

TMS
FALL MEETING
'98

**Are You Looking
for Answers?**



The TMS FALL MEETING '98 . . .

essential materials information



TMS

Minerals • Metals • Materials

Sponsored by The Minerals, Metals & Materials Society (TMS)

11-15 October 1998 • O'Hare Hilton Hotel • Chicago, Illinois, U.S.A.

In cooperation with the ASM International Materials Solutions
Conference & Exposition, Rosemont Convention Center

Featuring programming by:

TMS Electronic, Magnetic & Photonic Materials Division

TMS Materials Processing & Manufacturing Division

TMS Structural Materials Division

ASM International: Materials Science Critical Technology Sector

Registration and Housing Forms Enclosed

If you want answers, you'll get answers at the TMS Fall Meeting '98.

Today, the world of advanced materials technology is being flooded with information. Although, new research and knowledge are the professional lifeblood for materials scientists and engineers, it is becoming increasingly difficult to sort through all the fluff to find just the solution or technique that will answer your question and solve your problem.

The Minerals, Metals & Materials Society (TMS) has done the sorting for you. At the TMS Fall Meeting '98 you will find that the fluff has been removed for you and what remains is a program of symposia that cuts right to the core of today's most exciting and most active trends in research and industry. In a program assembled by TMS's Electronic, Magnetic & Photonic Materials Division; Materials Processing & Manufacturing Division; Structural Materials Division; and the ASM Materials Science Critical Technologies Sector; approximately 100 technical sessions will focus on key information and successful strategies to give you the edge in the research, development, and application of new materials processes, analysis techniques, and equipment advances.

By registering for the TMS Fall Meeting '98 you will also have free access to the Materials Solutions Exposition being held concurrently at the nearby Rosemont Convention Center. There you will be able to make hands-on comparisons of products and services important to materials testing, analysis, and characterization; engineered materials; high-performance metals; powder metals; metal forming; surface treatments; welding and joining; and reinforced plastics and composites.

This year, you have the added opportunity of attending presentations at ASM International's Materials Solutions Conference and the ASM Heat Treating Conference and Expo, also being held concurrently at the Rosemont Convention Center, for only a \$50 additional bridge fee (see the General Information section of this brochure for details).

With all of these many opportunities to learn, you can't help but get the answers you need at the **TMS Fall Meeting '98**.

A message from the TMS Fall Meeting '98 Program Director:

The TMS Fall Meeting '98 is quickly approaching. As usual, the technical divisions have supplied outstanding symposia topics that attendees will find stimulating, educational, and beneficial to their professional development. I must say, efforts to co-locate the TMS programming as close as possible to the ASM conference were fraught with challenges that both societies worked creatively to overcome. Nonetheless, the site location at the O'Hare Hilton Hotel will provide easy access to all TMS and ASM activities and allow for maximum interaction with our colleagues.

Specific strengths of the TMS meeting will include a very strong program in composite materials, and those of you particularly interested in the mechanical behavior and damage of materials will find a comprehensive menu of topics. Moreover, the thermodynamics and physical metallurgy of microstructural development are being examined thoroughly in two special symposia honoring John Cahn

and Paul Beck. All of the thoughtfully organized symposia will cover both academic and industrial topics, thereby providing a forum for engineers, scientists, educators, and students.

If your professional interests range from aluminum to high temperature materials, such as ceramics, intermetallics, or refractory metals, the TMS Fall Meeting '98 will be the place to be!



Dan Thoma, Program Director
Los Alamos National Laboratory

1998 TMS Fall Meeting Grid Chairs

Dr. Rusty Gray
SMD
Los Alamos National Labs.
Los Alamos, New Mexico

Dr. Howard Sizek
MSCTS
Inco Alloys International Inc.
Huntington, West Virginia

Prof. David Bourell
MDMD
University of Texas
Austin, Texas

TABLE OF CONTENTS

General Information		Shuttle Service	2
Location	1	Travel and Destination Information	3
Registration Information	1	Student Information	4
Technical Sessions	2	Special Events	4-5
Attention Symposia Organizers		Tutorial Luncheon Lectures	5
& Tech. Committee Chairs	2	Symposia Highlights	6-8
Poster Session	2	Housing Form	9
Authors' Coffee	2	Registration Form	11
Publication Sales	2	ASM Materials Solutions Conference Info.	14-15
Hotel Information	2		

GENERAL INFORMATION

Location

TMS Fall Meeting '98 will take place in Chicago, Illinois. All technical sessions, conference registration, and sleeping rooms will be in the O'Hare Hilton Hotel located at the O'Hare International Airport, the TMS headquarters hotel for the event.

Advance Registration

Advance registration is strongly recommended. A registration form may be found on page 11. Payment MUST accompany the form. Registration forms sent via fax or the World Wide Web must include a credit card payment. Registration forms mailed must include payment via check or credit card. Your registration will not be processed without payment in full.

Pay an additional \$50 fee and attend the ASM International Materials Solutions Conference and the ASM Heat Treating Society Conference and Expo at the Rosemont Convention Center (see pages 14-15).

All TMS Fall Meeting '98 registration fees include admittance to all TMS programming at the O'Hare Hilton Hotel, and admittance to the Materials Solutions Exposition at the Rosemont Convention Center. Payment of the Additional \$50 bridge fee entitles you to also attend the ASM Materials Solutions Conference and ASM Heat Treating Society Conference and Expo, also at the convention center. Regular shuttle service will be available between the O'Hare Hilton and the Rosemont Convention Center.

Registration Fees

TMS/AIME Member \$395	TMS Non-member Author \$395
Student Member FREE *	Non-member \$495 **
Retired Member \$175	Non-member Student \$25

Bridge fee for to ASM Materials Solutions/Heat Treating Conference at the Rosemont Convention Center \$50

* Students must attach a copy of their student ID card to their registration form.

** Non-members registrants receive a free TMS membership for 1999.

Advance Registration Deadline - September 18, 1998

Three ways to advance register:

Mail your completed registration form to:
TMS Customer Service Center
420 Commonwealth Drive
Warrendale, PA 15086-7514

Fax with credit card information to: 724/776-3770

World Wide Web via the TMS Fall Meeting '98 site at <http://www.tms.org/Meetings/Fall98/Fall98.html>.

Note: If you register via fax or the World Wide Web, do not mail. If you register via mail, do not fax or use the World Wide Web.

Advance registration is strongly recommended to avoid delays in attending the technical sessions. Badges can be picked up starting Sunday, October 11, at 12:00 noon at the registration area in the Grand Ballroom Lobby Level of the O'Hare Hilton Hotel. Full payment of registration fees and social function tickets must accompany the completed Advance Registration Form. **Any questions should be directed to:**

TMS Customer Service Center
420 Commonwealth Drive
Warrendale, PA 15086
Telephone: 724-776-9000 Ext. 270
Fax: 724-776-3770
E-mail: csc@tms.org

Confirmations will be mailed to all processed registrants. Advance registrant packets will be available for pickup during registration hours at the Lobby Level, Grand Ballroom, O'Hare Hilton.

There will be a \$5 processing fee for reprinting a new badge.

At-Meeting Registration

Registration hours at the O'Hare Hilton Hotel, Grand Ballroom Lobby Level:

Sunday, October 11 ----- 12:00 noon - 7:00 p.m.
Monday, October 12 ----- 7:00 a.m. - 5:00 p.m.
Tuesday, October 13 ----- 7:00 a.m. - 5:00 p.m.
Wednesday, October 14 ----- 7:00 a.m. - 5:00 p.m.
Thursday, October 15 ----- 7:00 a.m. - 10:00 a.m.

Cancellation Policy

Registration fees will be refunded if a written request is received before October 2, 1998. A \$30 processing fee will be charged on all cancellations. No refunds will be given on-site. Please mail or fax written requests to TMS Customer Service, 420 Commonwealth Drive, Warrendale, PA 15086; or fax: 724-776-3770.

Tax Deduction

An income-tax deduction is allowed for expenses for education (including registration fees, travel, meals, and lodging) undertaken to maintain and improve professional skills (see Treas. Reg. 1.162-5) (U.S. registrants only).

Audio/Video Recording Policy

The Minerals, Metals & Materials Society (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, publications, or copyright without the express written consent of TMS and the individual authors is strictly prohibited. Contact the TMS Technical Programming Department to obtain a copy of the waiver release form.

Technical Sessions

Technical sessions will begin on Monday morning, October 12, 1998, and end on Thursday, October 15, 1998. All technical sessions will be held at the O'Hare Hilton Hotel. **Abstracts will be available by accessing the TMS Conference Management System (CMS) on the World Wide Web at <http://www.tms.org/cms>, or in PDF format via TMS OnLine, also on the Web at <http://www.tms.org/Meetings/Fall98/Fall98.html>. If you do not have access to the World Wide Web, contact TMS Customer Service for a copy of the technical session abstracts.**

The abstracts will be in the final program distributed at the meeting.

Attention Symposia Organizers & Technical Committee Chairs

At a special organizers workshop on Tuesday, October 13, 1998, TMS will demonstrate the Conference Management System (CMS). This presentation will familiarize organizers with the direct electronic submission of abstracts and the organization of symposia via the TMS world wide web site. All organizers of present and future symposia, as well as technical committee members are strongly encouraged to attend. Contact Peggy Weiss, TMS Programming Services for additional information at 724-776-9000, ext. 227 or e-mail: weissp@tms.org.

Poster Session

A poster session will be held in conjunction with the 1998 Fall Meeting. Presentations will be displayed on 4'x8' poster boards, no formal or oral presentation is required. The poster session will begin Monday, October 12 and remain in place through Wednesday, October 14. Abstracts of 150 words or less must be submitted to TMS by September 15, 1998. E-mail abstracts to weissp@tms.org, or send to Peggy Weiss, TMS, 420 Commonwealth Drive, Warrendale, PA 15086, Fax: 724-776-3770.

Authors' Coffee

The TMS Authors' Coffee will be held each morning and each afternoon at the O'Hare Hilton International Ballroom for authors, chairs and organizers. Authors are asked to attend the authors' coffee only on the morning or the afternoon of their presentation. The morning coffee will run from 7:15 a.m.-8:15 a.m. The afternoon coffee will run from 12:30 p.m.-1:30 p.m.

Publications Sales

Concurrent proceedings volumes from TMS Fall Meeting '98 will be on sale in the Garden Terrace area at the O'Hare Hilton Hotel.

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 requiring specific equipment or services as an attendee of the TMS Fall Meeting '98 contact the TMS Meeting Services Department, at telephone 724-776-9000, ext. 232, and advise of any specific requirements in advance.

Hotel Information

All hotel reservations must be made directly with the O'Hare Hilton Hotel by mail, telephone: 1-800-445-8667, or fax: (972) 503-0089 by using the Housing Reservation Form included in this brochure on page 9. To receive reduced event rates, the form needs to be received by the O'Hare Hilton no later than September 20, 1998. No telephone reservations will be accepted.

All changes and cancellations are to be made directly with the hotel. Hotel confirmations will be provided by the O'Hare Hilton Hotel.

Facts about the O'Hare Hilton Hotel:

- The only hotel located inside the O'Hare International Airport complex and is accessible to terminals via underground speed walks.
- Access to the elevated train to downtown Chicago from the lower lobby.
- Minutes from Rosemont Convention Center and Rosemont Horizon.
- Airline arrival/departure monitors in lobby and on in-room TV screens.
- Spacious lobby with 10 guest service agent stations-featuring Zip-in check-in/Zip-out check-out.
- Two restaurants-*Andiamo*-featuring renowned American/Italian cuisine and the *Gaslight Club*-offering steak and seafood in a "roaring twenties" atmosphere.
- The Sports Edition bar offering specialty drinks and food with monitors featuring multiple sporting events from around the world.
- 10,000 square-foot athletic club located on the Arcade level that features: free weights, nautilus, aerobic equipment, indoor pool, sauna, jacuzzi, steam room, massage therapist, simulated golf, and tanning beds in a luxurious private club atmosphere.
- State-of-the-art life safety/sprinkler system.
- 24-hour room service.
- Valet parking.
- Valet dry cleaning/laundry.
- Guest service hotline.

Arcade level also includes: clothing store, currency exchange, dentist, flower shop, gift & sundry store, travel desk, gourmet coffee shop, ATM machine, international package room, and beauty salon.

Shuttle Service

All programming for the TMS Fall Meeting '98 will be held at the O'Hare Hilton Hotel. The ASM Materials Solutions Conference, Materials Solutions Exposition, and Heat Treating Society Conference will be held at the Rosemont Convention Center. A shuttle bus service for all attendees between these two facilities and the many overflow hotels will be provided. The schedule for this service will be posted in each hotel lobby and the Rosemont Convention Center.

TRAVEL AND DESTINATION INFORMATION

Airlines

The O'Hare Hilton Hotel, site of the TMS Fall Meeting '98, is located at Chicago's O'Hare International Airport and is connected to the terminal by an underground walkway. The O'Hare International Airport is a major hub for more than 15 different airlines.

Special Airfares

US Airways has been designated as the official carrier for the attendees of the TMS Fall Meeting '98, October 11-15, 1998, in Chicago, Illinois. See the US Airways ad on this page.

Airport Transportation

The O'Hare Hilton Hotel offers complimentary shuttle service to and from the airport and can be arranged by calling 686-8000.

Car Rental

Hertz Rent-a-Car has been selected as the official car rental company for the TMS Fall Meeting '98. Special rates are being offered and will be honored up to one week before or one week after the meeting dates. Rates are available for your convenience on rentals at all Hertz Corporate locations in the Rosemont area.

See the Hertz Rent-a-Car ad on this page for reservation details.

ATTENTION: ALL NON-MEMBER REGISTRANTS!

SPECIAL OFFER!

Welcome! Receive a one-year complimentary introductory TMS associate membership for 1999!

That's right . . . all non-member registrants of the 1998 TMS Fall Meeting automatically receive a one-year complimentary associate membership in TMS! The applicable dues fee will be paid from your non-member registration fee. Associate members receive all of the same benefits as members, including a subscription to JOM, discounts on TMS publications and meeting fees, inclusion in, and access to, the TMS Membership Directory on TMS OnLine via the World Wide Web, plus an array of other personalized membership benefits and services.

Shortly after the meeting, you will receive your membership card and new member packet, along with a postal card asking for additional vital information for our records, such as birthdate, education, and work experience. Your associate membership will be activated upon completion of your registration form and payment of the non-member registration fee.

Special bonus! All new TMS members processed during the 1998 TMS Fall Meeting will be entered in a drawing after the meeting for complimentary week-end lodging during the 128th TMS Annual Meeting in San Diego, California, February 28-March 4, 1999!

Don't miss out on this opportunity for a one-year trial membership in TMS and also enjoy BIG savings on publication purchases while you're attending the meeting!



Hertz Rent-a-Car System...

has been selected as the Official Car Rental Company for the 1998 Fall Meeting.

Special rates are being offered and will be honored up to one week before or one week after the meeting dates. Rates are available for your convenience on rentals at all Hertz Corporate locations in Rosemont, Illinois.

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 1998 Fall Meeting and reference the CV number which follows:

You must give the reservations agent the Hertz Meeting #24424.

Rates being offered are as follows:

CAR CLASS	DAILY Per Day	WEEKEND Per Day	WEEKLY 5-7 Days
A COMPACT 2DR	\$34.99	\$24.99	\$154.99
B COMPACT 4DR	\$37.99	\$26.99	\$169.99
C MIDSIZE 2/4DR	\$40.99	\$28.99	\$184.99
D FULLSIZE 2DR	\$43.99	\$33.99	\$199.99
F FULLSIZE 4DR	\$47.99	\$35.99	\$214.99
I LUXURY	\$65.99	\$65.99	\$319.99
R MINIVAN	\$65.99	\$65.99	\$299.99

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 coverages (Loss Damage Waiver, personal Accident Insurance, personal Effects Protection, refueling and state tax) are not included in the above rates.
- Drivers must meet standard Hertz age, driver and credit requirements
- Hertz Rent a Car System is a frequent flyer partner with USAirways, Delta, Northwest, United and American Airlines. Frequent flyer information may be requested at time of car booking.
- Rate cannot be combined with other corporate or association discounts.



Official Carrier of the
1998 Fall Meeting

U.S AIRWAYS

US Airways agrees to offer an exclusive low rate for the attendees traveling to the 1998 Fall Meeting in Rosemont, IL. This special fare will offer a 5% discount off First Class and any published US Airways promotional round trip fares. A 10% discount off unrestricted coach fares will apply with 7 day advance reservations and ticketing required. Plan ahead and receive an additional 5% discount by ticketing 60 days or more prior to departure. These discounts are valid providing all fare rules and restrictions are met and is applicable for travel from the Continental United States, Bahamas, Bermuda, Canada and San Juan, PR. Meeting discounts are not combinable with other discounts or promotions.

Additional restrictions may apply on international travel.

For Reservations Call US Airways Meeting and Convention Reservation Office at 1-800-334-8644 8:00 AM - 9:00 PM (Eastern Time)

Refer to GOLD FILE NUMBER #34200049

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 Meeting and Convention Reservation Office.

STUDENT INFORMATION

The TMS Fall Meeting offers students interested in materials science and engineering a myriad of opportunities to gather technical information, explore career possibilities, and network with student and professionals in their fields - **and registration for TMS student members is free!**

Non-Member Students Get a Free Year of TMS Membership!

TMS student members receive complimentary registration at the TMS Fall Meeting. Registration for students who are not members is \$25, which will be applied toward a 1999 TMS Student Membership. If you also plan to attend the ASM Annual Event in nearby Rosemont, Illinois, you may take advantage of another discounted registration offer for students!

1998 JOINT ASM/TMS STUDENT NIGHT ACTIVITIES

Students attending the TMS Fall Meeting are invited to attend **Student Night**, scheduled for Sunday, October 11 at the Rosemont Hyatt. These annual student activities are organized and jointly sponsored by ASM International and TMS. Students, faculty, and interested members should note these opportunities!

The Student Night activities are **free** for all students. For additional information, contact Vicki Koebnick, Education Department at koebnick@tms.org.

1998 Student Career Forum in Materials Science and Engineering

Sunday, October 11 • Rosemont Hyatt 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 career options. Select ASM and TMS scholarships and the 1998 ASM/TMS Chapters of Excellence will be announced and recognized!

There will be a break for dinner, and students will receive information about dining options around the Chicago/Rosemont area.

1998 Student/Faculty Mixer

Sunday, October 11 • Rosemont Hyatt Hotel

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.

TMS STUDENT AFFAIRS COMMITTEE

Students are encouraged to attend and participate in the TMS Student Affairs Committee Meeting, scheduled for Monday morning, October 12. At this meeting, practicing engineers interested in student programs, chapter faculty advisors, and students discuss the important issues involved with the TMS Student Programs. Contact Vickie Koebnick, Education & Member Services at koebnick@tms.org baker@tms.org for more information.

TMS STUDENT MONITORS

Monday-Thursday, October 12-15 • O'Hare Hilton Hotel

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 (7:15am-8:15am) they are scheduled to monitor sessions. Monitor positions are limited and will be assigned on a first-come basis. The deadline for submitting monitor work forms to TMS is September 15, 1998. To obtain work forms and schedule, contact Peggy Weiss, TMS, 724-776-9042, ext. 227 or weissp@tms.org, or fax 724-776-3770.

TMS FALL MEETING '98 SPECIAL EVENTS



Dr. John W. Cahn Honorary Dinner
Monday, October 12, 1998
6:00 - 7:00 p.m. Reception
7:00 - 8:00 p.m. Dinner
Location: Carlucci's Restaurant

Tickets are \$45 and may be purchased via the TMS Fall Meeting '98 registration form.

On the occasion of Dr. John W. Cahn's seventieth birthday, and as a tribute to his numerous and fundamental contributions to metallurgy and materials science, an honorary symposium is being held during the TMS Fall Meeting '98. The honorary dinner is planned for Monday, October 12, 1998.

ASM and TMS Distinguished Lectureship in Materials and Society

Wednesday, October 14, 1998
11:45 a.m. - 12:45 p.m.
Rosemont Convention Center

Lecturer: Dr. Lyle H. Schwartz, FASM
President
Associated Universities, Inc.
Washington, D.C.

Topic: Materials and Sustainability: How Are We Doing?

UNIVERSITY ALUMNI RECEPTIONS

Alumni receptions of various universities will be scheduled at the O'Hare Hilton Hotel. Please refer to the final program (to be available on-site), for a detailed listing.

ATTENTION: YOUNG LEADERS!

ALL MEETING ATTENDEES UNDER THE AGE OF 35 YEARS OF AGE ARE CORDIALLY INVITED TO ATTEND THE TMS YOUNG LEADERS MEETING/RECEPTION AS FOLLOWS:

Sunday, October 11, 1998

Business Meeting

3:30 P.M. - 5:30 P.M.

Reception

5:30 P.M. - 6:30 P.M.

O'Hare Hilton Hotel

Come and become a part of this pro-active young membership!

TUTORIAL LUNCHEON LECTURE SERIES

TMS will once again present its extremely popular Tutorial Luncheon Lectures Series at the TMS Fall Meeting on Monday, October 12, 1998. This series offers an informal seminar atmosphere for expert presentations on subjects designed either as theoretical review or as informal discussion of experimental techniques and leading edge scientific advancements. The lecture format includes optional "brown bag" lunch for \$15. Lunch begins at 12:00 noon, followed by a 40 minute tutorial lecture beginning at 12:20 pm. Tickets may be purchased in advance using the TMS Fall Meeting Registration Form or at the TMS Registration Desk at the O'Hare Hilton. There will be no charge for those attending the lecture who do not wish to purchase the lunch.

"ABET - EC2000: What and Why ?"

Sponsored by the TMS Continuing Education Committee
Presented by Carl J. McHargue, Center for Materials Preprocessing at the University of Tennessee-Knoxville
Monday, October 12, 1998, 12:00 noon-1:30 p.m.

The adoption of Engineering Criteria 2000 (EC2000) by the



Accreditation Board for Engineering and Technology (ABET) represents a radical change in the accreditation process for engineering educational programs. The emphasis will shift from an auditing of input by the institution to an outcomes-based assessment of the product (students demonstrated abilities). The focus will be on continuous improvement in the educational experience of students.

The lecture will present an overview of the motivation for change, the content of EC2000, the processes to be used in accreditation visits, and the schedule for implementation.

About the Presenter: Carl J. McHargue is Professor, Materials Science and Engineering and Director, Center for Materials Processing at the University of Tennessee-Knoxville. He obtained the B. S. in Metallurgical Engineering, M. S. in Metallurgical Engineering, and Ph. D. from the University of Kentucky. After 38 years at the Oak Ridge National Laboratory, he joined the faculty of the University of Tennessee - Knoxville. The author of more than 200 scientific papers and holder of two U. S. patents, his recent research interests have been in the field of surface modification of materials. He is a Senior Member and Fellow of TMS and is active on the Accreditation and Education Committees. He is scheduled to assume the role of TMS representative to the ABET Board of Directors in November, 1998.

"Advanced TEM Techniques for the Characterization of Materials"

Sponsored by the TMS Young Leaders Committee
Presented by Professor Manfred Ruhle, Max-Planck-Institut für Metallforschung, Stuttgart, Germany
Monday, October 12, 1998, 12:00 noon - 1:30 p.m.

Advanced TEM techniques allow the characterization of the structure and composition to the atomic level. High-resolution transmission electron microscopy allows the determination of the position of columns of atoms within the TEM specimen. However, there exist stringent experimental conditions which have to be fulfilled; e.g., columns have to be parallel to the incoming electron beam. If all conditions are fulfilled, a quantitative determination of the position of atoms can be reached with an accuracy better than 0.01 nm.

The chemical composition can be studied by analytical microscopy which includes energy dispersive spectroscopy (EDS) as well as electron energy loss spectroscopy (EELS). Both techniques allow the qualitative and quantitative determination of the composition of materials. The spatial resolution depends on the diameter of the probe as well as the specimen thicknesses.

An emerging technique is being reflected in the energy loss near-edge structure (ELNES). Through a quantitative interpretation of ELNES structure and comparison with theoretical modelling information on bonding in the crystal can be obtained with high spatial resolution.

About the presenter: Manfred Ruhle is currently Executive Director of the Max-Planck-Institut für Metallforschung, Stuttgart, Germany. He earned his Dipl.-Physics (1963) and Ph.D. (1967) from the University of Stuttgart. He has been affiliated with the Max-Planck-Institut für Metallforschung since 1967.

He has received numerous professional honors and serves on the editorial boards or as co-editor of the following publications: *Interface Science*; *Zeitschrift für Metallkunde*; *Journal of Microscopy*; *Journal of Electron Microscopy*; *European Physical Journal*; *Philosophical Magazine*; *Ultramicroscopy*; *Bulletin of Materials Science, India*; *Microscopy*, *Microanalysis*; *Microstructure*; and *Journal of Electron Microscopy Techniques*.

Dr. Ruhle's research interests have focused on microstructure-property relationship of advanced materials; microstructural characterization of high performance materials with emphasis on transmission electron microscopy, including high-resolution and analytical electron microscopy, structure of grain boundaries in ceramics, analysis of atomistic structure of interfaces, determination of chemical composition of materials with high spatial resolution, bonding and debonding mechanisms and interfaces; and displacive transformations in inorganic materials.

TMS FALL MEETING '98 SYMPOSIA HIGHLIGHTS

More than 100 technical sessions programmed by the Electronic, Magnetic and Photonic Materials Division (EMPMD); Materials Processing and Manufacturing Division (MPMD); Structural Materials Division (SMD); and the Materials Science Critical Technologies Sector of ASM International (ASM MSCTS), will update materials scientists and metallurgical engineers with up-to-the-minute scientific and technical developments to answer today's most pressing technological questions.

The entire TMS Fall Meeting 1998 program, including abstracts, may be viewed by accessing the TMS Conference Management System (CMS) on the World Wide Web at <http://www.tms.org/cms>, or in PDF format via TMS OnLine, also on the Web at <http://www.tms.org/Meetings/Fall98/Fall/98.html>. If you do not have access to the World Wide Web, contact TMS Customer Service for a copy of the technical session abstracts. The abstracts will be in the final program distributed at the meeting.

Damage Processes in Advanced Materials

This symposium will cover a wide range of processes that could limit the performance of advanced materials. Creep, fatigue, corrosion and radiation damage are prominent processes that will be considered in this symposium but other damage processes will also be considered. Materials that are being considered for this symposium include intermetallics, ceramics and polymers and composites of these materials. Improvements in the performance of advanced materials is possible with a knowledge of these damage processes which provide the needed information for modifications in material chemistry and structure. It is expected that this symposium will be of interest to those involved in component design, materials selection, and materials development and characterization. This symposium will be published with the book available at the conference.

Discontinuously Reinforced Al-Composites: Present & Future

Discontinuously Reinforced Aluminum (DRA) composites have begun to see both commercial and defense application in a range of markets. This symposium is directed towards metal matrix composites experts and novices alike. It will consist of a series of tutorials providing an overview of the field supplemented with invited and contributed talks. Current applications in the various markets along with future opportunities will be reviewed. In addition, it will focus on the continued research and development needed in the areas of manufacturing processes, materials design, and property understanding to expand the use of this material system.

HONORARY SYMPOSIUM: Evolving Paradigms in Microstructure Evolution: A Symposium Dedicated to Dr. John W. Cahn

Sponsored by: TMS EMPMD/SMD Alloy Phases Committee, Chemistry & Physics of Materials Committee, Phase Transformations Committee; and the ASM MSCTS Thermodynamics and Phase Equilibria Committee

About the symposium:

This symposium will honor Dr. John W. Cahn on the occasion of his seventieth birthday and is a tribute to his numerous and fundamental contributions to metallurgy and materials science. The symposium will focus on new and evolving paradigms in microstructural evolution with an emphasis on "where do we go from here".

About Dr. Cahn:

John W. Cahn, Senior Fellow at the Materials Science and Engineering Laboratory of the National Institute of Standards and Technology (formerly NBS), received his BS in Chemistry from the University of Michigan, and his Ph.D in Physical Chemistry from the University of California at Berkeley. In 1990 and 1996 he received honorary degrees from Northwestern University and Université d'Evry in France. In 1960, he was awarded a Guggenheim fellowship, which he spent at Cambridge University. He has been a visiting professor in Sweden, Israel, and Iran, and since 1984 has been an affiliate professor, jointly in physics and materials science at the University of Washington in Seattle. His many awards and honors include: Fellow of both TMS and ASM; membership in the National Academy of Sciences, the National Academy of Engineering, and the American Academy of Arts and Sciences; honorary membership in the Japan Institute of Metals and the Indian Materials Research Society. He was awarded the Dickson Prize of Carnegie-Mellon University, the Michelson-Morley Award of Case-Western Reserve University, ASM's Sauveur Award, NBS's Stratton Award, and gold medals from the U.S. Department of Commerce, the Japan Institute of Metals, and Acta Metallurgica. He has delivered the TMS Institute of Metals Lecture, the Von Hippel Lecture of MRS, and the McDonald Lecture of the Canadian Metallurgical Society.

Dr. Cahn's early interest in the kinetics and mechanisms of metallurgical phase changes demonstrated a need for exploration of fundamentals and for a deeper understanding of surfaces, interfaces, and defects. Much of his research has been devoted to the study of quasicrystals, which Shechtman discovered at NBS while studying rapid solidification. In his earlier work with John Hilliard, it was found that thermodynamics could be applied usefully even in inhomogeneous systems far from equilibrium, and since then Dr. Cahn's research focus gradually shifted into adapting thermodynamics to materials science problems.

A special dinner is planned for Dr. Cahn on Monday evening, October 12, 1998 as part of the symposium activities. Tickets are \$45 and may be purchased via the TMS Fall Meeting '98 registration form in this brochure.

Dynamic Behavior of Materials

The dynamic behavior of materials encompasses a broad range of phenomena with significant technological applications in both the military and civilian sectors. The processing of materials at high rates, including in the shock regime, has yielded technological processes such as the explosive welding, cladding, compaction and synthesis. Novel processing methods are also under development, combining combustion synthesis and HIP with high-rate processes. The high-strain rate and impact response of metals, ceramics and composites has important implications in the design of projectiles and armor, in crash worthiness of vehicles, in high-speed machinery and in meteorite impact.

Fatigue Behavior of Titanium Alloys

With the renewed interest in the fatigue behavior of military and civilian airframes, gas turbine engines and industrial components, the following will be addressed: high cycle fatigue, low cycle fatigue, fatigue crack initiation mechanisms, environmental effects, effects of processing/microstructure, and life prediction approaches/methods.

General Abstracts

Designed to supplement the meeting's announced symposia, these sessions provide a forum for papers discussing minerals, metals, intermetallics, ceramics, polymers, electronic materials, composites, coatings, polymers, electronic materials, composites, coatings and thin films, deformation, physical properties, environmental effects, extraction and processing, fatigue, fracture, phase transformations and structural evolution, modeling powder technology, solidification, structure, and wear phenomena. Presentations will cover original research and developments in the field.

Hot Deformation of Aluminum Alloys

This symposium will examine the relationships between mechanical behavior and microstructural evolution that must be quantified to develop predictive models for hot deformation of aluminum. Hot deformation is important in large scale production of sheet and extruded forms, processes needed for final shaping of products, and deformation resulting from elevated temperature service that affects dimensional stability and/or performance of a part. Session will address issues including constitutive modeling, process design and modeling, laboratory simulation of large scale hot working processes, the evolution of microstructure texture, damage, dynamic precipitation, recovery, and recrystallization processes, creep and superplastic deformation and the ability to predict phenomena such as corrosion and formability after hot deformation.

Interstitial and Substitutional Solute Effects in Intermetallics II

The symposium will address recent developments in our understanding of the effects of interstitial and substitutional solute atoms on the physical and mechanical properties of intermetallic

compounds. 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, internal friction other related topics. Tentative plans call for publication of both the invited and contributed papers in a proceedings volume that will be available at the time of the conference.

Materials Characterization via the Internet

The combination of high speed communication via the Internet and the increasing capabilities of desktop computers has made it possible to extend the control of expensive scientific instruments such as electron microscopes from the laboratory to distant locations. It is now possible for scientists at widely disparate locations to participate in a microscopy session, using inexpensive teleconferencing tools and their own personal computers. This includes the ability to assume full control of the microscope operation, if desired, so that a local operator need not even be present. Collaborators can view results and share ideas in real time, improving the potential to obtain reliable interpretation and understanding of the data. The implications of this new way for scientists to work together, unencumbered by time and space, to do better science will be explored in this symposium. A number of live demonstrations will be highlighted. Hardware issues and Internet security will also be discussed.

Mechanical Performance of Laminated Composites

This symposium will cover the mechanical properties and resulting performance of laminated composites containing metallic, intermetallic or composite layers. Topics to be covered include, but are not limited to, high and low temperature deformation behavior, fracture toughness, fatigue impact response and damping. Papers covering the following topics are especially encouraged: structure-property correlations, material modeling, improved properties and performance resulting from lamination and material design for prescribed properties and performance.

Mechanisms and Mechanics of Composite Fracture

This symposium will address advances in the understanding of the mechanisms and mechanics of composites fracture, by bringing together people from the materials and mechanics community. Topics to be covered include: 1) particle and fiber reinforced metallic composites, 2) laminated structures, 3) extra lightweight tailored structures such as metallic foams, 4) issues of fast-fracture, fatigue crack growth, and creep fracture, 5) interface fracture, 6) coupled issues of interface failure and matrix plasticity in composite fracture, 7) damage issues and their relationship to final failure, 8) analytical and computational methods of failure/damage prediction at both micro and meso scales, and 9) development of materials for fracture critical applications. Manuscripts are due at the meeting for publication in a special issue of Metallurgical Transactions following a peer review process. However, manuscript submissions is not mandatory for presentation of papers at the symposium.

Modelling of Texture and Anisotropic Properties in Steel and Aluminum Industries for Optimum Materials Performance

The objective of this meeting is to bring together researchers from industrial laboratories and universities to discuss recent advances in the area of modelling of texture development and texture anisotropy correlation in the Aluminum and Steel industries. Problems involving the texture modelling of rolling and annealing processes, modelling of correlation between texture and formability and other mechanical properties, magnetic properties and the environmental degradation of properties during service will be addressed.

New & Emerging Applications for Refractory Metals & Materials

The scope of this symposium encompasses new and emerging applications of refractory metals, their alloys and their use in compound-based refractory materials. Emphasis will be placed on the physical, mechanical and process metallurgy of these materials in services such as aqueous, liquid metal and high-temperature corrosion, wear-resistant service, medical implants, high-energy physics and advanced energy conversion systems.

Paul A. Beck Memorial Symposium

The Paul A. Beck Memorial Symposium is being presented to honor the memory of the late Paul A. Beck for his varied and outstanding contributions to the science and technology of physical metallurgy, and also for his services to promote metallurgy via TMS, especially as the founder of the Alloy Phases Committee of TMS. The major topics of the symposium will include: textures, low temperature heat capacities of alloys, structural relationships of intermetallic compounds and magnetism.

Plasma Case Hardening & Related Processes for Surface Modification

The symposium will provide an interactive forum for the cross-fertilization of ideas and methods in plasma diffusion treatments. The session is intended to include many types of nitriding, carburizing, boronizing, and other processes as well as plasma-assisted deposition and duplex treatments. Topics to be covered included novel advances in processing, interrelationship of structure and properties, and industrial applications.

Processing & Fabrication of Advanced Materials VII

The purpose of this inter-disciplinary conference, is to bring together state-of-the-art developments in the processing and fabrication aspects of advanced materials spanning the entire spectrum of metallics, intermetallics, ceramic-matrix composites, intermetallic-matrix composites, metal-matrix composites, polymer-matrix composites and high-temperature coatings. The conference will attempt to provide an attractive forum for presenting the latest advances in materials processing and fabrication by researchers and engineers from industry, research laboratories and academia. Both invited and contributed papers will be included. Invited speakers involved in "leading-edge" academic and industrial research in related areas will provide an overview of the status and future directions of the research. Contributed papers will cover specific problems in the same areas. The topics of interest include, but are not restricted to: advanced metallics, ceramics, ceramic-matrix

composites, metal-matrix composites, polymer-matrix composites, and high temperature coatings.

Processing of High Temperature Alloys

The aerospace industry faces strong competitive pressures for cost control. This environment, coupled with a mature palette of alloys from which to choose, has led to increased emphasis on processing to improve quality, and increase reliability and component life. This symposium will address developments in processing of high temperature alloys in support of these goals. Abstracts particularly from industry, but also universities and government laboratories, dealing with such topics as cost control, cycle time reduction, quality initiatives, mechanical property improvements or increased product reliability resulting from processing enhancements are encouraged. Processing procedures including, but not limited to: melting and refining, clean metal technologies, ingo metallurgy, directional solidification, powder metallurgical processes, near-net shape technologies, skin-spar technology and other deposition techniques, hot and cold forming operations coatings, and heat treatment will be considered.

Processing & Properties of Advanced Structural Ceramics

This symposium will focus on the processing and properties of advanced structural ceramics. Papers are solicited in the following areas (but not limited to): processing of advanced ceramics from amorphous precursors (including polymer precursors), nanostructured composites, laminated ceramics composites, microstructure-property correlations in advanced composites, toughening mechanisms in nanocrystalline ceramics. The overall theme of the symposium would be on the fundamental understanding of microstructure-property relationship in advanced structural ceramics processed by innovative techniques.

TEMPUS–Spacelab Processing of Metallic Melts

The TEMPUS team of US and German investigators completed a successful mission on MSL-1R Spacelab flight in July, 1997. TEMPUS is an electromagnetic containerless processing facility built by the German space agency for experimentation in low earth orbit. The results of experiments on the properties of undercooled liquid metals, nucleation, solidification, and metallic glass formation will be presented by the investigators in this symposium.

Texture in Films and Coatings

The objective of this symposium is to bring together researchers from industry, industrial laboratories and universities to discuss advances in the area of texture control in coatings and films for the electronic industry, automobile industry, magnetic recording industry and other applications. Examples illustrating how the texture and structure of thin films and coatings is formed and how it can be controlled during the manufacturing process will be discussed. Research on the processing of texture in coatings by electrodeposition, plasma spray, CVD, PVD, sol-gel and other techniques will be presented. Finally, the presentations will focus on various applications of texture control in coatings and films and the correlation between texture and physical, chemical and mechanical properties will be discussed. In particular, the presentations will focus on texture related problems in thin films for electronic interconnects, films for the magnetic recording industry, superconductive films, applications of ferroelectric films, nanocrystalline coatings, reactive elements, high temperature coatings, Zn based automobile steel coatings, application of plasma spray coatings, coatings in aluminum industry and other topics.



TMS 1998 Fall Meeting
October 11-15, 1998
O'Hare Hilton Hotel - Rosemont, Illinois

Reservation Fax (972-503-0089) Reservation Phone 1-800-445-8667

Please Reserve Room(s) for persons

Name _____ Sharing with _____

Company _____

Mailing Address _____

City _____ State _____ Zip Code _____ Country _____

Company Phone _____ Company Fax _____

ALL RESERVATION REQUESTS MUST BE ACCOMPANIED BY THE FIRST NIGHT'S DEPOSIT FOR THE RESERVATION TO BE PROCESSED AND CONFIRMED. ALL CREDIT CARDS USED TO PREPAY WILL BE CHARGED IMMEDIATELY. DEPOSITS ARE REFUNDABLE UPON (30) DAYS ADVANCE NOTICE. AN EARLIER DEPARTURE WILL RESULT IN AN EARLY CHECK OUT FEE OF \$25 (CHARGED TO YOUR INDIVIDUAL ACCOUNT).



[] Please check here if handicap accommodations are required.

All reservations must be received at the O'Hare Hilton Hotel by September 13, 1998. Requests prior to and after convention dates will be accepted on a space available basis only. Convention rate applies two days prior and two days following official meeting dates based on availability. All rooms are subject to 14.9% tax.

[] PAYMENT ENCLOSED [] CHECK [] CREDIT CARD

CARD NO. _____

[] VISA [] MASTERCARD [] AMERICAN EXPRESS [] DISCOVER [] OTHER

EXPIRATION DATE _____

SIGNATURE _____

I plan to arrive _____ DATE I plan to depart _____ DATE

Please Check: [] Single Occupancy \$164.00 [] Double Occupancy \$164.00
[] Smoking [] Non-smoking

Special Requests _____

PLEASE NOTE: CHECK IN TIME IS 3:00 PM CHECK OUT TIME IS 12 NOON

CALL RESERVATIONS FOR DETAILS Reservation Fax (972-503-0089) Reservation Phone 1-800-445-8667

FUTURE MEETING SITES

MEETING	DATE	LOCATION
---------	------	----------

ANNUAL MEETING AND EXHIBITION: More than 1,000 technical presentations and 20,000 square feet of exhibitions will detail the latest advances and most critical developments in minerals, metals, and materials science and technology.

1999 - San Diego, CA	February 28 - March - 4	San Diego Convention Ctr.
2000 - Nashville, TN	February 20 - 24	Opryland Hotel
2001 - New Orleans, LA	February 11 - 15	Ernest N. Morial Convention Center

FALL MEETING: PHYSICAL METALLURGY AND MATERIALS: A program focusing on new developments in materials research and applications held in conjunction with ASM's Materials Week and the Materials Expo.

1998 - Rosemont, IL	October 11 - 15	O'Hare Hilton Hotel O'Hare International Airport
1999 - Cincinnati, OH	October 31 - November 4	Omni Netherland Plaza
2000 - St. Louis, MO	October 8 - 12	Hotel: TBA

FALL EXTRACTION & PROCESS METALLURGY MEETING

1999 - San Sebastian, Spain	September 5 - 9	Kursaal Conference Centre
-----------------------------	-----------------	---------------------------

*Global Symposium on Recycling, Waste Treatment and Clean Technology **REWAS'99***

ELECTRONIC MATERIALS CONFERENCE: The annual forum devoted to discussion of preparation and characterization of electronic materials.

1998 - Charlottesville, VA	June 24 - 26	University of Virginia
1999 - Santa Barbara	June 30 - July 2	University of California

SPECIALTY CONFERENCES

1998 - La Jolla, CA	May 31 - June 4	Sheraton Grande Torrey Pines
	<i>The Ninth International Conference on Metal Organic Vapor Phase Epitaxy ICMOVPE IX</i>	
1998 - Pittsburgh, PA	June 14 - 19	Carnegie Mellon University
	<i>Third International Conference on Grain Growth ICGG - 3</i>	
1998 - Honolulu, HI	July 12 - 16	Hilton Hawaiian Village Hotel
	<i>Third Pacific Rim International Conference on Advanced Materials and Processing PRICM 3</i>	
1999 - Newport Beach, CA	July 31 - August 6	Newport Beach Marriott Hotel
	<i>9th International Symposium on Environmental Degradation of Materials in Nuclear Power Systems-Water Reactors</i>	
1999 - Phoenix, AZ	October 10 - 13	The Pointe Hilton on South Mt.
	<i>Copper '99 - Cobre '99</i>	

For more information on any of these conferences, please contact:

TMS Customer Service Department
420 Commonwealth Drive
Warrendale, PA 15086

Telephone: (412) 776-9000, ext. 270
Fax: (412) 776-3770
E-Mail: csc@tms.org

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

