating between the UK, Europe, North America, and the Pacific with its most recently held conference in Nagasaki, Japan (2019). The 2024 Conference will cover the latest advancements in materials, manufacturing, and repair for conventional thermal power generation including but not limited to: steam power (HRSG, Boilers, steam turbines), gas turbines, concentrating solar power, and geothermal, and advanced energy system: small modular reactors, advanced nuclear technologies, bulk thermal energy storage, sCO2 power cycles, next generation CSP, A-USC steam, and hydrogen.

This conference will enable a robust technical exchange and promotion of collaboration among scientists, engineers, and academics on an international scale focused around the following conference themes:

- High-Temperature Materials: superalloys, CSEF steels, stainless steels, intermetallics, non-metallics, coatings, claddings
- Damage Mechanisms & Properties: Creep, creep-fatigue, oxidation and corrosion, weld performance, wear/erosion
- Component Manufacturing: castings, forgings, blades, rotors, valves, shop & field fabrication processes, etc.
- Advanced Manufacturing: additive (PBF, DED, etc.), Powder Metallurgy Hot Isostatic Pressing (PM-HIP), advanced welding and cladding processes
- Qualification: Design, design rules, codes & standards
- Performance: Field experience, Life management, Fitness-for-Service (FFS), feature testing, modeling & validation
- Repair: weld repair, rejuvenation, advanced repair methods
- Emerging High-Temperature Materials Technology: refractories, new alloy developments, modeling developments

SUBMIT YOUR ABSTRACT TODAY!
DEADLINE: DECEMBER 13, 2023

ORGANIZED BY:
eprievent.org
## TECHNICAL PROGRAM — IMAT

**SPECIAL NOTE**

The only way to view the full IMAT and Heat Treat technical program is via the mobile app or via the IMAT or Heat Treat 2023 websites. Schedule subject to change for the most updated information download the official event app for Apple and Android devices by searching “IMAT/Heat Treat 2023”.

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<th>Date</th>
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<th>Oct 17, 2023</th>
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<td>Locations</td>
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<tr>
<td>Keynotes / Special Sessions</td>
<td>9:00 AM - 10:00 AM</td>
<td>IMAT Keynote: ARPA-E Advances High-Potential, High-Impact Energy Technology: Dr. Evelyn N. Wang, Director, Advanced Research Projects Agency-Energy (ARPA-E)</td>
<td>9:00 AM - 10:00 AM</td>
<td>Alpha Sigma Mu Lecture: Prof. Robert O. Ritchie, Materials Sciences Division, Lawrence Berkeley National Laboratory, and Department of Materials Science &amp; Engineering, University of California Berkeley</td>
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<td>10:30 AM - 11:30 AM</td>
<td>ASM-TMS Distinguished Lectureship in Materials and Society: Dr. Viola Acoff, Dean of the School of Engineering, Professor of Mechanical Engineering, University of Mississippi</td>
<td>8:00 AM - 9:40 AM</td>
<td>Automotive &amp; Transportation</td>
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<td>Failure Analysis</td>
<td>10:30 AM - 11:50 AM</td>
<td>Aviation I</td>
<td>8:00 AM - 9:40 AM</td>
<td>Embrittlement – Related Failures II</td>
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<td>1:00 PM - 2:40 PM</td>
<td>Aviation II</td>
<td>8:00 AM - 9:40 AM</td>
<td>Tools &amp; Techniques II</td>
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<td>3:00 PM - 5:00 PM</td>
<td>Automotive &amp; Transportation</td>
<td>1:00 PM - 4:20 PM</td>
<td>Threaded Joints &amp; Fasteners I</td>
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<td>JOINT SESSION: FAS/IMS</td>
<td>10:30 AM - 11:50 AM</td>
<td>8:00 AM - 9:40 AM</td>
<td>Threaded Joints &amp; Fasteners II</td>
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<tr>
<td>Failure Analysis</td>
<td>10:30 AM - 11:30 AM</td>
<td>Corrosion I</td>
<td>1:00 PM - 1:40 PM</td>
<td>Non-Metallic Materials</td>
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<td>8:40 AM - 9:40 AM</td>
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<td>1:00 PM - 2:40 PM</td>
<td>Corrosion II</td>
<td>8:00 AM - 9:40 AM</td>
<td>Fatigue &amp; Fracture II</td>
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<td>3:00 PM - 4:40 PM</td>
<td>Food &amp; Beverage I</td>
<td>1:00 PM - 4:40 PM</td>
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<td>Welding &amp; Joining</td>
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<td>Food &amp; Beverage II</td>
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<td>331 ABC</td>
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<tr>
<td>Characterization of Materials and Microstructure through Metallography, Image Analysis, and Mechanical Testing - Fundamental and Applied Studies</td>
<td>10:30 AM - 11:50 AM</td>
<td>Microstructural Characterization and the Correlation of Microstructure to Mechanical Properties I</td>
<td>9:00 AM - 9:40 AM</td>
<td>Microstructures in Additive Manufacturing (Joint session with the AM Committee) and Metallographic Preparation Techniques from Fundamentals to Novel Solutions</td>
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<td>1:00 PM - 2:40 PM</td>
<td>Microstructural Characterization and the Correlation of Microstructure to Mechanical Properties II</td>
<td>8:40 AM - 9:40 AM</td>
<td>1:20 PM - 5:00 PM</td>
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<td>5:00 PM - 6:00 PM</td>
<td>IMS Annual Meeting</td>
<td>10:40 AM - 11:50 AM</td>
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<td>IMS Annual Meeting</td>
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<td>Quantification and Simulation of Microstructures and Properties</td>
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<td>331 ABC</td>
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<td>1:00 PM - 2:00 PM Henry Clifton Sorby Lecture: Prof. Yuichi Ikuhara, Director, Institute of Engineering Innovation, School of Engineering, The University of Tokyo</td>
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<td>Special Sessions</td>
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<td>PSDK XVIII: Phase Stability and Diffusion Kinetics</td>
<td>10:30 AM - 11:50 AM PSDK XVIII: J Willard Gibbs Equilibrium Award Session Honoring Ji-Cheng ‘JC’ Zhao I</td>
<td>1:00 PM - 2:40 PM PSDK XVIII: J Willard Gibbs Equilibrium Award Session Honoring Ji-Cheng ‘JC’ Zhao II</td>
<td>8:00 AM - 9:40 AM PSDK XVIII: Phase-Field Modeling</td>
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<td>Thermal Spray &amp; Surface Engineering</td>
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<td>8:00 AM - 10:00 AM TSSE - 1</td>
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<tr>
<td>Materials Behavior &amp; Characterization</td>
<td>1:20 PM - 2:40 PM Microstructural Characterization</td>
<td>8:20 AM - 10:00 AM Mechanical Properties of Materials I</td>
<td>1:20 PM - 2:00 PM Sustainable Materials Processing and Manufacturing II</td>
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<tr>
<td>Sustainable Materials &amp; Processes</td>
<td>10:30 AM - 11:50 AM Sustainable Materials Processing and Manufacturing I</td>
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<td>Corrosion and Environmental Degradation</td>
<td>3:00 PM - 4:40 PM Crosscutting Issues in Corrosion of Materials: Control, Monitoring, Mitigation and Material Selection</td>
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<td>Archeometallurgy and Ancient Metalworking</td>
<td>8:40 AM - 9:40 AM Archeometallurgy and Ancient Metalworking I</td>
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<td>Archeometallurgy and Ancient Metalworking</td>
<td>10:30 AM - 11:10 AM Archeometallurgy and Ancient Metalworking II</td>
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<tr>
<td>336</td>
<td>Metals, Ceramics and Composite Materials (raw materials, processing, manufacturing methods, applications, environmental effects)</td>
<td>8:40 AM - 9:40 AM Metallic Materials, Alloy Development, and Heat Treatment</td>
<td>1:00 PM - 2:00 PM EDFAS Tutorial I - Christian Boit, Photonic Localization Techniques</td>
<td>1:00 PM - 2:00 PM EDFAS Tutorial II - Jason Holm, Transmission Electron Imaging and Diffraction in the SEM: What, Why and How to Do This in Your Microscope</td>
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<tr>
<td>337</td>
<td>Emerging Technologies</td>
<td>10:30 AM - 12:10 PM Emerging Technology</td>
<td>8:40 AM - 9:40 AM Advancement in AM Processing of Non-Ferrous Metals</td>
<td>1:00 PM - 2:00 PM Novel Alloy Design Approaches for AM</td>
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<tr>
<td>337</td>
<td>Materials for Energy &amp; Utilities</td>
<td>3:00 PM - 4:40 PM Materials for Energy &amp; Utilities</td>
<td>8:40 AM - 9:40 AM Advancements in Polymer Additive Manufacturing</td>
<td>1:00 PM - 2:00 PM Novel Alloy Design Approaches for AM (Part 2) / Cold Spray Additive Manufacturing</td>
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<tr>
<td>337</td>
<td>EDFAS</td>
<td>1:00 PM - 2:00 PM EDFAS Tutorial II - Jason Holm, Transmission Electron Imaging and Diffraction in the SEM: What, Why and How to Do This in Your Microscope</td>
<td>1:00 PM - 2:00 PM EDFAS Tutorial III - Dave Albert, Microelectronic Failure Analysis</td>
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<td>338</td>
<td>Additive Manufacturing</td>
<td>10:30 AM - 11:50 AM Challenges in AM Qualification, Supply Chains and Logistics</td>
<td>10:30 AM - 11:50 AM Advancing Understanding of Process Structure Property Relationships in AM I</td>
<td>8:00 AM - 9:00 AM Advancing Understanding of Process Structure Property Relationships in AM II</td>
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<td>411 BC</td>
<td>Perspectives for Emerging Professionals</td>
<td>10:30 - 11:50 AM Perspective for Emerging Professionals I</td>
<td>1:00 PM - 2:00 PM Perspective for Emerging Professionals II</td>
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<td>412 AB</td>
<td>Joining of Advance and Specialty Materials (JASM XXII)</td>
<td>10:30 AM - 11:30 AM Ultrasonic and Impact Welding</td>
<td>10:30 AM - 11:30 AM Friction Stir Technologies II</td>
<td>8:00 AM - 10:00 AM Nano Joining</td>
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<tr>
<td>413 AB</td>
<td>10:30 AM - 11:50 AM Aluminum Alloys for Automotive I</td>
<td>1:00 PM - 2:00 PM Aluminum Alloys for Automotive II</td>
<td>8:40 AM - 9:40 AM Materials Processing II</td>
<td>1:00 PM - 2:00 PM Materials used in Railway Transportation II</td>
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<td>3:00 PM - 5:00 PM Materials Processing I</td>
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<td>10:30 AM - 11:50 AM Materials used in Railway Transportation</td>
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**Exhibit Hall A - Industry Forum Keynotes/ Special Sessions/ Education Workshops**

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**Exhibit Hall A – IMAT Poster Area – Expo Show Floor**

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<td>IMAT Poster Session, HTS Strong Bar Competition, &amp; Fluxtrol Student Research Competition</td>
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CALL FOR ABSTRACTS

SUBMIT AN ABSTRACT FOR HEAT TREAT MEXICO 2024

You are invited to share your expertise and insights with a diverse audience of industry professionals by becoming a speaker at Heat Treat 2024. This is your chance to showcase your knowledge, contribute to cutting-edge discussions, and leave a lasting impact on the field. Seize this moment to inspire, educate, and connect – submit your abstract now!

SUBMISSION DEADLINE:
DECEMBER 1, 2023

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<tr>
<td>311 AB</td>
<td>9:00 AM - 10:00 AM Applied Technology / Processes and Applications: Energy Consumption and Efficiency</td>
<td>1:00 PM - 1:40 PM New Trends in Global Heat Treating</td>
<td>10:30 AM - 12:10 PM Atmosphere Technology and Surface Engineering II: Nitriding and Cleaning</td>
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<td>10:30 AM - 11:30 AM Applied Technology / Processes and Applications: Quality Control</td>
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<td>9:00 AM - 10:00 AM Atmosphere Technology and Surface Engineering I</td>
<td>1:00 PM - 2:20 PM Vacuum Processes and Technology</td>
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<td>1:00 PM - 2:20 PM Vacuum Processes and Technology</td>
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<td>313 AB</td>
<td>9:00 AM - 10:00 AM Microstructural Development / Characterization I</td>
<td>10:30 AM - 11:30 AM Vacuum Processes and Technology</td>
<td>3:00 PM - 5:10 PM Heat Treating: Induction Heat Treating</td>
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<td>10:30 AM - 12:10 PM Atmosphere Technology and Surface Engineering II: Nitriding and Cleaning</td>
<td>3:30 PM - 4:50 PM Quenching Technologies I: High Pressure</td>
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<td>3:30 PM - 4:50 PM Industry Internet of Things</td>
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<td>3:15 PM - 4:00 PM IMAT Keynote: The Challenges of Insertion of Advanced Materials &amp; Processes for Spaceflight: Dr. Bryan W. McEnerney, NASA Technical Fellow, Materials, NASA Engineering &amp; Safety Center (NESAC)</td>
<td>11:30 AM - 12:00 PM IMAT Panel Session: Advanced Materials and Manufacturing Technologies</td>
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<td>Exhibit Hall A – Heat Treat Student Poster Area – Expo Show Floor</td>
<td>4:00 PM - 5:30 PM Fluxtrol Student Research Competition - Phase 1 – Poster Presentation</td>
<td>3:00 – 3:30 PM Bar Student Award Presentations – Fluxtrol and HTS Strong Bar Competitions</td>
<td>9:15 AM - 10:00 AM Heat Treat Keynote: Ordinary Materials, Extraordinary Applications: Dr. Marvin Barnes, NASA</td>
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<td>4:00 PM - 5:30 PM HTS Strong Bar Student Competition - Phase 1 – Poster Presentations</td>
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# EXHIBIT HALL HOURS

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<tr>
<th>Day</th>
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<th>Refreshment Break</th>
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<th>Reception with Exhibitors</th>
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<tr>
<td>Tuesday, October 17</td>
<td>Exhibit Hall Open 9:00 a.m. – 6:00 p.m.</td>
<td>9:30 – 10:30 a.m.</td>
<td>Lunch on the Show Floor 11:30 a.m. – 1:30 p.m.</td>
<td>2:30 – 3:30 p.m.</td>
<td>Welcome Reception with Exhibitors 4:00 p.m. – 5:30 p.m.</td>
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<td>Wednesday, October 18</td>
<td>Exhibit Hall Open 9:00 a.m. – 5:00 p.m.</td>
<td>9:30 a.m. – 10:30 a.m.</td>
<td>Lunch on the Show Floor 11:30 a.m. – 1:30 p.m.</td>
<td>Afternoon Refreshment Break 2:30 – 3:30 p.m.</td>
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<td>Thursday, October 19</td>
<td>Exhibit Hall Open 9:00 a.m. – 12:00 p.m.</td>
<td>Morning Refreshment Break 9:30 a.m. – 10:30 a.m.</td>
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CARBURIZING
FNC/NITROCARBURIZING
CARBONITRIDING
HARDENING
BRAZING
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ANNEALING
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The 2024 IFHTSE World Congress revolves around the theme “Innovations in Heat Treatment and Surface Engineering for a Sustainable Future.” Emphasizing the critical role of these technologies in shaping a sustainable world, the event will explore the latest developments, breakthroughs, and practices that can enhance the efficiency, performance, and environmental impact of heat treatment and surface engineering processes. In addition, traditional heat treating topics will be offered.

CONFERENCE HIGHLIGHTS:

• Cutting-Edge Research: Join us for a dynamic congress featuring presentations by global experts, unveiling the latest innovations and case studies in the field of heat treatment and surface engineering.

• Real-World Impact: Discover how heat treatment and surface engineering are transforming industries like automotive, aerospace, manufacturing, and electronics through practical applications and impactful case studies.

• Explore the Exhibit Hall: Immerse yourself in a co-located exhibition with IMAT 2024, where top companies showcase cutting-edge equipment, technologies, and products in the heat treatment and surface engineering realm.

• Connect and Collaborate: Network with professionals, forge partnerships, and exchange ideas, fostering future advancements in the field during this ideal platform for collaboration.
IMAT & HEAT TREAT EXHIBITOR LIST

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Rolled Alloys .............................................................1621
RoMan Manufacturing .................................................2233
RUBIG Industrial Furnaces .........................................2206
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Scientific Forming Technologies Corp. .......................2019
SECO/VACUUM Technologies ......................................2101
SECO/WARWICK Corp. ...............................................1918
Selas Heat Technology ...............................................1937
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Orange indicates Sponsor
Exhibitor List
*as of 9/18/2023
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#### 2023 MPT Exhibitors

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Exhibitor List
*as of 8/14/2023
VIP INDUSTRY TOUR

VIP Industry Tour
*featuring stops at the Data Ecosystem booths
Wednesday, October 18 | Exhibit Hall A - Industry Forum
3:30 – 4:30 p.m.

What is the VIP Industry Tour? Firsthand presentations of the latest tools, products and services in the industry. Limited to the first 150 attendees, sign up for this complimentary opportunity during the registration process. Already registered? No problem! Sign in to your registration account and add to your package today!

Pre-registration is required. Registrants should meet at 3:15 pm outside of the entrance doors to Exhibit Hall A.

Demonstrations will be provided by:

Booth #1722
Overview: DANTE is the Sate-of-the-Art heat treatment simulation software for steel, aluminum and nickel based alloys. With validated material models and material database, DANTE has been successfully used in the aerospace, automotive, heavy equipment industries, and research institutes. The practical applications include gas carburizing, low pressure carburizing, gas nitriding, immersion quenching, high pressure gas quenching, press quenching, induction tempering, and laser hardening, etc. The simulated hardness, microstructural phases, in-process and residual stresses, and distortion are used for part design, process optimization, and fatigue life prediction. DANTE has developed a series of standalone utility programs that aid in material database customization, heat treatment process simulation and design for simplified geometries. All DANTE standalone tools are available for short-term subscription through ASM Data Ecosystem.

Booth #1717
Product: Vacuum furnace technology
Overview: Vacuum furnace technology is the most sustainable alternative to conventional heat treating (often replacing batch IQ and/or sealed quench systems) that gives you a cleaner, safer, and more efficient operation. Energy consumption is minimal, CO₂ emissions are near 80% less, and safety concerns are eliminated with the removal of open flames and fire hazards. ECM’s cold wall technology enables higher temperature treatments and easy integration into machining lines. It allows for a higher throughput while also preventing intergranular oxidation during carburizing thanks to the absence of oxygen. Let’s achieve your green initiatives by integrating ECM vacuum technology into your facility.

Booth #1901
Product: Pyrometry Management Software
Overview: Our presentation will focus on combining our high quality thermocouples, thermocouple wire, calibration services with our Pyrometry Management Software for the complete all-in-one Pyrometry solution. No more paper calibration reports to lose, all will be saved digitally. Removal of input errors when entering or averaging correction factors on calibration reports. Simple tracking of load sensors, TUS, SAT, scheduling of tests thru one package.

Booth #1701
Product: The Inductoscan® Induction Heat Treating System
Overview: We can’t wait to show you around our booth and the new and improved Inductoscan Induction Heat Treating System. The Inductoscan has been recently improved to meet the changing needs of our customers and the manufacturing industry. The platform boasts a high-strength architecture, rigid...
VIP INDUSTRY TOUR

Tower assembly, precision controls, integrated Signature Quality Monitoring System, and many customization options. Hand-assembled in Madison Heights, Michigan, the Inductoscan utilizes cutting-edge induction heating technology to deliver optimal performance, reliability, and production longevity.

**Booth #1746**
**Product:** PANDAT software suite
**Overview:** PANDAT is a software suite developed with the CALPHAD method. It has six modules and can be used to calculate phase equilibria of complicated multi-component, multi-phase systems, simulate diffusion-controlled kinetic processes, such as solidification, diffusion, and precipitation. Moreover, it can also simulate microstructure evolution by the phase field method. PANDAT software has a robust calculation engine, user-friendly graphical interface, and it can be easily coupled with other software tools for a variety of applications. PANDAT software is an essential tool for alloy design and processing optimization, and it plays an important role in ICME.

**Booth #1505**
**Product:** Cold spray additive manufacturing services
**Overview:** Polycontrols is thrilled to showcase its PolyCSAM industrial hub! PolyCSAM integrates advanced surface preparation techniques, metal deposition, in-situ robotic machining and surface finishing, heat treatment, and data analytics with machine learning-based process control. This fully digital additive manufacturing environment allows for the production and repair of parts and assemblies of various sizes and weights, ranging from a few centimeters to several meters in length and from a few kilograms to hundreds of kilograms in weight. The CSAM process, 100% sustainable, enables multi-materials deposition without any oxidation/phase transformation of the initial feedstock nor any heat affected zone in the substrate.

**Booth #2006/2007**
**Overview:** Quaker Houghton delivers superior industrial solutions to meet required metallurgical properties and reduce distortion in heat treated components to the automotive, aerospace, bearing and commercial heat treatment industries. Visit us at Booth 2006/2007 to learn about our heat treatment solutions, including:
- Aqueous Polymers
- Cold Quenching Oils
- Heat Treatment Salts
- Martempering Oils
- Vacuum Quench Oils
- Specialty Greases
ECM
Dennis Beauchesne, General Manager

*If you had to give an impromptu 30-minute speech on any topic, what would you talk about?*

“Low pressure carburizing and its effects on the auto industry over the last 25 years”

*What is one piece of advice you’re glad you ignored?*

“Gas quenching will never work for carburized steels”

Inductoheat
Rob Madeira, Director IHWM
Global Manager of Heat Treating Technologies, Inductoheat Inc.

*Strangest thing you’ve ever observed during a virtual meeting?*

“Nature gives us the opportunity to see that strange can also be adorable. This is going to be shared by many that know of him: Lou the bird gets pretty tired of hearing others speak, so he will join in on the conversation.”

*What is the worst piece of advice you have ever been given?*

“Oil has a high enough flash point. I wish I could say more about it.”

Polycontrols

*What is your favorite quote, who said it? Why is it your favorite?*

“A dream you dream alone is only a dream. A dream you dream together is reality.” John Lennon & Yoko Ono.

At Polycontrols, we believe that everything, including innovation, starts with a dream. That the team is key to achieving ambitious dreams. And that there is no “I” in the word “team”!

Quaker Houghton
Chuck Faulkner, Commercial Development Manager
Heat Treatment

*What is one thing you wish could be automated at your job?*

“I wish we could automate our supply chain and logistics to be able to ship our products like the Amazon business model.”

*What is something that sets your team apart?*

“We have a great global team that has worked together for many years and we are able to communicate and collaborate effectively and efficiently to excel at our customer intimacy.”

SECO VACUUM / SECO WARWICK USA

*What your company is doing to be “green”?

SECO/VACUUM
At SECO/VACUUM we offer innovative, ecological technologies allowing our partners to make pro-environmental changes in the energy, aviation, automotive and recycling industries. Primary solutions such as low pressure carburizing (LPC) reduce production energy consumption, increase production efficiency, and shorten the process and treatment time.

SECO/WARWICK USA
SECO/WARWICK USA’s Aftermarket Services offer on-site gas-to-electric conversions to make heat treating furnaces of any make greener. The SECO/WARWICK service team can retrofit existing furnaces with new electric heating elements, control components, and wiring to reduce energy consumption, increase efficiency and shorten heat treating time.
JOIN US IN CASCAIS, PORTUGAL FOR SMST 2024!

MAY 6–10, 2024
HOTEL CASCAIS MIRAGEM | CASCAIS, PORTUGAL

The International Conference on Shape Memory and Superelastic Technologies (SMST) is the premier conference and exposition for shape memory and superelastic technologies in the world, with a strong emphasis on the creation and utilization of shape memory materials. SMST brings together a diverse group of worldwide experts who are active in the improvement, design, and application of Nitinol. The technical program will include keynote sessions, educational workshops, a panel discussion, and numerous networking events. Plan today to attend SMST 2024!

ORGANIZED BY:

smstevent.org
SOLUTIONS CENTER SCHEDULE

Exhibit Hall A – Industry Forum.
The Solutions Center focuses on solving actual customer problems with FREE presentations given by exhibiting companies. Presentations will include products and/or services that can help attendees solve a particular manufacturing problem, or improve productivity. Presentations will be held Tuesday–Thursday.

TUESDAY, OCTOBER 17

10:30 a.m.
Steelhead Technologies
Presenter: Jeff Halonen
Future Proofing Your Plant in 2 Weeks: Digitize, Automate, Optimize
“There has to be a better way...” Our team of automation and optimization experts listened to your call for help, feeling your frustration from a lack of ERP options designed specifically for the heat-treating process. With fully digital plant management solutions carefully crafted for the heat treating and metal finishing industry, Steelhead digitizes, automates, and optimizes processes, saving endless hours, dollars, and management headaches.
You'll learn how to replace clunky systems, outdated software, and the paper shuffle with an updated system that's so easy to use, you can train any Operator how to use it in just 10 minutes!

10:50 a.m.
Thermo Fisher Scientific
Presenter: John Yorsten
Determining the Unique Components of Materials Using ChemiSEM & ChemiPhase
Scanning electron microscopy and energy dispersive x-ray microanalysis (SEM-EDX) is widely used in the characterization of materials. Advances in computing power together with the application of adaptive super-pixel clustering algorithms has vastly decreased the time necessary to map, determine elemental compositions and to delineate statistically similar component phases. ChemiSEM Technology uses a big data approach to detect all statistically significant spectra within the acquired data cube. ChemiPhase software then provides a simple probability for each pixel, indicating if it belongs to each of these spectra. This makes interpretation of complex samples much more straightforward and intuitive, as each pixel can only belong to a single phase.
In this short tutorial, we will look at several examples of how ChemiSEM and ChemiPhase are used to speed the time to accurate SEM-EDX results.

11:10 a.m.
Thermo Fisher Scientific
Presenter: Rogier Miltenburg
Thermo Scientific Perception Software: A gamechanger in quality control
These days scanning electron microscopy (SEM) is used not only for research but also for daily quality control. Steel, precision parts and battery components are routinely inspected for contaminations or defects. Depending on the size, shape and composition, particles can have a negative impact on the quality of the finished product and therefore it is critical to understand the properties of the particles.
Discover how Thermo Fisher Scientific’s new Perception Software enables advanced SEM-EDS automated particle analysis. Perception is an all-in-one software package which will turn your scanning electron microscope into a dedicated solution for your particle analysis needs.

1:10 p.m.
HZO
Presenter: Ryan Moore
Thin-film Conformal Coating Practices to Safeguard & Enhance Your Product Design
Explore optimal techniques and options for employing thin-film conformal coatings in product design to ensure both protection and augmentation. This presentation delves into innovative practices that safeguard electronics from environmental factors while enhancing performance. Learn about state-of-the-art application methods, material selection, and industry standards, equipping you to strike the perfect balance between functionality and reliability. Discover how conformal coatings act as a shield against moisture, dust, and chemicals, prolonging product lifespan. Join us to unravel the synergy between advanced coating strategies and elevated product design, resulting in resilient electronics fit for diverse applications.
1:30 p.m.
Air Products and Chemicals
Presenter: Mark Weise
Industrial gas tank monitoring system to ensure safety, reliability, and NFPA 86 compliance
Ensuring a safe and reliable supply of gases to your furnace in compliance with NFPA 86 is critical to your operation. Join this Air Products presentation and visit booth #2020 to learn more about Air Products Tank Monitoring System - a convenient, reliable way to remotely monitor your storage tanks. Not only does this system help you manage your industrial gas supply, but it also allows detection of abnormal gas usage and tracking of tank liquid and vaporized gas temperature. With Air Products Smart Technology, you get the benefit of decades of experience in gas supply, applications solutions, and safety.

1:50 p.m.
Polycontrols
Presenter: Luc Pouliot
Sustainable, Valued-Added Restoration of a Worn Steel Component Using Laser-Assisted CSAM
In this presentation, the audience will gain a deeper understanding on the upcoming regulation and how solvents used in modern closed vacuum machines can ensure - in addition to achieving the required level of cleanliness on a consistent basis - a reliable process, environmental compliance, low waste volumes, and above all, miniscule chemistry consumption.

WEDNESDAY, OCTOBER 18

1:10 p.m.
Quaker Houghton
Presenter: Chris Hill
Real time process fluid condition monitoring
The QH FLUIDMONITOR™ GREENLIGHT is a self-contained measurement system allowing continuous concentration monitoring of water-dilutable metalworking fluids. Water dilutable process fluids concentration is essential to ensure peak operating performance. QH FLUIDMONITOR GREENLIGHT can seamlessly integrate with QH FLUIDTREND™, Quaker Houghton’s cloud, allowing for real time data, alerts, and data retention.

1:30 p.m.
ECM USA
Presenter: Thomas Michel
Advancing Global Sustainability through Vacuum Heat Treating
In response to evolving global sustainability imperatives and the pressing need to reduce CO2 emissions and energy consumption in the heat treat industry, vacuum furnace technology has emerged as the leading solution. Unlike conventional methods such as batch IQ and sealed quench systems, vacuum furnaces (with their cold wall technology) offer a cleaner, safer, and remarkably efficient approach to heat treatment. They not only facilitate higher temperature treatments but also seamlessly integrate into existing or new production lines. Join us in this eco-friendly initiative, as we pave the way for a carbon-neutral future in the global heat treat industry.

1:50 p.m.
SAFECHEM Europe GmbH
Presenter: Stefan Lukowski
Cleaning before and after heat treatment – what are future options retaining cost efficiency, sustainability and process reliability?
Metal cleaning has the potential to make or break heat treat processes. However, many heat treat companies are struggling with common cleaning challenges. Recently, within the Toxic Substance Control Act (TSCA) EPA has announced more stringent regulation for the use of various cleaning chemistries causing a lot of uncertainty in choosing a long-term sustainable technology.

2:10 p.m.
Noxmat USA
Presenter: Matt Wolf
Energy efficient heating and conversions GAS/Electric
New and innovative methods in heating for industrial furnaces, focusing on saving money, energy and CO2 emissions as well as furnace upgrades from Gas- to Electric heating.
THURSDAY, OCTOBER 19

10:00 a.m.
Inductoheat
Presenter: Rob Madeira
Increasing Flexibility and Throughput for the Electric Induction Heating of Bearings and Raceways

As one of the most demanding components of the drivetrain is the point where the wheel connects to the drivetrain. The hub and spindle or inner and outer raceway are the stress component that mates the road environment to the engine torque requested by the driver.

Induction Hardening of the roller grooves is a common method of adding wear resistance and strength to hubs and raceways. Based on the parts design, it is common that a raceway exists on both in and out board sections of the component. It is preferred for overall performance of the components that both races be induction heat treated simultaneously. The design of the induction tooling, and the process methodology employed to harden the part are determined by the geometry of the part and the desired process result.

This presentation looks in detail of how passive and active components of an induction hardening system benefit such critical process factors as: more rapid heating time, lower current densities, and those in combination with unique inductor positioning opportunities, minimize distortion.

10:20 a.m.
IHWM
Presenters: Hiram Martinez & Hasael Duran
Analysis of Errors in Simulation Modeling

Computer based simulation programs for induction heating and resulting metallurgy are extremely useful in developing tooling and process for induction heating. Induction hardening simulation brings in elements of inductor design, steel properties such as time-temperature-transformation curves, both thermal and magnetic properties at various temperatures and cooling rate based on the phase of the quench media on cooling.

A common method of in place hardening (static hardening) is known as single shot hardening. In this process, the inductor commonly is designed with a top and bottom half loop connected by the heating rails. The length of heating is determined by the length of the rails and a percentage height of the width of the half loops. Accurately predicting the length of the heating pattern in this 3D modeling approach is computationally a heavy load on the modeling prerequisites. Commonly the inductor is modeled and then tested with the actual results showing a different length than what was predicted.

This paper reaches into the analysis of why the predicted length may differ from the test results discussing what factors constitute the largest variance from the predicted outcome. Errors in computational ability of the software, material specification, Inductor design and the reliance on set up during testing will be discussed.
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International Symposium for Testing and Failure Analysis (ISTFA) is the premier event for the microelectronics failure analysis community. Join us at the only North American event devoted to the semiconductor, electronic sample preparation, and imaging markets. This is the best venue for failure analysts and the FA community for sharing challenges and acquiring the technical knowledge and resources needed to take them on.

MEET THE 2023 KEYNOTE SPEAKER:
Dr. Peter Friedrichs,
Vice President SiC Infineon
“Wide band gap power devices
and related robustness and reliability aspects”
Tuesday, November 14 at 8:30 a.m.

ORGANIZED BY:
EDFAS
Electronic Device Failure Analysis Society
ASM INTERNATIONAL

ISTFAEVENT.ORG
NEW H hires
ECM
We are proud to announce that Randy Beck has joined the ECM USA team as the resident Metallurgical and Pyrometry Engineer. His role is crucial to our operations, particularly in the areas of heat treatment testing, sample analysis, and troubleshooting.

Gefran, Inc.
Gefran, Inc. is thrilled to welcome Jim Norton as the new Operations Manager for our North Andover, Massachusetts plant. Jim brings over two decades of experience in industrial manufacturing to our team, along with a Bachelor of Science in Electrical Engineering from the University of Illinois Urbana-Champaign and a Master of Business Administration and Operations Management from the University of Oregon. Since joining Gefran in April 2023, Jim has made significant contributions to our operations with his approach to lean manufacturing and cycle time reduction. We are excited to see his leadership continue to drive our success in the power and process controls industry.

NITREX
Forging new horizons! Although not new to the industry, Steven Sumner is the fresh face of NITREX Heat Treat Services! With a wealth of experience in the heat-treating industry, his strategic vision will steer our growth across North America.

BUILDING TEAMWORK & CREATING UNITY!

Moffitt
At Moffitt, we do monthly team Lunch and Learn seminars on a variety of topics. For August, discussing the Moffitt Culture. This is how we make sure everyone knows what to expect during their time here as we continue to grow and welcome new team members.
Each holiday season we perform a day of service. In 2022, half our staff cleaned the beach and the other half volunteered at the Peace of Heart House where we harvested vegetables, made mulch, weeded the gardens, and cleaned the chicken coops. We also host regular Vision Cast meetings, where we brainstorm as a company. As a thank you for continued hard work, off site events like visiting Top Golf, trivia contests, or attending Jacksonville Jumbo Shrimp baseball games are enjoyed as a team.

Polycontrols
Fueling innovation, Fostering Team Partnerships: Spending great time with colleagues strengthens crucial bonds!
Polycontrols’s Social Club is very creative at organizing social events regularly throughout the year. Special lunches, Family Feast, 5 @ 7, Annual Golf Classic, E-Karting, Ski Day, etc…
Because we believe that employees are way more than resources, we make everything possible to create a positive and vibrant workplace that will in turn stimulate collaboration and innovation.

Steelhead
In order to build the strongest team in the industry, we make sure we start by first understanding the needs of each job shop from the core of their processes to why they do what they do. Our dedication here to building a strong team is truly what sets us apart from other solutions in the industry because it powers our customized software and world-class deployments!
Team Steelhead at the June “Steelhead Run” – a semi-annual retreat when our team comes together to brainstorm new features and enhancements through creative collaboration.

NITREX
Empowering unity! Celebrating the remarkable contributions of the women of Nitrex, who excel in diverse roles from the shop floor to the boardroom, inspiring success and shaping our journey forward.
Moffitt - Acquisition
Moffitt, LLC (Moffitt) is honored to announce that we have purchased Romlair Fan Company (Romlair). This purchase includes its corporate office and warehouse in San Diego, California and manufacturing facility in Tijuana, Mexico. Like Moffitt, Romlair is a family business. The addition of Romlair positions Moffitt to expand our ventilation solutions into the light industrial market including warehouses, distribution centers, and more.

Rolled Alloys - New Facility
Rolled Alloys, a leader in the metals industry for both heat-resistant and corrosion-resistant alloys, has broken ground on a new high-tech, light-manufacturing facility in Monclova Township, just south of Toledo. The project is expected to be completed in August 2024. If you’d like to learn more about Rolled Alloys, please visit rolledalloys.com.

United Technical - Award
United Technical proudly announces winning the American Welding Society’s WEMCO committee 2023 Excellence in Welding award in the Small Business category. United Technical was nominated for its holistic focus on welding and the associated metallurgy, testing, engineering and training required to successfully implement welding processes for manufacturing.

AFC-Holcroft - Partnership
AFC-Holcroft, a member of the Aichelin Group and global leader in the thermal processing equipment industry announced July 25, 2003 a strategic partnership with Sanken Sangyo, a Japanese based leader in the thermal processing equipment industry to expand aluminum heat treat furnace capabilities. From Left to Right: AFC-Holcroft L.L.C.; Ron Waligora, COO of Project Management, Engineering, Manufacturing, and Field Services, AFC-Holcroft LLC; Tracy Dougherty, COO of Applications Engineering, Sales, and Aftermarket; Sanken Sangyo CO., LTD.; Yuichiro Miura, President, Sanken Sangyo CO., LTD.; Kosei Daida, Chairman.

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(813) 879-5811
Across USA
Booth 2024
Across USA and CFC Design specializes in the manufacturing technology of C/C composite [Carbon Fiber + Carbon]. Carbon-Carbon composites are among the strongest and lightest high-temperature engineered material in the world. We offer wide range of C/C solutions: Heat-treat trays, racks, shelves, grids, fixtures, furnace parts (fans, conveyors, rollers, hearth rails, fasteners) etc. At CFC, we continuously aim to provide innovative materials through the development of carbon composite technology.

AFC Holcroft
Booth 2219
Our experts will be on hand, ready to discuss your specific thermal processing needs. Let one of our experienced, knowledgeable staff personally address your unique situation. Bring your production and process requirements and challenges, and give us an opportunity to offer feedback. We’re sure you will find your visit to be productive and informative. After all, AFC-Holcroft has been a trusted leader in industrial furnace technology for over 100 years. Talk with our team and you’ll see why.

AFFRI, Inc.
Booth 1830
For over 60 years, AFFRI has been designing and manufacturing state of the art Hardness Testing equipment inclusive of test scales such as Rockwell, Brinell, Vickers, and Knoop. All materials from metals to plastic and rubber with absolute accuracy. AFFRI’s innovative Closed-Loop Load Control System® enhances optimal testing performance. All hardness testers conform to ASTM and ISO hardness standards.

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Air Products, a worldwide leading industrial gas supplier, brings significant experience in gas supply, applications development and safety to help you improve quality, reduce operating costs and increase production. We offer high-purity gases, gas-handling equipment and technical know-how from metals -processing focused applications engineers to help you succeed. www.airproducts.com/metal

Airflow Sciences Corporation
Booth 1924
Heat treating is largely controlled by the conditions applied to the surface of your parts. Take control of that environment through ASC’s CFD and experimental methods. ASC has successfully improved furnaces, liquid quench tanks, high pressure gas quenching, air quenching, and intensive quenching processes.

AJAX TOCCO
Booth 2137
Ajax Tocco Magnethermic, SAET/EMMEDI, Pillar Induction and GH Induction, all leaders in the induction industry, provide Innovative Solutions for Induction Heat Treating, Heating and Melting applications. A dual spindle compact scanner complete with power supply, water system, quench system and control will be featured. See a computer presentation of Ajax TOCCO / SAET EMMEDI / GH Induction / Pillar Induction heating and heat treat products and the latest scanner controls with coil monitoring.

Alcon Industries, INC.
Booth 2047
alconindustries.com

ALD Vacuum Technologies North America, Inc.
Booth 1725
ALD Vacuum Technologies heat treatment division designs, sells and services high-end vacuum heat treatment systems, e.g. ModulTherm® or SyncroTherm® for case hardening of highly stressed gear components in the automotive industry. For customers who do not intend to invest in heat treatment systems, ALD is providing heat treatment as a toll-based service through our facilities in Port Huron Mi, and Ramos Arizpe, Mexico.

Allegheny Alloy, Inc.
Booth 2231

Allied High Tech Products, Inc.
Booth 1506
For over 40 years, Allied High Tech Products has provided quality products for metallographic sample preparation & analysis. Items on display include state-of-the-art Grinding/Polishing Systems, Sectioning Saws and Mounting Systems, as well as a full range of consumable products.

allichightech.com
IMAT, ASM International’s annual meeting will focus on membership and materials community needs, offering an industry-oriented conference and exposition. IMAT will target a broad range of materials, processes, and their applications, with an emphasis on advanced materials and manufacturing technologies.

Traditional topics of interest will be explored, including metals, ceramics, composites, coatings, alloy development, microstructure/process/properties relationships, phase equilibria, mechanical behavior, joining, corrosion, and failure analysis.

Emerging topics, instrumental in advancing materials development and cutting-edge technologies, will be covered. Technologies such as advanced manufacturing, including additive, Industry 4.0 and digitization of the materials industry, biomedical/multifunctional materials, power, and transportation industries, materials for energy, renewable and sustainable materials and processes, as well as materials to enable automation and robotics will be covered.

Students will have the opportunity to showcase their research and connect with future materials scientists through various events and competitions.

Abstracts are solicited in the following areas:

- Additive Manufacturing
- Archaeometallurgy and Ancient Metalworking
- Characterization of Materials and Microstructure through Metallography, Image Analysis, and Mechanical Testing: Fundamental and Applied Studies
- Corrosion and Environmental Degradation
- Emerging Technologies
- Failure Analysis
- Functional Materials and Structures: Solving Barriers to Adoption
- Joining of Advanced and Specialty Materials (JASM XXII)
- Light Metal Technology
- Materials 4.0: Materials Information in the Product Life Cycle
- Materials Behavior & Characterization
- Materials for Energy & Utilities
- Medical / Biomaterials: Delivering Patient Value
- Materials & Processes for Automation
- Metals, Ceramics, and Composite Materials: Raw Materials, Processing, Manufacturing Methods, Applications, and Environmental Effects
- Perspectives for Emerging Professionals
- Processing and Applications
- PSDK XV: Phase Stability and Diffusion Kinetics
- Sustainable Materials & Processes

ABSTRACT SUBMISSION DEADLINE: FEBRUARY 14, 2024

imevent.org
Alloy Engineering
Booth 1619
Alloy Engineering is a diverse nickel & stainless steel fabricator specializing in high-temperature and corrosion resistant alloys. We offer custom designed & engineered products as well as custom fabrication, machining & welding to specification.

AMERICARB Inc
Booth 1945
americarb.com

AMPP: Association for Materials Protection and Performance
Booth 1414
AMPP represents the largest global community of corrosion and protective coatings professionals. AMPP protects infrastructure and assets worldwide through member workforce education and credentialing, company accreditation, technological innovation, and global standardization. AMPP provides members with the knowledge and resources to ensure high performance materials are used to build and maintain sustainable infrastructure.
ampp.org

ASM Materials Education Foundation
Booth 1412
The ASM Materials Education Foundation provides for the advancement of scientific and engineering knowledge through its support of education and research. Our mission is to develop and deploy materials science content and hands-on, minds-on instructional strategies to inspire, engage, and empower future generations to create STEM solutions for 21st century challenges.
asmfoundation.org

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For over 60 years BASF has manufactured the some of the best high temperature thermocouples, thermocouple wire, and pyrometers in the industry. Our ISO17025 facility, located in Fremont, California provides thermocouples and wire in Type R, S, B, and C. Our in-house ISO 17025 certified lab offers calibration reports for all products. Along with our products, BASF offers refining services to reclaim any spent precious metals. These metals can be used to offset the cost for new thermocouples.
catalysts.basf.com

Bluewater Thermal Solutions
Booth 2045
Bluewater Thermal Solutions operates 12 heat treatment and brazing facilities in the United States and this makes us one of the largest heat treating and brazing companies in North America. Each location has different capabilities and equipment that allows them to offer specialized different types of processing required by their local markets.
bluewaterthermal.com

Bodycote
Booth 1513
Bodycote, the world’s leading provider of heat treatment and specialist thermal processing services, specializes in the treatment of parts and components used in a wide range of industries. Bodycote’s facilities provide a complete post-build processing solution – from classical heat treatments and specialized hot isostatic pressing (HIP), to the safe removal from base plate, testing, and final inspection for the 3D printed components.
bodycote.com

C3 Data, LLC
Booth 1637
C3 helps heat treaters & CAL labs manage Plant Maintenance & Furnace compliance with Nadcap (AMS2750) & CQI-9. Our mobile app (eCapture™) simplifies Plant Maintenance & Furnace Compliance. From defining what tests & tolerances are required, to scheduling/collecting test data, to reporting & proof-of-compliance, we cover it. Real-time visualization of furnace compliance provides you the peace of mind & confidence that comes with knowing your furnaces are qualified to run product and audit-ready!
c3data.com

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calor.com.tr

Can-Eng Furnaces International Ltd.
Booth 2207
CAN-ENG Furnaces International Ltd, a prominent global designer and manufacturer of leading-edge heat treatment equipment for both ferrous & non-ferrous metals. Can-Eng’s premium furnace systems provide the latest advancements in energy saving technology, material handling, and automation; particularly our aerospace systems for heating & forging various Al, Ti, & Ni alloys. Using focused design CAN-ENG continues to meet and exceed today’s increasingly rigorous standards (i.e. AMS 2750E, CQI-9).
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Recharge in the company of visionaries, connect with other materials executives who share your fire about the future of the materials world, and unlock new thinking to spark innovation.

This year’s summit will convene a powerful collection of groundbreaking innovators and top subject-matter experts, focused on the following domains:

- Materials 4.0 — Materials Genome Deployment
- Nexus of Data Science and Materials Science
- Industry 4.0 — the New Manufacturing Landscape
- Materials Sustainability in the 21st Century

Plan today to join other materials executives and ASM leaders during this exclusive two-day summit, featuring keynotes, expert panel sessions, and numerous networking opportunities. Be sure to arrive early to relax and network with your peers during an informal golf outing!

REGISTER TODAY!

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Carbon Composites Inc., an innovator of high temperature graphite furnace insulation and C/C composites, specializes in the design and manufacturing of high temperature graphite furnace insulation packages. CCI manufactures Carbon fiber reinforced carbon composites fixtures and hardware, carbon fiber based insulation for high temperature applications, and more! Locations in both MA and NH. Supporting Heat Treat, Semiconductor, High Pressure/High Temperature Sintering, Solar Industries, and more!
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Cast Alloy Products
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Cast Alloy Products LLC is an Alloy Casting company providing your casting solutions with over 100 years of combined experience supplying to the Steel industry, Heat Treat, Aerospace, Power plants, Oil refineries, to name a few industries in North America. Whether you are a new partner seeking cast alloy components or optimizing an existing cast design, we can handle it all. Design, Alloy enhancement, increase properties and increased life C.A.P can pour your needs.
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Contour Hardening is a full service heat treat provider. our systems and processes are used to heat treat millions of parts for our customers around the world. with our headquarters in Indianapolis Indiana and our facility in Silao Mexico we have the technical expertise to meet all your heat treat needs. With over 30 years in business and four degreed metallurgist on staff we are IATF 16949 certified ISO9001 certified and CQI-9 Compliant. High-volume contract processing, systems and R&D.
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ECM USA provides high quality vacuum furnace systems, advanced automation, service, and R&D testing in the Americas for the ECM Group. With experienced engineering, advanced manufacturing & installation expertise, ECM systems provide high up-time to demanding production environments all over the world. Our diverse products are ideal for industrial and R&D heat treat applications: automotive (ask about EV transmissions!), aerospace, crystal growth, photovoltaic, semiconductor, 3D additive & more.
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We are at the forefront of vacuum for all heat treatment applications. We can provide you with high quality, reliable and cost effective vacuum solutions with reduced environmental impact. Our experts can select the best option for your process, whether oil sealed or dry pumping technology.
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Eurotherm by Schneider Electric designs and manufactures products and systems to enable excellence in Precision Process Control, Secure Data Recording and Advanced Power Control. 3000+ customers over the last 50 years have relied on our expertise in improving control and providing solutions for Heat Treat standards (CQI9, AMS2750F and Nadcap).
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With over 50 years of experience and nearly 700 employees worldwide, Gefran engineers and manufactures high-quality solutions for the heat treatment industry. Gefran products are designed for process optimization, increasing energy efficiency, and intelligent operations management, and include indicators and alarm units, single and multi-loop PID controllers, power units to control electrical heating, and so much more. Stop by booth gefran.com

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Manufacturer of thermocouples and thermocouple wire with an ISO/IEC 17025:2017 accredited temperature calibration lab. We’re offering PMS, Pyrometry Management Software, so you can download your calibration reports to help reduce input errors that result in audit findings. Stop by and see how we can put together a complete package of products and software to make work easier. All products meet the tightest quality requirements of major aerospace companies. Orders ship in days-not weeks.
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CARBONEERING® Value-adding factor for high-temperature processes Graphite Materials is a developer and manufacturer of carbon components for high-temperature processes and furnaces. By using the high-tech materials graphite and CFC, we enable optimum benefit/price ratios for industrial manufacturing processes in the temperature range from 850 to 3,000 °C. With smart graphite and CFC components we raise industrial high-temperature processes to carbon level!
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Heat Treat Furnaces (a TTX Company)
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HTF industrial furnaces have an extensive list of capabilities and can be manufactured to suit almost any application. We are a full-service supplier, meaning we assume responsibility for all mechanical, electrical, structural and control aspects of our furnaces. When you purchase an HTF furnace, you get complete engineering support, evaluation, testing, design, fabrication, installation, start-up and field service with the continued support from our in-house service team.
heattreatfurnaces.com

Heat Treat Today
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heattreattoday.com

Hebei Shinning Metals Co., Ltd.
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Shinning Alloy has specialized in heat resistant steel castings for nearly 20 years. We work closely with international heat treatment plants such as Bodycote and Aalberts and furnace manufacturers such as Aichelin and Ipsen, assisting them in the design and manufacture of heat treatment fixtures and furnace components. Our diverse heat treatment fixture solutions successfully help our customers find cost-effective solutions for their fixtures. Looking forward to your special challenges!
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HEMO GmbH
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High Temperature Concept
Booth 1833
Looking for high-quality CFC Racks and Fixtures made in the USA? Look no further than High Temperature Concept (HTC)! As one of the pioneers in the field with over 25 years of experience and a Ph.D., we have the knowledge and expertise to deliver outstanding CFC Fixtures for your process. We have over 20 references, patents, and presentations to back up our reputation. Join us on your journey to a bright future, and catch us at our booth (#1833) or oral presentation at the Conference in Detroit.
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IHI Machinery and Furnace Co., Ltd.
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Inductotherm Group
Booth 1701
HEAT TREAT CORPORATE SPONSOR
Please stop by Inductoheat booth (# 1701, to speak with our experts and see the latest advancements in the world of induction heating. The Inductotherm Group will be represented this year at the 2023 Heat Treat show by Inductoheat, Inc. and Consarc Corporation. inductoheat.com

Industrial Heating Equipment Association
Booth 1538
The Industrial Heating Equipment Association (IHEA), is a national trade association of designers and manufacturers of industrial furnaces and ovens, combustion equipment, process controls and other components for industrial furnaces and ovens. The IHEA booth will include information on all our educational opportunities including the On-Line Distance Learning Course, newsletters and resource information, as well as the revised 3rd edition of the Infrared Process Heating Manual! ihea.org

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ITC - International Technical Ceramics
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ITC offers a full line of high-temperature, energy-efficient ceramic coatings used to reduce energy consumption, reduce refractory maintenance and increase refractory longevity as a well as improve temperature uniformities, reduce turn around times and shorten furnace heat-up and cool down times. ITC also manufactures coatings that are used to protect metal parts from oxidation due to prolonged used at elevated temperatures. All ITC products are water based and contain no harmful VOC’s. itccoatings.com

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Jackson Transformer
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Jackson Transformer Company is a leading designer and manufacturer of Transformers, Reactors, Chokes, and other magnetic products. We have been developing, designing, and manufacturing water-cooled and air-cooled magnetic products since 1955. We provide repair and reconditioning services on Transformers used in Induction Heating Equipment, regardless of original manufacturer. ISO 9001:2015-Registered jacksontransformer.com

Journal of Thermal Spray Technology (JTST)
Booth 1410
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. asminternational.org
JUMO Process Control, Inc.
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jumousa.com

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khtheat.com

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llfurnace.com

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leco.com

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Dry-Compression Vacuum Pump Systems.
leybold.com/us/en

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lincotekequipment.com

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nelhydrogen.com

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nk-carbon.com

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nitrex.com

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United Technical Inc.
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United Technical is a cutting-edge, full-service testing facility offering metallurgical analysis, destructive testing, nondestructive examination, welding training, and technical consulting. Our 25,000 square-foot facility is A2LA, Nadcap, and AWS accredited, and houses a variety of inspection, testing, training, and development equipment. Our experienced professionals provide clients practical, unbiased, data-driven solutions. unitedtechnicalinc.com

Upton Industries, a Kolene company
Booth 1617
Kolene Corporation is a global leader in molten salt bath technology. Our equipment and chemistries are used worldwide for cleaning, conditioning, and modifying metal surfaces. Our nitriding chemistry provides exceptional surface hardening and corrosion protection. Family owned and continuously operating since 1939. kolene.com

Vac Aero International Inc.
Booth 2130
VAC AERO manufactures a wide range of front and bottom loading external quench vacuum furnaces with the highest quality standards to will fulfill any specialized processing needs. From small horizontal models to large vertical furnaces VAC AERO vacuum furnaces are ideal for a broad range of vacuum processing applications of specialty alloys and engineered materials including vacuum heat treating and brazing, vacuum sintering, hardening, tempering, annealing and a host of other special processes. vacaero.com

Verder Scientific, Inc.
Booth 1818
CARBOLITE GERO is a leading manufacturer of high temperature furnaces and ovens. With more than 100 years of experience in thermal engineering, our products are used in research laboratories, pilot plants and manufacturing sites worldwide. In addition to the wide range of standard products, CARBOLITE GERO is an expert in the development of customized equipment for complex heat treatment processes. verder-scientific.com

Vericheck Technical Services, Inc.
Booth 2244
Vericheck Technical Services has been a leader in the Metals Testing Industry for nearly 30 years. ISO17025 accredited, our testing methods include OES, Hardness, RA analysis, and Coating thickness. We feature a large product line with GNR, Hitachi, Lune CHF and OBLF instruments along with ERNST hardness testing equipment. verichek.net
VESCO - A Company of the Busch Group  
Booth 2141  
buschusa.com

Weldaloy Metallurgical Laboratory  
Booth 1530  
IMAT SPONSOR  
weldaloy.com

Williams Industrial Service  
Booth 2127  
Williams Industrial Service, Inc. has designed and manufactured batch and continuous high-performance heat treating systems in standard and custom sizes for the heat treating industry since 1971. You can count on us for rugged, durable heavy construction with state of the art control and tracking systems that offer superior performance with minimal maintenance. Call us at 419-353-2120, or visit us at wisfurnaces.com for any of your heat treating needs.  
wisfurnaces.com

Wirco Inc.  
Booth 2039  
wirco.com

Wisconsin Oven  
Booth 1825  
Wisconsin Oven has been designing and manufacturing industrial ovens, furnaces and other heating equipment since 1973. Their custom and standard equipment are available in batch and continuous designs and used for a multitude of applications including metal finishing, preheating, composite curing, drying, aging, and heat-treating, among others. Their experienced design team is able to meet even the most stringent standards for temperature uniformity and equipment performance documentation.

WS Thermal Process Technology Inc.  
Booth 1925  
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.  
flox.com

YUASA INTERNATIONAL  
Booth 1844  
yuasa-intl.com

ZEISS Industrial Quality Solutions  
Booth 1500  
zeiss.com

ZIRCAR Ceramics, Inc.  
Booth 1536  
zircarceramics.com

Zircar Refractory Composites, Inc.  
Booth 2034  
ZIRCAR Refractory Composites, Inc., produces a comprehensive line of advanced high performance ceramic-ceramic composite materials and related products. For over thirty years, we have been a problem-solver working with our customers to resolve their thermal management problems.  
zrci.com
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EXHIBITION HOURS
Tuesday, October 17 • 9:00 a.m. – 6:00 p.m.
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Thursday, October 19 • 9:00 a.m. – 12:00 p.m.

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Products has provided quality products for metallographic sample preparation AND analysis for over 40 years. Allied designs and manufactures sectioning, mounting, grinding/polishing and milling equipment at their U.S. 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 two-year warranty and prompt service or technical help is always available.

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ECM offers furnace systems such as ECO, FLEX, JUMBO, and NANO, which have been low carbon emitting for over 25 years. Through a team of dedicated experts, ECM’s ecological goals align with the global heat treat industry in its ecological and social transition by designing, manufacturing, and implementing high-tech, decarbonized (or low carbon) furnace solutions. We also implement robotics/automation within your new or existing heat treat production line to reduce cycle time and maintain consistent product quality.

ecm-usa.com — Booth 1717

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**Stack Metallurgical Group**

consists of commercial heat treating, metal processing, and hot isostatic press (HIP) facilities in Portland, Ore, Spokane, Wash., Salt Lake City, Utah, and Albany, Ore. Stack specializes in advanced processes for the most demanding industries including aerospace, medical implant, power generation, and many more! With Nadcap, ISO 13485, a wide range of OEM approvals, and a team of industry experts, make Stack your partner for all your metal processing needs.

[stackmet.com — Booth 2229](#)

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[quakerhoughton.com — Booths 2006/2007](#)

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is a premier supplier of consumables and specimen preparation tools and accessories for optical light microscopy and electron microscopy applications. We carry a wide range of sample preparation supplies, SEM mounts and sample holders, TEM grids and support films, calibration standards, as well as Cressington sample coating systems for electron microscopy. We manufacture and distribute many of our own instruments, accessories, and tools for sample preparation under the PELCO brand name.

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- Our comprehensive gas supply and technology program can support your hot isostatic pressing (HIP) process for medical and aerospace parts.
- Our team takes the time to get to know you and your unique needs.

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Motor City
Detroit earned the nickname ‘Motor City’ due to its pivotal role in revolutionizing the automotive industry. Nicknamed the “Tin Lizzie”, the Model T became so popular that Ford invented the first assembly line, making production more efficient and creating roughly 13,000 new jobs.

With the invention of the first assembly line in Detroit, the ability to mass-produce cars changed the auto industry forever! By the 1920s, three of the biggest car companies were based in Detroit — Ford, General Motors, and Chrysler. As the center of the American motor industry, Detroit became a haven for people who had recently lost their jobs to flock to and easily earn a livable wage.

- What four-wheeled masterpiece marked your debut into the world of driving?

Coney Dogs
In 1917, Gust Keros, a Greek immigrant, opened American Coney Island on West Lafayette Street in downtown Detroit. A few years later, in 1924, he brought his brother William to Detroit to help. Keros’s brother opened Lafayette Coney Island when space opened up next door. The businesses have operated continuously in the same locations ever since.

Both of these Detroit Coney Islands are incredibly popular to this day, where there is an on-going argument over which establishment serves the best Coney dog. The chili recipes, key to the Coney dog, differ: American makes its own chili which is said to be spicier than the beefier chili of Lafayette, made from a family recipe. The dispute has been featured on several food television shows, including Food Wars and Man v. Food.

- Is a hot dog just a sandwich that decided to roll with a different crowd?

Motown
In 1960, the famous record label Motown was created by Berry Gordy, which he named after Detroit’s nickname “Motor Town”. Motown was a pioneer in releasing music in the rock, soul, and blues genres. Dominating the charts for the majority of the ’60s, Motown Records was an impressive powerhouse that gave Detroit another reason to be famous. While Motown Records has locations elsewhere now, the stamp it left on Detroit is ever present through the city’s soul, the production of musicians, and so much more.

- What artist or band gets your feet moving and your soul grooving?
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FACES IN THE CROWD

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**Dr. Toni Marechaux, FASM**
Senior Analyst
Booz Allen Hamilton

Four-wheeled masterpiece? Pontiac 1200
Hotdog? YES
Feet moving, soul grooving? Marvin Gaye

**Mr. Burak Akyuz – IMAT Conference Co-Chair**
Metallurgy, Failure Analysis, Polymers Mechanical Department
Applied Technical Services, Inc.

Four-wheeled masterpiece? Honda Accord
Hotdog? NO, definitely not
Feet moving, soul grooving? Stevie Wonder

**Dr. Elizabeth N. Hoffman, FASM**
Director, Innovation and University Engagement
Savannah River National Laboratory

Four-wheeled masterpiece? Nissan Sentra
Hotdog? No
Feet moving, soul grooving? I have no idea. I listen to it all, but do not pay attention to artist names or song titles.

**Dr. James E. Saal**
Manager-External Research Programs
Citrine Informatics

Four-wheeled masterpiece? Honda Civic
Hotdog? YES
Feet moving, soul grooving? Stevie Wonder

**Prof. Pierpaolo Carlone**
Full Professor – Manufacturing
Department of Industrial Engineering
University of Salerno

Four-wheeled masterpiece? Fiat Punto
Hotdog? Technically speaking...YES, even if I always say: “let’s go for a sandwich OR a hot dog”!
Feet moving, soul grooving? Stevie Wonder

**Prof. André McDonald, PEng, CEng, PE, FASM, FIMMM, FI MechE**
Associate Vice President (Strategic Research Initiatives and Performance) and Professor
University of Alberta

Four-wheeled masterpiece? 1990 Mazda 626
Hotdog? YES
Feet moving, soul grooving? Smokey Robinson and the Miracles

**Mr. Larry Somrack**
Retired President and Owner
NSL Analytical

Four-wheeled masterpiece? Rambler then BMW
Hotdog? No a sausage or beef in a tube
Feet moving, soul grooving? Diana Ross

Mr. Christopher J. Misorski, FASM
Technical Advisor – Materials
Mercury Marine

Four-wheeled masterpiece? 1966 Volkswagen Beetle
Hotdog? NO
Feet moving, soul grooving? 4 Tops

Dr. Dehua Yang, FASM
President
Exponential Business and Technologies Companies

Four-wheeled masterpiece? Nissan Maxima
Hotdog? NO, it’s a long bun wrapped over a meat sausage
Feet moving, soul grooving? Ray Charles

Ms. Nicole M. Hudak
Student
Materials Science and Engineering
The Ohio State University

Four-wheeled masterpiece? Pontiac G6
Hotdog? NO
Feet moving, soul grooving? Stevie Wonder; My Cherie Amour

Mr. Christopher J. Misorski, FASM
Technical Advisor – Materials
Mercury Marine

Four-wheeled masterpiece? 1966 Volkswagen Beetle
Hotdog? NO
Feet moving, soul grooving? 4 Tops

Feet moving, soul grooving? 4 Tops

Meet the HTS BOARD

**President**
Lesley Frame
Assistant Professor
University of Connecticut

Four-wheeled masterpiece? A Saturn (it was bright teal and I called it a “Barbie car” because it was so ridiculous looking)
Hotdog? Nope
Feet moving, soul grooving? Oooh...tough one. Either the Marvelettes or Marvin Gaye

**Vice President**
Mr. Benjamin Bernard
VP International Sales
Surface Combustion Inc

Four-wheeled masterpiece? 92 Pontiac Grand AM
Hotdog? YES
Feet moving, soul grooving? Stevie Wonder

**Secretary**
Deidra Minerd
Operations Manager
Euclid Heat Treating Company

Four-wheeled masterpiece? Buick Skylark
Hotdog? NO
Feet moving, soul grooving? Stevie Wonder, “Signed, Sealed, Delivered, I’m Yours”
**HTS Officers:**

**Chuck Faulkner**
Commercial Development Manager - Heat Treatment
Quaker Houghton

*Four-wheeled masterpiece?* Dodge Charger
*Hotdog?* NO
*Feet moving, soul grooving?* Marvin Gaye

**Steven Ferdon**
Director Engineering Technology
Cummins Engine Components

*Four-wheeled masterpiece?* Ford LTD.
*Hotdog?* NO
*Feet moving, soul grooving?* Smokey Robinson

**Hannah Noll**
Senior Manager, Quality
ATI Specialty Materials

*Four-wheeled masterpiece?* Sorry, Detroit, it was a Kia Optima
*Hotdog?* Absolutely not, hot dogs are an entire genre of their own!
*Feet moving, soul grooving?* Stevie Wonder

**Rob Madeira**
Grp Mgr Heat Treat
Inductotherm Group

*Four-wheeled masterpiece?* 1969 Buick Rivera GS-430 with a slap stick automatic
*Hotdog?* NO, a hot dog needs water
*Feet moving, soul grooving?* Bob Seagar, wasn’t exactly Motown, he is from Detroit and my favorite song is “old time rock and roll”

**Doug Puerta**
CEO
Stack Metallurgical Group

*Four-wheeled masterpiece?* Plymouth Neon
*Hotdog?* Yep
*Feet moving, soul grooving?* Stevie Wonder

**Liang He**
Application Engineer
Air Products and Chemicals

*Four-wheeled masterpiece?* Ford Taurus
*Hotdog?* NO
*Feet moving, soul grooving?* Boyz II Men (the only Motown band I know)
Bowling capital of the World

Detroit holds the record for most registered bowlers in the country. Detroit, specifically, Metro Detroit, claims the moniker “Bowling Capital of the World”. This is supported by the fact that in the tri-county Detroit area there are over 80 bowling centers and over 50,000 regular league bowlers. The Garden Bowl located in downtown Detroit is the oldest, continuously operating bowling alley not only in Michigan, but also in the United States. Opened in 1913, and was named to the National Register of Historic Places in 2008.

- **What activity do you like to do in your SPARE time?**

Potato Chips

It’s reported that the people of Detroit consume, on average, an annual 7 pounds of potato chips compared to the rest of the country’s 4 pounds. At one point, there were roughly 22 potato chip manufacturing companies in the city alone. Better Made chips have been noted as tasting like Michigan; the home-grown potato flavor shines through.

- **When it comes to spud-tacular snacking, which potato chip flavor takes the top spot?**

Theater and arts

Unofficially, Detroit has the second largest theater district in the country to New York City. Detroit’s theaters are architecturally incredible with the best original and Broadway plays in the country. Detroit’s Fox Theatre was originally billed as “the most magnificent Temple of Amusement in the World”

- **What theater production or concert left you shouting ‘Encore!’**
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Lunch & Learn, Tuesday, 12-1 P.M.
Industry Forum, Exhibit Hall A
FACES IN THE CROWD

Meet the EDFAS BOARD

President
Felix Beaudoin
PMTS Yield Engineer
Global Foundries

SPARE time? Playing ice hockey
Potato chip? Dill Pickle
Encore production? Pink Floyd A Momentary Lapse of Reason Tour (it left a long-lasting impact on my 15-year-old-brain)

Vice President
Renee Parente
Technology & Product Engineering Operations Director
Advanced Micro Devices (AMD)

SPARE time? I can do all sorts of fun arm balances
Potato chip? Oh, by far, Jalapeno. My favorite brand is Cape Cod and their jalapeño potato chips!
Encore production? Sinead O’Connor at City Gardens, Trenton NJ in 1988

Immediate Past President
James Demarest
Senior Engineer
IBM

SPARE time? Ice Hockey
Potato chip? BBQ
Encore production? Lion King

Secretary
Chris Richardson
Manager X Prep Products and Applications
Allied High Tech Products

SPARE time? Favorite sport to watch is Ice Hockey, leisure activity was/is Karate (2nd degree black belt)
Potato chip? Miss Vickie’s Jalapeño Chips
Encore production? It’s a toss up, either Garth Brooks (amazing entertainer) or Papa Roach (report writing music)

Meet the FAS BOARD

Outgoing President
Tony Havics
pH2,LLC.

SPARE time? Rock Climbing
Potato chip? BBQ
Encore production? Mikado

Incoming Vice President
Margaret Flury
Principal Materials Engineer
Medtronic

SPARE time? Detroit Tigers Baseball (I’m a Michigan native)
Potato chip? Better Made dark chocolate covered potato chips – a Detroit company
Encore production? Dave Matthews Band (unfortunately it was in Soldier Field in Chicago)

Incoming Vice President
Mike Connelly
Consultant
Connelly Consulting

SPARE time? I grew up on the South Side of Chicago, so my favorite sport was 16” softball (it’s played mostly in Chicago), I still follow the Chicago White Sox. My favorite leisure activity is the Eisenman Materials Camp.
Potato chip? Jalapeno Cheddar Kettle Chips
Encore production? Birthday present from my daughter – the Lion King on Broadway
Best concert – 1974, opening group was the Pointer Sisters and the headline act was Chicago

Incoming Secretary
Andrew Kitahara
Materials Engineer
Analytical Mechanics Associates
National Institute of Aerospace

SPARE time? Baseball
Potato chip? Jalapeno Kettle Chips
Encore production? Hadestown (Patrick Page as Hades)

Incoming Secretary
Joseph Lemberg
Senior Managing Engineer
Exponent

SPARE time? Soccer. Vamos A-T-L!
Potato chip? All Dressed or Old Bay
Encore production? Rolling Rock Town Fair, 2001
Meet the SMST BOARD

President
Ashley Bucsek
Assistant Professor
University of Michigan

SPARE time? Long walks with the dogs
Potato chip? Lime or Red Hot
Encore production? My very first concert was the Rolling Stones’ Bridges to Babylon tour, and it’s still the best I’ve ever been to!

Vice President
Srinidhi Nagaraja
Technical Fellow
G. Rau Inc.

SPARE time? Playing ice hockey (Go Red Wings!!) and running
Potato chip? Kettle cooked Lay’s Jalapeno Chips because I love spicy food!
Encore production? My kids aren’t much into theatre, yet, so I will say The Book of Mormon. It was the funniest show I have ever been too.

Immediate Past President
Othmane Benafan
Materials Research Engineer
NASA Glenn Research Center

SPARE time? Real Football - soccer that is of course.
Potato chip? Baked Lay’s Oven Original Potato Crisps
Encore production? Soraya & Salma theatre in the woods (my kids shows are the best)

Meet the TSS BOARD

Immediate Past President
Bill Lenling
Sr. Distinguished Engineer
Thermal Spray Technologies

SPARE time? Downhill skiing
Potato chip? Homemade
Encore production? The Eagles
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Fuel Your Competitive Spirit: Watch Tomorrow’s Innovators Unleash their Brilliance in Student Competitions!

The Future of Materials Engineering

The future workforce for materials engineers will be characterized by innovation, adaptability, and a strong foundation in materials science principles. These engineers will contribute to a wide range of industries, driving technological progress and addressing global challenges.

Current trends for the future of materials engineers:
- Advanced Materials Development
- Nanotechnology and Nanomaterials
- Sustainable and Green Materials
- Energy and Aerospace Industries
- Biomedical Applications
- Additive Manufacturing (3D Printing)
- Data-Driven Materials Design
- Collaboration and Interdisciplinary Work
- Globalization and International Collaboration

As technology evolves rapidly, materials engineers will need to engage in lifelong learning to stay updated on the latest advancements and tools in the field.

Shaping Future Innovators: Igniting the Spark of Materials Engineering Through Inspiring Teachers!

STEM high school teachers play a crucial role in introducing students to the foundational concepts of materials engineering and inspiring them to explore this field further. While high school teachers might not directly teach advanced materials engineering topics, they can lay the groundwork by fostering interest, curiosity, and a strong foundation in science and engineering.

Materials engineering professors play a critical role in college by shaping the education, research, and future careers of students in the field of materials science and engineering. Materials engineering professors play a multifaceted role that involves teaching, research, mentorship, and leadership. Their dedication to education and advancing the field is essential for preparing the next generation of materials engineers and researchers.

Detroit Pizza

Detroit pizza is known for its distinctive style characterized by a thick, rectangular crust that’s crispy on the outside and airy on the inside. The pizza is typically baked in rectangular steel pans originally used as automotive parts trays in Detroit’s factories. It has a generous amount of cheese that goes all the way to the edges, creating caramelized, crispy cheese edges known as “frico.” The sauce is often applied on top of the cheese, giving the edges, creating caramelized, crispy cheese edges known as “frico.” The sauce is often applied on top of the cheese, giving it a unique flavor profile. This style of pizza is also known for its hearty toppings and its popularity in the Detroit area.

- Let’s Settle the Great Pizza Debate: Thick Crust or Thin Crust – Which One Takes the Slice?
- What should be taught in schools that is currently not covered?
- Is a hot dog just a sandwich that rolls with a different crowd?
- What teacher has had the biggest impact on you and why?

HTS Strong Bar Competition

Sponsored by: MTS

Tuesday, October 17, 4:00 – 5:30 pm
Phase 1, Poster Presentation, Hall A – Student Poster area

Wednesday, October 18, 11:45 am – 12:30 pm
Phase 2, Bent Test. Exhibit Hall A – Strong Bar Competition area

Teams Flex their metallurgical muscle by participating in the Strong Bar Competition, organized by the ASM Heat Treating Society! Student teams will heat treat steel bar to achieve the highest combination of bending strength and bend deflection. This is a two-phase competition that begins with a poster presentation, describing the team’s heat treatment method, the hardness profile, and microstructure. During phase two, teams will heat treat the specimen according to their best choice. The bars will be tested on the exhibit show floor to determine the winners.

Team: PSMRC EAGLES, Missouri University of Science and Technology, Rolla

Professor: Viraj Athavale
Students: Kingsley Amatanweze, Barshan Saha, Edward Mueller

Kingsley Amatanweze
Thick or Thin? Chicken pizza with pineapple
Taught in schools? Volunteerism
Hotdog? No, it’s not.
Impact teacher? My grade 4 teacher, Mrs. Angela Aniude. She motivated and always encouraged us to study. She would celebrate every of my little academic progress then. I would say my chemistry teacher too, Mr. Ekwoba. He made me enjoy chemistry as a subject and didn’t hesitate to admonish us at every given time to aim for greatness. He has one of the best teaching skills I have ever come across.

Barshan Saha
Thick or Thin? Thin crust
Taught in schools? High school should teach musical instrument
Hotdog? Yeah, hot dog is a type of sandwich
Impact teacher? Dr. Shahnawaz Ali has the biggest impact on me because he is the reason I started to love chemistry and pursuit my career on material science

Team: Huskies Bar, University of Connecticut

Professor: Lesley Frame
Students: Benjamin Gwinnell, Justin Coe, Jaclyn Grace, Leena Alam

Thick or Thin? Everyone but Jaclyn prefers thick crust.
Taught in schools? Sign language, personal finance, general first aid, and African-American history should be taught in school.
Hotdog? A hot dog is NOT a sandwich.
Impact teacher? Justin’s calculus teacher taught him good work ethic. Ben’s English teacher taught him the importance of a mental health day. Jaclyn’s physics teacher challenged her to reach for the stars. Leena’s physics teacher showed her that she has what it takes to be an engineer.
Team: THE Strong Bar Team, The Ohio State University
Professor: Elvin Beach
Students: Justin Smith, Jacob Shell, Samantha McArdle, Nicole Hudak

Nicole Hudak
Thick or Thin? Thick
Taught in schools? How to handle everyday personal finances.
Hotdog? No, you hold it differently.
Impact teacher? My high school robotics teacher, Mr. Sedlak, taught me how to be a lifelong learner and never take the opportunities I am awarded for granted. He taught me to pursue my passions and most importantly he taught me to never let anyone tell me that I am not enough.

Jacob Shell (Also competing in DomesDay, Team: Dome Money, Dome Problems)
Thick or Thin? Thick for sure
Taught in schools? Information about taxes and rights, but also life skills such as financial literacy and career planning.
Hotdog? Yes, it’s meat in between sliced bread. A poor sandwich, but one, nonetheless.
Impact teacher? I think Dr. Beach (Elvin Beach) at Ohio State has made a large impact. He makes it very easy to be passionate about the program while also helping students get involved in valuable programs. He also offers some of the best hands-on education and is very willing to take the time to help a student with a subject, or simply allow a student to interact with and learn about equipment/devices in the department.

Justin Smith
Thick or Thin? Thin crust pizza
Taught in schools? How to do your taxes.
Hotdog? A hot dog is definitely a sandwich.
Impact teacher? Dr. Elvin Beach had the biggest impact on me. He encouraged me to pursue opportunities I didn’t have the confidence to do before including participating in the Strong Bar Competition and joining the Heat Treating Society Board.

Samantha McArdle
Thick or Thin? Thin crust pizza is always the best!!
Taught in schools? Everything regarding filing taxes and tax returns should definitely be taught
Hotdog? I do not think hot dogs are a sandwich
Impact teacher? Professor Elvin Beach has had a large impact on my education. He has been a great mentor and guide since the start of my MSE education. He has introduced me to possibilities in Materials Science that I had never thought about before.

Team: TEAMMAT, Instituto Tecnológico de Morelia
Professor: Monserrat Sofia López-Cornejo
Students: Valeria Elide Villagomez Lopez, Monserrat Arias Rico, Marco Sebastian Silverio Morales, Karla Viviana Marquez Piñon, Maria Fernanda Ortiz Alcantara

Monserrat Arias Rico
Thick or Thin? Always thick!
Taught in schools? Schools should teach a little more soft skills, such as effective communication, critical thinking, and personnel management, and subjects such as finance and entrepreneurship would be good tools in the lives of students.
Hotdog? No
Impact teacher? The teacher who has impacted me the most is PhD. Monserrat Sofia Lopez, because she is a dedicated and passionate woman for her work, she has a long career in the industry and in teaching, and she is a person who always cares and encourages her students to excel, but above all, she is an exceptional woman who inspires many students, but especially women who are studying an engineering career.

Valeria Elide Villagomez Lopez
Thick or Thin? Thin pizza is the best.
Taught in schools? how to work in a team, administration and finance issues, on soft skills
Hotdog? It's not
Impact teacher? My high school robotics teacher, Mr. Sedlak, taught me how to be a lifelong learner and never take the opportunities I am awarded for granted. He taught me to pursue my passions and most importantly he taught me to never let anyone tell me that I am not enough.

Jacob Shell (Also competing in DomesDay, Team: Dome Money, Dome Problems)
Thick or Thin? Thick for sure
Taught in schools? Information about taxes and rights, but also life skills such as financial literacy and career planning.
Hotdog? Yes, it’s meat in between sliced bread. A poor sandwich, but one, nonetheless.
Impact teacher? I think Dr. Beach (Elvin Beach) at Ohio State has made a large impact. He makes it very easy to be passionate about the program while also helping students get involved in valuable programs. He also offers some of the best hands-on education and is very willing to take the time to help a student with a subject, or simply allow a student to interact with and learn about equipment/devices in the department.

Justin Smith
Thick or Thin? Thin crust pizza
Taught in schools? How to do your taxes.
Hotdog? A hot dog is definitely a sandwich.
Impact teacher? Dr. Elvin Beach had the biggest impact on me. He encouraged me to pursue opportunities I didn’t have the confidence to do before including participating in the Strong Bar Competition and joining the Heat Treating Society Board.

Samantha McArdle
Thick or Thin? Thin crust pizza is always the best!!
Taught in schools? Everything regarding filing taxes and tax returns should definitely be taught
Hotdog? I do not think hot dogs are a sandwich
Impact teacher? Professor Elvin Beach has had a large impact on my education. He has been a great mentor and guide since the start of my MSE education. He has introduced me to possibilities in Materials Science that I had never thought about before.
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Visit us at the ASM Heat Treat Show, Booth 1918.
Team: The Strong-diggers, Colorado School of Mines
Professor: Gerald Bourne
Students: Kelsey Ferro, Micah Sweezey, Jaime De Mora, Travis McDonald, Brent Dillard

Kelsey Ferro
Thick or Thin? Thin Crust
Hotdog? Hot Dogs are absolutely a sandwich, especially when loaded with all the fixin’s!
Impact Teacher? My 7th grade science teacher. He is the one that inspired my love for science and curiosity to learn with his genuine excitement about everything he taught.

Jaime De Mora
Thick or Thin? Thin crust is much better! You can eat more sauce and meaty toppings with a thin crust.
Hotdog? Yes, it is meat between buns.
Impact Teacher? Dr. De moor, he has been providing me help with schoolwork, course counseling and professional advice since my first semester at Mines. He has written many recommendations for me that have resulted in undergraduate research opportunities, fellowships, scholarships and a job.

Micah Sweezey
Thick or Thin? I think thick crust pizza is way better than thin crust.
Hotdog? A hot dog is not a sandwich. It is a fold, just like a taco and a sub sandwich are folds.
Impact Teacher? The teacher that had the biggest impact on me was my 7th grade science teacher. He is the one that inspired my love for science and curiosity to learn with his genuine excitement about everything he taught.

Team: Saudi Falcons, King Fahd University of Petroleum and Minerals
Professor: Dr. Abduljabar Alsayoud
Students: Khalid Alfaieh, Ali Hazazi, Bader Alghamdi, Nawaf Alharbi, Osama Alali

Thick or Thin? Thin
Taught in schools? Coping mechanisms and emotional regulation
Hotdog? Yes
Impact Teacher? Our materials science teacher has had a big impact on us because he encouraged us to participate in such a competition.

Fluxtrol Student Research Competition

Tuesday, October 17, 4:00 – 5:30 pm
Phase 1 – Poster Presentation, Hall A - Student Poster area

Wednesday, October 18, 10:30 – 11:30 am
Phase 2 – Oral Presentations, 313AB

Heat Treat 2023 offers a platform for aspiring young scientists/professionals to participate in a competitive awards program (and win prizes)! The goal is to inspire the next generation’s engagement with the ASM Heat Treating Society. With an exciting two-phase structure, including a poster competition and oral presentations for semi-finalists, this event offers a gateway to their success in the world of heat treating.
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Jide Oyerinde, Clarkson University

Thick or Thin? Thick
Taught in schools? Hands-on current industrial equipment and softwares

Hotdog? Yes

Impact teacher? Prof. Samson Adeosun

Kenneth Looby, University of Connecticut

Thick or Thin? Thin crust, I am originally from NYC so I’m biased)

Taught in schools? Financial Management, Laws that are practical for everyday life, How to study for liberal arts and STEM classes, How to build teams, Basic Car Maintenance, How to start a business, - Social skills and networking

Hotdog? A hot dog is not a sandwich

Impact teacher? My machine design professor was a manufacturing engineer and licensed mechanical engineer. He taught me that engineering is simple but working with people is complicated. He taught me the impact engineers have on the world and our responsibility to exercise integrity in our work. He inspired me to become a manufacturing engineer and a licensed mechanical engineer. These experiences led me to pursue my Ph.D. in material science & engineering as no other field addresses the structure-property-process paradigm that is needed to fully understand manufacturing processes.

M Nabil Bhuiyan, University of Connecticut

Thick or Thin? Thin Crust

Taught in schools? How to catch fish and which fish need to be focused on. School shouldn’t focus only on academics world

Hotdog? Yes, it is a Sandwich

Impact teacher? Lesley D Frame. I have the ground to discuss with her outside of my research and academics. During my personal crisis, she helped me a lot.

Alyssa Stubbers, University of Kentucky

Thick or Thin? Larosa’s deep dish thick crust all the way. Cincinnati forever.

Taught in schools? I think that schools should embrace the individuality of their students and teach them that there are many ways to success, rather than overemphasizing traditional “book smart” success. Students can be boisterous and energetic without being labelled disruptive or a nuisance in a classroom, and students can be smart and successful through their critical reasoning skills despite having poor memorization skills. There are ways to channel energy and learning onto a path that is inclusive rather than a single narrow definition of a “good student” that we live with today.

Hotdog? No

Impact teacher? They weren’t a teacher in a formal sense, but I had a lab tech that I worked with as a co-op in undergrad and I think I learned just as much from him as I did in my formal education classes. He taught me how individuals can influence the lab space and make it a welcoming, productive space and that the people working in the lab are its most valuable resource. He showed me that I should take the opportunity to learn whenever I can, especially when people have experiences that are different than my own.

Haoxing You, Worcester Polytechnic Institute

Thick or Thin? Thin!

Taught in schools? Poster design

Hotdog? Yes!

Impact teacher? My advisor-Prof. Richard Sisson

Matthew Carragher, University of Connecticut

Thick or Thin? I think thin crust pizza is definitely better

Taught in schools? I think all students should be required to take a shop class that teaches you how to do really basic home improvement project, fixing drywall, replacing an outlet etc.

Hotdog? A hot dog is definitely not a sandwich.

Impact teacher? My high school physics teacher Mr. Michealson. He taught me how to think more critically about problems and apply theory to real life.

**ASM DomesDay Competition**

Tuesday, October 17, 10:00 am - 1:30 pm
Exhibit Hall A - DomesDay area

Can these domes take the weight? Established by the ASM Student Board Members, DomesDay is intended to familiarize Material Advantage students with a piece of ASM culture, the Geodesic Dome, by involving them in a design and materials selection competition. Swing by the DomesDay booth on Tuesday AM to cheer on the student teams and see them in action as they compete for cash prizes and bragging rights. The highlight of the competition will be the destruction of the teams via compression testing.

**School: Technological Institute of Morelia**

Team Name: Domelicious Crew

ITM

Students: Bryan Oliver Hernández, Ortiz Monserrat Torres, Sierra Fátima Paola, Soto Jaime Sergio, Andres Morales Molina, Pedro Cortes Lachino

Thick or Thin?

- Pedro: I think that thick crust pizza is better because the taste in the mouth is more delicious.
- Bryan: I think that it depends, maybe thick crust pizza would be better if it’s filled with a super cremenous cheese, but I like thin crust better, it looks more aesthetic.
- Monse: Thin crust pizza because you can taste the cheese and sauc more, plus it makes you feel less stuffed.
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New in 2023b: Thermo-Calc Finite Element add-on module that takes a unified treatment of process parameters and alloy dependent thermophysical properties

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- Connect thermal histories with Diffusion Module and/or Precipitation Module

Visit us at booth 1601
- Sergio: Thin crust pizza because you can taste the cheese and sauce more, plus it makes you feel less stuffed.

- Fatima: I think thin crust pizza is better, I don’t like to feel just bread in my mouth, I love when I get a bite and feel the cheese and all the ingredients together.

Taught in schools?

- Pedro: Negotiation skills. Everything in life is negotiation, from opening a bank account to deciding whether to go to the gym today or not you’re always in some form of a negotiation with others or yourself.

- Bryan: Effective communications skills, how to be healthy (Nutrition, exercise, but more important mentally health) and how to be an adult like how to pay taxes, how to ask for help and how to help others.

- Monse: Financially, people could aspire to better living conditions if they know how to manage their money.

- Sergio: I would say that something very important to learn is self-confident, another thing they should teach us is about financial education.

- Fatima: Leadership and self-confidence. Around all my career I learnt how to solve my own problems and how to carry on a team. Teachers never teach us how to lead a team or how to feel confident with our work, they usually focus on teaching about theory about the industry, but they never teach us what we need to do when we finally will be there.

Hotdog?

- Pedro: Yes, it is. A sandwich is two or more slices of bread or a split roll having a filling in between.

- Bryan: For sureee, that’s what I think, hotdogs are sausage sandwiches, but no one want to admit it.

- Monse: It may depend on how hungry you are.

- Sergio: Mmm, I wouldn’t say so, for me a hot dog it’s closer to be a taco

- Fatima: I disagree, I think a hot dog is like a taco, the way you fill a taco and a hot dog it’s the same, you put the toppings and then salsas haha.

Impact teacher?

- Pedro: His name is Pedro Garnica Gonzalez, is teacher that impacts me because is an exemplary person; his capacity to pass on knowledge, personal values, honor, and excellence make him the best teacher I have ever had.

- Bryan: It should be my middle school math teacher Nathan, he transmitted passion around how math can make the things better if we know how to use it, he might be the reason why I’m studying to be an engineer. Also, he taught me a lot of values like honesty, respect, and resilience.

- Monse: She is PhD, she is a mother and her name is the same as mine. Monserrat López has always encouraged me to move forward, she has supported me with advice, and she inspires me to be a great professional.

- Sergio: I couldn’t say one in specific but throughout my studies I have come across excellent teachers who in some way, each of them have had a positive impact on my life.

- Fatima: Alberto Ramón. He wasn’t precisely my teacher, but he gave me tutorials and he taught me how to love Materials engineering and how to solve my own problems. He always wants to share his passion about his career.

School: The Ohio State University
Team Name: Dome Money, Dome Problems
Students: Jacob Shell, Caroline Min, Ashley Ohmstede. Liz Kuebel

Caroline Min
- Thick or Thin? Thick crust
- Taught in schools? How to change a flat tire
- Hotdog? No
- Impact teacher? My high school physics teacher. He really inspired me to learn and pursue

Liz Kuebel
- Thick or Thin? Thick crust
- Taught in schools? How to manage, budget, and save money
- Hotdog? No, but I would consider is a branch of a sandwich like a sub
- Impact teacher? Professor Elvin Beach because he genuinely cares about each one of his students’ successes and has been such a big help in school and with career advice.

Ashley Ohmstede
- Thick or Thin? Thin crust
- Taught in schools? How to clean the microwave
- Hotdog? Absolutely not!
- Impact teacher? My high school engineering teacher because she taught me that women are capable of anything!

School: University of Connecticut
Team Name: Trampled Gampel
Students: Jaclyn Grace, Christian Sabatini, Morgan Xu, Carter Densk

Jaclyn Grace
- Thick or Thin? Jaclyn and Morgan prefer thin crust while Carter prefers thick crust.
- Taught in schools? History/culture of minority groups in America, how to pay taxes, and CPR should be taught in school.
- Hotdog? Morgan and Carter think a hot dog is a sandwich, while Jaclyn does not.

Impact teacher?

- Morgan’s economics teacher showed her that kindness helps students more than anything else while learning.

- Carter’s algebra teacher taught him how to make the most of every day, both academically and in life.

- Jaclyn’s Spanish teacher showed her the balance between fun and focus in life.
School: University of Tennessee

Team Name: Lil' Domey III
Students: Raymond Wysmierski, Jack Fredrick, Marlena Alexander, Charles Brush, Madeline Maben

Thick or Thin? Thick crust

Taught in schools? How to do taxes and invest/budget personal savings

Hotdog? No, it only becomes a sandwich if the bun separates into two distinct halves.

Impact teacher? All of us were greatly impacted by our high school science teachers. We share similar experiences to having science teachers with fun/interesting classes. Also, most of us ended up in the engineering field because of these key instructor's classes and encouragement.
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Ceramic Coatings
Across USA ................................................. 2024
Bodycote ......................................................... 1513
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FURNACES
Atmosphere Furnaces (Gas Fired, Oil Fired, Electrical)
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Furnacare Inc ............................................ 2131
GEFRAN, Inc. ............................................. 2032
Ipsen .......................................................... 2200
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Salt Bath Systems
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Can-Eng Furnaces International Ltd. ........................................ 2207
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Gasbarre Thermal Processing Systems .................................... 1928
LINDBERG/MPH ........................................................................ 1827
Linde ....................................................................................... 2239
High Performance Gas Pressure Regulators for All Combustion Applications

**Cirval** Line Pressure Regulators

- Inlet pressures up to 75 PSIG
- Modular/Configurable design without changing orifices
- Options for NFPA 86 Compliant Overpressure Protection including modular slam shut, independent full monitor or independent monitoring device.

**GOVERNOR** Line Pressure Regulators

- CSA certified
- Horizontal and vertical mounting positions
- Integral and external vent limiter – no vent line required*
- Filter included in all models
- 500:1 turndown
- Over pressure protection options available
- Positive 100% bubble-tight lock-up

*As approved by local codes and standards

HEAT TREAT | 2023

Heat Treat Show — October 17-19, Detroit, MI | Visit us at Booth 2121


combustion@equipmentcontrols.com | combustionHT.com
PRODUCT CATEGORIES

McLaughlin Services LLC.................................................1919
Nel Hydrogen..................................................................1816
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Nel Hydrogen..................................................................1816
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Williams Industrial Service ...........................................2127

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Cooley Wire Products ..................................................1927
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Cooley Wire Products ..................................................1927
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Freezers, Chillers
Dry Coolers Inc .............................................................1613
JUMO Process Control, Inc.......................................1940
Furnace Parts (Fans, Radiant Tubes)
Across USA ..................................................................2024
We Are Your First Choice
For Gas or Electric Heating

Noxmat USA, Inc.
42754 Mound Rd.
Sterling Heights, Michigan
Zach Spraggins, Director of Business Development
Phone: +1 (248) 619 6113
E-Mail: Zachary.Spraggins@noxmat.com

www.noxmat.com
## PRODUCT CATEGORIES

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Fluxtrol is a World Leader in Induction Heating Solutions
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<tr>
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<td>1617</td>
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**HEAT TREAT PROCESS CONTROLS & INSTRUMENTATION**

| **Carbon Sensors/Oxygen Probes**                       |      |
| Air Products and Chemicals, Inc.                       | 2020 |
| Combustion 911                                         | 1603 |
| JUMO Process Control, Inc.                             | 1940 |
| Nitrex                                                 | 2138 |
| Olstrad Engineering Corporation                        | 1840 |
| Super Systems                                          | 1817 |

| **Controllers**                                        |      |
| C3 Data, LLC                                           | 1637 |
| Combustion 911                                         | 1603 |
| Control Concepts Inc.                                  | 1828 |
| Eurotherm USA                                          | 1609 |
| Future Design Controls                                 | 2019 |
| GEFRAN, Inc.                                           | 2032 |
| JUMO Process Control, Inc.                             | 1940 |
| Nitrex                                                 | 2138 |
| Olstrad Engineering Corporation                        | 1840 |
| Protection Controls, Inc.                              | 2037 |
| Super Systems                                          | 1817 |
| Televac/The Fredericks Company                         | 1807 |

**Controls, Computerized**

| C3 Data, LLC                                           | 1637 |
| Combustion 911                                         | 1603 |
| Eurotherm USA                                          | 1609 |
| Future Design Controls                                 | 2019 |
| GEFRAN, Inc.                                           | 2032 |
| Nitrex                                                 | 2138 |
| Olstrad Engineering Corporation                        | 1840 |
| Premier Furnace Specialists / Beavermatic              | 1736 |
| Super Systems                                          | 1817 |
| Surface Combustation                                   | 1801 |
| Televac/The Fredericks Company                         | 1807 |
| Tenova Inc.                                            | 1923 |
| Williams Industrial Service                            | 2127 |

**Controls, Fuel/Air Ratio**

| Combustion 911                                         | 1603 |
| Future Design Controls                                 | 2019 |
| GEFRAN, Inc.                                           | 2032 |
| Honeywell                                              | 1936 |
| Olstrad Engineering Corporation                        | 1840 |
| Rockford Systems, LLC                                  | 1829 |
| Super Systems                                          | 1817 |

**Controls, Furnace Atmosphere**

| Combustion 911                                         | 1603 |
| Future Design Controls                                 | 2019 |
| GEFRAN, Inc.                                           | 2032 |
| Linde                                                  | 2239 |
| McLaughlin Services LLC                                | 1919 |
| SECO/WARWICK LLC                                       | 1918 |
| Super Systems                                          | 1817 |

**Controls, Temperature**

| Combustion 911                                         | 1603 |
| Control Concepts Inc.                                  | 1828 |
| Eurotherm USA                                          | 1609 |
| Future Design Controls                                 | 2019 |
| GEFRAN, Inc.                                           | 2032 |
| JUMO Process Control, Inc.                             | 1940 |
| Linde                                                  | 2239 |
Audit prep just got a lot easier with

P6 Audit Checklist

Check & avoid potential NCRs with ease using C3’s Audit Checklist Module

Features

- Audit results report provided with action items req’d to avoid NCR’s
- Pre-Audit review by an Industry Expert *
  - procedures
  - work instructions
  - pyrometry records and
  - other calibration records
- Save your checklists as you go
- Pre-populate your next pre-audit
- Collaborate w/colleagues.
- Add unlimited attachments & comments.

*optional

Special Processes

- HEAT TREATING
  - AC7102
  - AC7102/1
  - AC7102/2
  - AC7102/3
  - AC7102/10
- NDT
- MATERIALS TESTING
- MMM
- CHEMICAL PROCESSING
- COATINGS
- ALL OTHER PROCESSES

P6: Proper Prior Planning Prevents Poor Performance
### PRODUCT CATEGORIES

**Dew Pointers**
- Olstrad Engineering Corporation .......................................................... 1840
- Optris Infrared Sensing, LLC ................................................................. 1824
- Super Systems ...................................................................................... 1817
- Thermcraft, Inc. .................................................................................... 1527
- Verder Scientific, Inc. ............................................................................ 1818

**Flow Meters**
- JUMO Process Control, Inc. ................................................................ 1940
- Nitrex .................................................................................................. 2138
- Super Systems ...................................................................................... 1817

**Infrared Instruments**
- BASF Temperature Sensing ................................................................. 2030
- GEFRAN, Inc. ...................................................................................... 2032
- Optris Infrared Sensing, LLC ................................................................. 1824
- Palmer Wahl Instruments, Inc. ............................................................... 1839
- Super Systems ...................................................................................... 1817

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- Combustion 911 .................................................................................. 1603
- Eurotherm USA ................................................................................... 1609
- Future Design Controls ........................................................................ 2019
- GEFRAN, Inc. ...................................................................................... 2032
- JUMO Process Control, Inc. ................................................................ 1940
- Olstrad Engineering Corporation .......................................................... 1840
- Palmer Wahl Instruments, Inc. ............................................................... 1839
- PhoenixTM ........................................................................................... 1625
- Super Systems ...................................................................................... 1817

**Thermocouples**
- BASF Temperature Sensing ................................................................. 2030
- C3 Data, LLC ....................................................................................... 1637
- Cleveland Electric Laboratories, Inc. ..................................................... 1728
- GEFRAN, Inc. ...................................................................................... 2032
- JUMO Process Control, Inc. ................................................................ 1940
- Palmer Wahl Instruments, Inc. ............................................................... 1839
- PhoenixTM ........................................................................................... 1625
- SMS-Elotherm ..................................................................................... 2021
- Televac/The Fredericks Company .......................................................... 1807
- Thermcraft, Inc. .................................................................................... 1527
- Verder Scientific, Inc. ............................................................................ 1818

### MATERIALS TESTING/CHARACTERIZATION EQUIPMENT & SUPPLIES

**Chemical / Surface Analysis Equipment**
- Hubbard-Hall ..................................................................................... 2135
- SciAps Inc. ............................................................................................ 1504

**Hardness Testing Equipment**
- AFFRI, Inc. ........................................................................................... 1830
- Allied High Tech Products, Inc. ............................................................. 1506
- LECO Corporation ............................................................................... 1541

**Image Analyzers**
- AFFRI, Inc. ........................................................................................... 1830
- LECO Corporation ............................................................................... 1541

**Metallographic Specimen Preparation Equipment / Supplies**
- SciAps Inc. ............................................................................................ 1504

**Microscopes**
- SciAps Inc. ............................................................................................ 1504

**Software, Materials Testing**
- AFFRI, Inc. ........................................................................................... 1830
- Allied High Tech Products, Inc. ............................................................. 1506

**Sorters, Alloy**
- SciAps Inc. ............................................................................................ 1504

**Tensile Testers**
- AFFRI, Inc. ........................................................................................... 1830
- Verder Scientific, Inc. ............................................................................ 1818
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## PRODUCT CATEGORIES

### Test / Lab Furnaces / Environmental Chambers
- LINDBERG/MPH ............................................................ 1827
- Optris Infrared Sensing, LLC ........................................ 1824
- Thermcraft, Inc. ................................................................ 1527
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### Universal (Tension / Compression) Testing Machines
- AFFRI, Inc. ..................................................................... 1830

### METAL FORMING EQUIPMENT
#### Billet & Bar Heaters
- AJAX TOCCO .................................................................. 2137
- Inductotherm Group .................................................... 1701
- SMS-Elotherm............................................................... 2021
- Tucker Induction Systems ........................................... 1845

#### Forging/Forming Presses
- SMS-Elotherm............................................................... 2021
- DuBois Chemicals......................................................... 1837
- Quaker Houghton........................................................... 2006

### METALS & ALLOYS - Ferrous Metals
#### Other Ferrous Materials
- Alloy Engineering Co .................................................... 1619
- North American Cronite ............................................... 1631
- Thermo-Calc Software Inc. .......................................... 1601

#### Stainless Steels
- Alloy Engineering Co .................................................... 1619
- Cast Alloy Products ...................................................... 2044
- Fort Wayne Metals ...................................................... 1524
- Rolled Alloys .................................................................. 1621
- Simplex Metals LTD ...................................................... 1706
- Thermo-Calc Software Inc. .......................................... 1601

#### Steels, Carbon and Alloy
- Alloy Engineering Co .................................................... 1619
- Ebato .......................................................... 1926
- North American Cronite ............................................... 1631
- Thermo-Calc Software Inc. .......................................... 1601

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- Thermo-Calc Software Inc. .......................................... 1601

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- Ebato ........................................................................ 1926
- Thermo-Calc Software Inc. .......................................... 1601

#### Copper Alloys
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#### Magnesium Alloys
- Fort Wayne Metals ...................................................... 1524
- Metal-Matrix Composites (MMCs)
  - Across USA ................................................................. 2024
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#### Nickel-, Nickel-Iron-, and Cobalt-Base High-Performance Alloys
- Alloy Engineering Co .................................................... 1619
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#### Other Nonferrous Metals
- Mersen USA Greenville-MI Corp. .................................. 1916

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- Mersen USA Greenville-MI Corp. .................................. 1916
- Zircar Refractory Composites, Inc. .............................. 2034

#### Engineering Plastics
- Ebato ........................................................................ 1926
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### PRODUCT CATEGORIES

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