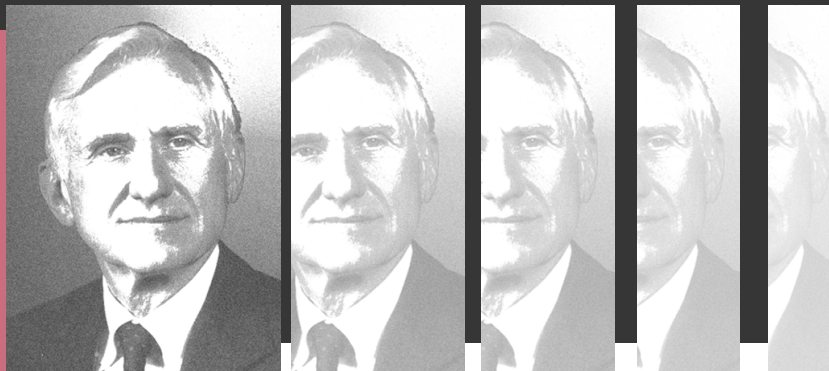


SALUTING AN OUTSTANDING EDUCATOR AND EXPLORER  
IN THE FIELD OF MATERIALS SCIENCE AND ENGINEERING



# Merton C. Flemings Symposium

June 28–30, 2000

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)  
CAMBRIDGE, MASSACHUSETTS, U.S.A.

Sponsored by

The Minerals, Metals & Materials Society  
and the Massachusetts Institute of Technology


**TMS**  
Minerals • Metals • Materials



**HOUSING AND REGISTRATION FORMS ENCLOSED**

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As an educator,  
researcher,  
technology policy  
leader, mentor,  
and friend,  
Merton C. Flemings  
has made significant  
contributions to  
MIT and the  
materials science  
and engineering  
community.

Join in the events  
celebrating his  
accomplishments.

Visit the Merton C. Flemings  
Symposium Home Page on the  
World Wide Web at

[http://www.tms.org/Meetings/  
Specialty/Flemings/  
Flemings.html](http://www.tms.org/Meetings/Specialty/Flemings/Flemings.html)

# Schedule of Events

## TUESDAY, JUNE 27, 2000

Reception and Registration ..... Royal Sonesta Hotel ..... 7:00PM–9:00PM

## WEDNESDAY, JUNE 28, 2000

Registration and Coffee ..... Tang Center, MIT ..... 8:00AM–7:00PM

Symposium Opening ..... Tang Center, MIT ..... 8:30AM

Session 1: ..... Tang Center, MIT ..... 8:35AM–12:00Noon  
Dendritic Solidification Dynamics

Luncheon ..... MIT Faculty Club ..... 12:15PM–2:00PM

Session 2: ..... Tang Center, MIT ..... 2:00PM–5:15PM  
Control of Casting Quality

Posters & Social Hours ..... Tang Center, MIT ..... 5:30PM–7:00PM

## THURSDAY, JUNE 29, 2000

Registration ..... Tang Center, MIT ..... 8:30AM–5:15PM

Session 3: ..... Tang Center, MIT ..... 8:30AM–11:50AM  
Interdendritic Fluid Flow

Luncheon and Discussion Tables ..... MIT Faculty Club ..... 12:15PM–2:00PM

Session 4: ..... Tang Center, MIT ..... 1:30PM–3:20PM  
Education & Art

Session 5: ..... Tang Center, MIT ..... 3:35PM–5:15PM  
Semi-Solid Processing

Symposium Banquet ..... Museum of Fine Art, Boston ..... 6:15PM–9:30PM

## FRIDAY, JUNE 30, 2000

Registration ..... Tang Center, MIT ..... 8:30AM–12:00Noon

Session 6: ..... Tang Center, MIT ..... 8:30AM–11:50AM  
Innovative Casting Processes

Luncheon and Discussion Tables ..... MIT Faculty Club ..... 12:00Noon–2:00PM

Tours of DMSE/MIT Facilities ..... Bldgs. 4, 8, 12, 13 ..... 2:00PM–3:15PM

## **General Meeting Chairman**

**Professor Harold D. Brody, Distinguished Professor**

Metallurgy and Materials Engineering

Institute of Materials Science U-136

University of Connecticut

Storrs, CT 06269-3136

**Telephone:** (860) 486-0853

**Fax:** (860) 486-4745

**E-mail:** brody@enr.uconn.edu

## **MCF Organizing Committee**

Reza Abbaschian

*University of Florida*

Diran Apelian

*Worcester Polytechnic Institute*

Arthur Aronson

*Allegheny Teledyne, Inc.*

Dixon Chandley

*Metal Casting Technology, Inc.*

Thomas Eagar

*Massachusetts Institute  
of Technology*

Sergio Gallo

*teksid S.p.A.*

Theo Kattamis

*University of Connecticut*

Toshihiko Koseki

*Nippon Steel Corporation*

Ronald Kurtz

*Kulite Tungsten*

Marguerite Meyer

*Massachusetts Institute  
of Technology*

Francois Mollard

*Concurrent Technologies  
Corporation*

Andreas Mortensen

*Swiss Federal Institute  
of Technologies*

Eisuke Niyama

*Polytech College Oyama*

Thomas Piwonka

*University of Alabama*

David Poirier

*University of Arizona*

David Ragone

*Massachusetts Institute  
of Technology*

Richard Simmons

*Allegheny Teledyne*

Stuart Uram

*Certech (Retired)*

Dan Steighner

*TMS*

## **Co-Sponsoring Societies**

Société Française de Métallurgie et de Matériaux

The Japan Institute of Metals

ASM International

The Iron and Steel Institute of Japan

The Korean Institute of Metals and Materials

## **Cooperating Society**

The Materials Research Society

*Registration and Housing forms may be found in the center of this brochure.*

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### **Dates and Location**

The Merton C. Flemings Honorary Symposium will be held in the beautiful settings of the MIT campus and the Royal Sonesta Hotel in Cambridge, Massachusetts, June 28-30, 2000.

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### **Scope**

This symposium has been organized to recognize and acknowledge Merton C. Flemings's contribution to MIT and the materials science and engineering community, as well as provide a forum for materials science professionals to present papers on topics relevant to Professor Merton Flemings's work. Topics to be presented are consistent with key contributions of Professor Flemings, his students and his collaborators: dendritic solidification dynamics, control of casting quality, interdendritic fluid flow, semi-solid processing, innovative materials processing, and materials science and engineering education.

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### **Program**

A complete at-meeting program with a listing of the technical program symposium schedule, will be distributed to all registrants on-site. All full conference registrants will also receive a copy of the proceedings.

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### **Technical Sessions**

The technical program will commence Wednesday, June 28, 2000 at the Tang Center on the Massachusetts Institute of Technology campus. A session schedule and paper titles are included in this brochure.

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### **Audio & Video Recording Policy**

The Minerals, Metals & Materials Society (TMS) reserves the right 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 or copyright without the express written consent of TMS and the individual author is strictly prohibited. Contact the TMS Technical Program Department in advance to obtain a copy of the waiver release form.

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### **Conference Proceedings**

A proceedings volume, containing papers from oral presentations and abstracts from poster presentations, will be published and available at the meeting. One copy is included in the registration fee.

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### **Americans with Disabilities Act**

TMS strongly supports the federal Americans with Disabilities Act (ADA) which prohibits discrimination against, and promotes the public accessibility for those with disabilities. In support of this act, we ask that those attendees requiring specific equipment or services indicate by checking the box on the enclosed housing form.



## Symposium Registration

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The Symposium registration fee includes admission to all technical sessions; the Tuesday Welcoming Reception; Wednesday Symposium Luncheon; Thursday Luncheon; Friday Luncheon, Reception and Symposium Banquet at the Museum of Fine Arts; coffee breaks; and a bound copy of the symposium proceedings.

All attendees are encouraged to register in advance to avoid delays on-site. Advance registration form and fee (\$425 members or \$75 students) must arrive by June 2, 2000, to qualify for the pre-registration fee. Registration forms received after June 2, 2000, will be charged the on-site fee of \$475/members or \$100/students. You may register on-site during the hours listed below.

**To register in advance and qualify for the advance registration savings, complete the enclosed Registration Form and mail or fax with payment by June 2, 2000, to:**

TMS  
Merton C. Flemings Symposium  
184 Thorn Hill Rd.  
Warrendale, PA 15086  
Fax: (724) 776-3770

### REGISTER ONLINE

You may register any time day or night via the Merton C. Flemings Symposium Home Page on the World Wide Web at <http://www.tms.org/Meetings/Specialty/Flemings/Flemings.html>.

### REGISTRATION PACKETS

*Registration Packets will be distributed at the meeting during the following hours:*

Tuesday, June 27 ..... 7:00PM–9:00PM/Royal Sonesta Hotel  
Wednesday, June 28 ..... 8:00AM–7:00PM/Tang Center, MIT  
Thursday, June 29 ..... 8:30AM–5:15PM/Tang Center, MIT  
Friday, June 30 ..... 8:30AM–12:00Noon/Tang Center, MIT

### REFUND POLICY

Written request must be sent to TMS, 184 Thorn Hill Rd., Warrendale, PA 15086. No refunds will be issued after the June 2, 2000, deadline.

A \$50 service fee will be assessed on all cancellations.

## Social Functions

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Various social functions have been planned to supplement the formal technical program.

The functions are included in the registration fee for full-conference registrants and students. Tickets for accompanying persons may be purchased on the registration form. Welcoming Reception is complementary to all attendees and guests.

### WELCOMING RECEPTION

All attendees, students and guests are invited to attend the hosted Welcoming Reception on Tuesday, June 27, 2000 from 7:00PM–9:00PM at the Royal Sonesta Hotel.

### SYMPOSIUM LUNCHEON

For the convenience of attendees during the limited break time for lunch Wednesday, June 28; Thursday, June 29; and Friday, June 30, luncheons are included in the full conference registration fee. The cost per luncheon for students and guests is \$20 and may be purchased on the Registration Form included in this brochure.

## **SYMPOSIUM BANQUET - Featuring a performance by Yo-Yo Ma**

On Thursday, June 29, MIT and the organizers of the conference will host a reception and banquet at the Museum of Fine Arts in Boston's Back Bay from 6:15PM to 9:30PM. The banquet will take place in the Koch Gallery, which displays international high renaissance & baroque painting. The museum's fine Asian art collection will also be open for viewing and Yo-Yo Ma, an internationally celebrated cellist, will be performing.

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## **Housing Accommodations**

**Early Reservations are strongly recommended!**

A block of rooms has been reserved at the **Royal Sonesta Hotel** in Cambridge, Massachusetts for arrival on June 27 and departure on June 30. Please refer to the Housing Form in this brochure for reservation information. Housing reservations must be made in advance and will be processed on a first come basis. As the demand for rooms in Cambridge in June is large, it is imperative that you make your reservations NOW. Convention rates will be \$180/single/double per night.

### **CHECK-IN/CHECK-OUT**

**Check in time is after 3:00 PM.** Anyone arriving earlier than 3:00 PM will be checked in as soon as rooms become available. However, delays may be possible due to room availability before regular check-in time.

**Check out time is 12:00 Noon.** A late check out fee may be assessed for departure past 12:00 Noon.

The hotel will be happy to arrange for baggage storage for attendees' luggage.

Reservations must be received by the Royal Sonesta Hotel by May 27, 2000. Reservations received after this date are based on room and rate availability.

**Please mail or fax the enclosed Housing Form directly to the Royal Sonesta Hotel at:**

Royal Sonesta Hotel  
5 Cambridge Parkway, Cambridge, MA 02142-1299  
Phone: (617) 491-3600; Fax: (617) 661-5956

We advise you to make your reservations NOW, and cancel later if you must!

When making your reservation, it is **very important** that you identify yourself as being with the MIT Materials Science and Engineering Group – Merton C. Flemings Symposium. Please call (617) 491-3600 or fax the enclosed Housing Form to (617) 661-5956.

### **RESERVATION GUARANTEE POLICY**

In order to guarantee a reservation, the Royal Sonesta Hotel must receive a one-night deposit. This deposit may be made with either a credit card authorization, a personal check, or a guarantee from the guest's company. The Royal Sonesta Hotel honors Visa, American Express, Mastercard, Diners Club, Discover and JCB credit cards. All reservations will be held until 6PM unless guaranteed with a credit card for late arrival. Guaranteed reservations will be held for night arrival only.

For guaranteed reservations that "no show", one night room and tax will be charged to the individual.

### **MIT DORMITORY HOUSING**

A limited amount of dormitory housing is available on the MIT campus for attendees of the Merton C. Flemings Symposium. All rooms are single occupancy only and will be available on a first-come-first-serve reservation basis. You may reserve dormitory housing by submitting the MIT Dormitory Housing Form found in this brochure.

## Destination Highlights

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### LOCATION

The Royal Sonesta Hotel (three miles from Logan International Airport and just five minutes from downtown Boston) is located on the Charles River directly across from the Cambridge side Galleria overlooking Boston's famed Beacon Hill, minutes from Government Center, Cambridge high tech centers, Harvard, and MIT. The Sonesta, unlike other Boston hotels, has easy access to the historic waterfront, Quincy Market, and the financial district.

### HOTEL ACTIVITIES

The Royal Sonesta Hotel offers various activities for guests. The Health Club features a sparkling indoor/outdoor pool; and exercise room with gym, whirlpool, and saunas, as well as separate men's and women's locker rooms. Special Spa services include: on-staff massage therapist and esthetician.

Monday–Friday ..... 6:00AM–10:30PM  
Saturday & Sunday ..... 7:00AM–10:30PM

Guests who would like to jog through the hotel's adjacent scenic area may request maps through Guest Services. Other sports such as tennis, squash and racquetball can also be easily arranged. Bicycles are available during Spring, Summer, and Fall.

### OTHER PLACES OF INTEREST NEAR THE ROYAL SONESTA HOTEL

Shopping: The CambridgeSide Galleria Mall is located across the street and offers a wide shopping selection with over 105 shops. Complimentary transportation from the hotel to Boston and Cambridge to explore Copley Square, Harvard Square, and Newbury Streets shops.

### Boston's Attractions

Faneuil Hall, Quincy Marketplace, Paul Revere's House, the Freedom Trail, Beacon Hill, State House, Government Center, U.S.S. Constitution, Bunker Hill, Boston Tea Party Ship, Boston Common and Public Gardens, Copley Square, New England Aquarium.

### Boston's Museums

Museum of Science, Museum of Fine Arts, The Institute of Contemporary Arts, Fogg Museum and other Harvard University Museums, The Computer Museum, The Boston Children's Museum, Isabella Gardner Museum, John F. Kennedy Library and the Museum of Transportation.



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## **Transportation/Directions**

### **AIRLINES**

Boston International Airport is served by all major U.S. airlines. See the special fares available through US Airways on page 10.

### **ROYAL SONESTA HOTEL BOSTON**

5 Cambridge Parkway  
Cambridge, Massachusetts 02142  
Telephone: (617) 491-3600  
Fax: (617) 661-5956

Cab fare from Boston/Logan is approximately \$20.00. A courtesy van to many downtown Boston and Cambridge locations is provided. Public transportation is 1/8 mile away from the hotel.

### **DIRECTIONS TO ROYAL SONESTA HOTEL**

#### **From Logan International Airport**

Follow signs to Summer Tunnel/Boston (Route 1A South) to Route 93 North; stay in center lane and follow signs for Cambridge/Somerville; bear right and follow Sommerville/O'Brien Highway signs; and take left (Commercial Avenue) at traffic light after the Museum of Science. The hotel will be on your left directly across from the CambridgeSide Galleria. This trip is approximately three miles long.

#### **From the Massachusetts Turnpike (I-90) Eastbound**

Take exit 18 following signs to Allston/Cambridge; stay in right lane following signs to (Cambridge Street) and take a right at traffic light onto Memorial Drive (Rt. #3); and follow Memorial Drive East (Rt. 3 South) until you reach signs for Government/Kendall Square being sure to say in extreme right lane along river since Memorial Drive then turns into Commercial Avenue. The hotel will be on your right directly across from the CambridgeSide Galleria.

## **Additional Information**

For additional information regarding the  
Merton C. Flemings Symposium, please contact:

TMS Meeting Services Department  
184 Thorn Hill Rd., Warrendale, PA 15086  
Phone: (724) 776-9000 ext. 243  
Fax: (724) 776-3770  
E-mail: mtgserv@tms.org.

Up-to-date meeting information is also  
available via the World Wide Web at  
**[http://www.tms.org/  
Meetings/Meetings.html](http://www.tms.org/Meetings/Meetings.html)**



# U-S AIRWAYS

Official Carrier for the  
Merton C. Flemings Honorary Symposium

**US Airways** has been designated as the official carrier for the attendees of The Minerals, Metals & Materials Society Merton C. Flemings Honorary Symposium, June 28-30, 2000, in Boston, Massachusetts, and agrees to offer exclusive low fares for the attendees.

This special fare will offer a 5% discount off First or Envoy Class and any published US Airways promotional round trip fare. A 10% discount off unrestricted coach fares will apply with seven-day advance reservation 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 June 25 - July 3, 2000. 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 at 877-874-7687; 8:00 AM - 9:30 PM, Eastern Time.

**REFER TO GOLD FILE NO. 22631205**



# Rent-a-Car System

Has been selected as the official car rental company for the Merton C. Flemings Honorary Symposium, June 28-30, 2000, in Cambridge, Massachusetts.

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 Massachusetts locations.

Advance reservations may be made by calling the Hertz Reservations number (US 1-800-654-2240; Canada: 1-800-263-0600; International: contact you nearest Hertz reservation center) and identify yourself as an attendee of the Merton C. Flemings Honorary Symposium and reference the CV number which follows: You must give the reservations agent the Hertz CV #010P0007.

## 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, 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 a time of car booking.

## RATES

CAR CLASS	DAILY	WEEKEND	WEEKLY
	PER DAY	PER DAY	PER DAY
A Economy 2DR .....	\$44.99	\$21.99	\$179.99
B Compact 4DR .....	\$44.99	\$23.99	\$194.99
C Midsize 2/4DR .....	\$50.99	\$25.99	\$209.99
D Sporty 2DR .....	\$53.99	\$30.99	\$224.99
F Fullsize 4DR .....	\$57.99	\$32.99	\$239.99
I Luxury .....	\$75.99	\$62.99	\$344.99
L 4Wheel Drive .....	\$75.99	\$62.99	\$324.99
R Minivan .....	\$75.99	\$62.99	\$324.99

## **Technical Program**

(Please hold 4 pages for technical program)

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(Please hold 4 pages for technical program)

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(Please hold 4 pages for technical program)

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“Gratitude is something of which none of us can give too much. For on the smiles, the thanks we give, our little gestures of appreciation, our neighbors build up their philosophy of life.”

*A. J. Cronin, Scottish novelist*