

October 17-21, 2010 | Houston, TX USA

# MS&T'10<sup>®</sup>

Materials Science & Technology  
2010 Conference & Exhibition

*The leading forum addressing structure, properties, processing and performance across the materials community.*

## Advance Program

ACerS  
The American  
Ceramic Society

AIST  
Association for Iron  
& Steel Technology

ASM  
ASM  
International<sup>®</sup>

TMS  
The Minerals, Metals  
& Materials Society

Co-sponsor:  
NACE International

[www.matscitech.org](http://www.matscitech.org)



Michalske



McGrath



Robinson

This year's conference will draw attendance from more than 72 countries and will attract the best and brightest minds in the materials community. The MS&T'10 Plenary Session is focused on energy infrastructure, policy and security related to materials science and engineering.

### Energy, Infrastructure, Policy and Security

Tuesday, October 19, 2010 • 8:30 to 10 a.m. • George R. Brown Convention Center

Join us for a fascinating plenary session on one of the most important areas of opportunity in materials today—energy! **Terry Michalske**, Director of Sandia National Labs Energy and Security Systems Center, will open the session with his lecture, “**Energy, Climate and Global Security in the 21st Century.**” Since 1949, SNL has developed science-based technologies that support our national security. Today, over 300 million Americans depend on SNL's technology solutions to solve national and global threats to peace and freedom. The Energy, Resources and Nonproliferation Program serves the nation's security interests through excellence in science, technology, and engineering; continuously improved understanding of complex systems; contributions in arenas where technology and policy intersect; and appropriate global engagement to achieve:

- Improved energy and critical resource surety (safety, security, reliability, sustainability)
- Reductions in the proliferation of dangerous materials
- Increased world stability

Following Michalske's lecture, you will have the opportunity to interact with two distinguished plenary panelists on the implications of emerging energy opportunities for the materials science and engineering community. Specific areas of focus will include: renewable energy, energy systems engineering and infrastructure – threat and vulnerability analysis, impact of energy and climate change on the U.S., security posture, energy policies in the U.S. government, and oil and geopolitics.

#### Plenary Panelists:

##### **Robert T. McGrath, “Alternative Energy Sources for Reducing Dependence on Fossil Fuels”**

McGrath, National Renewable Energy Lab (NREL) Deputy Laboratory Director, Science & Technology, leads all aspects of the Laboratory's science and technology development. He has 27 years experience in government lab, industry and academic settings, including managing The Ohio State University's \$720 million annual research program.

##### **David Robinson, “Biofuels: The End of the Beginning”**

Robinson is the CEO of Endicott Biofuels and has an extensive background in petroleum refining, petrochemicals, toll chemical manufacturing, and specialty refining and technology. Prior to joining Endicott, Robinson was vice president of engineering and production at Carbon Nanotechnologies, Inc. / Unidym, where he led all aspects of carbon nanotube process development and production from the lab through commercialization.

**We look forward to seeing you in Houston in October at what promises to be the premier materials event of the year.**

#### Table of Contents

Program-at-a-Glance .....	4
Symposia .....	6
Calendar of Events .....	12
Lectures and Special Events .....	14
Student Activities .....	15
Exhibition .....	16
Short Courses .....	18
Guest Tour .....	19
Housing and Transportation .....	20
Registration .....	22

**The American Ceramic Society (ACerS)** strives to advance the study, understanding and use of ceramic and glass materials for the benefit of our membership and the materials community. You won't want to miss the camaraderie as we celebrate our 112th anniversary and annual meeting at MS&T'10. Join your colleagues Monday evening for the **ACerS Annual Honors and Awards Banquet**, and watch the induction of the 2010 Fellows class and awards presentation. Not only does MS&T'10 feature a Ceramic and Glass Materials theme, but it also plays host to these ceramic materials lectures: **Frontiers of Science and Society—Rustum Roy Lecture** on Sunday; **Arthur L. Friedberg Memorial Lecture** and **Edward Orton Jr. Memorial Lecture** on Tuesday; and **Robert B. Sosman Award, Lecture and Symposium** on Wednesday. Participate in all the ceramic-focused sessions including **Richard M. Fulrath Award Session** and **Alfred R. Cooper Session and Award** on Monday. Continue to expand your professional expertise after MS&T'10 by attending ACerS Short Courses: **Sintering of Ceramics** or **Dynamic Behavior of Structural and Armor Ceramics**. During the conference, stop by the Member Lounge to relax between sessions, network with peers and take a spin on the prize wheel. Visit ACerS at [www.ceramics.org/annualmeeting](http://www.ceramics.org/annualmeeting).

**Association for Iron & Steel Technology (AIST)** is committed to supporting research and development activities and collaborations as they relate to steel processing, products, and application under the broader and more universal umbrella of materials science. The **Steel Properties & Applications Conference** will feature symposia addressing a broad range of steel topics, including recent advances in processing and properties of zinc-coated advanced high-strength steels; the processing, microstructure, and properties of cast irons and cast and forged specialty steels; the latest developments in austenite formation and decomposition, including multiphase steels, characterization at the atomic and mesoscale, and solute effects on austenite decomposition kinetics; developments in steel processing, including steelmaking and casting, alloying and thermal/mechanical processing, and pipeline, tube, and plate steel processing; and steel product metallurgy and applications, including the performance and microstructure of multiphase steels, microstructure and mechanical property relationships, precipitation studies, the development of high-Mn steels, and steel welding processing and property relationships. This year's program will include the **Adolf Martens Memorial Steel Lecture** Wednesday, October 20th. Proceedings of steel-related papers will be published and available for sale. Visit AIST at [www.aist.org](http://www.aist.org).

**ASM International® (ASM)** is hosting several events to recognize our leaders and visionaries and to set the stage for a bright future in materials science. **ASM Leadership Awards Luncheon:** ASM Materials Education Foundation, Committee/Council and ASM organizational unit awards will be presented. Committee/Council members meeting during MS&T and awardees will receive an invitation to attend. Others may purchase tickets via the registration form. The **ASM 97th Annual Meeting:** Attend our annual meeting where officers will be elected for the 2010-2011 term and other ASM business will be transacted. **Edward DeMille Campbell Memorial Lecture:** Robert O. Ritchie, FASM will present “*Fracture of Structural Materials: From Engineering to Biology.*” **ASM Awards Dinner:** Join us in celebrating the accomplishments of this year's award recipients and the 2010 Class of Fellows. Tickets, which include the President's Reception, can be purchased via the registration form. **ASM Canada Council Suite:** Experience Canadian hospitality! **2010 ASM/TMS Distinguished Lecture in Materials and Society:** “*The Promise of New Materials Through Nanoscience and Nanotechnology,*” by Mildred Dresselhaus, FASM, Institute Professor of Electrical Engineering and Physics, Massachusetts Institute of Technology. Supporting technical session to follow. Visit ASM at [www.asminternational.org](http://www.asminternational.org).

**The Minerals, Metals & Materials Society (TMS)**, one of the founding partners of the MS&T Conference, continues to support cooperative and collaborative efforts such as this meeting, which benefit the materials community at large. International in both its membership and activities, TMS has historically been a leader in fostering the exchange of learning and ideas across the broad spectrum of materials science and engineering (MSE), from minerals processing and primary metals production to basic research and the advanced applications of materials. Of particular interest to TMS and its members throughout the years has been the role of MSE in addressing both short- and long-term energy challenges. In addition to traditional meeting programming and publication, TMS has partnered with other societies in new initiatives such as the Energy Materials Initiative with ASM International and joint government-funded studies to address materials-related energy issues. Recently, in response to the needs of both the MSE professionals that it serves and the world, TMS has committed to an even sharper, more strategic focus on materials-enabled energy technology—TMS Energy. A central website housing all TMS Energy initiatives will be launched in July at [www.energy.tms.org](http://www.energy.tms.org). In the meantime, visit our site for updates on this and other TMS programs and resources dedicated to supporting and advancing the field of MSE. Visit TMS at [www.tms.org](http://www.tms.org).

**NACE International**, The Corrosion Society, is the world's largest and most recognized association for corrosion control. With over 23,000 members worldwide, NACE International is dedicated to promoting public safety, protecting the environment, and reducing the economic impact of corrosion through its training and certification programs, conferences, industry standards, reports, and publications. The association is involved in every industry and area of corrosion prevention and control, from chemical processing and water systems, to transportation and infrastructure protection. Visit NACE at [www.nace.org](http://www.nace.org).



Co-sponsor:



**BIOMATERIAL TECHNOLOGY**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Bioinspired Materials Engineering	•	•	•	•				
Next Generation Biomaterials	•	•	•	•			•	
Processing, Characterization and Properties of Honeycombs, Foams and Highly Porous Materials				•	•	•		
Surface Properties of Biomaterials	•	•	•					

**CERAMIC AND GLASS MATERIALS**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
ACerS Sosman Award Symposium					•			
Advances in Ceramic Matrix Composites		•	•	•	•	•	•	
Amorphous Materials: Common Issues within Science and Technology		•	•	•	•			
Glass and Optical Materials		•		•	•			
Hexaboride Materials Processing, Properties and Applications	•							
Innovative Processing and Synthesis of Ceramics, Glasses and Composites	•	•	•	•	•	•		
International Symposium on Defects, Transport and Related Phenomena	•	•	•	•	•	•	•	
Multifunctional Oxides			•	•	•	•		

**CORROSION CONTROL AND SUSTAINABILITY**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Advanced Coatings and Surface Treatments for Corrosion Protection			•	•	•			
Applications and Experiences of Corrosion-Resistant Materials in the Chemical Process Industry	•	•						
Corrosion and Corrosion Protection of Materials in the Oil and Gas Industry					•	•		
Corrosion Modeling and Life Prediction of Corrodible Structures	•							
Corrosion Monitoring and Sensors				•				
Managing Corrosion with Fiber-reinforced Polymers					•	•		

**ELECTRONIC AND MAGNETIC MATERIALS**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Dielectric Ceramic Materials and Electronic Devices	•	•	•	•	•	•	•	
Lead-free Solders and Next Generation Interconnects: Emerging Issues in Manufacturing, Performance and Reliability	•	•	•	•				
Magnetoelectric Multiferroic Thin Films and Multilayers	•	•	•	•	•	•		
Recent Developments in High Temperature Superconductivity	•	•	•	•	•	•		

**ENVIRONMENTAL AND ENERGY ISSUES**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Clean Energy: Fuel Cells, Batteries, Renewables — Materials, Processing and Manufacturing	•	•	•	•	•	•	•	•
Energy Materials: Battery Technologies		•						
Green Technologies for Materials Manufacturing and Processing II				•	•	•		
Light Weight Materials for Vehicles and Components	•	•	•					
Materials Solutions for the Nuclear Renaissance			•	•	•	•	•	•

**FUNDAMENTALS AND CHARACTERIZATION**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
A Symposium in Honor of Professor Reza Abbaschian: Processing, Crystal Growth and Phase Equilibrium of Advanced Materials	•	•	•	•	•			
Dr. John J. Stephens, Jr. Memorial Symposium: Deformation and Interfacial Phenomena in Advanced High-temperature Materials			•	•	•	•	•	
High Strain Rate Behaviors of Composites and Heterogeneous Materials: Experiments, Modeling, and Simulations	•	•	•	•	•			
Multiscale Modeling of Microstructure Deformation in Material Processing	•	•						
Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-V)	•	•	•	•	•	•	•	
Recent Advances in Structural Characterization of Materials	•	•	•	•	•	•	•	
Solidification and Crystal Growth Technology for Industrial Applications: Developments in the Past Century					•	•	•	
Tools, Models, Databases and Simulation Tools Developed and Needed to Realize the Vision of Integrated Computational Materials Engineering		•	•	•	•	•		

**IRON AND STEEL**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Advancements in Processing and Properties of Zinc-coated Advanced High Strength Steels	•	•						
Austenite Formation and Decomposition IV	•	•	•	•	•	•	•	
Processing, Microstructure and Properties of Cast Irons and Cast and Forged Specialty Steels	•		•					
Recent Developments in Steel Processing	•	•	•	•				
Steel Product Metallurgy and Applications	•	•	•	•	•	•		

**MATERIALS PERFORMANCE**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Advanced Metallic Materials: Technological Exploitation of Mechanical Properties	•	•	•	•				
Failure Analysis and Prevention	•	•	•	•	•	•	•	•
Hardfacing Coatings for Wear and Corrosion Resistance Applications		•	•	•				
International Symposium on Fatigue of Materials: Advances and Emergences in Understanding	•	•	•	•	•			
Structural Materials for Aerospace and Defense: Challenges and Prospects	•	•	•	•	•	•		
Surface Protection for Enhanced Materials Performance	•	•	•	•				
Titanium Alloys for High Temperature Applications					•	•		
Tribological Contacts: Recent Issues and Practical Solutions				•	•	•		

**NANOTECHNOLOGY**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Controlled Processing of Nanoparticle-based Materials and Nanostructured Films	•	•	•	•	•	•	•	•
Mechanical Behavior of Low-dimensional Materials	•	•	•	•	•	•		
Nanolaminated Ternary Carbides and Nitrides (MAX Phases)	•	•						
Nanotechnology for Energy, Healthcare and Industry					•	•	•	
Nanotube Reinforced Metal Matrix Composites II			•	•	•	•		
Novel Sintering Processes and News in Traditional Sintering and Grain Growth: Applications, Theory and Nanoscale Challenges	•	•	•	•	•			

**PROCESSING AND PRODUCT MANUFACTURING**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
Fundamentals, Applications and Innovations in Heat Treatment		•		•				
High-performance Tooling Materials				•				
Joining of Advanced and Specialty Materials XII	•	•	•	•	•	•	•	•
Laser Applications in Materials Processing					•	•	•	•
New Roles for Electric and Magnetic Fields in Processing, Microstructure Evolution, and Performance of Materials in Energy and Biosciences			•	•	•	•		
Shaping and Forming of High-strength Steel, Titanium and Light Metals	•	•	•	•				

**SPECIAL TOPICS**

	Mon AM	Mon PM	Tue AM	Tue PM	Wed AM	Wed PM	Thu AM	Thu PM
2010 ASM/TMS Distinguished Lecture in Materials and Society		•						
Journal of Undergraduate Materials Research: Undergraduate Presentations					•			
National Materials Advisory Board Dissemination Series			•					
Perspectives for Emerging Materials Professionals: Early Strategies for Career Development					•	•		
Richard M. Fulrath Award Session		•						
Status of Ceramic Engineering Education in the United States	•							
Student Career Development and K-12 Demo Exhibition		•	•	•				



## BIOMATERIAL TECHNOLOGY

### • Bioinspired Materials Engineering

Anisotropic Materials from Biopolymers and Biotemplating; Functional Surfaces and Innovative Manufacturing; Innovative Manufacturing; and Medical and Biological Applications

### • Next Generation Biomaterials

Ceramic Biomaterials I; Ceramic Biomaterials II; Nano-biomaterials; Ceramic Biomaterials III; Biomaterials for Drug Delivery; Biomaterials for Tissue Engineering; Metallic Biomaterials I; Metallic Biomaterials II; and Metallic Biomaterials III

### • Processing, Characterization and Properties of Honeycombs, Foams and Highly Porous Materials

Porous and Cellular Materials I; Porous and Cellular Materials II; and Porous and Cellular Materials III

### • Surface Properties of Biomaterials

Biocompatible Coatings; Drug Delivery and Anti-Microbial Coatings; and Surface Modification

## CERAMIC AND GLASS MATERIALS

### • ACerS Sosman Award Symposium

Sol-Gel Fundamentals and Applications

### • Advances in Ceramic Matrix Composites

Fiber Composites I; Fiber Composites II; Modeling and Characterization; Nano-Ceramics and Composites; Novel Processing, and Testing; Characterization, and Microstructure-Property Relationships

### • Amorphous Materials: Common Issues within Science and Technology

Applications and Devices; Mechanical Phenomena; Processing and Phase Development; and Structural Investigation

### • Glass and Optical Materials

Cooper Award Session - "Applications and Science of Low Tg Glasses"; Modeling and Simulation; Optical Materials; and Special Topics in Glass

### • Hexaboride Materials Processing, Properties, and Applications

Session I

### • Innovative Processing and Synthesis of Ceramics, Glasses and Composites

Porous Ceramics and Coatings; Composites; Directional Solidification and Microwave; Stereolithography and Ceramic Suspensions; Catalytic, Photonic and Electronic Ceramics; Polymer Processing; and Ceramic Processing

### • International Symposium on Defects, Transport and Related Phenomena

Defects and Transport in Ceramics I; Defects and Transport in Ceramics II; Defects and Transport in Ceramics III; Defects and Transport in Materials Related to Fuel Cells I; Defects and Transport in Materials Related to Fuel Cells II; Defects and Transport in Materials Related to Fuel Cells III; and The Donald M. Smyth Session

### • Multifunctional Oxides

Microstructural and Physical Properties of Functional Oxides; Nanophenomena in Functional Oxides; Process, Synthesis, and Application of Functional Oxides I; and Process, Synthesis, and Application of Functional Oxides II



## CORROSION CONTROL AND SUSTAINABILITY

### • Advanced Coatings and Surface Treatments for Corrosion Protection

Session I; Session II; and Session III

### • Applications and Experiences of Corrosion-Resistant Materials in the Chemical Process Industry

Corrosion Experiences in the Chemical Process Industry; and High Temperature Corrosion

### • Corrosion and Corrosion Protection of Materials in the Oil and Gas Industry

Corrosion in the Oil and Gas Industry; and Corrosion of Materials in the Oil and Gas Industry

### • Corrosion Modeling and Life Prediction of Corrodible Structures

Session I

### • Corrosion Monitoring and Sensors

Corrosion Monitoring; and Corrosion Sensors

### • Managing Corrosion with Fiber-reinforced Polymers

Session I; and Session II

## ELECTRONIC AND MAGNETIC MATERIALS

### • Dielectric Ceramic Materials and Electronic Devices

Electronic Composites: Synthesis and Applications; Electronic Materials Applications: Devices; Materials: Properties and Device Applications; Materials: Structure and Properties; Materials: Structure, Properties and Characterization; Materials: Synthesis and Properties I; and Materials: Synthesis and Properties II

### • Lead-free Solders and Next Generation Interconnects: Emerging Issues in Manufacturing Performance and Reliability

Fundamentals of Tin Whisker Formation; Mechanics and Microstructure I; Mechanics and Microstructure II; and New Applications and Phenomena

### • Magnetolectric Multiferroic Thin Films and Multilayers

Epitaxial and Oriented Films, Materials Integration, Strain-Induced Phenomena; Multiferroic Phenomenon, Single Crystals and Thin Films; Multiferroics and Magnetolectric Composites; Piezoelectric, Ferroelectric and Multiferroic Materials; Relaxor, Piezoelectric, Ferromagnetic Materials and Characterization; and Synthesis and Characterization of Nanoferroic Materials

### • Recent Developments in High Temperature Superconductivity

Coated Conductor Processing and Related Issues; New Superconductors and MgB<sub>2</sub> I; New Superconductors and MgB<sub>2</sub> II; World-Wide Progress Review on Superconductor Development; YBCO Pinning Methods and Properties; and YBCO Processing and Reliability Related Issues

## ENVIRONMENTAL AND ENERGY ISSUES

### • Clean Energy: Fuel Cells, Batteries, Renewables—Materials, Processing, and Manufacturing

Batteries; Corrosion, Materials Degradation and Waste Minimization; Fuel Cells and Electrochemistry; NETL's Fossil Energy-Materials Advances for Improved Efficiency and Clean Fuel Combustion I; NETL's Fossil Energy-Materials Advances for Improved Efficiency and Clean Fuel Combustion II; Gasification and CO<sub>2</sub>; SOFC I; SOFC II; and Solar Energy, Modeling, and Advanced Materials

### • Energy Materials: Battery Technologies

Advancement in Battery Materials

### • Green Technologies for Materials Manufacturing and Processing II

Green Manufacturing I; Green Manufacturing II; and Green Materials Processing





### • Light Weight Materials for Vehicles and Components

Joining and Corrosion of Light Weight Materials; Light Weight Materials—Composites and Nanocomposites; and Processing of Light Weight Materials—Deformation, Microstructure and Tribology

### • Materials Solutions for the Nuclear Renaissance

Advanced Nuclear Fuels; Advanced Nuclear Fuels—Development and Characterization; Immobilization of Nuclear Wastes; Irradiation and Corrosion Effects; Materials Performance in Extreme Environments; and Materials Solutions for Nuclear Applications: Ceramics, Modeling and Joining

## FUNDAMENTALS AND CHARACTERIZATION

### • A Symposium in Honor of Professor Reza Abbaschian: Processing, Crystal Growth and Phase Equilibrium of Advanced Materials

Phase Transformation and Equilibrium I; Phase Transformation and Equilibrium II; Powder Processing and Mechanical Properties; Solidification and Crystal Growth I; and Solidification and Crystal Growth II

### • Dr. John J. Stephens, Jr. Memorial Symposium: Deformation and Interfacial Phenomena in Advanced High-temperature Materials

Joining Ceramics and Metals: Current Topics I; Joining Ceramics and Metals: Current Topics II; Processing and Properties of Alloys and Composites I; Processing and Properties of Alloys and Composites II; and Refractory Metals

### • High Strain Rate Behaviors of Composites and Heterogeneous Materials: Experiments, Modeling and Simulation

Engineered and Biomaterials; High Strain Rate Behavior of Composites I; High Strain Rate Behavior of Composites II; High Strain Rate Behavior of Materials; and Trimodal Composites

### • Multiscale Modeling of Microstructure Deformation in Material Processing

Session I; and Session II

### • Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-V)

Alloy Design and Phase Stability Modeling; Diffusional Processes; Diffusivity Modeling and Measurement; Phase Field and Thermodynamic Modeling; Phase Stability and Diffusional Processes; Session Honoring Arthur Pelton, Recipient of ASM's 2010 J. Willard Gibbs Phase Equilibrium Award; and Session Honoring Y. Austin Chang, Recipient of ASM's 2009 J. Willard Gibbs Phase Equilibria Award

### • Recent Advances in Structural Characterization of Materials

Imaging and Tomography: Developments and Applications I; Imaging and Tomography: Developments and Applications II; Imaging and Tomography: Developments and Applications III; Imaging and Tomography: Developments and Applications IV; Other Techniques: Developments and Applications; X-Ray and Neutron Diffraction: Developments and Applications I; and X-Ray and Neutron Diffraction: Developments and Applications II

### • Solidification and Crystal Growth Technology for Industrial Applications: Developments in the Past Century

Bulk Crystals and Thin Films of Oxides—Growth Optimization and Applications; Processing, Properties and Applications of Alloys—Role of Interfaces; and Solidification Processes in Stable and Metastable Structures

### • Tools, Models, Databases and Simulation Tools Developed and Needed to Realize the Vision of Integrated Computational Materials Engineering

ICME Panel Discussion on Barriers to ICME and How to Overcome It; ICME: Experimentation and Integration of Models; ICME: Informatics and Infrastructure; ICME: Material Model and Simulation Tools I; and ICME: Material Model and Simulation Tools II

## IRON AND STEEL

### • Advancements in Processing and Properties of Zinc-coated Advanced High Strength Steels

Session I; and Session II

### • Austenite Formation and Decomposition IV

Austenite Decomposition; Austenite Formation; Austenite Formation and Decomposition at the Atomic Scale; Austenite Formation and Decomposition at the Mesoscale; Multiphase Steels I; Multiphase Steels II; and Solute Effects on Austenite Decomposition Kinetics

### • Processing, Microstructure, and Properties of Cast Irons and Cast and Forged Specialty Steels

Cast Iron and Steel; and Wrought Steels

### • Recent Developments in Steel Processing

Alloying and Thermal/Mechanical Processing; Pipeline, Tubing, and Plate Steels; Recent Developments in Steel Processing; and Steelmaking and Casting

### • Steel Product Metallurgy and Applications

High Manganese Steels; Microstructure-Mechanical Behavior Relationships I; Microstructure-Mechanical Behavior Relationships II; Performance and Applications; Precipitation and Alloying Studies; and Steel Welding Processing/Property Relationships

## MATERIALS PERFORMANCE

### • Advanced Metallic Materials: Technological Exploitation of Mechanical Properties

Achievements in Steel and Ferritic Alloys; Advanced Synthesis and Processing; Mechanical Behavior of Advanced Materials; and New Advanced Materials

### • Failure Analysis and Prevention

Corrosion; Fatigue and Fracture; Natural Disasters; Non-Destructive Testing; Oil and Gas; Space Systems; Tools and Techniques; and Welding

### • Hardfacing Coatings for Wear and Corrosion Resistance Applications

Coating Properties Characterization; Corrosion and Wear Protection I; and Corrosion and Wear Protection II



### • International Symposium on Fatigue of Materials: Advances and Emergences in Understanding

Fatigue Analysis and Fracture of Materials; Fatigue Analysis: Role of Material; Microstructure and Environment; Mechanics and Mechanisms of Fatigue and Fracture I; Mechanics and Mechanisms of Fatigue and Fracture II; and Mechanisms and Mechanics of Understanding Crack Initiation and Crack Propagation

### • Structural Materials for Aerospace and Defense: Challenges and Prospects

Aluminum Alloys; Coatings; Composites; Magnesium Alloys; Nanocomposites; Nickel Base Superalloys; Session I; Session II; and Titanium Alloys and Shape Memory Alloys

### • Surface Protection for Enhanced Materials Performance

Environmental Barrier Coatings; Environmental Barrier and Multifunctional Coatings; Thermal Barrier Coatings; and Thermal Barrier and Protective Coatings

### • Titanium Alloys for High Temperature Applications

High Temperature Titanium: Applications, Processing, and Properties; and High Temperature Titanium: Environmental Protection and Corrosion, and Composites

### • Tribological Contacts: Recent Issues and Practical Solutions

Coatings, Composites and Lubricants I; Coatings, Composites and Lubricants II; Nanotribology and Metallic Friction





## NANOTECHNOLOGY

### • Controlled Processing of Nanoparticle-based Materials and Nanostructured Films

Direct Manufacturing of Nanomaterials I; Direct Manufacturing of Nanomaterials II; Low-dimensional Nanomaterials I; Low-dimensional Nanomaterials II; Nanocomposites; Processing and Sintering; Thin Film I; Thin Film II; and Novel Nanomaterial Approaches

### • Mechanical Behavior of Low-dimensional Materials

Advanced Testing Technique I; Advanced Testing Technique II; Graphene, Carbon Nanotube and Polymers; Mechanics of Nanowires; Strengthening and Deformation Mechanisms in Thin Films; and Twins and Nanocrystalline Metals

### • Nanolaminated Ternary Carbides and Nitrides (MAX Phases)

Mechanical and Tribological Properties of MAX Phases; Modeling of Thermodynamic Stability, Microstructure and Physical Properties of MAX Phases; Processing of MAX Phases and Their Composites; and Structural and Physical Properties of MAX Phases

### • Nanotechnology for Energy, Healthcare and Industry

Session I; Session II; and Session III

### • Nanotube Reinforced Metal Matrix Composites II

Advances in Nanotube Reinforced MMCs; Characterization—Microstructure and Properties; Processing of Nanotube Reinforced MMCs I; and Processing of Nanotube Reinforced MMCs II

### • Novel Sintering Processes and News in Traditional Sintering and Grain Growth: Applications, Theory, and Nanoscale Challenges

Assisted Sintering I; Assisted Sintering II; Experiments and Theory; Simulation and Experiments; and Toward Applications

## PROCESSING AND PRODUCT MANUFACTURING

### • Fundamentals, Applications, and Innovations in Heat Treatment

Microstructure and Properties; and Process and Analysis

### • High-performance Tooling Materials

Session I; and Session II

### • Joining of Advanced and Specialty Materials XII

Dissimilar Metal Welds and Welding in Oil and Petrochemical Industry; Dissimilar Metal Welds and Welding of CSEF Steels in Power Generation Industry; Microjoining I; Microjoining II; Nanojoining I; Nanojoining II; Solid State Dissimilar Metal Joints; Solid State Joining; and Welding Metallurgy and Arc Welding

### • Laser Applications in Materials Processing

Session I; Session II; and Session III;

### • New Roles for Electric and Magnetic Fields in Processing, Microstructure Evolution, and Performance of Materials in Energy and Biosciences

Session I; Session II; Session III; and Session IV

### • Shaping and Forming of High Strength Steel, Titanium, and Light Metals

Microstructure Evolution During Processing; Processing and Modeling I; Processing and Modeling II; Processing Defect and Sensitivity

## SPECIAL TOPICS

### • 2010 ASM/TMS Distinguished Lecture in Materials and Society

ASM/TMS Materials and Society

### • Journal of Undergraduate Materials Research: Undergraduate Presentations

Session I

### • National Materials Advisory Board Dissemination Series

Session I

### • Perspectives for Emerging Materials Professionals: Early Strategies for Career Development

Session I; and Session II

### • Richard M. Fulrath Awards Session

Session I

### • Status of Ceramic Engineering Education in the United States

Session I

### • Student Career Development and K-12 Demo Exhibition

Session I; Session II; Session III





Event	Time	Location
<b>SATURDAY, OCTOBER 16</b>		
<b>Material Advantage Student Functions</b>		
Chapter Leadership Workshop	Noon to 3 p.m.	HA
Outreach Demonstration Expo	3 to 5 p.m.	HA
<b>SUNDAY, OCTOBER 17</b>		
<b>Conference Activities</b>		
ACerS/BSD Ceramographic Display	2 to 7:30 p.m.	CC
MS&T Press Office	7:30 a.m. to 6 p.m.	CC
Registration	2 to 7:30 p.m.	CC
Society Member Lounges	2 to 7:30 p.m.	CC
Welcome Reception	6 to 7:30 p.m.	HA
<b>Lectures/Workshop</b>		
Frontiers of Science & Society—Rustum Roy Lecture	5 to 6 p.m.	CC
<b>Material Advantage Student Functions</b>		
Career Development Sessions	1 to 4 p.m.	HA
Undergraduate Student Speaking Contest		
Semi-Final Rounds	1 to 4 p.m.	HA
Final Round	4 to 5 p.m.	HA
Undergraduate Poster Contest Display	6 to 7:30 p.m.	CC
Student Networking Mixer	8 to 10:30 p.m.	HA
<b>Social Functions</b>		
ASM Annual Meeting & Awards Dinner Rehearsal	7 to 11:30 a.m.	HA
ASM Board of Trustees Luncheon	11:30 a.m. to 1 p.m.	HA
MSM/UHA/Missouri S&T Alumni Reception	5:30 to 7:15 p.m.	HA
ASM Materials Education Fdn Board of Trustees Dinner	7 to 10:30 p.m.	HA
<b>MONDAY, OCTOBER 18</b>		
<b>Conference Activities</b>		
ACerS/BSD Ceramographic Display	7 a.m. to 5 p.m.	CC
ASM Guest Hospitality	8 to 10:30 a.m.	HA
Authors' Coffee	7 to 8:20 a.m.	CC
MS&T Press Office	7:30 a.m. to 6 p.m.	CC
Registration	7 a.m. to 5 p.m.	CC
Society Member Lounges	7 a.m. to 5 p.m.	CC
<b>Lectures</b>		
ACerS Alfred R. Cooper Session and Award	8 to 11:40 a.m.	CC
2010 ASM/TMS Distinguished Lecture in Materials and Society	1:15 to 2:15 p.m.	CC
ACerS Richard M. Fulrath Awards Session	2 to 5:20 p.m.	CC
Alpha Sigma Mu Lecture	3 to 4 p.m.	CC

Event	Time	Location
<b>Material Advantage Student Functions</b>		
Undergraduate Poster Contest Display	7 a.m. to 5 p.m.	CC
AIST Student Plant Tour: TMK-IPSCO	7:30 to 11:30 a.m.	HA
AIST Student & Professor Lunch w/AIST Foundation Board of Trustees	12:30 to 1:45 p.m.	HA
AIST Steel Industry Student Reception	7 to 9 p.m.	HA
<b>Social Functions</b>		
ASM Leadership Awards Luncheon	11:45 a.m. to 1 p.m.	CC
ASM Tuxedo Pick-up	1 to 6 p.m.	HA
MS&T Women in Science Reception	5:30 to 6:30 p.m.	HA
University of Illinois Alumni Reception	5:30 to 7 p.m.	HA
University of Michigan/The Ohio State University Alumni Reception	6 to 8 p.m.	HA
Michigan Technological University Alumni Reception	6 to 8 p.m.	CC
Texas A&M University Alumni Night	6 to 9 p.m.	CC
Professor Reza Abbaschian Honorary Symposium Dinner	TBD	HA
ACerS Annual Honors and Awards Banquet	7:30 to 10:30 p.m.	HA
<b>Annual Meetings</b>		
ACerS 112 <sup>th</sup> Annual Membership Meeting	1 to 2 p.m.	CC
ASM 97 <sup>th</sup> Annual Meeting	4 to 5 p.m.	CC
<b>TUESDAY, OCTOBER 19</b>		
<b>Conference Activities</b>		
ACerS/BSD Ceramographic Display	7 a.m. to 6 p.m.	CC
ACerS Companion Breakfast	7:30 to 10 a.m.	HA
ASM Guest Hospitality	8 to 10:30 a.m.	HA
ASM Mini-Materials Camp	8:30 a.m. to 2:30 p.m.	CC
Authors' Coffee	7 to 7:50 a.m.	CC
MS&T Plenary Session	8 to 10 a.m.	CC
MS&T Press Office	7:30 a.m. to 6 p.m.	CC
Poster Session	11 a.m. to 6 p.m.	CC
Registration	7 a.m. to 6 p.m.	CC
Society Member Lounges	7 a.m. to 6 p.m.	CC
<b>MS&amp;T'10 Exhibit</b>		
Professional Recruitment & Career Pavilion	11 a.m. to 6 p.m.	CC
Show Hours	11 a.m. to 6 p.m.	CC
MS&T Food Court	11:30 a.m. to 2 p.m.	CC
Happy Hour Reception	4 to 6 p.m.	CC
Professional Recruitment & Career Pavilion Networking Reception	4 to 6 p.m.	CC
<b>Lectures</b>		
MS&T Plenary Session	8:30 to 10:00 a.m.	CC
ACerS Arthur L. Friedberg Memorial Lecture	10:20 to 11:20 a.m.	CC

Event	Time	Location
<b>Material Advantage Student Functions</b>		
TMS/NSDL Materials Digital Library Roundtable Luncheon Workshop: ICME, Undergraduate Education and MatForge	Noon to 1:45 p.m.	CC
ASM Edward DeMille Campbell Memorial Lecture	12:45 to 1:45 p.m.	CC
ACerS Edward Orton Jr. Memorial Lecture	1 to 2 p.m.	CC
ACerS Corporate Technical Achievement Award & Session	2 to 3 p.m.	CC
<b>Material Advantage Student Functions</b>		
Undergraduate Poster Contest Display	7 a.m. to 6 p.m.	CC
Mug Drop Contest	11:15 a.m. to 12:15 p.m.	CC
Putting Contest	12:15 to 1:15 p.m.	CC
Student Awards Ceremony	1 to 2 p.m.	CC
<b>Social Functions</b>		
ASM Tuxedo Pick-up	9 a.m. to 5 p.m.	HA
Guest Tour: Bayou Bend	11 a.m. to 3 p.m.	HA
Acta Materialia, Inc. Board of Governors Luncheon	Noon to 1 p.m.	HA
Penn State Materials Science & Engineering Alumni Reception	6 to 7 p.m.	HA
Alfred University Alumni Reception	6 to 7:30 p.m.	HA
ASM Board Portrait	6 to 6:30 p.m.	HA
ASM Awards Reception	6:30 to 7:15 p.m.	HA
Purdue University School of Materials Engineering Alumni and Friends Reception	6:30 to 8:00pm	OF
ASM Awards Dinner	7:15 to 9:30 p.m.	HA
ASM President's Reception	9:30 to 11:45 p.m.	HA
<b>WEDNESDAY, OCTOBER 20</b>		
<b>Conference Activities</b>		
ACerS/BSD Ceramographic Display	7 a.m. to 5 p.m.	CC
ASM Mini-Materials Camp	8:30 a.m. to 2:30 p.m.	CC
Authors' Coffee	7 to 7:50 a.m.	CC
MS&T Press Office	7:30 a.m. to 6 p.m.	CC
Poster Session	10 a.m. to 3 p.m.	CC
Registration	7 a.m. to 5 p.m.	CC
Society Member Lounges	7 a.m. to 5 p.m.	CC
ASM Guest Hospitality	8 to 10:30 a.m.	HA
MS&T Young Professionals Reception	5 to 6 p.m.	CC
<b>MS&amp;T'10 Exhibit</b>		
Professional Recruitment & Career Pavilion	10 a.m. to 3 p.m.	CC
Show Hours	10 a.m. to 3 p.m.	CC
MS&T Food Court	11:30 a.m. to 2 p.m.	CC
<b>Lectures</b>		
TMS/NSDL Materials Digital Library Roundtable Luncheon Workshop: ICME, Undergraduate Education and MatForge	Noon to 1:45 p.m.	CC

Event	Time	Location
TMS Young Leaders Tutorial Luncheon & Lecture	Noon to 2 p.m.	CC
ACerS Robert B. Sosman Lecture	1 to 2 p.m.	CC
AIST Adolf Martens Memorial Steel Lecture	1 to 2 p.m.	CC
<b>Social Functions</b>		
ASM Tuxedo Drop-off	7 a.m. to Noon	HA
<b>THURSDAY, OCTOBER 21</b>		
<b>Conference Activities</b>		
Authors' Coffee	7 to 7:50 a.m.	CC
MS&T Press Office	7:30 a.m. to 6 p.m.	CC
Registration	7 a.m. to 2 p.m.	CC
Society Member Lounges	7 a.m. to 2 p.m.	CC
<b>Educational Courses</b>		
Dynamic Behavior of Structural & Armor Ceramics	8 a.m. to 5 p.m.	HA
Oilfield Metallurgy	8 a.m. to 5 p.m.	HA
Sintering of Ceramics	8 a.m. to 5 p.m.	HA
Thermal Spray Technology	8 a.m. to 5 p.m.	HA
Corrosion – The \$460 Billion Problem	1 to 5 p.m.	HA
<b>FRIDAY, OCTOBER 22</b>		
<b>Educational Courses</b>		
Basics of Non-Destructive Testing	8 a.m. to 5 p.m.	HA
Corrosion – The \$460 Billion Problem	8 a.m. to 5 p.m.	HA
Dynamic Behavior of Structural & Armor Ceramics	8 a.m. to 5 p.m.	HA
Microstructures 101 and Beyond	8 a.m. to 5 p.m.	HA
Oilfield Metallurgy	8 a.m. to 5 p.m.	HA
Sintering of Ceramics	8 a.m. to 5 p.m.	HA





**Sunday, October 17** **Frontiers of Science and Society—Rustum Roy Lecture**  
 - "Issues in Defense Innovation," Arun Seraphin, Assistant Director for Defense Programs, White House Office of Science and Technology Policy

**Monday, October 18** **2010 ASM/TMS Distinguished Lectureship in Materials and Society**  
 - "The Promise of New Materials Through Nanoscience and Nanotechnology," Mildred Dresselhaus, FASM, Institute Professor of Electrical Engineering and Physics, Massachusetts Institute of Technology. Don't miss the supporting session to follow with presentations from Oded Rabin, University of Maryland; Tomas Palacios, Massachusetts Institute of Technology; and Jing Kong, Massachusetts Institute of Technology on Thermoelectric Calculations, grapheme, and graphene device applications.

**Alpha Sigma Mu Lecture**  
 - "The Future of Materials Technology: Design, Failure Analysis, and Societal Impact," Fredrick E. Schmidt, Jr., P.E. FASM, Technical Director, Materials Technology Engineering Systems Inc.

**Tuesday, October 19** **Plenary Session**  
 "Energy, Infrastructure, Policy and Security," Terry Michalske, Sandia National Labs; Robert McGrath, National Renewable Energy Lab; and David Robinson, Endicott Biofuels

**ACerS Arthur L. Friedberg Memorial Lecture**  
 - "Some Ceramic Engineering Solutions to Refractory Application Problems," Louis J. Trostel Jr., Technical Consultant

**Sunday, October 17** **Welcome Reception**  
 Network with your colleagues, meet new people and learn about the exciting membership offerings of the organizing societies.

**Monday, October 18** **Alfred R. Cooper Session and Award**  
 Invited Speakers:  
 - Richard K. Brow, Missouri University of Science & Technology  
 "Structural Chemistry and the Properties of Low-temperature Phosphate Glasses"  
 - Uwe Hoppe, Rostock University, Germany  
 "Structure of Binary Phosphate Glasses – P<sub>2</sub>O<sub>5</sub> and a Further Network-forming Oxide as the Second Component"  
 - Joshua Otaigbe, University of Southern Mississippi  
 "New Low-Tg Phosphate Glass/Polymer Hybrids—Current Status and Future Prospects"  
 - Xiang Hua Zhang, University of Rennes, France, and University of Arizona  
 "Tellurium and Selenium-based Glasses for Infrared Applications"

**ASM Leadership Luncheon**  
 In appreciation of the hard work and dedication of our volunteers, ASM Materials Education Foundation, Committee/Council and ASM organizational unit awards will be presented. Committee/Council members meeting during MS&T, and awardees, will receive an invitation to attend. Others may purchase tickets via the registration form.

**ACerS 112<sup>th</sup> Annual Meeting**  
 Newly elected officers take their positions and the Annual Membership Meeting is held. All ACerS members and guests are welcome.

**Richard M. Fulrath Awards Session**  
 - Japanese Academic: Wataru Sakamoto, EcoTopia Science Institute, Nagoya University  
 - Japanese Industrial: Osamu Nakagawara, Murata Manufacturing Co.  
 - American Industrial: Charles Lewinson, Ceramatec Inc.  
 - Japanese Industrial: Yasuharu Hosono, Toshiba Corp.  
 - American Academic: John Ballato, Clemson University

**Edward DeMille Campbell Memorial Lecture**  
 - "Fracture of Structural Materials: From Engineering to Biology," Robert O. Ritchie, FASM, Chua Distinguished Professor and MSE Dept. Head, University of California

**ACerS Edward Orton Jr. Memorial Lecture**  
 - "Teeth—What Nature's Most Resilient Bioceramic Can Tell Us About Our Origins," Brian Lawn, NIST and The George Washington University

**Wednesday, October 20** **TMS Young Leaders Tutorial Luncheon and Lecture**  
 - "The Future of Materials Technology: Design, Failure Analysis, and Societal Impact," Fredrick E. Schmidt Jr., P.E. FASM, Technical Director, Materials Technology Engineering Systems Inc.

**ACerS Robert B. Sosman Lecture**  
 - "Directing Sol-Gel Processing with Proteins and Living Cells," C. Jeffrey Brinker, The University of New Mexico, The UNM Cancer Research and Treatment Center, and Sandia National Laboratories

**AIST Adolf Martens Memorial Steel Lecture**  
 - "Martensitic Microstructural Systems in Carbon-Steels and Susceptibility to Hydrogen Embrittlement," George Krauss, University Emeritus Professor, Colorado School of Mines

**ASM'S 97<sup>th</sup> Annual Meeting**  
 Attend our annual meeting where officers will be elected for the 2010-2011 term and other ASM business will be transacted. ASM members and guests are welcome.

**Women in Materials Science and Engineering Reception**  
 Enjoy the chance to network with professionals and peers in a relaxed environment.

**ACerS Annual Honors and Awards Banquet**  
 Enjoy dinner, conversation and the presentation of Society awards. Purchase tickets for \$80 via the registration form.

**Tuesday, October 19** **ACerS Corporate Technical Achievement Award & Session**  
 "GE Healthcare's Gemstone™ Scintillator Development," Haochuan Jiang, GE Healthcare and Gorilla Glass® Corning Incorporated

**TMS/NSDL Materials Digital Library Roundtable Luncheon Workshop: ICME, Undergraduate Education and MatForge**  
 Follows ICME: Material Model and Simulation Tools, Part I and Precedes ICME: Material Model and Simulation Tools, Part II—Sponsored by the National Science Foundation. This roundtable highlights tools, modules and methods to bring ICME into MSE undergraduate courses in thermodynamics and kinetics.

**ASM Awards Dinner**  
 Join us in celebrating the wonderful accomplishments of this year's award recipients and the 2010 Class of Fellows. Tickets, which include the President's Reception following the dinner, can be purchased via the registration form.

**Wednesday, October 20** **TMS/NSDL Materials Digital Library Roundtable Luncheon Workshop: ICME, Undergraduate Education and MatForge**  
 Follows ICME: Experimentation and Integration of Models and Precedes ICME: Panel Discussion on Barriers to ICME and How to Overcome It—Sponsored by the National Science Foundation. This roundtable highlights tools, modules and methods to bring ICME into MSE undergraduate courses in thermodynamics and kinetics.

**Attention Students:**  
 Students in the materials science field can take advantage of this unique opportunity to interact with professionals from all areas of materials science. For full details on student opportunities at MS&T'10, visit matsci-tech.org and click on "Students" from the menu at the top!

**MS&T'10 Student Chapter Travel Grants**  
 The Material Advantage Student Program offers \$500 travel grants to student chapters in support of attending AISTech, the TMS annual meeting, or the ACerS and ASM annual meetings held at MS&T.

The student chapter may determine how the grant is spent, either to cover many students' hotel costs, or to cover 1 or 2 students traveling from afar. The grants are restricted to one grant per chapter per academic year. All grants are issued in check form to the chapter advisor, and will be sent after the event upon verification that the chapter was in attendance. If a chapter has special circumstances that require the checks to be issued prior to the meeting, exceptions can be made on a case-by-case basis. Travel grants will be awarded on a first-come, first-served basis, so act early!

Travel grant applications are due no later than October 4, 2010!

Chapters must be active and in good standing to be eligible for a travel grant. For more information, contact Candace Cunningham at students@asminternational.org, or by phone at (800) 336-5152, ext. 5527.

**Student Monitors**  
 Students may partially defray expenses by serving as session monitors. Monitors assist session chairs, record session attendance statistics, assist with audio/visual equipment, etc. Monitor positions are limited and are assigned on a first-come, first-served basis. Interested students should contact Nate Natale at natale@tms.org.

**Saturday, October 16** **Chapter Leadership Workshop**  
 Network and share best practices! This workshop provides a detailed introduction to the Material Advantage Student Program for chapter officers. A boxed lunch will be provided. Registration is required for this workshop as well as MS&T conference registration. This workshop is for Material Advantage Chapter Officers only. Contact Candace Cunningham at students@asminternational.org for more information.

**Material Advantage Outreach Demonstration Expo**  
 The Material Advantage Student Program will be showcasing outreach activities that have been developed by our very own Material Advantage Student Chapters. The Material Advantage Outreach Demonstration Expo will provide a venue for our Chapters to share their activities with other Chapters. This is also an excellent opportunity for Chapters who may not have a lot of experience in this area to see what other Chapters are doing which may generate new ideas. Tables are still available. If your Student Chapter is interested in participating with a demonstration, contact Candace Cunningham at students@asminternational.org.

**Sunday, October 17** **Undergraduate Student Speaking Contest**  
 MS&T hosts the national semifinals and final rounds of the Material Advantage Undergraduate Student Speaking Contest, organized by the Ceramic Educational Council. Each Material Advantage Chapter is encouraged to hold local contests on campus prior to MS&T. Local contest winners will advance to the semifinal/final rounds. The presentation subject must be technical but can relate to any aspect of materials science and engineering. Participants receive a \$300 travel grant awarded at the end of the semifinal/final rounds. Winners of the finals receive cash prizes. For contest rules, contact Tricia Nicol at tricol@ceramics.org. National contestants must be reported to Kevin Fox at Kevin.Fox@srl.nsl.doe.gov by September 24, 2010.

**Career Forum**  
 Discuss career options with professionals from industry, academia and government. Get insight into the value of professional memberships, make industry connections and learn about career opportunities from those with experience.

**Graduate School Information**  
 Students interested in graduate school will benefit from discussing pros and cons with graduate students at this session. Hear directly from university representatives about the process for applying to, and selecting a graduate school program.

**Art of Networking**  
 Improve your networking skills and learn how to meet and talk with people who may be able to impact your future!

**Undergraduate Poster Contest**  
 All undergraduate poster submissions will be displayed from Sunday, October 17 to Wednesday, October 20. For more information about this poster contest for undergraduates or to enter a poster abstract, contact Kristen Brosnan at brosnan@ge.com. The deadline for poster abstracts is September 24, 2010.

**Student Networking Mixer**  
 Join in this relaxed, casual, and fun atmosphere designed for students, Material Advantage Faculty Advisors, and society volunteer leaders. Students are encouraged to wear their school colors. Music will be provided.

**Monday, October 18** **AIST Student Plant Tour—TMK IPSCO, Baxtown, TX**  
 Take advantage of this great opportunity to see a steel mill in action. Whether you are already interested in steel, or would like to learn about the industry, sign up for this tour. Look for more information on the location. Contact Lori Wharrey for more information and to register at lwharrey@aist.org or (724) 814-3044.

**Student Lunch with AIST Foundation Trustees**  
 Students interested in steel are invited to enjoy lunch with the AIST Foundation Trustees. The Trustees are paramount in fund raising for AIST Scholarships, and are interested in the student perspective of the steel industry. RSVP to Lori Wharrey at lwharrey@aist.org or (724) 814-3044.

**AIST Student Steel Reception**  
 Students are invited to meet and talk with representatives from the steel industry about the high technology required in today's steel industry. Find out what great career opportunities are available. Be sure to bring your resume for internships and jobs. RSVP to Lori Wharrey at lwharrey@aist.org or (724) 814-3044.

**Tuesday, October 19** **NEW! Professional Recruitment & Career Pavilion!**  
 Stop by the new Professional Recruitment & Career Pavilion in the expo hall on Tuesday, October 19, and Wednesday, October 20, during regular expo hall hours. Visit booths, talk to company reps and view job postings in the Career Pavilion while you explore the exhibit hall. This is your chance to make valuable contacts with potential employers. Admission to the Career Pavilion is included in your conference registration fee.

**Mug Drop Contest**  
 Mugs fabricated by students from ceramic raw materials are judged on aesthetics and breaking thresholds. Mugs are dropped from varying levels until the breaking threshold is reached. The mug with the highest successful drop distance wins! To compete, register no later than October 8, 2010 by contacting William Hammetter at whamme@sandia.gov.

**Putting Contest**  
 Teams of four students compete using putters and balls they fabricated. Each team member must have his or her own putter and ball, which are judged prior to the contest. Prizes are awarded on aesthetics, closest putt, and best putting team (the team achieving the shortest combined distance from the hole). To register your team of four, contact William Hammetter at whamme@sandia.gov no later than October 8, 2010.

**Student Awards Ceremony**  
 Help congratulate the winners of this year's contests: Material Advantage Chapters of Excellence, Student Speaking Contest, Graduate and Undergraduate Poster Contests, Mug Drop Contest, Putting Contest, TMS International Symposium on Superalloys Scholarships, ASM Materials Design Competition, and AIST/AISI Scholarships.

**Professional Recruitment & Career Pavilion Networking Reception**  
 You are invited to attend this happy hour reception on Tuesday, October 19, 4 to 6 p.m., in the expo hall. Refreshments will be provided and casual networking with company representatives is encouraged! Your conference badge is your ticket to a world of career opportunities.



### Connect with Materials Professionals at MS&T'10!

#### Why Should You Attend the Exhibit?

Business gets done when partners meet face-to-face. Connect with metals and materials vendors at the MS&T'10 exhibit. Bringing together scientists, engineers and suppliers, MS&T helps to shape the future of materials science and technology through product demonstrations, informal networking, and proximity to cutting-edge research presentations. With more than 150 materials science and technology exhibitors participating, this event is a great place to meet a variety of professionals in one place! Expo-only tickets are \$25.

#### New for MS&T'10: Professional Recruitment & Career Pavilion!

Whether you're a job seeker looking for the next step in your career path or an employer looking for top recruits for high-tech positions, the new MS&T Professional Recruitment & Career Pavilion is the place to be.

- **Job Seekers:** Top metals and materials companies will be invited to participate in this career-focused area right on the exhibit floor. Visit the MS&T website for the most up-to-date listing of participating companies.
- **Employers:** There is no better way for companies and universities to target this audience! Reserve a booth in the Professional Recruitment & Career Pavilion to gain premier access to seasoned veterans, young professionals, graduate or post-doc candidates primed for the job market.

#### Why Should Your Company Exhibit?

- **Unique Forum** – Offers you access to thousands of materials professionals
- **Powerful Attendees** – More than 82% of attendees have significant buying power
- **Keep a Pulse on the Industry** – More than 3,300 attendees are expected
- **The MS&T Show Floor Attracts Customers** – 95% of attendees reported spending more than an hour in the exhibit hall at the 2009 event
- **On-Floor Attractions include:**
  - Expert Technical Panel Discussion
  - ASM Mini-Materials Camp
  - Poster Sessions
  - Football Toss
  - Mug Drop and Putting Contests
  - Great Venue and Value – Don't miss the opportunity to get quality leads efficiently

#### Exhibit Hours:

**Tuesday, October 19, 11 a.m. to 6 p.m.**

Posters on Display: 11 a.m. to 6 p.m.

Lunch on the Show Floor: 11 a.m. to 2:30 p.m.

Professional Development & Career Pavilion Happy Hour Reception: 4 to 6 p.m.

**Wednesday, October 20, 10 a.m. to 3 p.m.**

Posters on Display: 10 a.m. to 3 p.m.

Lunch on the Show Floor: 11 a.m. to 2:30 p.m.



#### Contacts:

**Patricia Janeway, ACerS**  
(614) 794-5826  
pjaneway@ceramics.org

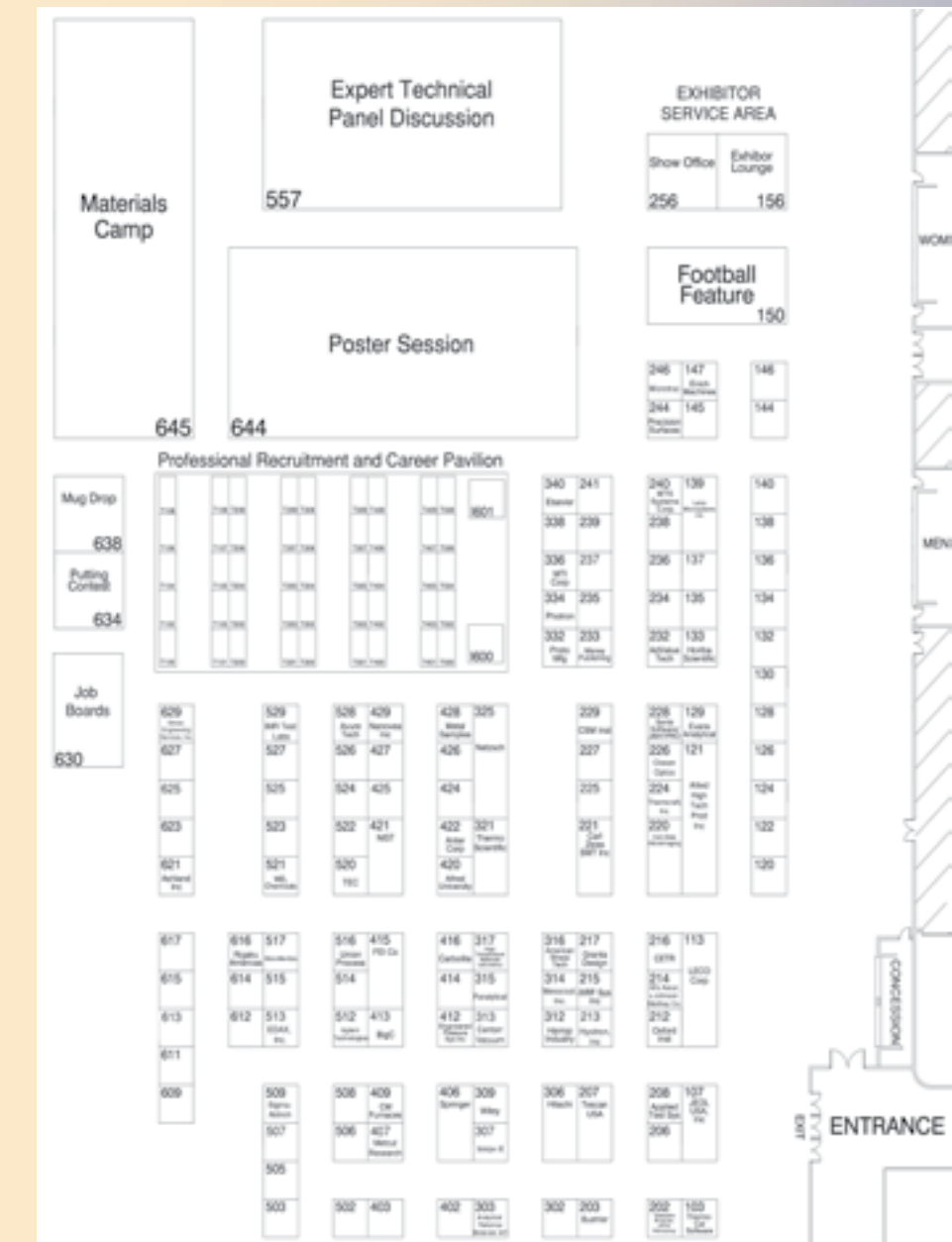
**Jeff Campbell, AIST**  
(724) 814-3030  
jcampbell@aist.org

**Kelly Thomas, ASM**  
(440) 338-1733  
kelly.thomas@asminternational.org

**Trudi Dunlap, TMS**  
(724) 814-3174  
tdunlap@tms.org

#### Exhibitors (as of 6/16/10)

Booth#	Company	Booth#	Company
232	AdValue Technology, LLC	521	MELChemicals
512	Agilent Technologies	314	Mesocoat, Inc.
214	Alfa Aesar, a Johnson Matthey Co.	428	Metal Samples Company
420	Alfred University	407	Metcut Research Inc.
121	Allied High Tech Products, Inc.	517	MicroMeritics Instruments Corporation
316	American Stress Technologies, Inc.	246	Microtrac
303	Analytical Reference Materials International	336	MTI Corporation
422	Anter Corporation	240	MTS Systems Corporation
208	Applied Test Systems	429	Nanovea
621	Ashland Inc.	325	Netzsch Fine Particle Technology LLC
528	Avure Technologies	325	Netzsch Instruments North America LLC
413	BigC	421	NIST
203	Buehler	226	Ocean Optics
416	Carbolite	212	Oxford Instruments
220	Carl Zeiss Microimaging	315	Panalytical
221	Carl Zeiss SMT	334	Photron
313	Centorr Vacuum Industries, Inc.	244	Precision Surfaces Int'l, Inc.
216	CETR	332	Proto Manufacturing, Inc.
409	CM Furnaces	616	Rigaku Americas Corporation
229	CSM Instruments	228	Sente Software Ltd.
513	EDAX, Inc.	509	Sigma-Aldrich
147	Eirich Machines	406	Springer
340	ELSEVIER	629	Stress Engineering Services, Inc.
412	Engineered Pressure Systems, Inc. (EPSI)	520	TEC
129	Evans Analytical Group	207	Tescan USA
415	FEI Company	224	Thermcraft, Inc.
202	Gasbarre Products (PTX-Pentronix)	321	Thermo Scientific
217	Granta Design	103	Thermo-Calc Software
312	Harrop Industries	516	Union Process Inc.
317	High Temperature Materials Laboratory	309	Wiley
306	Hitachi High Technologies America Inc.		
133	Horiba Scientific		
213	Hysitron, Inc.		
529	IMR Test Labs		
307	Innov-X		
215	IXRF Systems, Inc.		
107	JEOL USA Inc.		
228	JMATPRO		
113	LECO Corporation		
233	Maney Publishing		



Visit [www.matscitech.org](http://www.matscitech.org) or contact a representative today!



**Thursday, October 21 1 to 5 p.m.**  
**Friday, October 22 8 a.m. to 5 p.m.**

**Corrosion: The \$460 Billion Problem**  
**Instructor: Thomas Glasgow, John Glenn**  
**Research Center at Lewis Field (Retired)**

**Overview:** Corrosion occurs in all industries from automotive and aerospace to infrastructure, construction, petroleum, power, paper making, food processing, bioengineering, and pharmaceuticals. Corrosion is costly, dangerous, wasteful, and unsightly. It can be predicted, controlled, and even avoided. This short course presents an overview of the eight major corrosion processes and related corrosion monitoring, prediction and control mechanisms. The principles discussed are applicable to all metals. Emphasis is on practical applications of corrosion technology to industrial and infrastructure corrosion problems.

**Learning Objectives:** Upon completion of this course, you should be able to:

- Recognize and identify the active corrosion mechanism by the visual and microstructural characteristics of the corrosion products.
- Recommend effective means of decreasing the occurrence of corrosive degradation
- Describe the electrochemical techniques used to monitor and control the corrosion aqueous process

**Thursday - Friday October 21-22 8 a.m. to 5 p.m.**

**Dynamic Behavior of Structural and Armor Ceramics**  
**Instructor: Ghatu Subhash, University of Florida**

**Overview:** The course will cover projectile impact on armor; threat characteristics & ceramic responses; dynamic fracture, fragmentation and comminution; constitutive models for ceramic fracture under dynamic loads; experimental methods for dynamic response; constitutive response of comminuted ceramics; and design issues in impact-resistant ceramics.

**Learning Objectives:** Upon completion of this course, you should be able to:

- Understand the latest developments in experimental, analytical and numerical modeling of dynamic response of ceramics
- Understand their response under ballistic threats
- Appreciate the relevant issues in impact response of ceramics and be able to utilize this knowledge to better analyze the structural response for dynamic applications.

### Oilfield Metallurgy

**Instructor: Paul Kovach, Stress Engineering Services Incorporated**

**Overview:** The importance of energy to the economy and the reduced availability of fossil fuels as natural resources stimulate an increased emphasis on exploration and recovery of oil and gas from new and existing sources. The materials technology that is necessary for success in the oil patch is the subject of this course, and includes detailed examination of in-service corrosion, materials for drilling production, surface processing, and transport as well as a detailed discussion of failure analysis as applied to materials for use in the oil and natural gas industries. Both offshore and onshore applications are addressed.

**Learning Objectives:** Upon completion of this course, you should be able to:

- Identify suitable materials for use in oil and gas exploration or production
- Identify suitable materials for components used in drilling and production
- Recognize the possibility of in-service corrosion, and recommend preventative measures
- Avoid many of the costly design traps that speed in-service failure
- Perform failure analysis to identify and eliminate the cause of failure

### Sintering of Ceramics

**Instructor: Mohamed N. Rahaman, Missouri University of Science and Technology**

**Overview:** The course will follow the key topics in the text book, Sintering of Ceramics, by M. N. Rahaman, CRC Press and will be supplemented by detailed "case studies" of the sintering of specific ceramics and systems. Topics include review of sintering basics, solid-state and viscous sintering, microstructure development and control, liquid-phase sintering, effect in homogeneities on sintering, solid solutions additives (dopants), viscous sintering with crystallization, and "how to do" sintering.

**Learning Objectives:** Upon completion of this course, you should be able to:

- Do sintering to achieve specified target microstructures
- Understand the difficulties encountered in practical sintering
- Take practical steps to rectify the problems encountered in producing required target microstructures.

### Thermal Spray Technology

**Instructor: Chris Berndt, PhD, FASM, HoF**

**Overview:** Thermal spray technology and coatings provide "solutions" to engineers and scientists for applications that include repair, wear, high temperature and aqueous corrosion, and thermal protection. Processes include plasma spray, twin wire-arc, combustion, high velocity oxy-fuel (HVOF), and cold spray. Virtually any material can be deposited as a surface coating onto a wide range of other materials. This course provides grounding and understanding of thermal spray processes, reviews the basic engineering principles by means of physical models, and integrates this knowledge so that technical solutions to engineering needs may be determined. The mathematical content within this course is restricted to simple explanations of processes or materials/mechanical engineering. Participants are encouraged to contact the instructor prior to the course so that any particular application or problem can be discussed as a case history. Each registrant receives notes and the presentation slides.

**Learning Objectives:** Upon completion of this course, you can successfully:

- Determine the historical basis for thermal spray technology and retain detailed knowledge regarding the development of equipment and materials related to present-day technology
- Recognize the terminology, principles and underlying theory of thermal spray technology

- Compare and contrast thermal spray technologies with respect to competing coating technologies - PVD, CVD, hardfacing, electroplating etc.
- Explain how feedstocks are designed and manufactured and how to select them for different spray processes
- Identify applicable testing methods and currently accepted industrial practices used for quality control of coatings.

**Friday, October 22 8 a.m. to 5 p.m.**

**Basics of Non-Destructive Testing**  
**Instructor: Ron Theiss**

**Overview:** This class is an overview of the common Nondestructive Testing Methods. The class includes Liquid Penetrant Testing, Magnetic Particle Testing, Ultrasonic Testing, and Radiographic Testing

**Learning Objectives:** Upon completion of this course, you can successfully:

- Discuss the common nondestructive testing methods used in industry
- Recognize those methods which are volumetric and which are surface methods
- Determine which method/methods are best suited for detecting which type of discontinuity
- Describe clearly how each method works
- Recognize the strengths and weaknesses of each method

### Microstructures 101 and Beyond

**Instructor: Frauke Hogue, Hogue Metallography, Pacific Palisades, CA**

**Overview:** Do you interpret microstructures on a regular basis for quality control, failure analysis or research? Are you just curious about what the structures mean that you have been seeing all these years or is metallography a new field for you? This class is for you! The focus is on practical interpretation, NOT theory, phase diagrams, and thermodynamics. There are no prerequisites. We will look at slides of over 100 microstructures and find out and discuss what each structure tells us about the type of material, manufacturing methods used, heat treatment, mechanical properties, and sometimes even failure modes.

The class is divided into several segments including:

- Basic Structures – Illustrating the correct terminology used to describe structures, such as IGC, equiaxed, cold worked, coring, etc.
- Carbon and Alloy Steels – Learn to identify untempered martensite, retained austenite, bainite, influence of cooling rates, and heat treatment on microstructures
- Stainless Steels – Ferritic, martensitic, austenitic, duplex, and precipitation hardening stainless steel structures, sensitization, delta ferrite, wrought, and cast materials
- Superalloys – Co-, Ni- and Fe/Ni-base alloys, wrought, cast, single phase, incipient melting
- Titanium Alloys – Commercially pure Ti, Ti 6Al-4V, beta alloys, alpha case, over heating, primary alpha, hydride
- Manufacturing Methods – Welding, brazing, soldering, EDM, powder metallurgy, plating, thermal spray coatings, cold forming, forging.

## Tour Registration Form

**Deadline: October 11, 2010**

### Reservation Deadline

Due to limited capacities, registrations will be accepted on a first-come, first-serve basis and must be received by **Monday, October 11, 2010**. Onsite registrations will not be offered. To cancel your tour registration and receive a full refund, you must cancel in writing before October 8, 2010. Destination Houston will charge a \$15.00 cancellation fee for all cancelled tour registrations.

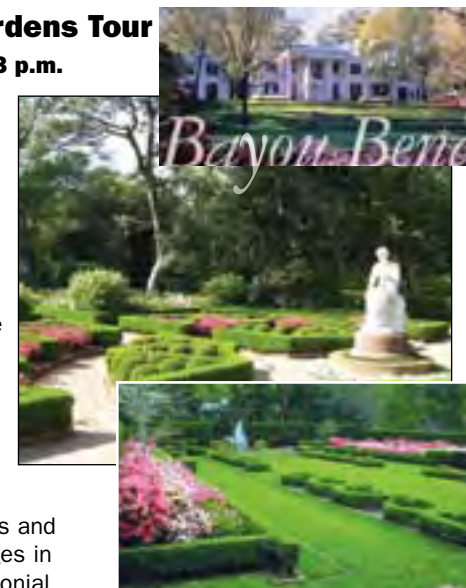
### Bayou Bend – Collection & Gardens Tour

**Tuesday, October 19, 2010 • 11 a.m. to 3 p.m.**

**Description:** Nestled on 14 rolling, wooded acres in the posh River Oaks area, Bayou Bend was the sanctuary from the hustle and bustle of the big city for local philanthropist Ima Hogg. It now serves as the decorative arts wing of the Museum of Fine Arts, Houston. Architect John Staub built Hogg's pink stucco dream home with the idea of "... adding pleasure to living." His innovative design is carried through into the nine surrounding gardens. Gracious and beautiful, Hogg intended that they be used as outdoor "rooms" for living and entertaining. The interior of the house borrows heavily from Northern architectural traditions. An ideal setting for Hogg's extensive collection of arts and antiques, 28 room settings depict the changes in America's taste, style and customs from Colonial times to the Victorian era. Miss Hogg passed away in 1975 after generously bequeathing her home and estate to the Houston Museum of Fine Arts. Art historians rank the Hogg collection of American silver, ceramics, furniture, paintings, and works on paper, glass and textiles, among the nation's finest. A visit to Bayou Bend Collection and Gardens is like stepping through a doorway to our past.

**Note:** Boxed lunch and beverage included in tour. Tour departs from the Hilton Americas East Lobby; please arrive 15 minutes before the scheduled departure time for boarding; tour departs on time; no refunds for missed tours. Onsite registrations will not be offered.

**Liability Waiver:** I agree and acknowledge that I am undertaking such participation in tours, events and activities of my own free will and intentional act, and I am aware that possible physical injury might occur to me as a result of my participation in these tours, events and activities. I give this acknowledgement freely and knowingly, and certify that I am, as a result, able to participate in these tours, events and activities and do hereby assume responsibility for my own well-being. I also agree not to allow any other individual to participate in my place. MS&T and Destination Houston are not liable for recovering any lost items while participating in the tour. All personal belongings are the responsibility of the individual.



### Tour Participant Information (one person per form):

Last Name \_\_\_\_\_ Middle Initial \_\_\_\_\_  
 First Name \_\_\_\_\_  
 Street Address \_\_\_\_\_  
 City \_\_\_\_\_ State/Province \_\_\_\_\_  
 Zip+4/Postal Code \_\_\_\_\_ Country \_\_\_\_\_  
 Daytime Phone \_\_\_\_\_ Fax \_\_\_\_\_  
 Cell Phone (to use onsite if needed) \_\_\_\_\_  
 E-mail \_\_\_\_\_  
 Person to contact in case of emergency \_\_\_\_\_  
 Phone \_\_\_\_\_

**Check box if you have special needs:** Please attach a written description of your disability and/or diet-related needs to this registration form. We cannot assure the availability of appropriate accommodations without prior notification of need.

**Lunch** – Please select which type of sandwich you would prefer for lunch:

- Turkey  Ham  Roast Beef  Vegetarian

**Payment Information:** Please fax or mail this form with full payment of **\$87.00** to:

Destination Houston – MS&T Convention, 912 Prairie Street, Houston, TX 77002  
 Fax: (713) 227-8303 Phone: (713) 227-8300

**Method of Payment:**  VISA  MasterCard  American Express  Discover  Check

Name on Card (please print) \_\_\_\_\_

Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

Card ID Number \_\_\_\_\_

For VISA and MasterCard – the last three or four numbers on the back on the signature line

For American Express – printed four numbers on the front over the last four embossed numbers

Cardholder Address (if different from above) \_\_\_\_\_

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_

For Checks – Reference #JACT-1001 in the memo.

**Terms and Conditions:** Tours are under the guidance of Destination Houston. The tour description is representative of the tour. Destination Houston reserves the right to alter the tour and provide equitable substitution when necessary as well as cancel the tour if minimum number of registrants is not met or if an attraction becomes unavailable for reasons beyond the control of Destination Houston.



### Hotel Options

Reserve your room through the **Greater Houston Convention and Visitors Bureau** at one of the official conference hotels in downtown Houston where MS&T has arranged for attendee discounted rates. Please note that MS&T has assumed a financial liability for any and all hotel rooms in blocks that are not reserved. We ask that you kindly reserve your room at one of the hotels listed below in order to limit our financial liability for the overall success of the meeting. Thank you for your cooperation!

#### Hilton Americas Houston

Attached to Convention Center. ACerS, AIST, ASM and TMS headquarters hotel

#### Alden Houston Hotel

8 blocks from Convention Center

#### Inn at the Ballpark

2 blocks from Convention Center

#### Courtyard Houston Downtown/Convention Center

6 blocks from Convention Center

#### Residence Inn by Marriott Houston-Downtown

6 blocks from Convention Center

**Reserve your room online at [www.matscitech.org](http://www.matscitech.org)**

### Transportation

Traveling to Houston has never been easier. As the fourth largest U.S. airport system and sixth largest in the world, the Houston Airport System is made up of George Bush Intercontinental Airport (20 miles from downtown Houston) and William P. Hobby Airport (11 miles from downtown Houston), which serves about 180 cities worldwide.

#### Airport Shuttle Service

SuperShuttle provides ground transportation services at both George Bush Intercontinental and William P. Hobby Airports.

Advance reservations are requested, but are not required for service from either airport. Please note; however, that advance reservations are required for the return trip from your hotel to the airport.

For reservations or for more information call (713) 523-8888 or visit [www.supershuttle.com](http://www.supershuttle.com).

#### Taxi Service

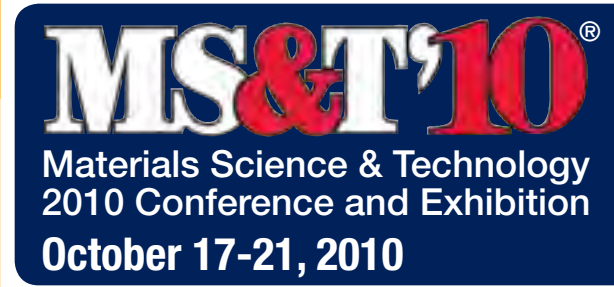
The average taxi fare from the Bush Intercontinental Airport to downtown Houston is \$45 and from Hobby Airport is \$22.

#### Car Rental

Special discounted rates have been arranged with Hertz. Call Hertz directly at (800) 654-2240 or reserve your car online at [www.hertz.com](http://www.hertz.com) and reference the MS&T Conference discount number **CV#01YS0002** to receive your special car rental rates.

#### Driving Directions to the George R. Brown Convention Center

The George R. Brown Convention Center is located in the heart of downtown Houston at 1001 Avenida de las Americas. Visit [www.matscitech.org](http://www.matscitech.org) for detailed driving directions to the Center.



## Official Housing Form

**Reservation Deadline: September 24, 2010**

**Instructions:** Submit one form for each room requested. For best availability and immediate confirmation, make your reservation online. Confirmation for other reservations may take up to 10 days. No reservations by phone.  
**Web:** [www.matscitech.org](http://www.matscitech.org) **Fax:** (713) 227-6331  
**Mail:** Houston/MS&T Housing Bureau; 901 Bagby Street, Suite 100; Houston, TX 77002

### Guest Information

Arrival Date \_\_\_\_\_ Departure Date \_\_\_\_\_  
 Surname \_\_\_\_\_  
 First Name \_\_\_\_\_ Middle Initial \_\_\_\_\_  
 E-mail Address (to receive confirmation) \_\_\_\_\_  
 Daytime Phone \_\_\_\_\_ Fax \_\_\_\_\_  
 Company \_\_\_\_\_  
 Street Address or P.O. Box \_\_\_\_\_  
 City \_\_\_\_\_ State/Province \_\_\_\_\_  
 Zip+4/Postal Code \_\_\_\_\_ Country \_\_\_\_\_

**Hotel Selection:** Indicate 1st, 2nd and 3rd choice and circle applicable rate.

	Single	Double	Db/Db	Triple	Quad	Govt. Rate*	Govt. Rate*
	1 bed/ 1 pers	1 bed/ 2 ppl	2 beds/ 2 ppl	2 beds/ 3 ppl	2 beds/ 4 ppl	Single	Double
<b>Hilton Americas**</b>	\$189	\$189	\$189	\$214	\$239	\$118	\$118
<b>Alden</b>	\$179	\$179	\$179	\$179	\$179	\$118	\$118
<b>Inn at the Ballpark</b>	\$179	\$179	\$179	\$179	\$179	\$118	\$118
<b>Courtyard by Marriott</b>	\$160	\$162	\$162	\$162	\$162	\$118	\$118
<b>Residence Inn by Marriott</b>	\$165	\$165	\$165	\$165	\$165	\$118	\$118

**Notes:** Rates are per room and do not include 17% tax.  
 \*Government rooms are extremely limited; proof of federal government employment must be shown at check-in or higher rate will be charged. Government rate is the prevailing government rate as of 10/1/09.  
 \*\*The Hilton Americas Hotel is the official headquarters hotel for ACerS, AIST, ASM & TMS

**List all room occupants including yourself (maximum of four);**

1. \_\_\_\_\_ 3. \_\_\_\_\_  
 2. \_\_\_\_\_ 4. \_\_\_\_\_

**Check here if you have a disability requiring special services:** \_\_\_\_\_

**For reservations at Alden, Hilton and Inn at the Ballpark, please indicate:**  
 Nonsmoking  Smoking  No Preference  
 Other hotels are smoke-free.

**Deposit**  
 Reservation requests must be accompanied by credit card information to guarantee the reservation.  
 Forms received without valid credit card information will not be processed.  
 At the earliest, your credit card will not be charged the first night's deposit until September 24, 2010.

American Express  MasterCard  VISA  Discover  Diners Club

Card # \_\_\_\_\_ Exp. Date \_\_\_\_\_  
 Cardholder Name (please print) \_\_\_\_\_  
 Signature \_\_\_\_\_

Cardholder Billing Address \_\_\_\_\_  
 City \_\_\_\_\_ State/Province \_\_\_\_\_  
 Zip+4/Postal Code \_\_\_\_\_ Country \_\_\_\_\_

**Need to check, change or cancel reservation?** E-mail [housing@ghcvb.org](mailto:housing@ghcvb.org), or visit [www.matscitech.org](http://www.matscitech.org), through 9/24/10. After that date, contact hotel directly.

**Have questions?** Call (888) 508-5731, 8:00 am to 4:00 pm CST weekdays, or e-mail [housing@ghcvb.org](mailto:housing@ghcvb.org), through 9/24/10.

**Cancellation Policy:** Reservations cancelled less than 72 hours prior to noon of scheduled arrival date will be charged one night rate and tax.



Register before September 24, 2010 and save as much as \$175!

### MS&T Registration includes:

- Welcome Reception (Sunday)
- MS&T Technical Sessions (Monday – Thursday)
- MS&T Proceedings CD-ROM
- MS&T Exhibition & Poster Session
- Professional Development & Career Pavilion Happy Hour Reception (Tuesday)
- Discounted Lunch in Exhibit Hall (Tuesday – Wednesday)
- Exhibition Contests and Activities
- Complimentary Memberships in ACerS, AIST, ASM, TMS (for non-members only)

### Three Ways to Register:

- Online at [www.matscitech.org](http://www.matscitech.org)
- Mail the enclosed registration form with payment
- Fax the enclosed registration form with credit card information

Registration cannot be processed without full payment. Advance registrants will receive an e-mail confirmation when their registration is processed.

### Badge Pick-up and On-site Conference Registration

The MS&T Conference Registration Desk will be located on the 3rd floor of the George R. Brown Convention Center. Advance registrants may pick-up badges at the registration area during the following hours:

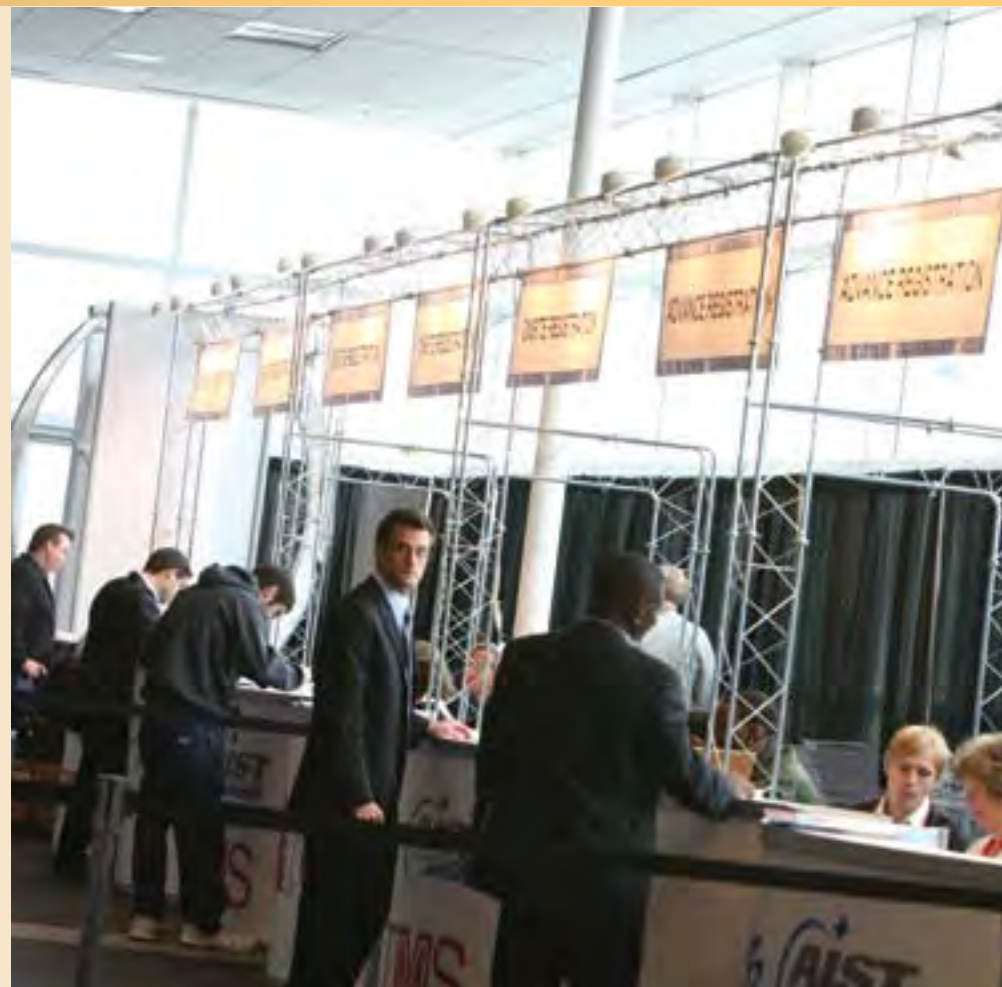
Sunday, October 17	2 to 7:30 p.m.
Monday, October 18	7 a.m. to 5 p.m.
Tuesday, October 19	7 a.m. to 6 p.m.
Wednesday, October 20	7 a.m. to 5 p.m.
Thursday, October 21	7 a.m. to 2 p.m.

### Cancellation Policy

Registration fees will be refunded, less a \$50 service fee, after the close of the event if a written request is received on or before September 24. After September 24, no refund requests will be granted. Send all written requests to MS&T, c/o Registration Control Systems; 1833 Portola Rd., Suite D, Ventura, California 93003.

### Americans with Disabilities

In accordance with the American with Disabilities ACT (ADA) of 1990, ACerS, AIST, ASM, TMS, NACE, the George R. Brown Convention Center and all conference hotels are striving to accommodate all guests with special needs. If you require access to modified housing, transportation, or other assistance, please provide this information in detail on both your registration and housing forms.



### Audio and Visual Recording of Technical Paper Presentations and Sessions

ACerS, AIST, ASM, TMS and NACE reserve the right to any still photography, audio and video reproductions of presentations at every technical session. Recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright without the express written consent of MS&T and the individual authors is strictly prohibited.

## Registration Form

Advance Deadline:  
September 24, 2010

Register online at [www.matscitech.org](http://www.matscitech.org)

If you are unable to register online, please mail or fax this form to:

MS&T, c/o Registration Control Systems; 1833 Portola Rd., Suite D, Ventura, California 93003  
Phone: (805) 677-4297 Fax: (805) 654-1676 Email: [mst2010@rcsreg.com](mailto:mst2010@rcsreg.com)

### 1. CONTACT INFORMATION (Please print or type.)

Member ID# \_\_\_\_\_  ACerS  AIST  ASM  NACE  TMS  Material Advantage  
 Mr.  Ms.  Mrs.  Dr.  Prof.  Business Address  Home Address  
 Surname \_\_\_\_\_ First Name \_\_\_\_\_ Middle Initial \_\_\_\_\_  
 Job Title \_\_\_\_\_  
 Company/School \_\_\_\_\_  
 Street Address or P.O. Box \_\_\_\_\_  
 Dept./M.S. \_\_\_\_\_  
 City \_\_\_\_\_ State/Province \_\_\_\_\_  
 Zip+4/Postal Code \_\_\_\_\_ Country \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_  
 E-mail \_\_\_\_\_  
 Person to contact in case of emergency \_\_\_\_\_ Phone \_\_\_\_\_  
 Special Requirements \_\_\_\_\_

### 2. REGISTRATION

	ADVANCE FEES on or before 09/24/10	ON-SITE FEES After 09/24/10
<b>Full Conference</b>		
<input type="checkbox"/> Member	<input type="checkbox"/> \$575	\$675
<input type="checkbox"/> Nonmember	<input type="checkbox"/> \$725 <sup>1</sup>	\$850 <sup>1</sup>
<b>Participant</b>		
<input type="checkbox"/> Participant (Speaker, Organizer, Session Chair) Member	<input type="checkbox"/> \$525	\$625
<input type="checkbox"/> Participant (Speaker, Organizer, Session Chair) Nonmember	<input type="checkbox"/> \$675 <sup>1</sup>	\$800 <sup>1</sup>
<b>Student</b>		
<input type="checkbox"/> Student Member	<input type="checkbox"/> \$75 <sup>2,4</sup>	\$100 <sup>2,4</sup>
<input type="checkbox"/> Student Nonmember	<input type="checkbox"/> \$100 <sup>2,3</sup>	\$125 <sup>2,3</sup>
<input type="checkbox"/> Student Member Participant (Speaker, Organizer, Session Chair)	<input type="checkbox"/> \$50 <sup>2,4</sup>	\$75 <sup>2,4</sup>
<input type="checkbox"/> Student Nonmember Participant (Speaker, Organizer, Session Chair)	<input type="checkbox"/> \$75 <sup>2,3</sup>	\$100 <sup>2,3</sup>
<b>1-Day</b>		
<input type="checkbox"/> Member	<input type="checkbox"/> \$425	\$600
<input type="checkbox"/> Nonmember (Day Attending) _____	<input type="checkbox"/> \$575	\$800
<input type="checkbox"/> MS&T Exhibit Only	<input type="checkbox"/> \$25	\$25
<b>Registration Total \$</b>		

<sup>1</sup> Nonmember fee includes a complimentary one-year membership to registrant's choice of one or more organizations: ACerS, AIST, ASM, and TMS.

<sup>2</sup> To qualify for the student rate, registrant must provide student I.D.

<sup>3</sup> Nonmember student fee includes a complimentary one-year membership in Material Advantage (ACerS/AIST/ASM/TMS joint student program).

<sup>4</sup> Rate applies to Material Advantage and NACE student members.

### 3. COMPLIMENTARY MEMBERSHIPS

Nonmember registrants should select the organization(s) to which they would like to receive complimentary one-year membership:  ACerS  AIST  ASM  TMS (NOTE: Nonmember students receive complimentary membership in Material Advantage.)

### 4. LUNCHEONS & SOCIAL FUNCTIONS AND WORKSHOPS

ASM International Leadership Awards Luncheon (Monday, October 18)	\$35 x _____	tickets = \$ _____
The American Ceramic Society Awards Banquet (Monday, October 18)	\$80 x _____	tickets = \$ _____
Professor Reza Abbaschian Honorary Symposium Dinner (Monday, October 18)	\$60 x _____	tickets = \$ _____
TMS Young Leader Tutorial Lecture [Box Lunch for Purchase] (Tuesday, October 19)	\$35 x _____	tickets = \$ _____
ASM International Awards Banquet (Tuesday, October 19)	\$80 x _____	tickets = \$ _____

Luncheon/Social Functions Total \$ \_\_\_\_\_

### 5. SHORT COURSES

#### Two-Day (Thursday, October 21 - Friday, October 22)

<input type="checkbox"/> Corrosion – The \$460 Billion Problem (1 p.m. to 5 p.m./8 a.m. to 5 p.m.)	<input type="checkbox"/> Member \$650	<input type="checkbox"/> Nonmember \$740	<input type="checkbox"/> Student \$199
<input type="checkbox"/> Dynamic Behavior of Structural and Armor Ceramics (8 a.m. to 5 p.m.)	<input type="checkbox"/> Member \$675	<input type="checkbox"/> Nonmember \$765	<input type="checkbox"/> Student \$225
<input type="checkbox"/> Oilfield Metallurgy (8 a.m. to 5 p.m.)	<input type="checkbox"/> Member \$675	<input type="checkbox"/> Nonmember \$765	<input type="checkbox"/> Student \$225
<input type="checkbox"/> Sintering of Ceramics (8 a.m. to 5 p.m.)	<input type="checkbox"/> Member \$675	<input type="checkbox"/> Nonmember \$765	<input type="checkbox"/> Student \$225
<input type="checkbox"/> Thermal Spray Technology (8 a.m. to 5 p.m.)	<input type="checkbox"/> Member \$675	<input type="checkbox"/> Nonmember \$765	<input type="checkbox"/> Student \$225

#### One-Day Only (Friday, October 22)

<input type="checkbox"/> Microstructures 101 and Beyond (8 a.m. to 5 p.m.)	<input type="checkbox"/> Member \$495	<input type="checkbox"/> Nonmember \$585	<input type="checkbox"/> Student \$125
<input type="checkbox"/> Basics of Non-Destructive Testing (8 a.m. to 5 p.m.)	<input type="checkbox"/> Member \$495	<input type="checkbox"/> Nonmember \$585	<input type="checkbox"/> Student \$125

Note: Registration fees will increase \$100 after September 24, 2010.

Short Course Total \$ \_\_\_\_\_

### 6. PROCEEDINGS (Full conference and participant registrants receive a copy of the Proceedings on CD.)

Additional attendee copies of MS&T'10 Proceedings on CD	\$195 x _____ copies = \$ _____
Additional student copies of MS&T'10 Proceedings on CD	\$75 x _____ copies = \$ _____

Proceedings Total \$ \_\_\_\_\_

### 7. RENEW SOCIETY MEMBERSHIP

If you are currently a member, or your membership has expired, renew your membership here.  
 ACerS \$120  AIST \$100  ASM \$103  TMS \$115  
 Material Advantage \$25

Membership Renewal Total \$ \_\_\_\_\_

### 8. STUDENT REGISTRATION INFORMATION

Degree Pursuing: \_\_\_\_\_  
 Anticipated Graduation Date: \_\_\_\_\_

### 9. METHOD OF PAYMENT (All payments must be in U.S. dollars.) Registrations will only be processed with full payment.

Check enclosed Check # \_\_\_\_\_ (Make check payable to MS&T.)  
 MasterCard  VISA  American Express  Discover

Grand Total \$ \_\_\_\_\_

Cardholder Name \_\_\_\_\_

Card # \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

Cancellation Policy: Registration fees will be refunded after the close of the event if a written request is received on or before September 24 less a \$50 service fee. After September 24, no refund requests will be granted. Send all written requests to MS&T, c/o Registration Control Systems; 1833 Portola Rd., Suite D, Ventura, California 93003. MS&T management reserves the right to amend this program as necessary.



# ADVANCE PROGRAM

# MS&T'10<sup>®</sup>

Materials Science & Technology  
2010 Conference & Exhibition

October 17-21, 2010 | Houston, TX USA

## Register by September 24 to save up to \$175!

600 N. Cleveland Ave., Suite 210  
Westerville, Ohio 43082 USA



[www.matscitech.org](http://www.matscitech.org)