

# TMS 2002

FALL MEETING

TMS Fall Meeting 2002  
October 6-10, 2002  
Greater Columbus Convention Center  
Crowne Plaza Hotel – TMS Headquarters  
Columbus, Ohio, USA

## BLAST OFF!

Sponsored by TMS  
EMPMD (Electronic, Magnetic, & Photonic Materials Division)  
MPMD (Materials Processing & Manufacturing Division)  
SMD (Structural Materials Division)  
and ASM-MSCTS (Materials Science Critical Technology Sector)

*The TMS 2002 Fall Meeting is held in conjunction with the ASM Materials Solutions Conference & Exposition and ASM International Surface Engineering Congress & 13th International Federation for Heat Treatment and Surface Engineering Congress*

**ADVANCE PROGRAM**  
HOUSING & REGISTRATION FORMS INCLUDED



7  
MONTHS

6  
MONTHS

5  
MONTHS

4  
MONTHS

3  
MONTHS

2  
MONTHS

1  
MONTHS

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MONTHS

## Getaway to Columbus

While in Columbus for the TMS 2002 Fall Meeting, don't forget to visit some of the great attractions the area has to offer!

### COLUMBUS MUSEUM OF ART

The Columbus Museum of Art features works from an outstanding collection of impressionists, German expressionists, cubists, American modernists, and contemporary artists, including works by Degas, Monet, Matisse, Picasso, Bellows, Demuth, Hopper, Marin and O'Keeffe. Highlights include the Russell Page Sculpture Garden and the Ross Photography Center.

### COLUMBUS ZOO AND AQUARIUM

Playing host to more than 2.5 million visitors each year, the Columbus Zoo and Aquarium has received national recognition for its success in breeding cheetahs and lowland gorillas, and for having the country's largest collection of reptiles. The Manatee Coast, a \$10 million mangrove waterway habitat that holds 190,000 gallons of water, various fish and turtle species, and three manatees, opened in 1999. Currently under construction are the Australia and the Islands projects, which will feature animals from Australia and the islands of Southeast Asia.

### JACK NICKLAUS MUSEUM

Opening in the spring of 2002, just miles from where Nicklaus grew up, the Jack Nicklaus Museum will include interactive exhibits and memorabilia documenting Nicklaus' career as a golfer, golf course designer, businessman, and family man. Highlights include a series of exhibits that chronicle Nicklaus' playing career through his performance in the sport's five major championships – the Masters, U.S. Open, British Open, PGA Championship and U.S. Amateur.

### NATIONWIDE ARENA/ARENA DISTRICT

Nationwide Arena, a 20,000-seat, multi-purpose arena, opened in September 2000 as the home of the Columbus Blue Jackets. The facility, located in downtown Columbus, also hosts an array of concerts and family entertainment events. The arena is the only facility in the National Hockey League with an attached practice facility. The Arena District, a 95-acre planned development, surrounds the arena. It features restaurants, nightclubs and office space, as well as the Arena Grand Theatre, an upscale first-run movie theater, and the PromoWest Pavilion, an indoor/outdoor music hall styled after the House of Blues.

# COUNTDOWN TO COLUMBUS

### COSI COLUMBUS

COSI Columbus, the city's interactive science center, is located in a 300,000-square-foot building that is more than five times larger than the White House. World-renowned architect Arata Isozaki designed the new building, which features eight "Learning Worlds" where visitors can experience hands-on activities that make science understandable and fun. The Learning Worlds are Ocean, Adventure, KidSpace, Progress, I/O, Gadgets, Life and Space. COSI also features a seven-story Extreme Screen Theater and a 21<sup>st</sup> century planetarium. COSI's president is former astronaut Kathryn D. Sullivan. This year's featured traveling exhibit is "The Hundred Languages of Children," which documents the work of children from a preschool in Italy. It will be on display through Dec. 31, 2002.

### GERMAN VILLAGE/BREWERY DISTRICT

As the largest privately restored historic district in the United States, German Village features quaint homes, gardens, shops, and galleries along brick-lined streets. Popular German Village attractions include Schiller Park, Schmidt's Restaurant & Sausage Haus and the 32-room Book Loft. The adjacent Brewery District, one of the city's top entertainment districts, is chock full of bars, nightclubs and restaurants.

### SCHOTTENSTEIN CENTER/OHIO STADIUM

The Schottenstein Center, a 20,000-seat multi-purpose arena opened in October 1998, is home to The Ohio State University men's and women's basketball teams, the men's ice hockey team and a variety of other sporting events, concerts and shows. The football team plays its home games in the recently renovated Ohio Stadium, one of the largest in college football. Ohio State fields teams in more than 30 sports.

*TMS would like to thank the Greater Columbus Convention and Visitors Bureau for providing the photograph and city information.*

**For more information visit the greater Columbus convention and visitors bureau online at <http://www.VisitColumbus.org> or call 1-800-345-4FUN.**



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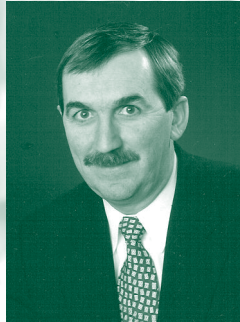
# Table of Contents

Special Events.....	4
Distinguished Lectureship in Materials & Society.....	4
Opportunities and Issues in Homeland Security.....	5
Technical Program.....	6
Symposia Highlights.....	6
Grid.....	8
Students.....	9
Student Career Forum.....	9
Student Faculty Mixer.....	9
Graduate Student Leaders Meeting.....	9
Young Leaders Tutorial Luncheon Lecture.....	9
Student Session Monitors.....	9
Registration, Hotel & Travel.....	10
Meeting Registration.....	10
Advance.....	10
On-site.....	10
Housing.....	10
Travel Information.....	11
Air Travel.....	11
Car Rental.....	11
General Information.....	12
Authors' Coffee.....	12
Poster Session.....	12
Receptions.....	12
TMS Membership.....	13
TMS Publications.....	20

# Announcing Two Special Events ...

## *Distinguished Lectureship in Materials & Society directly followed by Special Homeland Security Technical Session*

### ASM/TMS DISTINGUISHED LECTURESHIP IN MATERIALS AND SOCIETY



October 9, 2002  
12:45 PM – 1:45 PM  
Greater Columbus  
Convention Center  
Room D 131-132

**Duncan T. Moore**  
Rudolf and Hilda Kingslake  
Professor of Optical  
Engineering  
*University of Rochester*

**Biography:** Dr. Moore is the Rudolf and Hilda Kingslake Professor of Optical Engineering and Professor of Biomedical Engineering at the University of Rochester. He is also Special Assistant to the University President and Executive Director of the University, Industry and Government Partnership for Advanced Photonics. Previously, from 1995 until the end of 1997, he served as Dean of Engineering and Applied Sciences at the University.

In 1996, Dr. Moore also served as President of the Optical Society of America (OSA), a professional organization of 12,000 members worldwide. From January 2001 to the present, he has served as Senior Science Advisor at OSA.

The U.S. Senate confirmed Dr. Moore in the fall of 1997 for the position of Associate Director for Technology in The White House Office of Science and Technology Policy (OSTP). In this position, which ended December 2000, he worked with Dr. Neal Lane, President Clinton's Science Advisor, to advise the President on U.S. technology policy, including the Next Generation Internet, Clean Car Initiative, elder tech, crime tech, and NASA. From January through May 2001, Dr. Moore served as Special Advisor to the Acting Director of OSTP.

The PhD degree in Optics was awarded to Dr. Moore in 1974 from the University of Rochester. He had previously earned a master's degree in Optics at Rochester and a bachelor's degree in Physics from the University of Maine.

Dr. Moore has extensive experience in the academic, research, business, and governmental arenas of science and technology. He is an expert in gradient-index optics, computer-aided design, and the manufacture of optical systems. He has advised nearly 50 graduate thesis students. In addition, Dr. Moore began a one-year appointment as Science Advisor to Senator John D. Rockefeller IV of West Virginia in 1993. He also chaired the successful Hubble Independent Optical Review Panel organized in 1990 to determine the correct prescription of the Hubble Space Telescope. Dr. Moore is also the founder and former president of Gradient Lens Corporation of Rochester, NY, a company that manufactures the high-quality, low-cost Hawkeye boroscope.

Dr. Moore was elected to the National Academy of Engineering in February 1998. He has been the recipient of the Science and Technology Award of the Greater Rochester Metro Chamber of Commerce (1992), Distinguished Inventor of the Year Award of the Rochester Intellectual Property Law Association (1993), Gradient-Index Award of the Japanese Applied Physics Society (1993), and an Honorary Doctor of Science degree from the University of Maine (1995). In 1999, he received the National Engineering Award of the American Association of Engineering Societies and also was recognized as the Engineer of the Year by the Rochester Engineering Society. Most recently, he was the recipient of the 2001 OSA Leadership Award.

#### **Topic:** *Continued Economic Growth and its Barriers*

**Abstract:** The United States of America has had incredible growth during the last decade. Much of it has been fueled by the investments that we have made in science and technology. An issue is how we sustain this growth. This has become even more critical with the recent events in the United States. The lack of science and math teachers in the K-12 education system has been identified by the Council of Competitiveness as a barrier to continued economic growth. A second barrier may be the lack of sufficient numbers of technically trained workers. A comparison between the U.S. and other countries will be made.



**The TMS Public & Governmental Affairs Committee and the ASM International Federal Affairs Committee announce a special plenary presentation...**

**OPPORTUNITIES AND ISSUES IN HOMELAND SECURITY**

Wednesday, October 9, 2002  
2:00 PM • Immediately following the ASM/TMS  
Distinguished Lectureship in Materials & Society  
Greater Columbus Convention Center, Room D 131-132

Homeland security has become a driving need for the US government, for our transportation infrastructure, for industrial concerns, and even for private citizens. The opportunities for research, development, and application of materials and processes to improve homeland security are extensive. However, the difficulties in identifying the right insertion points and the logistics of working with uncertain security constraints may limit access to these opportunities. This session is intended to articulate and discuss these issues.

**Scheduled presentations:**

***Fifty Years of Defending the Nation at Home and Abroad***

Presented by: **Alton D. Romig, Jr.,**  
*Sandia National Laboratories*

Since WW II, US Department of Energy laboratories have played key roles in defending our nation. The National Nuclear Security Administration (NNSA) laboratories (Sandia, Los Alamos, and Lawrence Livermore National Laboratories) were scientific and technical cornerstones of the US success in prevailing during the Cold War. Recently these labs have been major players in the nation's efforts to combat terrorism and secure our homeland. This lecture will present unclassified activities within the NNSA laboratories, especially Sandia. Laboratory technology in the Afghanistan theater has enabled locating, tracking, and incapacitating Taliban and Al Qaeda facilities and forces. At home, technology has been deployed to detect chem-bio agents. Other technologies have been developed to mitigate these agents in the event of their use. For example, working with the US Postal Service, Sandia deployed technology to decontaminate mail in Washington, DC, and a Sandia-developed foam was used to treat several facilities contaminated with anthrax.

***Development of the Fortress/067/Door – Cockpit Security***

Presented by: **David R. Williams,**  
*Alcoa*

Alcoa has been an historic leader in the development and processing of aerospace metallics, primarily aluminum, from the beginning of manned flight through the current generation of commercial and military aircraft and space vehicles. The presentation will provide an overview of how Alcoa has continued to expand its global materials development, concurrent design, test and characterization and advanced manufacturing capabilities through both acquisition and internal growth. The talk will further discuss how Alcoa has brought those capabilities to bear on the critical issue of domestic security, and the new markets and new opportunities that Alcoa is pursuing and developing. The talk will concentrate on a specific example: the development of the Fortress//067/ door, a reinforced flight deck door for the commercial aerospace industry. It will explore the product development challenges and issues, and the organizational challenges Alcoa faced including: a market in which Alcoa had not participated; new customers; government regulatory requirements; business unit sponsorship; significant time constraints; and, resources and capabilities that were diverse, scattered, and unaccustomed to working together.

***The Role of Universities in Homeland Defense***

Presented by: **Jim Williams,**  
*Ohio State University*

The events of September 11, 2001 have created a heightened interest and need for innovative ways to protect the people of the US and, concurrently, minimize the degree to which their personal freedom is compromised. Achieving these two objectives simultaneously will require true innovation because new approaches to achieving security will be necessary. This begs the question, how will we meet his challenge and where will this innovation originate? A possibility is that a and major source of non-aligned technical and scientific talent is represented by faculty students in the research universities of this country. Engaging this talent pool in a productive manner to achieve the desired innovation creates some interesting challenges, many of which are non-technical. Included will be handling intellectual properties, restriction on access to sensitive data and information and the multi-national character of the talent pool at all universities. This talk will describe some of these challenges and offer some suggestions regarding ways to proceed.

**Also scheduled to present:**

**Warren Schultz,**  
*US Navy Research Laboratory*

and

**Lewis E. Slotter,**  
*US Department of Defense*



# SYMPOSIA HIGHLIGHTS

## ASSESSMENT OF MATERIALS ENGINEERING PROGRAMS (EC 2000)

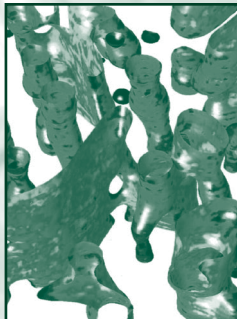
*Sponsored by: TMS-Education Committee*

EC 2000 requires new assessment procedures. This symposium will include presentations on preparing to meet the various ABET requirements and the experience of accreditation visits.

## CHARACTERIZATION AND REPRESENTATION OF MATERIAL MICROSTRUCTURES IN 3-D

*Sponsored by: Structural Materials Division*

This symposium will address recent advancements in the development of methods to characterize, quantify, and visualize experimentally determined microstructures in three dimensions (3-D). Topics to be covered include (but are not limited to) experimental methods for characterizing microstructures in 3-D, such as Microstructural reconstruction via serial sectioning, 3-D atom probe, and x-ray tomography; stereology, quantitative microscopy, or parameterization of microstructural features in 3D; computer visualization methods for material microstructure in 3-D; and the mathematical representation and reconstruction of microstructural features.



## CHEMISTRY OF MIGRATING BOUNDARIES

*Sponsored by: ASM International: Materials Science Critical Technology Sector, MPMD-Phase Transformations Committee*

This symposium will focus on how the chemistry of migrating boundaries in solids affects their migration behavior. Topics include solute partitioning at interphase boundaries during precipitation, segregation to grain boundaries during recrystallization and grain growth, and diffusion-induced grain boundary migration (DIGM). Emphasis will be placed upon measurements of interfacial chemistry using techniques with high spatial resolution as well as upon theoretical models for describing the effects of solute on boundary migration. The symposium is expected to provide a forum for discussing new data made possible by recent advances in analytical techniques.

## CORROSION IN REACTORS AND NUCLEAR POWER SYSTEMS

*Sponsored by: Structural Materials Division, ASM International: Materials Science Critical Technology Sector, Corrosion and Environmental Effects Committee, Jt. Nuclear Materials Committee*

Interest in the revived growth of nuclear power has been increasing both within the US and globally. Materials issues, particularly corrosion, remain important to the current generation of reactors and are critical to areas ranging from waste disposition to the implementation of advanced concepts. This symposium seeks to bring together experts with broad interest and experience in issues of corrosion and materials compatibility in nuclear systems. Topics of interest to current LWRs include radiolytic effects in aqueous corrosion, stress corrosion cracking, and hydrogen embrittlement. Advanced reactors include both generation 3 and 4 LWRs and HTGR systems such as the pebble bed concept. Also included are areas relevant to waste disposition such as materials for waste containers and materials accelerator transmutation applications such as liquid metal corrosion of metals and ceramics and aqueous corrosion of target materials.

## FORMING AND SHAPING OF LIGHT WEIGHT AUTOMOTIVE STRUCTURES

*Sponsored by: Materials Processing & Manufacturing Division, Shaping and Forming Committee*

This symposium provides a forum on forming and shaping of lightweight automotive structures. The materials include, but not limited to, ultra-high strength steels, aluminum alloys, magnesium alloys, and polymer composites. The processing technologies include, but not limited to rollforming, stamping, casting, hydroforming, bending, crushing, forging, extrusion, welding, injection molding, and compression molding. Papers of academic research, contracted research, industrial R&D, and commercialization of new technologies and materials related to reducing weight are solicited.

## INTERSTITIAL AND SUBSTITUTIONAL SOLUTE EFFECTS IN HIGH TEMPERATURE MATERIALS AND ALLOYS

*Sponsored by: Structural Materials Division, High Temperature Alloys Committee, Structural Materials Committee*

This symposium will address recent developments in the understanding of the effects of interstitial and substitutional solute atoms on the physical and mechanical properties of high temperature structural materials and alloys. It will provide a forum for discussing the theory, modeling, and experimental analysis of such effects as solid-solution hardening, point defect-solute interactions, stoichiometry effects, static and dynamic strain aging, the Portevin-Le Chatelier effect, internal friction measurements, dislocation-solute interactions, gettering effects and other related topics. Abstracts spanning the entire spectrum of refractory metals, intermetallics, superalloys, and other alloys intended for application at high temperatures.

## MECHANISMS AND MECHANICS OF FRACTURE: SYMPOSIUM IN THE HONOR OF PROF. J. F. KNOTT

*Sponsored by: Structural Materials Division, Structural Materials Committee*

The objective of the symposium is to honor the work of Prof. John Knott on the mechanisms and mechanics of fracture. The symposium will bring together scientists and engineers from around the world to present a comprehensive range of experimental and theoretical papers on the fracture of materials. Consistent with the work of Prof. Knott, the symposium will emphasize the fundamentals of fracture, and their engineering applications. The session will include invited and contributed papers in the following areas: Brittle fracture; Ductile fracture; Fatigue; Statistical approaches; Advanced materials; and Structural life prediction.

### **Buy the Proceedings!**

*W.O. Soboyejo, J.J. Lewandowski, and R.O. Ritchie, editors*  
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## MICROSTRUCTURAL DESIGN OF ADVANCED MATERIALS: A SYMPOSIUM IN HONOR OF PROF. GARETH THOMAS

*Sponsored by: Structural Materials Division, SMD-Mechanical Behavior of Materials-(Jt. ASM-MSCTS), SMD-Physical Metallurgy Committee*

Microstructural design for a set of targeted mechanical/functional properties has become a recognized field in Materials Science and Engineering especially with the developments for atomistic characterization methods, and in theoretical analysis and modeling. This symposium will bring together a group of experts and leaders in this field to honor Gareth Thomas who has pioneered this approach to materials science and engineering area over a wide range of materials problems and applications.



## MICROSTRUCTURE/PROPERTY RELATIONSHIPS IN ALPHA/BETA TITANIUM ALLOYS

Sponsored by: Structural Materials Division, Titanium Committee

Presentations are solicited on microstructure/property relationships in alpha/beta titanium alloys. Experimental elucidation of deformation mechanisms will constitute the overall theme of this symposium, with emphasis on the effects of the coarse and fine extremes of microstructural scale. Deformation studies in all temperature and strain rate regimes are appropriate. Assessments of the relative contributions of various slip obstacles to strength, such as prior beta grain boundaries, alpha grain boundaries, second phases, and alpha colony and lath boundaries in transformed beta microstructures are of interest, as well as damage accumulation mechanisms that lead to fracture. Modeling and simulation of microstructural development during processing (casting, thermomechanical processing, heat treatment, etc.) as they pertain to the attainment of desirable microstructures are also relevant.

## MODELING THE PERFORMANCE OF ENGINEERING STRUCTURAL MATERIALS

Sponsored by: Structural Materials Division, Structural Materials Committee

This symposium is the third in a series of symposia that have covered current research and development in all aspects related to the modeling of the performance of engineering structural materials. Contributions are encouraged which cover both analytical and computational modeling of all material forms including metals, ceramics, polymers, and composites. Specific topics of interest include elastic and plastic deformation, fracture and fatigue behavior, durability and high rate deformation. Modeling work concerned with the processing of materials to meet specific performance criteria is also encouraged. Special attention will be given to material models, studies involving the validation of modeling approaches and the use of modeling to study problems in engineering and science. The presentation of work on advanced structural materials that relates microstructure to performance is particularly encouraged. A proceedings of papers presented at the symposium is planned.

### Buy the Proceedings!

D.R. Lesuer, T.S. Srivatsan, and E.M. Taleff, editors  
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Approximately 361 pp., illus., hardcover

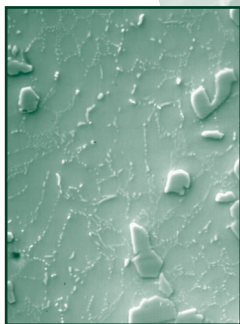
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## PB-FREE AND PB-BEARING SOLDERS

Sponsored by: Electronic, Magnetic & Photonic Materials Division, Electronic Packaging and Interconnection Materials Committee

This symposium will be aimed at providing a forum for exchange of ideas and recent findings in the currently popular field of electronic solders. It will consist of invited and contributed papers from leading research groups in the Universities, National Laboratories and Industrial/manufacturing facilities in U.S. and abroad.



## RAPID PROTOTYPING OF MATERIALS

Sponsored by: Materials Processing & Manufacturing Division, ASM International: Materials Science Critical Technology Sector, Powder Materials Committee

Rapid Prototyping also called Solid Free Form Fabrication has grown into a mature manufacturing method that has use in a number of fields. Numerous materials systems are processed the way that often times cannot be processed by other means. Furthermore, Rapid Prototyping has become a method by which new materials and composites can be formed. Recent examples involve the combining of preprocess processing with metal and alloy infiltration to form composite structure. This symposium will focus on the state of the art manufacturing of Rapid Prototyping while introducing the newest materials developments, which have come from this method. This symposium will also focus on the industrial use of Rapid Prototyping and Solid Free Form Fabrication and the commercial use where its successful use has been observed.

### Buy the Proceedings!

F.D.S. Marquis, D.L. Bourell, E.V. Barrera, and M.C. Shofner, editors  
ISBN 0-87339-530-1

Approximately 615 pp., illus., index, hardcover

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## SOLIDIFICATION DURING JOINING PROCESSES

Sponsored by: Materials Processing & Manufacturing Division, Solidification Committee

The strength of a joint is determined by its microstructure, which is in turn determined by the processing conditions. This symposium will focus on controlling the microstructure and thus the properties of welded, brazed and soldered joints by controlling the solidification process and pre/post heat treatment. Educational papers in this area are also of interest.

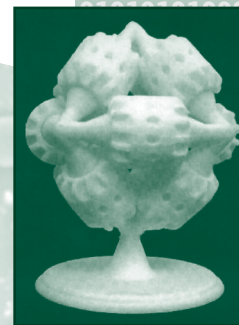
## GENERAL ABSTRACT SESSIONS

Sponsored by: TMS Committees

The TMS Fall Meeting Program Committee invites you to present your research as part of its most extensive program of general abstract sessions ever. In an effort to present a more comprehensive view of current work being carried on in materials science research, particularly new and emerging technologies and techniques. TMS solicited general abstract submissions for sessions related to the following areas: alloy phases, chemistry and physics of materials, composite materials, corrosion and environmental effects, electronic packaging and interconnection materials, ferrous metallurgy, high temperature alloys, industrial innovations, mechanical metallurgy, new and emerging technologies, non-ferrous metals, nuclear materials, polymers, powder metallurgy, refractory metals, shaping and forming, solidification, superconducting materials, surface engineering, thin films and interfaces.



This symbol indicates that the proceedings of a symposium will be available for purchase at the 2002 TMS Fall Meeting. To reserve your copy, contact TMS today at (724) 776-9000, ext. 270 or [publications@tms.org](mailto:publications@tms.org).





# STUDENT INFORMATION

## COMPLIMENTARY STUDENT MEMBER REGISTRATION

Full-time students who register for the conference will pay a reduced conference fee. Student members of TMS receive FREE registration. Full-time students who are not currently members of TMS will pay \$25 to attend all TMS Fall Meeting technical sessions and lectures held Monday through Thursday, and will receive one complimentary year of TMS or Joint ASM/TMS student membership! The Sunday evening Student Welcome and Student Night activities are free for all students. A valid student identification card for all students and a TMS or Joint ASM/TMS student membership number for members is required to qualify for the discounted rates.

## STUDENT SESSION MONITORS

Students will have the opportunity to partially defray their conference expenses by serving as session monitors. Monitors are responsible for assisting the session chair, recording session attendance, and assisting with audio/visual equipment. All monitors must report to Authors' Coffee each morning and/or afternoon that they are scheduled to monitor sessions. Monitors positions are limited and will be assigned on a first-come basis. To obtain work forms and a schedule, contact Charlotte Kobert, (724)776-9000 ext. 253, ckobert@tms.org. The deadline to submit completed work forms is Tuesday, October 1.

## 2002 JOINT ASM/TMS STUDENT NIGHT ACTIVITIES

Students attending the TMS Fall Meeting are encouraged to attend Student Night activities, scheduled for Sunday, October 6. This program is annually organized and jointly sponsored by ASM and TMS. Students, faculty, and interested members should note these opportunities! The Sunday evening Student Night activities are FREE to all students.

## 2002 STUDENT CAREER FORUM IN MATERIALS SCIENCE AND ENGINEERING

Sunday, October 6 2002  
5:00 PM–6:30 PM  
Crowne Plaza Hotel

Students will have the opportunity to discuss career opportunities that involve materials science and engineering, with engineering and human resources representatives from related industries. Hors d'oeuvres will be served, and this will be a wonderful opportunity to make industry connections and learn about new career options. Select ASM and TMS scholarships will be announced and recognized!

## 2002 STUDENT NETWORKING MIXER

Sunday, October 6 2002  
8:00 PM–10:30 PM  
Crowne Plaza Hotel

The traditional mixer for students, Young Leaders and members will be held Sunday evening, and everyone is encouraged to display school pride by wearing their school colors! Dress is informal, and everyone should plan to dance and have a great time! Snacks and beverages will be provided, and those who attend will be able to participate in a raffle for fantastic door prizes! This will be a great opportunity to network with your peers and other TMS members.

## YOUNG LEADERS TUTORIAL LUNCHEON LECTURE

Monday, October 7, 2002  
12:00 PM–1:30 PM  
Crowne Plaza Hotel

### *Materials Aspects in Light Water Reactors*

**Presented by: K. Linga (KL) Murty**  
*North Carolina State University*

The complex chemical and radiation environment in nuclear reactors brings out unique and challenging issues for materials selection and reliable performance. The stringent regulations by the nuclear power industry bring out the importance of the materials' considerations in nuclear power reactors. Thus, studies on nuclear materials play an important role in keeping the current reactors operating safely and are at the same time of prime significance in the design of new reactors. The seven major components (Fuel, Structure, Moderator/Reflector, Control, Coolant, Shields and Safety System) will be briefly described with emphasis on the materials' selection criteria that will be followed by interesting historical development (primarily by US Navy) of the fuel cladding (Zr alloys) for light water reactors. A summary will be presented on the nuclear materials research at NC State University during the last 2 decades with emphasis on anisotropic deformation and creep of textured Zircaloy tubing, development of current generation of Nb-modified Zircaloys, SCC and pellet-cladding-mechanical interaction (PCI) and mitigating aspects, and radiation hardening of ferritic steels and pure iron with interesting synergistic effects of dynamic strain aging and radiation defects on deformation and fracture behaviors (and the role of Hall-Petch relation). The talk will be concluded with a brief outline of fundamental materials issues that need to be and are being addressed in the context of nuclear power generation and waste management.

K.L. Murty (PhD, Cornell '70), a professor in the department of Nuclear Engineering and jointly in Materials Science & Engineering at North Carolina State University, has extensive experience in mechanical properties, creep, fracture and life-prediction of structural metals, radiation effects, as well as in NDE and NDT using ball indentation and NMR. Recent emphasis has been on in-situ NMR investigation of the dynamical behavior of point and line defects in alkali halide single crystals (pure and doped NaCl, NaF) and thin foils of Al. In collaboration with the MCNC Center for microelectronics, he investigated the reliability of solders in electronic packaging with emphasis on flip-chip (C-4) technology for multichip modules. He is an author/coauthor of around 210 technical papers. He was the recipient of several awards for outstanding research including ANS-Mishima Award (1993), Best Paper Award in WCNDT (1996) and ASM-Fellow (1996).

Dr. Murty is currently Program Director, Metals Research at the National Science Foundation in Arlington, VA.

*The Young Leaders Tutorial Lecture includes an optional "brown bag" lunch for \$25, which should be purchased in advance using the enclosed registration form. There will be no charge for those attending the lecture that do not wish to purchase the lunch.*



# REGISTRATION, HOTEL, & TRAVEL

The TMS 2002 Fall Meeting will be headquartered at the Crowne Plaza Hotel, Columbus, Ohio, October 6-10, 2002. All TMS technical sessions will take place in the Greater Columbus Convention Center. TMS Committee Meetings will take place at the Crowne Plaza Hotel. ASM events will take place at the Hyatt Regency Columbus Hotel.

## MEETING REGISTRATION

TMS 2002 Fall Meeting Registration and Housing forms are included in the center of this brochure.

### EARLY REGISTRATION AND HOUSING ARE ADVISED.

By choosing the full conference registration option on the enclosed registration form, you will be entitled to attend all of the events for one fee.

## ADVANCE REGISTRATION

All attendees are encouraged to register in advance to avoid delays in registering on-site. Advance registration fees are as follows:

Attendee Member .....	\$575
Attendee Non-Member .....	\$645
Participant Member .....	\$475
Participant Non-Member.....	\$545
Student Member .....	\$0
Student Non-member .....	\$25

To register in advance, complete the registration form provided in this mailer. Advance registrations will be accepted until Friday, September 13 2002. Payment MUST accompany your registration form. Full payment of registration fees and social function tickets must accompany the completed advance registration form. Any questions about registration should be directed to the George E. Fern Company, fax (513) 621-4439.

You may submit your completed registration form by: (please submit only once)

1. Mail: Geo E. Fern Company  
1100 Gest Street  
Cincinnati, OH 45203
2. Fax: (with credit card information) (513) 621-4439
3. Web: <http://www.asminternational.org/materialssolutions>

Badges will be mailed two weeks before the TMS 2002 Fall Meeting. For international registrants, badges can be picked-up starting Sunday, October 6 at 2:00 PM in Hall C of the Greater Columbus Convention Center.

If you do not bring your badge with you, there will be a \$5 processing fee for printing a new badge. All badge changes will be made at the Registration Desk.

A confirmation card will be mailed to you within the two-month period preceding the TMS 2002 Fall Meeting. If your registration form is received by the Geo E. Fern Company after September 13, your registration will not be processed. You must register on-site.

## ON-SITE REGISTRATION

You may register at the meeting. On-site registration will be located in Hall C, beginning Sunday afternoon and continuing through Thursday afternoon during the following hours:

Sunday, October 6.....	2:00 PM - 7:00 PM
Monday, October 7.....	7:00 AM - 7:00 PM
Tuesday, October 8.....	7:00 AM - 6:00 PM
Wednesday, October 9.....	7:00 AM - 5:00 PM
Thursday, October 10 .....	7:30 AM - 1:30 PM

## REFUND/CANCELLATION POLICY

Registration fees will be refunded after the close of the event if a written request is received by September 20, 2002. Send your requests to ASM International, Customer Service Center, Materials Park, OH 44073, Fax: (440)338-4634. NO refunds will be issued on-site.

## HOUSING INFORMATION

The TMS headquarters hotel will be the Crowne Plaza Hotel in downtown Columbus, Ohio. Special conference rates have been contracted at all of the hotels listed on the housing form. To receive the special rates, please use the enclosed form to make your hotel reservations. Payment MUST accompany form. Reservations will be processed on a first-come, first-serve basis. In order to qualify for the special rates, you must identify yourself as a TMS 2002 Fall Meeting Attendee. No room block has been set-aside for TMS.

The Crowne Plaza Hotel will extend the following room rates to TMS 2002 Fall Meeting attendees:

Single Accommodations .....	\$134
Double Accommodations.....	\$144

These rates are subject to state and local taxes, which are currently 15.75%. The Crowne Plaza Hotel must receive reservations by Thursday, August 29, 2002 in order to guarantee the above rates. Check-in time is 3:00 PM and checkout time is 12 noon.

Submit your completed form to:

GCCVB Housing Bureau  
90 North High Street  
Columbus, OH 43215  
USA

Fax: (614) 222-6140

E-Mail: [housing@columbuscvb.org](mailto:housing@columbuscvb.org)

## ABOUT THE CROWNE PLAZA HOTEL

An enclosed walkway connects the Crowne Plaza hotel to the Greater Columbus Convention Center and a variety of shops and restaurants. The German Village District, Nationwide Arena District, Short North Art District, Ohio and Palace Theaters, City Center Mall and Ohio State University are all located close to the hotel. Port Columbus International Airport is just minutes away. Rooms include coffee maker, color TV with remote, in-room movies, on command Playstation games and Internet access, hair dryer, video checkout, and ironing board/iron. The lap pool, exercise room, and sauna are a perfect energetic getaway. Max & Erma's offers an exciting, casual atmosphere for breakfast, lunch, and dinner. The Boulevard Cafe offers the perfect snack featuring Seattle's Best Coffee, Mrs. Field's Pastries and Graeter's Ice Cream. The Boulevard Bar offers the finest appetizers and libations.





## U-S AIRWAYS

### US AIRWAYS

Official Carrier of the TMS 2002 Fall Meeting

US Airways agrees to offer an exclusive low rate for attendees traveling to the TMS 2002 Fall Meeting in Columbus, Ohio.

This special fare will offer a 5% discount off First or Envoy Class and any published US Airways promotional round trip fare. A 10% discount off unrestricted coach fares will apply with 60 days advance reservations and ticketing before departure. These discounts are valid provided all rules and restrictions are met and are applicable for travel from all points on US Airways' route system.

US Airways will also offer exclusive negotiated rates for attendees who are unable to meet the restrictions of the promotional round trip fares.

The above discounts are not combinable with other discounts or promotions, and are valid three days before and after the meeting dates. Additional restrictions may apply on international travel.

To obtain these discounts, you or your professional travel consultant must call US Airways' Group and Meeting Reservation Office toll free at (877) 874-7687; 8:00 AM – 9:30 PM, Eastern Time.

### REFER TO GOLD FILE NO. 14192113

Once your reservations are confirmed, US Airways Group and Meeting Reservation Office will mail the tickets to you or suggest several other convenient methods of purchase.

If you normally use the services of a travel agent or corporate travel department, please have them place the call so that they may obtain the same advantages for you. The special meeting fare is only available through the Group and Meeting Reservation Office



### HERTZ RENT-A-CAR SYSTEM

has been selected as the Official Car Rental Company for the TMS 2002 Fall Meeting in Columbus Ohio.

Meeting rates listed below, with free unlimited mileage, are guaranteed one week before through one week after the actual meeting dates and are subject to car availability. Rates are available from all Ohio locations. Hertz now offers attractive options for travelers with optional Hertz NeverLost audio driving directions, touch-screen Computerized Driving Directions where available, and portable cell phone rentals.

Advance reservations may be made by booking online at [www.hertz.com](http://www.hertz.com) or calling the Hertz reservations number (US: 1-800-654-2240; Canada: 1-800-263-0600; International: contact your nearest Hertz reservation center) and identify yourself as an attendee of the TMS 2002 Fall Meeting and reference the CV number which follows:

### Hertz CV #02QJ0003

Car Class	DAILY Per Day	WEEKEND Per Day	WEEKLY 5-7 Days
B Compact 4DR	\$44.99	\$25.99	\$208.99
C Midsize 2/4DR	\$46.99	\$26.99	\$218.99
D Sporty 2DR	\$48.99	\$27.99	\$228.99
F Fullsize 4DR	\$50.99	\$28.99	\$238.99

Standard rental and credit qualifications apply. Taxes, vehicle licensing fees/tax reimbursement, transportation fee, transaction fee, and optional items, such as refueling, are extra. At many airports and hotels, a 5% - 12.75% airport/hotel concession fee recovery applies on car rental.

### Terms and Conditions:

- UNLIMITED MILEAGE ALLOWANCE ON ABOVE RATES.
- One-way service fee will apply when cars are not returned to renting location.
- Additional daily charges for optional coverage (Loss Damage Waiver, Personal Accident Insurance, Personal Effect Protection, refueling and state tax) are not included in the above rates.
- Drivers must meet standard Hertz age, driver, and credit requirements.
- Hertz is a frequent flyer partner with US Airways, Delta, Northwest, United, and American Airlines. Frequent flyer information may be requested at time of car booking.



## GENERAL INFORMATION

### AMERICANS WITH DISABILITIES ACT

TMS strongly supports the federal Americans with Disabilities Act (ADA), which prohibits discrimination against, and promotes public accessibility for those with disabilities. In support of and compliance with this Act, we ask those attendees of the TMS 2002 Fall Meeting requiring specific equipment or services indicate their needs by contacting the TMS Meeting Services Department at telephone (724)776-9000 ext. 243, and advise of any specific requirements in advance.



### AUDIO AND VISUAL RECORDING POLICY

TMS reserves the rights to any audio and video reproduction of all presentations at every TMS sponsored meeting. Recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright without the express written consent of TMS and the individual authors is strictly prohibited. Contact the TMS Programming Department to obtain a copy of the waiver release form.

### AUTHORS' COFFEE

Authors' Coffee will be held each morning from 7:30 AM–8:30 AM and each afternoon from 1:00 PM–2:00 PM at the Greater Columbus Convention Center for authors, chairs, and organizers. Authors are asked to attend Authors' Coffee only on the morning or afternoon of their presentation.

### INFORMAL COFFEE BREAKS

Coffee will be available early morning thru afternoon via cash concession in the convention center in either the Center Lobby or on the exhibit show floor during show days/hours.

### POSTER SESSION

A poster session will be held in conjunction with the TMS 2002 Fall Meeting. Presentations will be displayed on 4'x8' poster boards; no formal oral presentation is required. The poster session will begin on Monday, October 7 and remain in place through Wednesday, October 9. Abstracts of 150 words or less may be submitted to TMS by September 1, 2002. Abstracts may be submitted through the TMS Conference Management System (CMS) via the World Wide Web: <http://cms.tms.org/>; e-mail: [ckobert@tms.org](mailto:ckobert@tms.org); mail: Charlotte Kobert, TMS, 184 Thorn Hill Road, Warrendale, PA 15086; or fax: 724-776-3770.

### PUBLICATION SALES

Concurrent proceedings volumes from TMS 2002 Fall Meeting along with other TMS publications will be on sale at the Greater Columbus Convention Center, outside Exhibit Hall C.

### TECHNICAL SESSIONS

Technical sessions will begin on Monday morning, October 7, 2002, and end on Thursday, October 10, 2002. All technical sessions will be held at the Greater Columbus Convention Center. Abstracts will be available by accessing the TMS Conference Management System (CMS) on the World Wide Web at <http://cms.tms.org/> or in PDF format via TMS Online, also on the World Wide Web at <http://www.tms.org/Meetings/Fall2002/Fall2002.html>.

If you do not have access to the World Wide Web, please contact TMS Technical Services for a copy of the technical session abstracts. The abstracts will also be published in the TMS Fall Meeting 2002 Final Program distributed at the meeting to all registered attendees.

### TUESDAY RECEPTION

All attendees are invited to attend the Tuesday Attendee Reception on Tuesday, October 8, from 5:00 PM to 6:00 PM at the Greater Columbus Convention Center on the Exhibit Show Floor. Guests may also attend, but will need to secure an Expo Only badge before being allowed onto the show floor.

### UNIVERSITY ALUMNI RECEPTIONS

Alumni receptions for various universities will be scheduled at the Crowne Plaza Hotel. Please refer to the final program (available on-site) for a detailed listing.

### PROF. GARETH THOMAS HONORARY DINNER

*In conjunction with the Microstructural Design of Advanced Materials Symposium*

Tuesday, October 8, 2002  
Offsite Venue To Be Determined

*Sponsored by: SMD Mechanical Behavior of Materials (Jt. ASM-MSCTS) and Physical Metallurgy Committee*  
Microstructural design for a set of targeted mechanical/functional properties has become a recognized field in Materials Science and Engineering especially with the developments for atomistic characterization methods, and in theoretical analysis and modeling. This symposium will bring together a group of experts and leaders in this field to honor Gareth Thomas who has pioneered this approach to materials science and engineering area over a wide range of materials problems and applications.

Dinner tickets are \$50 and may be purchased via the TMS/ASM Registration Form.

### PROF. JOHN KNOTT HONORARY DINNER

*In conjunction with the Mechanisms and Mechanics of Fracture Symposium*

Wednesday, October 9, 2002  
Crowne Plaza Hotel

*Sponsored by: SMD and Structural Materials Committee*  
The objective of the symposium is to honor the work of Prof. John Knott on the mechanisms and mechanics of fracture. The symposium will bring together scientists and engineers from around the world to present a comprehensive range of experimental and theoretical papers on the fracture of materials. Consistent with the work of Prof. Knott, the symposium will emphasize the fundamentals of fracture, and their engineering applications. The session symposium will include invited and contributed papers in the following areas: Brittle fracture; Ductile fracture; Fatigue; Statistical approaches; Advanced materials; and Structural life prediction.

Dinner tickets are \$60 and may be purchased via the TMS/ASM Registration Form.

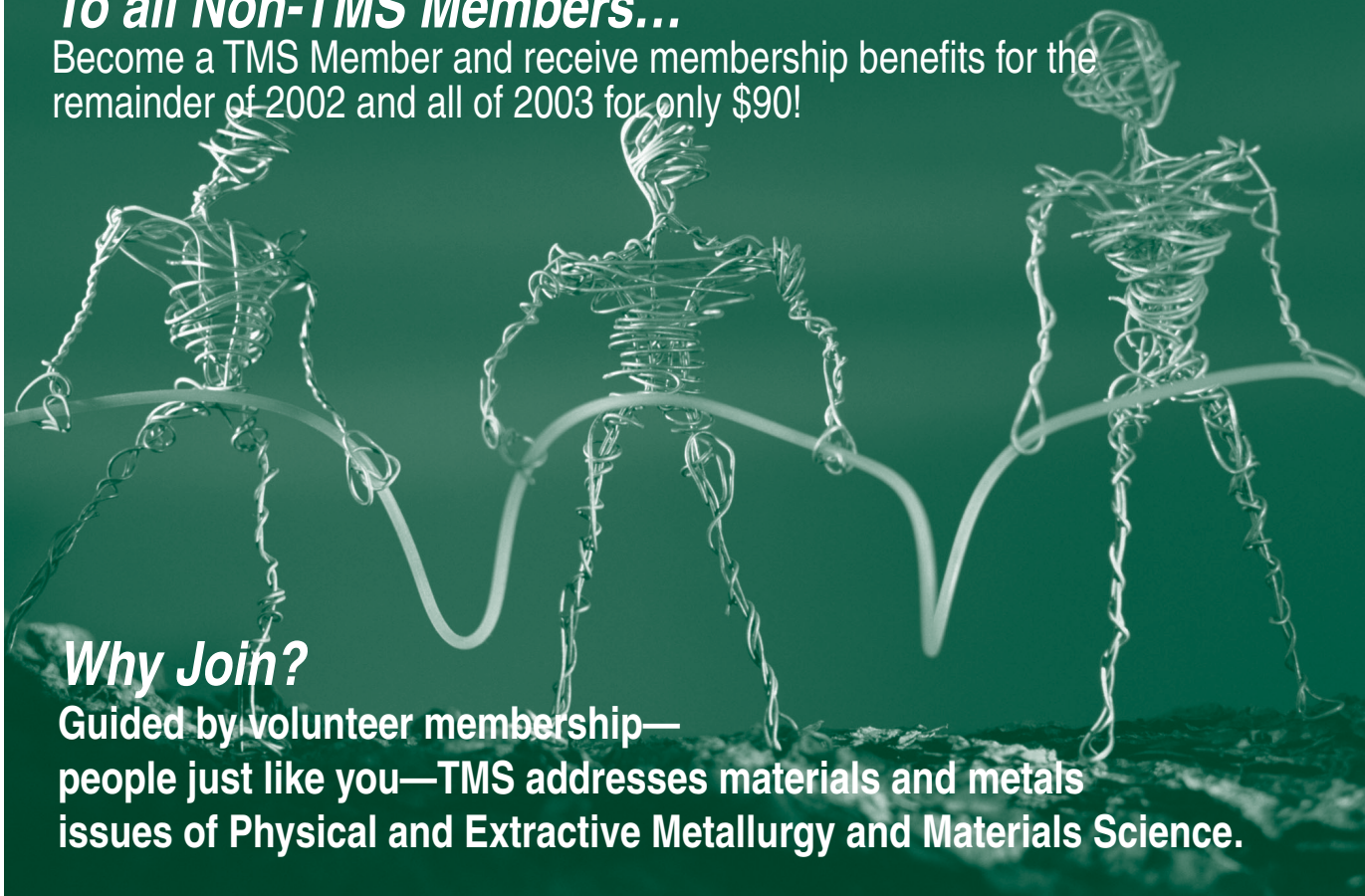
### FOR INFORMATION REGARDING CONFERENCE LOGISTICS, PLEASE CONTACT:

Michael Packard, CMP  
Manager, Meeting Services  
TMS  
184 Thorn Hill Road  
Warrendale, PA 15086  
Telephone: 724-776-9000 ext. 225  
Fax: 724-776-3770  
E-mail: [packard@tms.org](mailto:packard@tms.org)



## ***To all Non-TMS Members...***

Become a TMS Member and receive membership benefits for the remainder of 2002 and all of 2003 for only \$90!



### ***Why Join?***

**Guided by volunteer membership—  
people just like you—TMS addresses materials and metals  
issues of Physical and Extractive Metallurgy and Materials Science.**

#### **WE SPONSOR INTERNATIONAL CONFERENCES INCLUDING:**

- TMS Annual Meeting & Exhibition
- 2003 International Symposium on Hydrometallurgy
- International Symposium on Superalloys 718, 625, 706, and Derivatives
- International Symposium on Structural Intermetallics
- Electronic Materials Conference
- AND MORE!

#### **WE PROMOTE PROFESSIONAL AND ACADEMIC EXCELLENCE:**

- University accreditation
- Professional registration of engineers in metals and materials
- Professional awards and scholarships

***All TMS members receive discounted pricing on meetings, publications, and short courses.***

***Members also receive a complimentary print and electronic subscription to JOM and access to the Membership Directory on TMS OnLine, as well as a host of other benefits.***

#### **WE PUBLISH JOURNALS, CONFERENCE PROCEEDINGS, AND TEXTBOOKS, INCLUDING:**

- The journals JOM, the Journal of Electronic Materials, and Metallurgical and Materials Transactions A and B
- Conference proceedings from many TMS symposia and specialty conferences, including:
  - *Superalloys 2000*
  - *CALPHAD and Alloy Thermodynamics*
  - *Science and Technology of Interfaces*
  - *Ultrafine Grained Materials II*
  - *Creep Deformation: Fundamentals and Applications*
- Textbooks:
  - *Lectures on the Theory of Phase Transformations*
  - *Thermodynamic Loop Applications in Material Systems*
  - *Transport Phenomena in Materials Processing*

# TMS



# MEMBERSHIP APPLICATION

CODE FM02

PLEASE TYPE OR PRINT

- Mr.     Mrs.     Ms.  
 Dr.     Professor

SEND MAIL TO:

- Business Address  
 Home Address

TECHNICAL DIVISION SELECTION:

- Electronic, Magnetic, & Photonic Materials Division  
 Extraction & Processing Division  
 Light Metals Division  
 Materials Processing & Manufacturing Division  
 Structural Materials Division

THROUGH WHAT MEANS WERE YOU ENCOURAGED TO JOIN TMS?

- TMS Annual Conference  
 TMS Fall Conference  
 Specialty Conference  
 Exhibitor  
 TMS Staffed Booth  
 JOM  
 MET TRANS, JEM, Etc.  
 Publications Catalog  
 TMS Mailed Brochure  
 Non-TMS Advertisement  
 Continuing Education  
 TMS OnLine/Web  
 Colleague  
 Other \_\_\_\_\_

BIRTHDATE: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Members automatically receive a monthly print and electronic subscription to *JOM*.

If you prefer to receive your copy only electronically, please check here.

If you prefer to receive your subscription in print only, please check here.

If you would like additional information about member subscriptions and discounts to *JOM*, *Journal of Electronic Materials*, or *Metallurgical and Materials Transactions A and B*, please check here.

NAME: \_\_\_\_\_  
LAST FIRST MIDDLE INITIAL

TITLE: \_\_\_\_\_

COMPANY OR ORGANIZATION: \_\_\_\_\_

BUSINESS: \_\_\_\_\_

STREET OR P.O. BOX CITY STATE 9 DIGIT ZIP/POSTAL CODE COUNTRY

PHONE FAX TOLL FREE # E-MAIL WEB ADDRESS

HOME: \_\_\_\_\_

STREET OR P.O. BOX CITY STATE 9 DIGIT ZIP/POSTAL CODE COUNTRY

PHONE FAX E-MAIL

WHAT IS THE PRIMARY ACTIVITY OF YOUR PLACE OF EMPLOYMENT? (check one)

- Commercial Laboratory     Manufacturer of Finished Products (OEMs)     Educational  
 Government/Nonprofit Laboratory     Primary Metals Producer     Engineering or Consulting Firm  
 Engineered Materials Producer     Secondary Metals Producer  
 Manufacturer of Parts/Components     Producer/Processor of Materials     Other \_\_\_\_\_

WHAT BEST DESCRIBES YOUR PRIMARY JOB FUNCTION? (check one)

- Applications/Product Development     Metallurgical Materials Selection     Manuf./Production Management     Consultant  
 Basic Research     Corporate Management     Quality Engineering     Educator  
 Product Engineering and Design     R & D Engineer     Marketing or Sales     Student  
 Technical/Lab Management     R & D Scientist  
 Process Engineering     R & D Management     Other \_\_\_\_\_

OTHER SOCIETY AFFILIATIONS: \_\_\_\_\_

EDUCATION TO DATE:

Name of School	Dates Attended Month/Year–Month/Year	Major Subject/ Engineering Field	Degree Received or Expected Graduation Date: Month/Year
B.S. <input type="checkbox"/> _____			
M.S. <input type="checkbox"/> _____			
Ph.D. <input type="checkbox"/> _____			

REGISTERED PROFESSIONAL ENGINEER?  Yes  No    STATE: \_\_\_\_\_    YEAR OF REGISTRATION: \_\_\_\_\_

RECORD OF EXPERIENCE:

(List most recent record of employment. If you do not possess a qualifying degree, please include your last seven years of experience.)

From: \_\_\_\_\_ Title: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 To: \_\_\_\_\_ Nature of Company's Business: \_\_\_\_\_  
 Total Time with Company: \_\_\_\_\_  
 Engineering Responsibilities: \_\_\_\_\_

**TO APPLICANT**

If you have been encouraged to submit this application by a current member of TMS, please complete the following information:

Member's Name \_\_\_\_\_ Member # \_\_\_\_\_

*I agree, if elected, to accept election, and to abide by the TMS bylaws.*

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

PREPAYMENT IS REQUIRED (\$90) (checks should be made payable to TMS in U.S. dollars drawn on a U.S. bank)

- Check enclosed  
 Bill my credit card: (check one)  
 American Express     VISA     MasterCard     Diners Club

Credit Card # \_\_\_\_\_ Expiration Date \_\_\_\_\_

Cardholders Name \_\_\_\_\_

Signature \_\_\_\_\_

FOR OFFICE USE ONLY	
ID	_____
BIRTH	_____
ELECTED	_____
TYPE	_____
CATEGORY	_____
SECTION	_____
APPROVED	_____

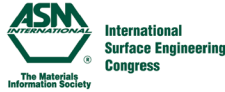
COMPLETE APPLICATION AND MAIL WITH PAYMENT TO: **184 Thorn Hill Road, Warrendale, PA 15086-7514**  
 Phone: 800-966-4867 or 724-776-9000 • Fax: 724-776-3770





# Registration Form

6 - 10 October 2002 • Greater Columbus Convention Center  
Columbus, Ohio USA



**Advance Registration Deadline:  
13 September 2002**

**Fax or mail this form with payment to:**  
George E. Fern Company • 1100 Gest St.  
Cincinnati, OH 45203 • FAX: (513) 621-4439

**Please print or type**

Mr.  Ms.  Mrs.  Dr.  Prof. ASM/TMS/IFHTSE ID# (required for discount) \_\_\_\_\_

Last Name \_\_\_\_\_ First Name \_\_\_\_\_ Middle Initial \_\_\_\_\_

Job Title \_\_\_\_\_

Company \_\_\_\_\_

Street Address \_\_\_\_\_

Dept./M.S. \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

E-mail \_\_\_\_\_

Is the above address a  business address or a  home address

Special Requirements \_\_\_\_\_

Dietary Restrictions:  Vegetarian (V)  Kosher (K)  Diabetic (D)

**1. Which category below BEST DESCRIBES the type of organization in which you are employed (please check only one)?**

- |   |   |   |
|---|---|---|
| <b>INDUSTRIAL</b>   | <b>INDUSTRIAL – Con't</b>   | <b>INDUSTRIAL – Con't</b>   |
| <input type="checkbox"/> X01 Aerospace                      | <input type="checkbox"/> X09 Energy and Utilities                 | <input type="checkbox"/> X15 Thermal Spray – Commercial & Captive |
| <input type="checkbox"/> X02 Automotive                     | <input type="checkbox"/> X10 Heat Treating – Commercial           | <input type="checkbox"/> X16 Consulting                           |
| <input type="checkbox"/> X03 Off-highway                    | <input type="checkbox"/> X11 Heat Treating – Captive (In-house)   | <input type="checkbox"/> X17 Commercial Testing                   |
| <input type="checkbox"/> X04 Fabricated Metal Products      | <input type="checkbox"/> X12 Heat Treating – Commercial & Captive | <input type="checkbox"/> X18 Contract R & D                       |
| <input type="checkbox"/> X05 Machinery (except electrical)  | <input type="checkbox"/> X13 Thermal Spray – Commercial           | <input type="checkbox"/> X19 <b>EDUCATION</b>                     |
| <input type="checkbox"/> X06 Electrical/Electronic Industry | <input type="checkbox"/> X14 Thermal Spray – Captive (In-house)   | <input type="checkbox"/> X20 <b>GOVERNMENT</b>                    |
| <input type="checkbox"/> X07 Chemical/Process Industry      |   | <input type="checkbox"/> X21 <b>BOOK DEALER</b>                   |
| <input type="checkbox"/> X08 Primary Metals Production      |   | <input type="checkbox"/> X22 <b>SUBSCRIPTION AGENT</b>            |

**2. Please check a single selection in each column that BEST DESCRIBES you and your work.**

- |  |  |
|--|--|
| <b>JOB CLASSIFICATION</b>  | <b>PRINCIPLE WORK DONE IN YOUR SECTION OR DIVISION OF THE ORGANIZATION</b> |
| <input type="checkbox"/> Y01 CEO/President/Gen'l Management      | <input type="checkbox"/> Y10 Manufacturing/Process Engineering             |
| <input type="checkbox"/> Y02 Mgr/Supervisor of Division or Group | <input type="checkbox"/> Y11 Materials Testing and Selection               |
| <input type="checkbox"/> Y03 Program/Project Mgr                 | <input type="checkbox"/> Y12 Quality Assurance/Quality Control             |
| <input type="checkbox"/> Y04 Engineer/Scientist                  | <input type="checkbox"/> Y13 Design/Selection of Materials                 |
| <input type="checkbox"/> Y05 Technician/Operator                 | <input type="checkbox"/> Y14 Marketing/Sales                               |
| <input type="checkbox"/> Y06 Professor/Instructor                | <input type="checkbox"/> Y15 Purchasing                                    |
| <input type="checkbox"/> Y07 Student                             | <input type="checkbox"/> Y16 Training                                      |
| <input type="checkbox"/> Y08 Librarian                           |  |
| <input type="checkbox"/> Y09 R & D                               |  |

**3. How many employees are at your location?**

- |                                      |                                      |                                      |  |                                     |                                    |
|--------------------------------------|--------------------------------------|--------------------------------------|--|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Z01 1-4     | <input type="checkbox"/> Z02 5-9     | <input type="checkbox"/> Z03 10-14   | <input type="checkbox"/> Z04 15-19     | <input type="checkbox"/> Z05 20-49  | <input type="checkbox"/> Z06 50-99 |
| <input type="checkbox"/> Z07 100-249 | <input type="checkbox"/> Z08 250-499 | <input type="checkbox"/> Z09 500-999 | <input type="checkbox"/> Z10 1000-2499 | <input type="checkbox"/> Z11 2500 + |                                    |

Please see "General Information" for what is included with each registration category.

Materials Solutions Event	Non-Member	Member
Value Package includes admission to Materials Solutions, The 13th International Federation for Heat Treatment/Surface Engineering Congress & ASM International Surface Engineering Congress, TMS Conference and Exhibits.		
• Full Conference - Attendees	<input type="checkbox"/> \$645 (MSAB)	<input type="checkbox"/> \$575 (MSAA)
• Full Conference - Participants <sup>1</sup>	<input type="checkbox"/> \$545 (MSBB)	<input type="checkbox"/> \$475 (MSBA)
• Full Conference - Students Only <sup>2</sup>	<input type="checkbox"/> \$ 25 (MSCD) <sup>3</sup>	<input type="checkbox"/> \$ 0 (MSCC)
Exhibits	Non-Member	Member
• Materials Solutions & Surface Engineering Exhibits (Pre-Reg Only)	<input type="checkbox"/> \$ 0 (JJJZ)	<input type="checkbox"/> \$ 0 (JJJY)
I am attending primarily for:		
<input type="checkbox"/> Materials Solutions Exhibit (JJJU)		
<input type="checkbox"/> Surface Engineering Exhibit (JJJV)		

Additional Functions:	Non-Member	Member
• ASM Committee/Council and Canada/Europe Awards Lunch (Monday)	_____ No. of Tickets	\$25 (KKKE) = _____
• ASM Awards Dinner Ticket (Monday)	_____ No. of Tickets	\$65 (KKKC) = _____
• TMS Young Leaders Tutorial Luncheon (Monday)	_____ No. of Tickets	\$25 (KKKK) = _____
• IFHTSE/SEC Dinner Ticket (Tuesday)	_____ No. of Tickets	\$50 (KKKM) = _____
• Prof. Gareth Thomas Honorary Dinner (Tuesday)	_____ No. of Tickets	\$50 (KKKO) = _____
• Prof. John Knott Honorary Dinner (Wednesday)	_____ No. of Tickets	\$60 (KKKN) = _____

Plant Tours (Thursday)	Non-Member	Member
• Worthington BeamAlloy	_____ No. of Tickets	\$20 (KKKG) = _____
• Worthington Steel Company	_____ No. of Tickets	\$20 (KKKH) = _____
• United States Air Force Museum	_____ No. of Tickets	\$20 (KKKI) = _____
• EWI, Edison Welding Institute	_____ No. of Tickets	\$20 (KKKJ) = _____

<sup>1</sup> Participants are Organizers, Session Chairs, Speakers and Poster Presenters Only  
<sup>2</sup> To qualify for student rate, you must attach a copy of your student ID card. Registrations received without appropriate verification will be charged full conference registration fee.  
<sup>3</sup> Non-member students will receive a complimentary membership in ASM & TMS for 2003.

**Method of Payment (all payments must be in U.S. dollars)**  
*Registrations will not be processed without full payment*

Check enclosed (payable to ASM International) Check#: \_\_\_\_\_

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

MasterCard  VISA  American Express  Discover  Diners Club

Signature \_\_\_\_\_

**CEMBOTMS**

ASM reserves the right to amend this program as necessary.

Grand Total: \$ _____
-----------------------

Address: <http://www.asminternational.org/materialssolutions>

**AVOID WAITING IN LINES... REGISTER ONLINE TODAY!**





# Housing Form

6 - 10 October 2002  
COLUMBUS CONVENTION CENTER • COLUMBUS, OHIO



## INSTRUCTIONS

Reservations can be made by choosing one of the following methods:

**Internet:** Book your reservation on line at [www.asminternational.org/materialssolutions](http://www.asminternational.org/materialssolutions) or [www.asminternational.org/surface](http://www.asminternational.org/surface), click on housing and use access code ASMATT1007. **This is the quickest and most effective method.**

**Fax:** Fax completed form with credit card information to **614/222-6140**.

**Mail:** Send completed form with credit card information to **GCCVB Housing Bureau, 90 North High Street, Columbus, OH 43215-3014**.

All reservation requests must be made through the Housing Bureau by **29 August 2002**.

If additional forms are needed, photocopies of this form are acceptable.

## ACKNOWLEDGEMENTS

Acknowledgements will be sent after each reservation booking, modification and/or cancellation. Review acknowledgements carefully for accuracy. If you do not receive an acknowledgement within 14 days after any transaction, please contact the Housing Bureau via email [housing@columbuscvb.org](mailto:housing@columbuscvb.org). Please note that the confirmation number on your acknowledgement is not the confirmation number for the individual hotel. This acknowledgement should be kept with you in the event you have a problem checking into the hotel.

Number all hotels in numerical order of preference. A limited number of rooms have been blocked at the convention rate at each of the listed hotels. Room assignments will be made in order of receipt of official housing reservation form. Failure to receive your first choice does not constitute an error.

CIRCLE ROOM TYPE REQUESTED BELOW					
Number Hotels in order of preference	HOTELS Room rates DO NOT include 15.75% tax.	SINGLE 1 person	DOUBLE 2 persons	TRIPLE 3 persons	QUAD 4 persons
	Adams Mark	\$129	\$139	\$149	\$159
	Crowne Plaza (TMS Headquarters)	\$134	\$144	\$155	\$155
	Hampton Inn	\$ 98	\$118	\$128	\$138
	Hyatt Regency (ASM/IFHTSE Headquarters)	\$132	\$142	\$152	\$162

## MODIFICATIONS/CANCELLATIONS

**Please review carefully:** A one-night deposit (plus 15.75% tax) is required for each room requested. Credit card processing will be held until checkout. A \$25 cancellation fee will be charged for reservations **cancelled on or after 20 August 2002**. Reservations **cancelled on or after 26 September 2002** or no shows will be charged up to the cost of one night by the hotel. Any changes or cancellations should be made via fax to the Housing Bureau by **26 September 2002**. After **26 September 2002**, contact the hotel.

## MULTIPLE ROOMS

For reservations of 5 rooms or more, rooming lists (faxed or mailed) are due by **15 August 2002**.



ARRIVAL DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ DEPARTURE DATE: \_\_\_\_\_

### SPECIAL REQUESTS: THESE ARE ONLY REQUESTS AND CANNOT BE GUARANTEED.

However, hotels will do their best to honor all requests. Hotels will assign specific room types upon check-in based on availability.

Smoking  Non-Smoking  King Bed

To ensure our conference is ADA accessible to all, please indicate any special assistance that you may require: \_\_\_\_\_

Last Name \_\_\_\_\_ First Name \_\_\_\_\_

Title \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_ Country \_\_\_\_\_

Email \_\_\_\_\_ Phone \_\_\_\_\_ Fax \_\_\_\_\_

*Include Country Code*

(confirmation will be sent to the above email address if available; if email is not available confirmation will be faxed or mailed.)

Roommates: 1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_

Indicate if arrival or departure dates are different \_\_\_\_\_

### GUARANTEE METHOD

VISA  MasterCard  American Express  Discover  Diner's Club

Credit Card No. \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

*Necessary to process reservation*

Name on Card \_\_\_\_\_

*Please print*

By signing I authorize my credit card to be charged in compliance with the above referenced cancellation policies should I cancel my reservation.

**Register on line at [www.asminternational.org/materialssolutions](http://www.asminternational.org/materialssolutions) Or [www.asminternational.org/surface](http://www.asminternational.org/surface) Or**

**MAIL or FAX this form by 29 August 2002 to:**

**ASM Housing Bureau  
c/o GCCVB • 90 North High Street • Columbus, OH 43215-3014  
Fax: 614/222-6140**

# FUTURE TMS MEETING SITES

## ANNUAL MEETING & EXHIBITION

2003 / San Diego, CA	March 2-6	San Diego Convention Center
2004 / Charlotte, NC	March 14-18	Charlotte Convention Center
2005 / San Francisco, CA	February 13-17	Moscone West Convention Center
2006 / San Antonio, TX	March 12-16	Henry B. Gonzalez Convention Center

## FALL MEETING: PHYSICAL METALLURGY AND MATERIALS

2003 / Chicago, IL	November 9-13	Hyatt Regency Downtown
2004 / New Orleans, LA	September 26-30	New Orleans Marriott Hotel

## ELECTRONIC MATERIALS CONFERENCE

2003 / Salt Lake City, UT	June 25-27	University of Utah
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## TOPICAL CONFERENCES

### DEVICE RESEARCH CONFERENCE

2003 / Salt Lake City, UT	June 23-25	University of Utah
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## HYDRO 2003

2003 / Vancouver, BC, Canada	August 24-27	Sheraton Vancouver Wall Centre Hotel
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FOR MORE INFORMATION ON ANY OF THESE CONFERENCES, PLEASE CONTACT

TMS MEETING SERVICES DEPARTMENT  
184 THORN HILL ROAD  
WARRENDALE, PA 15086

TELEPHONE: (724) 776-9000, EXT 243

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WEB: [HTTP://WWW.TMS.ORG/MEETINGS/MEETINGS.HTML](http://www.tms.org/meetings/meetings.html)





LEARN MORE ABOUT THE TECHNOLOGIES PRESENTED AT THE 2002 TMS FALL MEETING WITH THESE SELECTED PUBLICATIONS!

# Publications TMS

## PROCESSING MATERIALS FOR PROPERTIES II

*Brajendra Mishra and Chikabumi Yamauchi, editors*

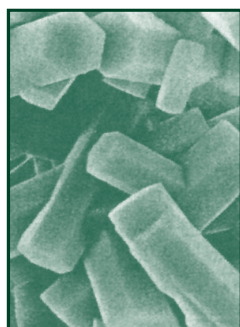
This volume contains the proceedings from the Second International Conference on Processing Materials for Properties, jointly organized by The Minerals, Metals & Materials Society and the Mining and Materials Processing Institute of Japan. This collection emphasizes the processing aspects in materials research, development, and production. Materials characterization and properties, as well as major processing science and technology, are also included so as to stimulate mutual interaction among processors in different materials fields. This meeting addressed topics dealing with most of the prominent material processing methods, including thin films, powder processing, aqueous and electrolytic processing, high-temperature processing, and iron and steelmaking. Environmental issues and resource recovery have also been addressed.

1137 pp., illus., index, hardcover

**Order No. 495X**

Weight 7 lbs

M \$174 • S \$127 • L \$244



## ULTRAFINE GRAINED MATERIALS II

*Y.T. Zhu, T.G. Langdon, R.S. Mishra, S.L. Semiatin, M.J. Saran, and T.C. Lowe, editors*

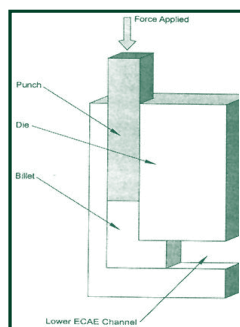
These proceedings from the 2002 TMS Annual Meeting focus on all aspects of science and technology of bulk ultrafine-grained materials produced by severe plastic deformation (SPD) techniques. The potential of SPD techniques in producing clean and fully dense, bulk ultrafine-grained materials for scientific explorations and practical structural applications has made it a rapidly developing area. This book provides an update on advances in the areas of processing microstructures, microstructural evolution, mechanical and physical properties, superplasticity, computational and analytical modeling, and new SPD technologies and advances.

704 pp., illus., index, hardcover

**Order No. 5239**

Weight 3 lbs

M \$125 • S \$89 • L \$178



## ADVANCES IN TWINNING

*S. Ankem and C.S. Pande, editors*

337 pp., illus., index, hardcover

**Order No. 4305**

Weight 2 lbs

M \$60 • S \$44 • L \$82

## CALPHAD AND ALLOY THERMODYNAMICS

*Patrice E.A. Turchi, Antonios Gonis, and Robert D. Shull, editors*

292 pp., illus., index, hardcover

**Order No. 514X**

Weight 2 lbs

M \$72 • S \$51 • L \$102

## CHEMISTRY AND ELECTROCHEMISTRY OF CORROSION AND STRESS CORROSION CRACKING: A SYMPOSIUM HONORING THE CONTRIBUTIONS OF R.W. STAEHLE

*Russell Jones, editor*

670 pp., illus., index, hardcover

**Order No. 478X**

Weight 3 lbs

M \$96 • S \$70 • L \$134

## COMPUTATIONAL MODELING OF MATERIALS, MINERALS, AND METALS PROCESSING

*M. Cross, J.W. Evans, and C. Bailey, editors*

737 pp., illus., index, hardcover & CD-ROM

**Order No. 5131**

Weight 3 lbs

M \$129 • S \$92 • L \$184

## THE EMERGENCE OF THE TITANIUM INDUSTRY AND THE DEVELOPMENT OF THE Ti-6Al-4V ALLOY: COLLECTIONS AND RECOLLECTIONS

*Stanley Abkowitz*

42 pp., illus., appendix, softcover or portable document format

**Order No. 433X**

Weight 1 lb

Price \$30

## FRICTION STIR WELDING AND PROCESSING

*K.V. Jata, M.W. Mahoney, R.S. Mishra, S.L. Semiatin, and D.P. Field, editors*

246 pp., illus., index, hardcover

**Order No. 5026**

Weight 2 lbs

M \$84 • S \$60 • L \$120

## GAMMA TITANIUM ALUMINIDES 1999

*Yong-Wong Kim, Dennis M. Dimiduk, and Michael H. Loretto, editors*

851 pp., illus., index, hardcover

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## INNOVATIONS IN PROCESSING AND MANUFACTURING OF SHEET MATERIALS

*Mahmoud Demeri, editor*

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## IRIDIUM

*Evan K. Ohriner, Richard D. Lanam,*

*Peter Panfilov, and Hiroshi Harada, editors*

456 pp., illus., index, softcover

**Order No. 4615**

Weight 2 lbs

M \$68 • S \$50 • L \$94

## MERTON FLEMINGS SYMPOSIUM 2000

*Harold D. Brody, Reza Abbaschian, and Andreas Mortensen, editors*

534 pp., illus., hardcover

**Order No. 4984**

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## MICROSTRUCTURE MODELING AND PREDICTION DURING THERMOMECHANICAL PROCESSING

*R. Srinivasan, S.L. Semiatin, Armand Beaudoin, Steven Fox, and Zhe Jin, editors*

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## MODELING THE PERFORMANCE OF ENGINEERING STRUCTURAL MATERIALS II

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## POWDER METALLURGY ALLOYS AND PARTICULATE MATERIALS FOR INDUSTRIAL APPLICATION

*David E. Alman and Joseph W. Newkirk, editors*

213 pp., illus., index, hardcover

**Order No. 4488**

Weight 2 lbs

M \$60 • S \$44 • L \$82





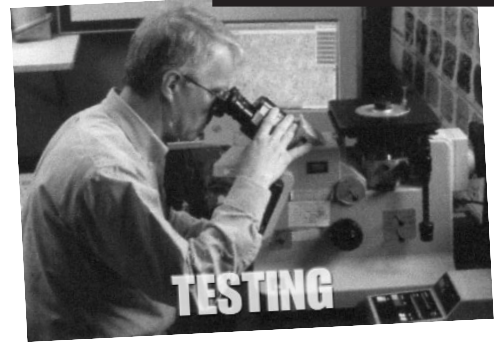
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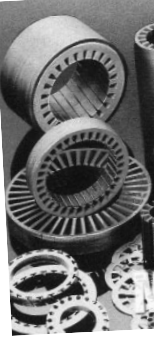
**TESTING**



**PROCESSES**



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### ASM MATERIALS SOLUTIONS PLENARY SESSION

Monday, Oct. 7

**"The New Freedom Car"**

Mr. Tom Gross, U.S. Department of Energy – Office of Transportation Technologies

**"Nanotechnology Initiatives"**

Dr. James Murday, National Science and Technology Council – Nanometer Science Engineering and Technology / National Nanotechnology Coordination Office

**"What is the Cost of Corrosion?"**

Mr. Jeff Littleton, NACE International

**"Current Status of Plasma Thermochemical Surface Engineering"**

Prof. Tom Bell, The University of Birmingham (UK)

**"Surface Engineering: Needs and Opportunities in the Department of Defense"**

Dr. Lewis Slotter, Defense Research and Engineering, U.S. Department of Defense

### ASM MATERIALS SOLUTIONS TECHNICAL PROGRAM

Monday-Thursday, Oct. 7-10

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Challenges Facing the Casting Industry</li> <li>• Failure Analysis and Prevention</li> <li>• 2nd International Aluminum Casting Technology Symposium</li> <li>• Emissions Challenges in the Heavy Equipment Industry</li> <li>• Distributed Energy Resources (DER)</li> <li>• The New Face of Forging Net and Near-Net Shape</li> <li>• International Conference on Joining of Advanced and Specialty Materials – V</li> <li>• Joining and Repair of Gas Turbine Components – II</li> <li>• Machining and Grinding of Engineered Materials: A Symposium Recognizing Dr. M. Eugene Merchant, FASM</li> </ul> | <ul style="list-style-type: none"> <li>• Materials Challenges and Solutions in the Automotive Industry</li> <li>• Application of Materials Science to Military Systems</li> <li>• International Symposium on Microalloyed Steels</li> <li>• Processing and Fabrication of Advanced Materials, 11th International Symposium</li> <li>• Stainless Steels and Specialty Materials Conference 2002</li> <li>• International Symposium on Superplasticity and Superplastic Forming Technology</li> </ul> |
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## ASM MATERIALS SOLUTIONS EXPOSITION EXHIBITORS (as of 5/15/02)

**Tuesday – Wednesday, October 8-9**

<ul style="list-style-type: none"> <li>• Admet</li> <li>• Allied High Tech Products, Inc.</li> <li>• American Stress Technologies</li> <li>• AMTI</li> <li>• Archive 4 Images</li> <li>• ASPEX LLC</li> <li>• Battelle Memorial Institute</li> <li>• Buehler Ltd.</li> <li>• CamScan USA</li> <li>• Carl Zeiss, Inc.</li> <li>• Clemex Technologies, Inc.</li> <li>• Conam Inspection Inc.</li> <li>• Dynamic Systems Inc.</li> <li>• EDAX Inc.</li> <li>• EMTEC</li> <li>• EWI-Edison Welding Institute</li> <li>• FRT of America LLC</li> <li>• Granta Design Ltd</li> </ul>	<ul style="list-style-type: none"> <li>• HC Starck Ohio</li> <li>• Hitachi High Technologies</li> <li>• Hysitron</li> <li>• Institute of Materials</li> <li>• Keymaster Technologies</li> <li>• Leeman Labs</li> <li>• Manufacturing Sciences Corp</li> <li>• Mar-Test Inc.</li> <li>• Metal Samples Company</li> <li>• Metcut Research Inc.</li> <li>• Microphotonics</li> <li>• Micropyretics Heaters International Inc.</li> <li>• Microscopy/Microscopy Education</li> <li>• Modern Applications News</li> <li>• NACE International</li> <li>• Natural Resources Canada</li> <li>• Naval Research Lab (NRL)</li> </ul>	<ul style="list-style-type: none"> <li>• Niton Corp</li> <li>• NSL Analytical Services, Inc.</li> <li>• Oak Ridge National Lab</li> <li>• Oxford Instruments Inc</li> <li>• Pace ATM Corporation</li> <li>• Poco Graphite Inc.</li> <li>• Princeton Gamma-Tech, Inc.</li> <li>• Proto Manufacturing Ltd.</li> <li>• Sherry Laboratories Inc.</li> <li>• Struers Incorporated</li> <li>• Superior Graphite Co.</li> <li>• TEC</li> <li>• TechSolve Incorporated</li> <li>• Thermo Noran</li> <li>• UES Software, Inc.</li> <li>• Wall Colmonoy Corporation</li> <li>• White Engineering Surfaces</li> <li>• Wisconsin TechSearch</li> </ul>
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## INCLUDED WITH MATERIALS SOLUTIONS REGISTRATION

### TECHNICAL HIGHLIGHTS OF THE IFHTSE/ASM CONGRESS

Monday-Thursday, October 7-10

*Symposia on Surface Engineering, Heat Treatment and Thermal Spray will cover:*

- Physical Vapor Deposition (PVD)
- Chemical Vapor Deposition (CVD)
- Electroplating
- Laser Processes
- Tribological Coatings
- Residual Stress
- Surface Engineering Technology Management
- Quenching
- Carburizing
- Novel Non-Toxic Chromating Processes
- Nitriding
- Carbonitriding



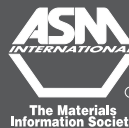
The 13th International Federation for Heat Treatment and Surface Engineering Congress



International Surface Engineering Congress

*The first-ever ASM Surface Engineering Exposition will be held next to the ASM Materials Solutions Exposition on Tuesday and Wednesday, October 8-9. Exhibitors will include:*

- Gold Star Coatings
- HEF USA
- International Thermal Spray Association
- LSP Technologies
- NIST
- Olympus America Inc., S.E.G.
- Quesant Instrument Corporation
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- SECA
- Surface Enhancement Technologies
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***For up-to-the-minute information  
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