

TMS2001

FALL MEETING

TMS Fall Meeting 2001
November 4–8, 2001
Indiana Convention Center
Indianapolis, Indiana, USA

SETTING THE PACE

Sponsored by the TMS EMPMD,
MPMD, SMD, and the ASM-MSCTS

THE TMS FALL MEETING
2001 IS BEING HELD
WITH THE ASM MATERI-
ALS SOLUTIONS CONFER-
ENCE & EXHIBIT, THE
21ST ASM HEAT TREATING
SOCIETY CONFERENCE &
SHOW, AND THE TMS/SPE
PAD POLYMER MATERI-
ALS CONFERENCE ■

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INDIANA CONVENTION
CENTER! ■

Today, information is exchanged rapidly at tremendous speed, ignoring traditional restrictions of national & international borders and time zones.

The TMS Fall Meeting draws visitors from around the world and is a must for anyone interested in the latest research and development in physical metallurgy and materials. ■

4 TRACKS ■ 1 FEE

THE MEETING FEATURES NUMEROUS TECHNICAL SYMPOSIA COVERING EVERYTHING FROM METAL-MATRIX COMPOSITES, POLYMERS, COMPUTATIONAL THERMODYNAMICS, FRICTION STIR WELDING, SOLIDIFICATIONS, MATERIALS DESIGN, TO ALLOY PHASES—JUST TO NAME A FEW OF THE MANY TOPICS DISCUSSED. LOOK ON PAGE 4 IN THIS BROCHURE FOR SYMPOSIA HIGHLIGHTS. ■

Even though access to information has widened with the development of the information superhighway—providing millions of sources readily available day and night—fast access to information does not always guarantee a high quality resource. This year, TMS invites you to attend the TMS Fall Meeting 2001 in Indianapolis and experience a different information superhighway that promises to be the high quality resource you can depend on. As you will discover, the TMS Fall Meeting 2001 will be your information superhighway with technical “tracks” of four conferences under one roof for just one full registration! ■

REGISTER TODAY FOR THE TMS FALL MEETING 2001 AND YOU WILL BE ABLE TO ATTEND AT NO ADDITIONAL CHARGE:

- ASM Materials Solutions Conference & Expo
- 21st ASM Heat Treating Society Conference & Show
- TMS/SPE PAD Polymer Materials Conference

ALL UNDER ONE ROOF AT THE INDIANA CONVENTION CENTER

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THE LINEUP

TABLE OF CONTENTS

<i>Technical Program Grid</i>	3
<i>Symposia Highlights</i>	4-6
<i>Special Feature</i>	7-8
<i>TMS/SPE PAD Polymer Materials Conference</i>	
<i>Planned Proceedings</i>	9-10
<i>Special Events</i>	12-14
<i>ASM/TMS Distinguished Lectureship</i>	
<i>ASM Federal Affairs Committee</i>	
<i>Young Leaders Tutorial Luncheon Lecture</i>	
<i>Student Corner</i>	15
<i>Joint ASM/TMS Student Night Activities</i>	
<i>Student Career Forum</i>	
<i>Student/Faculty Mixer</i>	
<i>Graduate Student Leaders Meeting</i>	
<i>Student Session Monitors</i>	
<i>Complimentary Student Membership Registration</i>	
<i>University Alumni Reception</i>	
<i>The Meeting in General</i>	16-17
<i>Registration Information</i>	16
<i>Advance Registration</i>	
<i>Refund/Cancellation Policy</i>	
<i>Hotel & Transportation Information</i>	18
<i>On Location, Indianapolis</i>	19
<i>Future Meetings Calendar</i>	2



TMS FUTURE MEETING SITES

MEETING	DATE	LOCATION
<i>Annual Meeting and Exhibition</i>		
More than 1,000 technical presentations and 30,000 square feet of exhibitions will detail the latest advances and most critical developments in minerals, metals, and materials science and technology.		
2002 - Seattle, WA	February 17-21	Wash. State Conv. & Trade Center
2003 - San Diego, CA	March 2-6	San Diego Convention Center
2004 - Charlotte, NC	March 14-18	Charlotte Convention Center
<i>Fall Meeting: Physical Metallurgy and Materials</i>		
A program focusing on new developments in materials research and applications held in conjunction with ASM's Materials Week and the Materials Expo.		
2002 - Columbus, OH	October 7-10	Adams Mark
<i>Fall Extraction & Process Metallurgy Meeting</i>		
2002 - Lulea, Sweden	June 16-20	Lulea University of Technology
<i>Electronic Materials Conference</i>		
The annual forum devoted to discussion of preparation and characterization of electronic materials.		
2002 - Santa Barbara, CA	June 26-28	University of California
<i>Topical Conference</i>		
2002 - Santa Barbara, CA	June 24-26	University of California
<i>Device Research Conference</i>		

FOR MORE INFORMATION ON ANY OF THESE CONFERENCES, PLEASE CONTACT:

TMS Meeting Services Department
184 Thorn Hill Road, Warrendale, PA 15086

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WEB: <http://www.tms.org/Meetings/Meetings.html>

HIGH OCTANE FUEL

SYMPOSIA HIGHLIGHTS

The extensive coverage of technical topics will update metallurgists and materials scientists with the latest scientific and technical developments. ■

TECHNICAL SESSIONS ARE PROGRAMMED BY THE TMS ELECTRONIC, MAGNETIC AND PHOTONIC MATERIALS DIVISION (EMPMD); MATERIALS PROCESSING & MANUFACTURING DIVISION (MPMD); STRUCTURAL MATERIALS DIVISION (SMD); TMS EDUCATION COMMITTEE; AND THE MATERIALS SCIENCE CRITICAL TECHNOLOGIES SECTOR (MSCTS OF ASM INTERNATIONAL). ALL SESSIONS WILL BE HELD AT THE INDIANA CONVENTION CENTER AND COORDINATE WITH THE ASM MATERIALS SOLUTIONS CONFERENCE. ■

AFFORDABLE METAL-MATRIX COMPOSITES FOR HIGH PERFORMANCE APPLICATIONS

Metal-matrix composites (MMCs) have been in use in certain aerospace, automotive and electronic components and are being considered for more applications in aerostructures, aeropropulsion, space propulsion, automotive and electronic components. Most of the applications of MMCs were primarily driven by the superior stiffness and strength as compared to monolithic alloys. Affordable MMCs could be potential candidates for many high performance applications and strength and tailorable CTE play an important role. The purpose of this symposium is to discuss the technical challenges pertaining to the high performance applications. This symposium will cover all the relevant aspects of MMC technology such as selection/development of a suitable matrix alloy & processing techniques, microstructural characterization, and mechanical properties. The issues related with aerospace and space applications of MMCs will be emphasized. While this symposium will primarily focus on the particulate-reinforced metallic composites, the papers on continuous fiber-reinforced metallic composites will also be considered. Other advanced materials such as dispersion-strengthened alloys and unreinforced alloys will also be considered. These systems include metallic composites systems such as aluminum, titanium, copper, magnesium, nickel, niobium, etc.

APPLICATIONS OF COMPUTATIONAL THERMODYNAMICS IN MATERIALS PROCESSING

This symposium will cover all aspects of the applications of computational thermodynamics in the synthesis and processing of materials. Topics include alloy design, solidification and solid state reaction simulation, heat treatment simulation, process optimization, corrosion prevention, thin film coating and inclusion engineering, as well as databases and software development. Research related to processes involving irons and steels, non-ferrous alloys, light weight alloys, polymers and intermetallics and topics that relate laboratory or in-plant validation are especially encouraged.

FRICION STIR WELDING AND PROCESSING

The process of friction stir welding is a relatively new solid state joining process receiving considerable attention in the industry. FSW is the most-significant development in the joining industry in the last ten years. Friction stir welding not only provides a solution to join all types of aluminum alloys and composites, it also leads to a significantly better joint properties. Also, some researchers are using the fric-

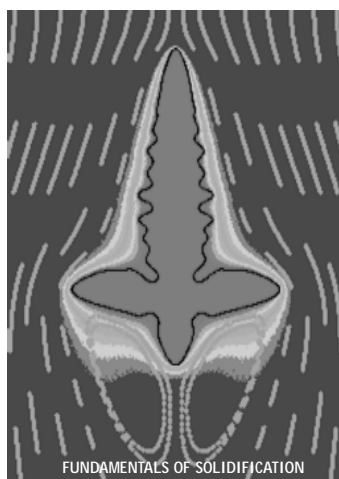
tion stir process as a grain refinement technique. In such cases Friction Stir Processing (FSP) is likely to open up several new possibilities. This symposium will provide researchers with an opportunity to review fundamentals and the current status of the friction stir related processes and discuss the future possibilities.

FULL DENSITY POWDER PROCESSING

This symposium will consist of a series of papers focusing on pore-free materials produced from powders. Topics will include full density processing techniques, resultant properties, and fundamental studies which relate to phenomena which are relevant to full density particulate processing.

FUNDAMENTALS OF SOLIDIFICATION

Solidification represents an important and growing component of materials processing. As a foundation it is essential to maintain continuing effort in the development and understanding of basic solidification concepts. The purpose of the symposium is to highlight recent advances in solidification analysis and modeling concepts.



LEAD-FREE, LEAD-BEARING SOLDERS & ALTERNATIVE SURFACE FINISHES FOR ELECTRONIC PACKAGING

This symposium will cover all aspects of solders, surface finishes, component lead finishes, and the interactions between these materials relevant to electronic packaging. Papers on solders and surface finishes for PWB, BGA, flip-chip, CSP, optoelectronic packaging, and MEMS packaging are welcome. Topics include, but are not limited to, lead-free solders, lead-bearing solders, surface finishes, bumping materials, and lead frame materials. This symposium is organized with an emphasis of bringing researchers from different disciplines together. Issues related to design of solders, phase equilibria, soldering technologies, processing, microstructures, properties, chemical interactions, electromigration, failure mechanisms, and reliability of solder joints will be discussed.

MATERIALS DESIGN APPROACHES AND EXPERIENCES

The conference will bring together materials scientists and engineers who have developed successful alloys (which have found wide applications) with those who are developing new materials design methodologies/tools. Alloy developers from the industry will illustrate how some of the most successful alloys were developed, what tools were used, and what tests were performed to bring the alloys to the successful application. The methodology/tool developers will demonstrate what new tools have been developed and how can these tools be applied to new alloy design. The interaction among the groups will bridge the gaps between them, thus accelerating the transition of new alloy design tools from the developing stage to industrial application. Moreover, the conference will identify the critical areas/needs in new methodologies/tools to focus upon.

MECHANICAL BEHAVIOR & CONSTITUTIVE MODELING OF POLYMERS, FIBER- & PARTICULATE-REINFORCED POLYMER COMPOSITES & POLYMER-BASED NANOCOMPOSITES

TMS and the Polymer Analysis Division of the Society of Plastics Engineers are co-sponsoring this 3-day symposium. The objective of the symposium is to provide a forum for discussion between researchers from broad backgrounds on the mechanical behavior (including static, dynamic and time dependent), constitutive modeling, and model validation of polymers and polymer composites (both nanocomposite and fiber or particulate reinforced). Papers relating to the molecular level response, interface response, or architecture to the macroscopic performance are of particular interest. This symposium will participate in the TMS/SPE Polymer Materials Conference undergraduate and graduate student poster contest.

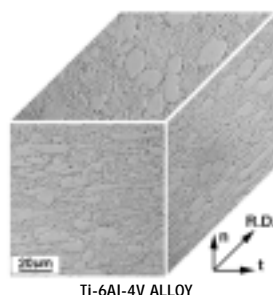
MICROSTRUCTURE MODELING AND PREDICTION DURING THERMOMECHANICAL PROCESSING

This symposium will address developments in the areas of experimental, analytical and computer modeling of the processing of titanium, aluminum, superalloys, and steels. Work that addresses the evolution of microstructure and recrystallization will be presented. Six sessions are planned; two sessions will be on titanium alloys, one session on computer simulation and modeling, and three sessions on other alloys.

MODELING THE PERFORMANCE OF ENGINEERING STRUCTURAL MATERIALS

The objective of this multi-disciplinary symposium is to examine current research and development efforts in all aspects related to modeling of the performance of engineering structural materials. Sessions cover both analytical and computational modeling of materials spanning the spectrum of metals, ceramics, polymers and their composite counterparts. Special topics of interest include: (a) elastic and plastic deformation, (b) fracture and fatigue behavior, (c) durability and damage tolerance, and (d) high-strain-rate deformation. Modeling-related studies applicable to the processing of materials to meet specific criteria will also be presented. Special attention will be given to material models, studies involving validation of modeling approaches, and the effective use of modeling to study problems spanning all domains of materials science and engineering. The presentation of research related to advanced structural materials and the relationship of microstructure to mechanical performance was particularly encouraged for session topics.

Both INVITED and CONTRIBUTED papers will be included. Invited papers will involve speakers, drawn from "leading-edge" academic, national laboratory, and industrial research settings, who will provide a lucid and comprehensive overview of current status and future directions for research.



POLYMERS AND OTHER ORGANICS FOR ELECTRONIC APPLICATIONS: MICRO-TO NANO-TECHNOLOGY

The conference will cover a broad range of topics in the area of electronic applications of polymers and smaller organic molecules as passive and active layers. Topics on passive layers will include materials issues relating to low-dielectric-constant polymers and their applications as inter-level dielectric materials and electronic packaging materials. Because the field of electronic devices made with organic and polymeric materials as active layers has grown rapidly in the last few years, the conference will also cover materials, processing and performance issues relating to organic/polymeric electronic and photonic devices including transistors, light emitting diodes, sensors and solar cells. This symposium will participate in the TMS/SPE Polymer Materials Conference undergraduate and graduate student poster contest.

POWDER MATERIALS: CURRENT RESEARCH & INDUSTRIAL PRACTICES

This symposium will draw presentations from industry, academia and government laboratories on current research and/or industrial practices in powder materials. Contributions are invited in a wide range of areas such as; powder making, powder conditions, reactive powder handling, powder characterization, hot and cold uniaxial pressing, hot and cold isostatic pressing, powder rolling, extrusion, sintering, heat treatment and processing facilities, rapid and directional solidification and consolidation, in-situ synthesis of composites, ceramics and intermetallics, atmospheric and low pressure plasma spray, flame spray, wire arc spray, alloy and materials development, mechanical behavior of bulk powder based materials, physical based mathematical models, theories, simulation, micromechanisms and end use products. The purpose of this symposium is to bring together scientists, engineers and manufacturers both as speakers and audience and to create a forum on both fundamental and technological aspects with the intention of bridging them. The contributions presented at this symposium will be published in the form of a proceedings to be available at the conference.

PROCESSING/PROPERTY RELATIONSHIPS IN POLYMER-MATRIX COMPOSITES AND NANOCOMPOSITES

This symposium provides a forum for researchers, materials suppliers and industrial users to present technical information on the relationship between processing methods and the resultant properties of polymer composites and nanocomposites. Papers are solicited on the topics of new materials and processing methods, and the effects processing methods on the mechanical, chemical, thermal, optical and electrical properties. This symposium will participate in the TMS/SPE Polymer Materials Conference undergraduate and graduate student poster contest.

RADIATION AND THERMAL DEGRADATION OF POLYMER MATERIALS

Topics will span the areas of active interest in the nuclear industry (NPP Containment coatings and cables), defense, and industrial sectors. Papers are invited pertaining to basic, applied and industrial research concerning any effects of the electromagnetic radiation spectrum (i.e. IR, UV, X-Ray, GAMMA) and particulate radiational (alpha, beta, neutron) effects on the structural integrity of polymers and other organic materials. This symposium will participate in the TMS/SPE Polymer Materials Conference undergraduate and graduate student poster contest.

SURFACE COMPOSITE COATINGS DEDICATED TO DR. ROBERT REEBER, ARO (RETIRED)

Symposium on "Surface Composite Coatings" will review the current state of technology and science of protecting surfaces from friction and wear, hot gas erosion, chemical corrosion and so on. Techniques ranging from electrode position, sputtering, ion beam, explosive cladding, and similar are of interest. Focus will be the relationship between the microstructure of surfaces, for the wide variety of protective surface composites, and the ultimate properties necessary for successful service application.

THIN FILMS OF REFRACTORY METALS IN THE ELECTRONICS INDUSTRY

This seminar will cover all aspects of refractory metal thin films in electronic applications. Refractory metals will include Mo, V, Nb, Ta, W, and Re, as well as their alloys and compounds. Suggested topics include, but are not limited to, material manufacturing advances, deposition techniques, applications, and characterization techniques for both bulk materials and thin films.

GENERAL ABSTRACTS

The TMS Fall Meeting Program Committee invites you to attend the scheduled general abstract sessions. 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 has scheduled presentations on the following topical areas:

- Alloy Phases
- Chemistry & Physics of Materials
- Corrosion & Environmental Effects
- Electronic Packaging & Interconnection Materials
- Ferrous Metallurgy
- High Temperature Alloys
- Industrial Innovations
- Mechanical Metallurgy and Composite Materials
- Non-Ferrous and Powder Metallurgy
- Nuclear Materials
- Polymers
- Refractory Metals
- Surface Engineering

The entire TMS Fall Meeting 2001 program, including abstracts, may be viewed by accessing the TMS Conference Management System (CMS) on the World Wide Web at <http://cms.tms.org> and online in PDF format at <http://www.tms.org/Meetings/Fall2001/Fall2001.html>. If you do not have access to the World Wide Web, contact TMS Meeting Services at (724) 776-9000 ext. 243 for a copy of the technical session abstracts. The abstracts will be printed in the final program distributed at the meeting. ■

The perfect opportunity to session-hop and maximize your information opportunities.

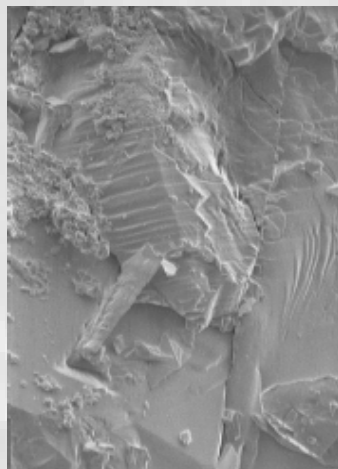
POLE POSITION

ANNOUNCING A SPECIAL EVENT

TMS/SPE PAD POLYMER MATERIALS CONFERENCE

November 5–8, 2001

PART OF THE TMS FALL MEETING 2001



SPONSORED BY TMS AND THE SOCIETY
OF PLASTICS ENGINEERS' POLYMER
ANALYSIS DIVISION (SPE PAD). ■

TMS



MONDAY MORNING ■ NOVEMBER 5, 2001

ALL-CONFERENCE PLENARY PRESENTATION ON POLYMER COMPOSITE TECHNOLOGY

Kicking off the week as part of the TMS/ASM All-Conference Plenary Session will be a presentation by Professor Jan-Anders E. Manson, of the Laboratory of Composite Technology, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland, as part of the TMS/SPE PAD Polymer Materials Conference.

TUESDAY AFTERNOON ■ NOVEMBER 6, 2001

SPECIAL TMS/SPE PAD POLYMER MATERIALS CONFERENCE PLENARY

Featuring presentations by:

Prof. Emmanuel Giannelis, Cornell University
TOPIC: A Current Overview of
Clay-Polymer Nanocomposites

Prof. Karen Gleason, MIT
TOPIC: New Paradigms for Low
Dielectric Constant Films

J.M. Caruthers, Purdue University
TOPIC: A Comprehensive Nonlinear Viscoelastic
Constitutive Model: Theory, Numerical
Implementation and Experimental
Validation

Dr. Roger Clough, Sandia National Laboratories
TOPIC: Aging Measurements, Degradation
Mechanisms, and Lifetime Prediction
in Elastomers

**This session will be immediately followed by
a student poster session/competition.**

THE TMS/SPE PAD POLYMER MATERIALS CONFERENCE WILL ALSO INCLUDE THE FOLLOWING SYMPOSIA:

MECHANICAL BEHAVIOR & CONSTITUTIVE MODELING OF POLYMERS, POLYMER COMPOSITES, & POLYMER- BASED NANOCOMPOSITES

The objective of this symposium is to provide a forum for discussion between researchers from broad backgrounds on the mechanical behavior (including static, dynamic and time dependent), constitutive modeling, and model validation of polymers and polymer composites, including nanocomposites. Papers relating to the molecular level response, interface response, or architecture to the macroscopic performance are of particular interest.

KEYNOTE SPEAKERS:

DR. JOZEF BICERANO
Dow Chemical Corporation

ALAN J. LESSER
Conte Research Center,
University of Massachusetts

PROCESSING/PROPERTY RELATIONSHIPS IN POLYMER-MATRIX COMPOSITES AND NANOCOMPOSITES

This symposium provides a forum for researchers, materials suppliers and industrial users to present technical information on the relationship between processing methods and the resultant properties of polymer composites and nanocomposites. Papers will be presented on new materials and processing methods, and the effects processing methods on the mechanical, chemical, thermal, optical and electrical properties.

KEYNOTE SPEAKER:

RODNEY ANDREWS
Center for Applied Energy,
University of Kentucky

JOHN KARDOS
Washington University
of St. Louis



JAN-ANDERS E. MANSON



EMMANUEL GIANNELIS



KAREN GLEASON



J.M. CAROTHER



ROGER CLOUGH



RODNEY ANDREWS



JOZEF BICERANO



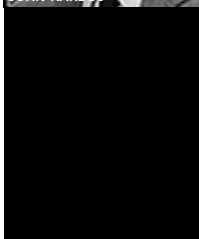
ALAN J. LESSER



JOHN KARDOS



GEORGE MALLIARAS



GEORGE MALLIARAS

Make the most of
your visit by sitting
in on these infor-
mative sessions. ■

POLYMERS AND OTHER ORGANICS FOR ELECTRONIC APPLICATIONS: MICRO- TO NANO-TECHNOLOGY

This symposium will cover a broad range of topics in the area of electronic applications of polymers and smaller organic molecules as passive and active layers. Topics on passive layers will include materials issues relating to low-k polymers and their applications as inter-level dielectric materials and electronic packaging materials. The conference will also cover materials, processing and performance issues relating to organic/polymeric electronic and photonic devices including transistors, light emitting diodes, sensors and solar cells.

KEYNOTE SPEAKER:

PROF. GEORGE MALLIARAS
Department of Materials
Science & Engineering,
Cornell University

RADIATION AND THERMAL DEGRADATION OF POLYMER MATERIALS

Topics in this symposium will span the areas of active interest in the nuclear industry (NPP Containment coatings and cables), defense, and industrial sectors. Papers are invited pertaining to basic, applied, and industrial research concerning any effects of the electromagnetic radiation spectrum (i.e. IR, UV, X-Ray, GAMMA) and particulate radiational (alpha, beta, neutron) effects on the structural integrity of polymers and other organic materials.

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Your guides to the maintenance of your materials science education, the following titles are scheduled for release at the 2001 TMS Fall Meeting. ■

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PARTMENT THIS FALL. ■

AFFORDABLE METAL MATRIX COMPOSITES FOR HIGH PERFORMANCE APPLICATIONS

*Awadh Pandey, Kevin Kendig,
and Thomas Watson, editors*

This proceedings volume will contain papers based on original work in metal-matrix composites (MMCs) for high performance applications. The purpose of the symposium is to discuss the technical challenges pertaining to high performance applications, and it will cover all relevant aspects of MMC technology such as selection/development of a suitable matrix alloy, processing techniques, microstructural characterization, and mechanical properties. Issues related to aerospace and space applications of MMCs will be emphasized, while processing, strengthening mechanisms, and properties issues will also be discussed.

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MODELING THE PERFORMANCE OF ENGINEERING STRUCTURAL MATERIALS

Donald Lesuer and T.S. Srivatsan, editors

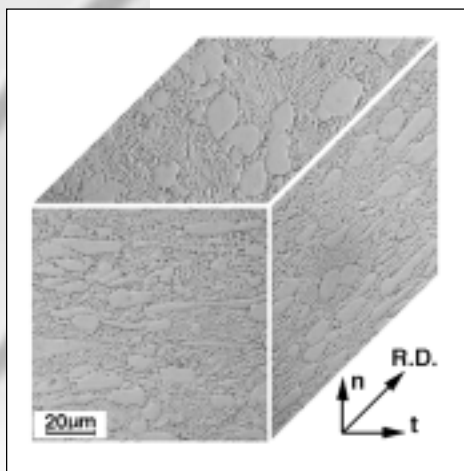
This multi-disciplinary symposium will examine current research and development efforts in all aspects related to modeling the performance of engineering structural materials. These proceedings will cover both analytical and computational modeling of materials, spanning the spectrum of metals, ceramics, polymers, and their composite counterparts. The book will include discussion of elastic and

plastic deformation, fracture and fatigue behavior, durability and damage tolerance, and high-strain-rate deformation. Special emphasis will be placed on material models, studies involving validation of modeling approaches, and the effective use of modeling to study problems spanning all domains of materials science and engineering.

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index

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FRICION STIR WELDING AND PROCESSING

Kumar Jata, Murray Mahoney, and Rajiv Mishra, editors

As the process of friction stir welding is a relatively new solid state joining process receiving considerable attention in the industry, this proceedings volume will attempt to provide researchers with an opportunity to review fundamentals and the current status of the friction stir related process and discuss its future possibilities. As the most significant development in the joining industry in the last ten years, friction stir welding not only provides a solution to join all types of aluminum alloys and composites, it also leads to significantly improved joint properties. Researchers are now using the friction stir process as a grain refinement technique, which is likely to open up several new possibilities.

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MICROSTRUCTURAL MODELING AND PREDICTION DURING THERMOMECHANICAL PROCESSING

R. Srinivasan and S.L. Semiatin, editors

This proceedings volume will include papers on recent developments in modeling and prediction of microstructure during thermomechanical processing of titanium, superalloys, aluminum, and ferrous alloys. This volume plans to emphasize the evolution of microstructure and recrystallization, and its scope will cover both physical and computer modeling.

ISBN 0-87339-505-0

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MATERIALS DESIGN APPROACHES AND EXPERIENCES

J.-C. Zhao, Michael Fahrman, and Tresa Pollock, editors

These proceedings will be a unique collection of papers describing both past alloy design experiences and state-of-the-art alloy design methodologies. The papers describing alloy design approaches will serve as updates and reviews of the state-of-the-art computational methodologies covering first-principle, neural network, combinatorial, phase-field, thermodynamic, and regression-based alloy design. The papers on alloy development experiences will provide an historic perspective on how some of the most successful alloys were developed and the amount of testing and property balance considerations required for the alloys to find commercial applications. Covering both past experiences and new approaches, the book should be attractive to alloy developers, metallurgists, and materials scientists in industry and academia.

ISBN 0-87339-503-4

Approx. 432 pp., illus., index, hardcover

Order No. 5034

POWDER MATERIALS: CURRENT RESEARCH AND INDUSTRIAL PRACTICES

F.D.S. Marquis, N. Thadhani, and E.V. Barrera, editors

This symposium will draw presentations from industry, academia, and government laboratories on current research and/or industrial practices in powder materials. Contributions are invited in a wide range of areas such as powder making, powder conditions, reactive powder handling, powder characterization, hot and cold uniaxial pressing, hot and cold isostatic pressing, powder rolling, extrusion, sintering, heat treatment and processing facilities, rapid and directional solidification and consolidation, in-situ synthesis of composites, ceramics and intermetallics, atmospheric and low pressure plasma spray, flame spray, wire arc spray, alloy and materials development, mechanical behavior of bulk powder-based materials, physical-based mathematical models, theories, simulations, micromechanisms, and end-use products. This proceedings volume brings together scientists, engineers, and manufacturers to create a forum to bridge the fundamental and technological aspects of powder materials.

ISBN 0-87339-507-7

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☐ TMS OnLine/Web
☐ Colleague
☐ Other _____

BIRTHDATE:

_____/_____/_____

Members automatically receive
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Materials, or Metallurgical and
Materials Transactions A and B,
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ID

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TYPE

CATEGORY

SECTION

APPROVED

NAME: _____

LAST

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MIDDLE INITIAL

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COMPANY OR ORGANIZATION: _____

BUSINESS: _____

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CITY

STATE

9 DIGIT ZIP/POSTAL CODE

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COUNTRY

PHONE

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E-MAIL

MONTH

DAY

YEAR

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 _____

Recruit a friend and earn 180 Appreciation Points for the TMS Reward Auction. Visit www.tms.org/Society/auction/membrauction.html for more information.

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

THE INSIDE TRACK

SPECIAL EVENTS

ASM/TMS DISTINGUISHED LECTURESHIP IN MATERIALS AND SOCIETY

November 7, 2001
12:45 PM–1:45 PM
Indiana Convention Center



LECTURER: DR. BHAKTA B. RATH
ASSOCIATE DIRECTOR,
MATERIALS SCIENCE AND
COMPONENT TECHNOLOGY
DIRECTORATE
NAVAL RESEARCH LABORATORY

BIOGRAPHY

Dr. Rath's academic career includes a Ph.D. from Illinois Institute of Technology. From 1961 to 1965, he held a tenured position at Washington State University. In 1965 he joined the staff of the Edgar C. Bain Laboratory for Fundamental Research of the US Steel Corporation, and in 1972 continued on to head the Metal Physics Research Section of the McDonnell Douglas Research Laboratories. He joined the Naval Research Laboratory in 1976 as Head of the Physical Metallurgy Branch, and in 1982 served as Superintendent of the Materials Science and Technology Division while serving as Adjunct Professor at various universities.

He serves as a member of several steering, planning, review, and advisory boards and has received numerous awards and honors, including the 1999 "Presidential Rank Award," presented by The President of the United States for sustained outstanding achievements of a senior executive. Dr. Rath has been one of the primary forces in enhancing research collaborations between India and the United States in the broad field of Physical and Materials Sciences.

Dr. Rath represents the US Navy and the Department of Defense, and serves as the Executive Chairman on "Materials and Processing Technology Group" for the TTCP countries (USA, UK, Australia, Canada, and New Zealand). He has been appointed by the US Secretary of Defense and the Secretary of US Navy to serve as a member of the board to develop strategy and collaborative research on Methane Hydrates with the Department of Interior, Department of Energy, NOAA and NSF.

TOPIC:

Abundance of Frozen Clean Energy from the Sea

Abstract:

Methane hydrates occur naturally in ocean sediments as a crystalline solid under proper conditions of temperature and pressure in a water environment. The crystalline framework of water molecules captures the methane during crystallization and forms icy solids known as clathrates. Abundant methane hydrate deposits are found along all continental shelves of the world either on the surfaces of seabeds or shallow depths in the sediment. The total amount of concentrated methane deposits is estimated to be over twice the known amount of carbon in earth's fossil-fuel reserves. With a rapid depletion of oil reserves, the vast hydrate deposits have the potential of becoming the major energy resource for the 21st century. Nearly pure methane, with highest energy density and cleanest combustion of all hydrocarbons, can be easily and economically separated from the hydrate deposits, by simply altering tem-

perature, pressure or composition. A number of research and development issues such as: structure, chemistry, thermodynamic and kinetic factors on formation and phase stabilities of hydrates, locations and quantification of hydrate deposits and stability zones, seafloor geophysical properties, nature of methane transport through sediments and environmental impacts need to be well understood before economic exploitation of this vital resource can be realized. Current efforts and future plans of a number of nations will be discussed.

November 7, 2001

2:00 PM

Indiana Convention Center

**ADVOCACY FOR MATERIALS
SCIENCE AND ENGINEERING—
THE WASHINGTON “SCENE”**

**A Special session sponsored by the Public and
Government Affairs Committee of TMS and the
Federal Affairs Committee of ASM International**

*Co-Chairs: Prof. Diran Apelian, Metal Processing Institute,
WPI, Worcester, MA*

*Mr. Bruce Boardman, Deere and Company,
Moline, IL*

Federal spending as a percentage of GDP from 1985-1999 has dropped 21% in Engineering and 29% in the Physical Sciences. Since 1986, the number of bachelor's degrees awarded in engineering is down 21.1%. These are dangerous trends. If these trends continue, and if federal research budget does not keep up with the rise of our GNP, there is concern that the United States will not be able to compete in the global marketplace. In contrast, funding for health related initiatives has dramatically increased over the same period, particularly, the NIH budget. We, as a community of materials scientists, engineers, practitioners and industrialists, need to reverse the trend. What are desperately needed are a unified voice, a genuine advocacy for materials science and engineering, and an advocacy to bolster the investments in mathematics, engineering, and the physical sciences. This special session has been organized jointly by the Public and Government Affairs Committee of TMS, and the Federal Affairs Committee of ASM to kick off a pro-active initiative for an advocacy voice in Washington.

THREE KEYNOTE SPEAKERS WILL ADDRESS
THESE ISSUES IN THIS SPECIAL FORUM.

- **Prof. Merrilea Mayo:** Penn State University, and ASTRA (Alliance for Science and Technology Research in America) Board member. Dr Mayo will address and review trends in the last decade, and will outline ASTRA's agenda. She will also frame the role and responsibilities of materials scientists and engineers, as well as the role of the Professional Societies.
- **Mr. Curt Supplee:** Director of Legislative and Public Affairs, The National Science Foundation (former science writer for the Washington Post). Mr. Suplee will discuss the public's perception of engineers and scientists, and will provide a glimpse of “ourselves” in the societal mirror ... the question being: “do we like what we see? ... and if not what do we need to do?”
- **Ms. Robin Gibbin:** National Academy of Engineering. Ms. Gibbin will review and discuss NAE's twenty greatest achievements of the 20th century. She will provide a historical context of the role of Engineering and Society.

November 5, 2001

Indiana Convention Center

2001 CONFERENCE KEYNOTE SESSION

The 2001 Conference Keynote Session (Plenary) offers an extraordinary opportunity to attendees. This synergistical collaboration of experts representing Materials Solutions, the Heat Treating Society (HTS), the Thermal Spray Society (TSS), the International Metallographic Society (IMS), and TMS will provide a look at what can be expected in our careers during the next decade. Don't miss “Materials and Processes for the New Millennium”.

November 5, 2001

12:00 noon–1:30 PM

Westin Indianapolis Hotel

**YOUNG LEADERS TUTORIAL
LUNCHEON LECTURE**

Dr. Fay Hua, Intel Corp.

SPONSORED BY THE YOUNG LEADERS COMMITTEE

**Soldering Technology in
Electronic Package and Assembly**

Solder alloys have been used extensively in electronic packaging. Unfortunately, most of these alloys contain Pb and are, thus, not environmentally benign. A large-scale effort is underway to replace existing Pb-Sn alloys with Pb-free alloys of similar properties. This talk will focus on new developments and properties of new Pb-free solder alloys.

Dr. Fay Hua received her Ph.D. from Vanderbilt University in Materials Science and Engineering in 1995, and quickly joined the Hewlett Packard Company. She led the Hewlett-Packard company Pb-free conversion effort and was recognized as technical leader in the area. Recently, she joined Intel Corporation as materials technologist, where she is leading and working on all package aspects of soldering technologies. She has authored and co-authored over 40 papers in Pb-free soldering technology in electronic package and assembly.

The Young Leaders Tutorial Lecture includes an optional “brown bag” lunch for \$20, which should be purchased in advance using the enclosed registration form. There will be no charge for those attending the lecture who do not wish to purchase the lunch.

AMATEUR RACERS

STUDENT CORNER

2001 JOINT ASM/TMS STUDENT NIGHT ACTIVITIES:

Sunday, November 4

Indianapolis Marriott Downtown

Students attending the TMS Fall Meeting are encouraged to attend Student Night activities, scheduled for Sunday, November 4. 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.

Sunday, November 4, 5:00 p.m.–6:30 p.m.

Indianapolis Marriott Downtown

2001 Student Career Forum in Materials Science and Engineering:

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!

Sunday, November 4, 8:00 p.m.–10:30 p.m.

Indianapolis Marriott Downtown

2001 Student/Faculty Mixer

The traditional mixer for students and faculty 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! Students, faculty, members of the Board, and executive officers are all invited to attend.

Non-Members pay just \$25 for meeting registration and receive a year of student membership **FREE**.

GRADUATE STUDENT LEADERS MEETING

Monday, November 5, 11:00 a.m.–12:00 noon

Westin Indianapolis Hotel

Attend the TMS Graduate Student Leaders meeting on Monday, November 5, in the Westin Hotel from 11:00 a.m.–12:00 p.m. Meet with your peers and TMS staff to assist in development of this program geared specifically toward graduate students. For more information, contact Tara Oprosky, Membership Coordinator at toprosky@tms.org.

FREE STUDENT REGISTRATION

All current ASM/TMS Joint Student Members may register for the 2001 TMS Fall Meeting at no charge. You may attend all of the sessions of the TMS Fall Meeting, the ASM Materials Solutions Conference, the 21st ASM Heat Treating Society Conference, and the TMS/SPE PAD Polymer Materials Conference, including all of the events listed on this page for free. ■

STUDENT SESSION MONITORS WANTED!

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 the Authors' Coffee each morning (7:00 am–8:15 am) or afternoon (1:00 pm–2:00 pm) that they are scheduled to monitor sessions. Monitors' positions are limited and will be assigned on a first-come basis. The deadline for submitting monitor work forms to TMS is September 27, 2001. To obtain work forms and schedule, contact Charlotte Kobert, TMS, (724) 776-9042 ext. 253, or ckobert@tms.org, or fax (724) 776-3770.

BE THERE!

UNIVERSITY ALUMNI RECEPTIONS

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



GRANDSTAND

THE MEETING IN GENERAL

The TMS Fall Meeting 2001 is being held concurrently with ASM Materials Solutions Conference & Show and the 21st ASM Heat Treating Society Conference & Show. ■

BY CHOOSING THE FULL CONFERENCE REGISTRATION OPTION ON THE ENCLOSED REGISTRATION FORM, YOU WILL BE ENTITLED TO ATTEND ALL ASM AND TMS CONFERENCES FOR ONE FEE. ■

FOR MORE INFORMATION ABOUT INDIANAPOLIS, INDIANA, PLEASE VISIT THE CITY'S WEBSITE AT <http://www.indy.org/>.

DATE AND LOCATION

The TMS Fall Meeting 2001 will be headquartered at the Westin Indianapolis Hotel, Indianapolis, Indiana, November 4-8, 2001. All TMS technical sessions and events will take place in the Indiana Convention Center. TMS Committee Meetings will take place at the Westin Indianapolis Hotel. ASM events will take place at the Indianapolis Marriott Downtown.

REGISTRATION INFORMATION

TMS Fall Meeting 2001 Registration and Housing forms are included in the center of this brochure.

Early Reservations and Registration are advised.

TMS Fall Meeting Advance Registration Fees

Participant (Authors) Full Conference	\$495
TMS/ASM Member (Non-Participant) Full Conference ..	\$595
Non-Member (Non-Participant) Full Conference	\$645
Student Member Full Conference	No Charge
Student Non-Member Full Conference	\$25

ALL REGISTRATION FEES INCLUDE ADMISSION TO:

- 1 - TMS Fall Meeting 2001
- 2 - TMS/SPE PAD Polymer Materials Conference
- 3 - ASM Materials Solutions Conference & Exhibit
- 4 - 21st ASM Heat Treating Society Conference & Show

To register in advance, complete the registration form provided in this mailer. Advance registrations will be accepted until October 8, 2001. Payment **MUST** accompany your registration form. For questions on advance registrations, please contact Geo E. Fern Company.

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

1. Mail: ASM 2001, 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/indy2001>

Badges will be mailed two weeks prior to the TMS Fall Meeting 2001. For international registrants, badges can be picked-up starting Sunday, November 4, at the registration area in the Main Lobby of the Indianapolis 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.

Full payment of registration fees and social function tickets must accompany the completed advance registration form. Any questions should be directed to the Geo E. Fern Company, telephone (888) 621-3376.

A confirmation card will be mailed to you within the two-month period preceding the TMS Fall Meeting 2001. If your registration form is received by the Geo E. Fern Company after October 8, 2001, 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 the Indianapolis Convention Center, beginning on Sunday afternoon and continuing through Thursday morning during the following hours:

Sunday, November 4 2:00 p.m.–7:00 p.m.
Monday, November 5 7:00 a.m.–5:00 p.m.
Tuesday, November 6 7:00 a.m.–5:00 p.m.
Wednesday, November 7 7:00 a.m.–5:00 p.m.
Thursday, November 8 7:30 a.m.–1:30 p.m.

Cancellation Policy

Registration fees will be refunded after the close of the event if a written request is received by October 22, 2001. No refunds will be given on-site. Please send written requests to:

ASM International, Customer Service Center
Materials Park, OH 44073-0002
Fax: (440) 338-4634

THE WESTIN INDIANAPOLIS HOTEL

Located in the heart of downtown Indianapolis and connected by a covered skybridge to the Indiana Convention Center, RCA Dome, and Circle Centre Mall, the Westin Indianapolis Hotel offers the city's finest accommodations and personal attentive service. Hand-some wood paneling, marble flooring, and earth tone fabric designs, create an upscale yet pleasing atmosphere where the comforts of home are readily available. The Westin Indianapolis Hotel enjoys the prestigious AAA Four-Diamond Award and is home to a restaurant legend—Shula's Steakhouse. The hotel is conveniently located 8 miles from the Indianapolis International Airport.

The Westin Indianapolis Hotel will extend the following room rates to TMS Fall Meeting 2001 attendees:

Single Accommodations \$139
Double Accommodations \$159

These rates are subject to state and local taxes, which are currently 11%. Reservations must be received by the Westin Indianapolis Hotel by October 9, 2001, in order to be guaranteed the above rates.

You may submit your completed form by

1. Mail: The Westin Indianapolis Hotel, Reservations
50 South Capitol Avenue, Indianapolis, IN 46204
2. Telephone: (317) 262-8100 or (800) WESTIN-1
3. Fax: (317) 231-3929

In order to qualify for the rates listed above, identify yourself as a TMS Fall Meeting 2001 attendee. Hotel reservations must be made directly with the Westin Indianapolis Hotel by using the Housing Reservation Form included in this brochure. Payment MUST accompany form.

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 that those attendees of the TMS Fall Meeting 2001 requiring specific equipment or services indicate their needs on the enclosed housing and registration forms.

AUTHORS' COFFEE

The TMS Authors' Coffee will be held each morning and afternoon for authors, chairs, and organizers. Authors are asked to attend the Authors' Coffee only on the morning or afternoon of their presentation. The coffee service will be available from 7:00 a.m.–8:15 a.m. and 1:00 p.m.–2:00 p.m.

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 copy-right without the express written consent of TMS and the individual authors is strictly prohibited. Contact the TMS Programming Department at (724) 776-9000 ext. 253 to obtain a copy of the waiver release form.

TECHNICAL SESSIONS

Technical sessions will begin on Monday morning, November 5, 2001, and end on Thursday, November 8, 2001.

All technical sessions will be held at the Indianapolis 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/Fall2001/Fall2001.html>.

If you do not have access to the World Wide Web, please contact TMS Programming Services for a copy of the technical session abstracts. The abstracts will also be published in the TMS Fall Meeting 2001 Final Program distributed at the meeting to all attendees.

POSTER SESSION

A poster session will be held in conjunction with the TMS Fall Meeting 2001. Presentations will be displayed on 4'x8' poster boards; no formal oral presentation is required. The poster session will begin on Monday, November 5, and remain in place through Wednesday, November 7. Abstracts of 150 words or less may be submitted to TMS by September 8, 2001. 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; mail: Charlotte Kobert, TMS, 184 Thorn Hill Road, Warrendale, PA 15086; fax: (724) 776-3770.

PUBLICATION SALES

Concurrent proceedings volumes from TMS Fall Meeting 2001 along with other TMS publications will be on sale at the Westin Indianapolis Hotel.

TRANSPORTATION INFORMATION

Known as the "Crossroads of America", Indianapolis is intersected by more segments of interstate highway than any other metropolitan area—I-69, I-70, I-74, I-65 and I-465—making getting around on wheels very convenient.

Indianapolis is home to the largest airport in the United States managed by a private firm, which is the same firm that operates London's Heathrow and Gatwick airports. The airport is only a 12-minute drive from downtown and served by 18 airlines. Taxi service is available from the Indianapolis International Airport to the Westin Indianapolis. The cost is \$18-\$20 one-way. If two or more people need transportation, it is recommended to take a taxi.





U-S AIRWAYS

US AIRWAYS – OFFICIAL CARRIER OF THE TMS FALL MEETING 2001

US Airways agrees to offer an exclusive low rate for the attendees traveling to the TMS Fall Meeting 2001 in Indianapolis, Indiana. Offer applies to flights on US Airways via Indianapolis, Indiana.

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 on unrestricted coach fares will apply with seven-day advance reservations and ticketing required. Plan ahead and receive an additional discount by ticketing 60 days or more prior to 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.

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' Meeting and Convention Reservation Office toll free at (877) 874-7687; 8:00 AM – 9:30 PM, Eastern Time.

REFER TO GOLD FILE NO. 60671635

Once your reservations are confirmed, we 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 US Airways Meeting and Convention Reservation Office.



RENT-A-CAR SYSTEM HAS BEEN SE- LECTED AS THE OFFICIAL CAR RENTAL COMPANY FOR THE TMS FALL MEETING 2001 IN INDIANAPOLIS, INDIANA.

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 Indianapolis locations.

Advance reservations may be made by 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 Fall Meeting 2001 and reference the CV number which follows:

Hertz CV#010P0009

	DAILY	WEEKEND	WEEKLY
Car Class	Per Day	Per Day	5-7 Day
A Economy 2DR	\$34.99	\$21.99	\$129.99
B Compact 4DR	\$39.99	\$25.99	\$149.99
C Midsize 2/4DR	\$42.99	\$27.99	\$164.99
D Sporty 2DR	\$45.99	\$32.99	\$179.99
F Full-size 4DR	\$49.99	\$34.99	\$194.99
I Luxury	\$65.99	\$62.99	\$274.99
L 4 Wheel Drive	\$65.99	\$62.99	\$274.99
R Minivan	\$65.99	\$62.99	\$274.99

Standard rental and credit qualifications apply. Taxes, vehicle licensing fees/tax reimbursement, transportation fee, transaction fee, city fees, and optional items, such as refueling, are extra. At some locations, an airport access fee of up to 10% may apply. 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.

AT THE TRACK

ON LOCATION, INDIANAPOLIS

"Like the spin of that [Children's Museum] carousel, Indianapolis remains a city in motion, yet with strong ties to its past. Where the annual Indy 500 celebrates velocity, the rest of the city tempts visitors to slow down, look around and stay awhile." *Midwest Living, April 2001*

WHETHER WELCOMING A VISITOR FOR A STAY OF A DAY OR A WEEK, INDIANAPOLIS OFFERS THE BEST OF THE "HOOSIER HOSPITALITY." THE CIRCLE CITY HAS A VARIETY OF OFF-BEAT AND EXCITING THINGS TO DO AND PLACES TO GO. IT DOESN'T MATTER IF YOU'RE INTERESTED IN BASKETBALL, HISTORY, OR HIGH-OCTANE EXCITEMENT, INDIANAPOLIS CAN PROVIDE FRIENDLINESS AND FUN THAT IS RECOGNIZED FAR AND WIDE. ■

FOR MORE VISITOR INFORMATION VISIT THE INDIANAPOLIS CONVENTION & VISITORS ASSOCIATION ONLINE AT <http://www.indy.org> OR CALL THE TOURISM HOTLINE AT 1-800-958-INDY



WHILE IN INDIANAPOLIS, VISIT SOME OF THE CITY'S ATTRACTIONS AND LANDMARK HIGHLIGHTS

Indianapolis Motor Speedway

Built in 1909, the Speedway is home to the famed 500-Mile Race for the Indy Racing League as well as the popular Brickyard 400 stock car race and the SAP United States Grand Prix, the only Formula One race in the United States. Also features a Hall of Fame Museum with approximately 75 cars on display, representing a widely diversified collection of early day passenger cars. A historic video is shown every 20 minutes and bus rides around the track are offered for \$3 when the track is not in use.



Canal Walk

This area is located between West and 10th Streets, along the Central Canal. The Canal Walk is a garden-like oasis with lush landscaping, massive fountains, antique-style street lamps, walkways, a pedestrian bridge, a pedal boat turnaround, jogging paths, and murals depicting scenes of life in Indiana.

President Benjamin Harrison Home

Built in 1875, this National Historic Landmark was home to America's 23rd president. The 16-room Italianate mansion, from which Harrison campaigned in 1888, has been carefully restored to its late 1800s appearance with original Victorian furnishings and political mementos.

Indianapolis Museum of Art
Founded in 1883, the Indianapolis Museum of Art is one of the oldest art museums in the country.



TMS would like to thank the Indianapolis Convention & Visitors Association for providing photographs and city information.

PIT STOP

OPTIONAL EXTRAS ARRANGED BY ASM

While attending the TMS Fall Meeting 2001, take advantage of these opportunities as part of the ASM Materials Solutions Conference. ■

SHORT COURSES

This year, ASM is pleased to offer twelve all new, practical courses in Indianapolis including:

November 2-4, 2001

- Thermal Spray Technology

November 3, 2001

- Introduction to Material and Process Selection:

November 4, 2001

- Fundamentals of Ferrous Powder Metallurgy
- Advanced Material and Process Selection
- Failure Analysis-Process and Methodologies

November 5, 2001

- Introduction to "Metallurgy for the Non-Metallurgist"
- Failure Analysis using Surface Analytical Techniques:

November 6, 2001

- Metallurgy and Heat Treatment of Ferrous Alloys:
- Extending the Life of Your Atmosphere Furnace and Generator

November 8, 2001

- Overview of Failure Analysis and Fractography for Metal Parts

GUEST PROGRAMS

For those accompanied by travel companions, consider the optional guest programs that offer a closer look into Indianapolis culture. This year's programs include:

Covered Bridges & Country Roads

MONDAY, NOVEMBER 5, 2001

Indianapolis Historic Houses and Mansion

TUESDAY, NOVEMBER 6, 2001

Indianapolis Museum of Art Tour Option: Gifts to the Tsars

WEDNESDAY, NOVEMBER 7, 2001

PLANT TOURS

During your visit to Indianapolis, don't miss your opportunity to visit one of three area manufacturing facilities. All plant tours will be held Thursday, November 8, 2001. Costs for the tours are \$20 per person. This year's tour include visits to:

Allison Transmission

Visitors will tour Allison Transmissions plant 4, home of the 1000 and 2000 series transmission. This is Allison's newest manufacturing facility, which incorporates work cell and lean manufacturing concepts.

Contour Hardening Inc

Contour Hardening's new facility has over 50,000 square feet of induction heat treat processing and machine equipment assembly space. During the tour, CHI will demonstrate a variety of heat treat processes.

TOCCO-FECO Inc

TOCCO Indianapolis is a 10,000-square-foot facility housing a Service Center, Training Center, Inductor Manufacturing Center and a Commercial Heat Treat Center. The tour will consist of reviewing each of these centers and their capabilities.

To register for the plant tours use the enclosed registration form.

FOR MORE INFORMATION CONTACT ASM CUSTOMER SERVICE AT (440) 338-5151, EXT. 5900.

ALL HOTEL
RESERVATIONS
MUST BE
SUBMITTED TO
THE WESTIN
INDIANAPOLIS
HOTEL

TMS2001

FALL MEETING

HOTEL REGISTRATION FORM

TMS FALL MEETING 2001 ■ NOVEMBER 4-8, 2001

Please Note:
Check in time is 3 PM.
Check out time is 12 Noon.

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Please reserve _____ room(s) for _____ person(s).

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Special Requests _____

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 Indianapolis, Indiana USA

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Please print or type

☐ Mr. ☐ Ms. ☐ Mrs. ☐ Dr. ☐ Prof. ASM or TMS 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 _____

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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)?

INDUSTRIAL

- ☐ X01 Aerospace
- ☐ X02 Automotive
- ☐ X03 Off-highway
- ☐ X04 Fabricated Metal Products
- ☐ X05 Machinery (except electrical)
- ☐ X06 Electrical/Electronic Industry
- ☐ X07 Chemical/Process Industry
- ☐ X08 Primary Metals Production

INDUSTRIAL – Con't

- ☐ X09 Energy and Utilities
- ☐ X10 Heat Treating – Commercial
- ☐ X11 Heat Treating – Captive (In-house)
- ☐ X12 Heat Treating – Commercial & Captive
- ☐ X13 Thermal Spray – Commercial
- ☐ X14 Thermal Spray – Captive (In-house)

INDUSTRIAL – Con't

- ☐ X15 Thermal Spray – Commercial & Captive
- ☐ X16 Consulting
- ☐ X17 Commercial Testing
- ☐ X18 Contract R & D
- ☐ X19 **EDUCATION**
- ☐ X20 **GOVERNMENT**
- ☐ X21 **BOOK DEALER**
- ☐ X22 **SUBSCRIPTION AGENT**

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

JOB CLASSIFICATION

- ☐ Y01 CEO/President/Gen'l Management
- ☐ Y02 Mgr/Supervisor of Division or Group
- ☐ Y03 Program/Project Mgr
- ☐ Y04 Engineer/Scientist
- ☐ Y05 Technician/Operator
- ☐ Y06 Professor/Instructor
- ☐ Y07 Student
- ☐ Y08 Librarian

PRINCIPLE WORK DONE IN YOUR SECTION OR DIVISION OF THE ORGANIZATION

- ☐ Y09 R & D
- ☐ Y10 Manufacturing/Process Engineering
- ☐ Y11 Materials Testing and Selection
- ☐ Y12 Quality Assurance/Quality Control
- ☐ Y13 Design/Selection of Materials
- ☐ Y14 Marketing/Sales
- ☐ Y15 Purchasing
- ☐ Y16 Training

3. How many employees are at your location?

- ☐ Z01 1-4
- ☐ Z02 5-9
- ☐ Z03 10-14
- ☐ Z04 15-19
- ☐ Z05 20-49
- ☐ Z06 50-99
- ☐ Z07 100-249
- ☐ Z08 250-499
- ☐ Z09 500-999
- ☐ Z10 1000-2499
- ☐ 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, Heat Treating, IMS, TMS Conferences and Exhibits. <i>Note: You must pre-register to attend IMS Sunday Symposium.</i>		
• Full Conference - Attendees	<input type="checkbox"/> \$645 (MSAB)	<input type="checkbox"/> \$595 (MSAA)
• Full Conference - Participants ¹	<input type="checkbox"/> \$495 (MSBB)	<input type="checkbox"/> \$495 (MSBA)
• Full Conference - Students Only ²	<input type="checkbox"/> \$ 25 (MSCD)	<input type="checkbox"/> \$ 0 (MSCC)
Exhibits	Non-Member	Member
Materials Solutions and Heat Treating Exhibits (<i>Pre-Reg Only</i>)	<input type="checkbox"/> \$ 0 (JJJZ)	<input type="checkbox"/> \$ 0 (JJJY)
Additional Functions:		
• ASM Committee/Council and Canada/Europe Awards Lunch (Monday)	_____ No. of Tickets	\$25 (KKKE) = _____
• IMS Awards Luncheon (Tuesday)	_____ No. of Tickets	\$27 (IMMS) = _____
• ASM Awards Dinner Ticket (Monday)	_____ No. of Tickets	\$65 (KKKC) = _____
• Staley Symposium Dinner (Tuesday)	_____ No. of Tickets	\$33 (KKKD) = _____
• TMS Young Leaders Tutorial Luncheon (Monday)	_____ No. of Tickets	\$20 (KKKK) = _____
Plant Tours (Thursday)		
• Allison Transmission	_____ No. of Tickets	\$20 (KKKG) = _____
• Contour Hardening Inc.	_____ No. of Tickets	\$20 (KKKH) = _____
• TOCCO-FECO	_____ No. of Tickets	\$20 (KKKJ) = _____
¹ Participants are Organizers, Session Chairs, and Speakers Only ² 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.		
Method of Payment (all payments must be in U.S. dollars) Registrations will not be processed without full payment <input type="checkbox"/> Check enclosed (payable to ASM International) Check#: _____ Credit Card Number _____ Exp. Date _____ <input type="checkbox"/> MasterCard <input type="checkbox"/> VISA <input type="checkbox"/> American Express <input type="checkbox"/> Discover <input type="checkbox"/> Diners Club Signature _____ CEMBOTMS <i>ASM reserves the right to amend this program as necessary</i>		
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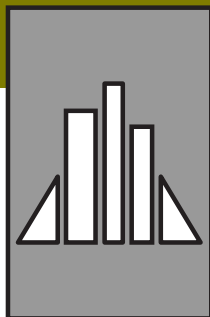
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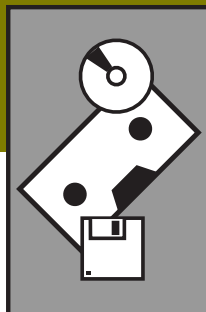
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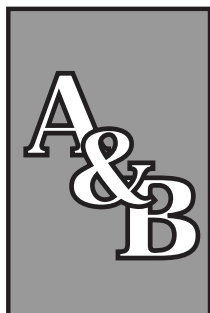
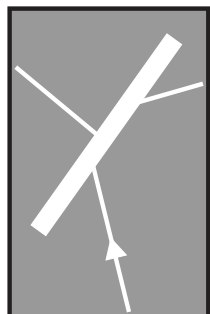
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