



2002 ASME INTERNATIONAL MECHANICAL ENGINEERING CONGRESS & EXPOSITION

November 17-22, 2002
New Orleans, Louisiana



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 **Onsite
Program**



2002 Exposition Directory

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THE ONE EVENT FOR ALL ENGINEERS

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Committee & Staff

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 Daniel Segalman, 2002 Technical Program Chair
 Jack Whitehead, 2002 Track Chair
 Mary Straffon, 2003 Technical Program Chair

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 Tony C. Min
 K.T. Yang
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 Chris Melling, Exhibit Chair
 Warren Cancienne, Tour Chair
 Harold Bauer, Session Aid Chair
 Amy Price, YEF Program Chair
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 Stacey Cooper, Web Administrator

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Welcome

Welcome to the **2002 International Mechanical Engineering Congress and the 2002 R&D Expo - The Event for New Discovery**. We encourage you to take advantage of the variety of multi-disciplinary, professional opportunities that this event provides.

The 2002 International Mechanical Engineering Congress features:

Keynote Address by J.M Bernhard, Chairman, President and CEO of The Shaw Group,
Monday at 5:45 pm

Technical Program with more than 500 sessions, including tracks on:

- Biomedical Technology
- Electrical Systems Design and Photonics Design
- Energy
- Engineering Business Management
- Micro Electrical Mechanical Systems (MEMS)
- Nanotechnology
- Transportation

Honors Assembly and Reception, Wednesday at 5:45 pm

Business Meeting and Election of Officers, Monday at 5:00 pm

Seven Honorary Lectures

Receptions, lunches and dinners sponsored by ASME divisions

Over 250 council and committee meetings

Industrial and historical site tours

The **2002 R&D EXPO - The Event for New Discovery** is an exciting new addition to the 2002 Congress.

Co-sponsored by ASME and Unicom[®], the Expo features more than 80 companies and organizations and is the first and only industry event focused entirely on new discovery. You'll meet leaders from the engineering, manufacturing and technology industries, as well as from government and academia, who are driving research and development and creating tomorrow's innovations.

See the future of our profession by attending and supporting engineering students at the Student Design Contest and the Student Technical Paper Competitions. Students are invited to attend a breakfast, a luncheon and a reception, and recent graduates are encouraged to attend the Young Engineers Forum.

To maximize your 2002 Congress and R&D Expo experience, check the Congress Program for event details and the Guest Program for entertainment opportunities.



Michael J. Askew
Summa Health System
Congress Committee Chair



Robert J. Miller
Pratt and Whitney
2002 General Congress Program Chair



Daniel J. Segalman
Sandia National Laboratories
2002 Technical Program Chair

PROGRAM IN BRIEF — SATURDAY, NOVEMBER 16, 2002

Engineer – Historian Award Dinner
 7:00pm – 10:00pm pg 12
 Room: Ascot/Third Floor/Hilton Hotel

PROGRAM IN BRIEF — SUNDAY, NOVEMBER 17, 2002

11:15am - 12:45pm	2:00pm - 3:30pm	3:45pm - 5:15pm	5:30pm - 7:00pm
Student Design Contest Finals 8:00am – 5:00pm pg 12 Room: Grand Ballroom A/Third Floor/Hilton Hotel	AES-2 pg 27 Room#: 208/Second Floor	AES-3A pg 27 Room#: 208/Second Floor	AES-4A pg 27 Room#: 213/Second Floor
ASME/ABET EC2000 PREPAREDNESS WORKSHOP 8:30am – 2:30pm pg 12 Room: Grand Salon Section 3/First Floor/Hilton Hotel	HT-2A pg 28 Room #: 209/Second Floor	AES-3B pg 27 Room#: 213/Second Floor	AES-4B pg 28 Room#: 208/Second Floor
22nd Young Engineers Forum 9:00am – 6:00am pg 12 Room: Grand Ballroom C/First Floor/Hilton Hotel	HT-2B pg 29 Room#: 204/Second Floor	HT-3A pg 30 Room#: 209/Second Floor	HT-4A pg 31 Room#: 209/Second Floor
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PID-1A pg 36 Room#: 211/Second Floor	PID-2 pg 36 Room#: 211/Second Floor	PVP-3C pg 35 Room#: 207/Second Floor	PVP-4A pg 35 Room#: 216/Second Floor
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	TED-2 pg 37 Room#: 212/Second Floor	TED-3 pg 37 Room#: 212/Second Floor	PID-4 pg 36 Room#: 211/Second Floor
			Student Reception & Student Contest Awards 6:30pm – 8:00pm pg 12 Room: Grand Ballroom B/First Floor/Hilton Hotel
			Safety Engineering & Risk Analysis Dinner 6:30pm – 8:00pm pg 12 Room: Oak Alley/Third Floor/Hilton Hotel

Please note: All Technical Sessions take place at the Ernest Morial Convention Center.

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Please note: All Technical Sessions take place at the Ernest Morial Convention Center.

PROGRAM IN BRIEF — TUESDAY, NOVEMBER 19, 2002

7:45am - 9:15am	9:30am - 11:00am	11:15am - 12:45pm	2:00pm - 3:30pm	3:45pm - 5:15pm	5:30pm - 7:00pm
AES-9A Room#: 215/Second Floor pg 51	AERO-1 Room#: 206/Second Floor pg 53	MAT Luncheon Room#: 130pm pg 14	FE-7A Room#: 218/Second Floor pg 58	AERO-2 Room#: 213/Second Floor pg 53	Freeman Scholar Lecture Room#: 206/Second Floor pg 69
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HT-10D Room#: 219/Second Floor pg 59	FE-5A Room#: 218/Second Floor pg 56	HT-12A Room#: 217/Second Floor pg 60	HT-13B Room#: 211/Second Floor pg 60	HT-14A Room#: 210/Second Floor pg 61	HT-15A Room#: 215/Second Floor pg 61
HT-10E Room#: 214/Second Floor pg 59	FE-5B Room#: 219/Second Floor pg 56	HT-12B Room#: 214/Second Floor pg 60	HT-13C Room#: 212/Second Floor pg 60	HT-14B Room#: 216/Second Floor pg 61	HT-15B Room#: 216/Second Floor pg 62
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					FE-Dinner Room#: Grand Salon Section 12 pg 14
					HTD Dinner Room#: Napoleon Ballroom pg 14
					MED Dinner Room: Third Floor/Hilton Hotel pg 14
					Joint MGMT/ITAS Reception & Dinner Room: Third Floor/Hilton Hotel pg 14
					Marlborough A Room: Second Floor/Hilton Hotel

Please note: All Technical Sessions take place at the Ernest Morial Convention Center.

PROGRAM IN BRIEF — WEDNESDAY, NOVEMBER 20, 2002

7:45am - 9:15am	9:30am - 11:00am	11:15am - 12:45pm	2:00pm - 3:30pm	3:45pm - 5:15pm	6:45pm - 8:15pm
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		T&S-7 Room#: 212/Second Floor			

Please note: All Technical Sessions take place at the Ernest Morial Convention Center.

PROGRAM IN BRIEF — THURSDAY, NOVEMBER 21, 2002

Rail Transportation Authors Breakfast
7:00am – 7:45am
Room: Marlborough B/Second Floor/Hilton Hotel

7:45am - 9:15am	9:30am - 11:00am	11:15am - 12:45pm	2:00pm - 3:30pm	3:45pm - 5:15pm	5:30pm - 7:00pm
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					AMD Dinner Room: Grand Salon B/First Floor/Hilton Hotel 7:00pm – 9:30pm pg 16
					BIO Division Award Dinner Room: Grand Salon B/First Floor/Hilton Hotel 7:30pm – 10:00pm pg 16
					Creole Queen Cruise Ship Boarding is at the Spanish Plaza Dock on the Riverwalk 7:30pm – 11:00pm pg 16
					DSCD Award Dinner Room: Grand Salon C/First Floor/Hilton Hotel 7:30pm – 11:00pm pg 16

Please note: All Technical Sessions take place at the Ernest Morial Convention Center.

PROGRAM IN BRIEF — FRIDAY, NOVEMBER 22, 2002

Rail Transportation Authors Breakfast
7:00am – 7:45am
Room: Marlborough B/Second Floor/Hilton Hotel

7:45am - 9:15am	9:30am - 11:00am	11:15am - 12:45pm	2:00pm - 3:30pm	3:45pm - 5:15pm
AERO-16A Room#: 208/Second Floor pg 106	AERO-17A Room#: 208/Second Floor pg 107	AERO-18A Room#: 208/Second Floor pg 107	AERO-19 Room#: 208/Second Floor pg 107	AERO-20 Room#: 207/Second Floor pg 108
AERO-16B Room#: 207/Second Floor pg 107	AERO-17B Room#: 207/Second Floor pg 107	AERO-18B Room#: 207/Second Floor pg 107	AMD-15A Room#: 212/Second Floor pg 109	AMD-16A Room#: 212/Second Floor pg 110
AMD-12A Room#: 209/Second Floor pg 108	AMD-13A Room#: 209/Second Floor pg 108	AMD-14A Room#: 212/Second Floor pg 109	AMD-15B Room#: 209/Second Floor pg 110	AMD-16B Room#: 209/Second Floor pg 110
AMD-12B Room#: 211/Second Floor pg 108	AMD-13B Room#: 211/Second Floor pg 109	AMD-14B Room#: 209/Second Floor pg 109	AMD-15C Room#: 211/Second Floor pg 110	AMD-16C Room#: 211/Second Floor pg 110
AMD-12C Room#: 212/Second Floor pg 108	AMD-13C Room#: 212/Second Floor pg 109	AMD-14C Room#: 211/Second Floor pg 109	AMD-15D Room#: 213/Second Floor pg 110	AMD-16D Room#: 213/Second Floor pg 111
BED-7A Room#: 219/Second Floor pg 111	BED-8A Room#: 219/Second Floor pg 112	AMD-14D Room#: 213/Second Floor pg 109	BED-10A Room#: 219/Second Floor pg 113	BED-11A Room#: 219/Second Floor pg 114
BED-7B Room#: 220/Second Floor pg 111	BED-8B Room#: 220/Second Floor pg 112	BED-9A Room#: 219/Second Floor pg 112	BED-10B Room#: 220/Second Floor pg 113	BED-11B Room#: 220/Second Floor pg 114
BED-7C Room#: 221/Second Floor pg 111	BED-8C Room#: 221/Second Floor pg 112	BED-9B Room#: 220/Second Floor pg 113	BED-10C Room#: 221/Second Floor pg 114	BED-11C Room#: 221/Second Floor pg 114
BED-7D Room#: 224/Second Floor pg 112	DE-10 Room#: 204/Second Floor pg 115	BED-9C Room#: 221/Second Floor pg 113	BED-10D Room#: 224/Second Floor pg 114	DE-13A Room#: 204/Second Floor pg 116
DE-9A Room#: 204/Second Floor pg 115	DSC-10A Room#: 217/Second Floor pg 117	DE-11A Room#: 204/Second Floor pg 116	DE-12 Room#: 204/Second Floor pg 116	DE-13B Room#: 205/Second Floor pg 116
DSC-9A Room#: 217/Second Floor pg 117	DSC-10B Room#: 218/Second Floor pg 117	DE-11B Room#: 205/Second Floor pg 116	DSC-12A Room#: 215/Second Floor pg 118	DE-13C Room#: 203/Second Floor pg 117
DSC-9B Room#: 218/Second Floor pg 117	EPP-9A Room#: 213/Second Floor pg 119	DE-11C Room#: 203/Second Floor pg 116	DSC-12B Room#: 218/Second Floor pg 118	DE-13D Room#: 208/Second Floor pg 117
EPP-7B Room#: 214/Second Floor pg 103	EPP-9B Room#: 215/Second Floor pg 119	DSC-11A Room#: 215/Second Floor pg 118	EPP-11 Room#: 216/Second Floor pg 120	EPP-12A Room#: 216/Second Floor pg 120
EPP-8A Room#: 216/Second Floor pg 119	EPP-9C Room#: 216/Second Floor pg 119	DSC-11B Room#: 218/Second Floor pg 118	NCA-11A Room#: 210/Second Floor pg 121	EPP-12B Room#: 215/Second Floor pg 120
EPP-8B Room#: 215/Second Floor pg 119	NCA-9 Room#: 210/Second Floor pg 121	EPP-10 Room#: 216/Second Floor pg 119	NCA-11B Room#: 207/Second Floor pg 121	NCA-12A Room#: 210/Second Floor pg 121
NCA-8 Room#: 210/Second Floor pg 120	RT-5 Room#: 205/Second Floor pg 122	NCA-10 Room#: 210/Second Floor pg 121	RT-7 Room#: 214/Second Floor pg 122	NCA-12B Room#: 207/Second Floor pg 121
RT-4 Room#: 205/Second Floor pg 122	TBMT-13 Room#: 206/Second Floor pg 115	RT-6 Room#: 214/Second Floor pg 122	TBMT-15 Room#: 206/Second Floor pg 115	RT-8 Room#: 214/Second Floor pg 122
TBMT-12 Room#: 206/Second Floor pg 115	TMMS-12 Room#: 214/Second Floor pg 120	TBMT-14 Room#: 206/Second Floor pg 115	TMMS-14 Room#: 217/Second Floor pg 120	TMMS-15 Room#: 217/Second Floor pg 120

Please note: All Technical Sessions take place at the Ernest Morial Convention Center.

General Information

CONFERENCE, EXPOSITION AND COMMITTEE MEETING LOCATIONS

The 2002 Congress takes place in two locations: The Ernest Morial Convention Center and the Hilton New Orleans Riverside Hotel.

All technical and track sessions, Keynote Lecture, Business Meeting, registration, publication sales and the R&D Expo are held at the Ernest Morial Convention Center, Exhibition Hall A. All other meetings or events are held Hilton New Orleans Riverside Hotel.

ON-SITE REGISTRATION HOURS

All conference registration takes place at the Ernest Morial Convention Center in Exhibit Hall A/Foyer Area.

Sunday, November 17	10:00am - 6:00pm
Monday, November 18	7:30pm - 7:00pm
Tuesday, November 19	7:30am - 6:00pm
Wednesday, November 20	7:30am - 5:00pm
Thursday, November 21	7:30am - 6:00pm
Friday, November 22	7:30am - Noon

REGISTRATION FEES

Conference Fees	Full Meeting	Single Day
	Super Pass	Super Pass
ASME Member	\$550	\$475
Cooperating Society	\$550	\$475
Author/Panelist	\$550	\$475
Chair	\$550	\$475
Vice-Chair	\$550	\$475
Non-Member	\$750	\$675
Student Member	\$95	\$95
Student Non-Member	\$195	\$195
Special Events Plus (formerly "Committee Meeting")	No Charge	
Life Member	No Charge	
Accompanying Guest	No Charge	
Auxiliary Member	No Charge	
Past ASME President	No Charge	
Student Member	No Charge	
Student Non-Member	\$25	\$25
Exhibit Only	\$25	\$25

REGISTRATION PAYMENT

All payments must be in U.S. dollars. ASME accepts payment in cash, check, travelers check, Visa, MasterCard, American Express, Diners Club and Discover.

REGISTRATION POLICIES

1. Super Pass-Full Conference fee includes admission to all technical sessions, track sessions, poster sessions, exhibits (including Opening Night Reception), Career Fair, Keynote Session, and Honors Assembly. The fee also includes one (1) CD Conference Proceedings (equivalent of approximately 10 division proceedings); 40% discount coupon for second CD Conference Proceedings, which must be redeemed at the ASME Publications Area; one free online subscription for one year to an ASME Transactions Journal not currently subscribed to; choice of one of the following four publications at the ASME Publications Area on a complimentary basis: *The Technical Presentation Workbook, 1st Ed*; *Company-Wide Implementation of Robust-Technology Development*; *Virtual Engineer: 21st Century Product Development*; *Mech-Check for IBM or Mech-*

Check for Mac; free Conference/R&D Expo Directory; \$100 off for any Continuing Education Institute (CEI) product or service and one promo CD from CEI (offer good for one year). All categories in shaded area of registration fee listing are considered "Super Pass."

2. Super Pass-One Day fee includes admission to one day of technical sessions, track sessions, poster sessions, exhibits (including Opening Night Reception), Career Fair, Keynote Session, and Honors Assembly. The fee also includes one (1) CD Conference Proceedings (equivalent of approximately 10 division proceedings); 40% discount coupon for second CD Conference Proceedings, which must be redeemed at the ASME Publications Area; one free online subscription for one year to an ASME Transactions Journal not currently subscribed to; choice of one of the following four publications at the ASME Publications Area on a complimentary basis: *The Technical Presentation Workbook, 1st Ed*; *Company-Wide Implementation of Robust-Technology Development*; *Virtual Engineer: 21st Century Product Development*; *Mech-Check for IBM or Mech-Check for Mac*; free Conference/R&D Expo Directory; \$100 off for any Continuing Education Institute (CEI) product or service and one promo CD from CEI (offer good for one year). All categories in shaded area of registration fee listing are considered "Super Pass."
3. Student Member (STM2) and Student Non-Member (STN1) fee categories include all technical sessions, track sessions, poster sessions, exhibits (including Opening Night Reception), Career Fair, Keynote Session, Honors Assembly, Free Conference/R&D Expo Directory. This category DOES NOT include CD Conference Proceedings and other offerings included in Super Pass.
4. Registrants for the "No Charge" and \$25 fee categories are required to register in order to obtain an official Congress 2002 badge. These categories include: Exhibit Only, Special Events Plus (formerly "Committee Meeting"), Auxiliary Member, Accompanying Guest, Past ASME President, and Life Member. These registrants can attend exhibits (including Opening Night Reception), Poster Sessions, Career Fair, Keynote Session, and the Honors Assembly, and receive the free Conference/Exhibit Directory. **Past ASME Presidents and Retired Life Members may also attend all Technical Sessions and Track Sessions, but do not receive Conference Proceedings.**
5. No one will be allowed to attend the technical sessions without registering and obtaining the official 2002 Congress badge.
6. Refund requests must have been submitted in writing by November 1, 2002 and sent to Marisa Scalice at ASME headquarters, Three Park Avenue, New York, NY 10016. ASME will assess a \$75 handling fee for all cancellations. After November 1, cancellations will not be honored.
7. Attention non-members: Once you pay the full non-member conference rate you are eligible for free ASME membership for one year.

COOPERATING SOCIETIES

Members of the following societies may register for the Congress at the ASME member rate:

ASME-Albania, CAI-Argentina, IEAust-Australia, BSE-Bahrain, IE-Bangladesh, BAN-Belarus, BSME-Belgium, ABCM- Brazil, CSME-Canada, CMES-P.R. China, CSME-Taipei, ACIEM-

General Information

Colombia, CMEA-Cyprus, CMES-Czech Republic, IDA- Denmark, CIME-Ecuador, ESME-Egypt, AFM-France, ISF-France, Republic of Georgia, VDI-Germany, GhIE-Ghana, HAMEE-Greece, HKIE-Hong Kong, GTE-Hungary, IE-India, IME-India, IE-Indonesia, IE-Ireland, SMEI-Israel, ASMECCANICA-Italy, UIT-Italy, JSME-Japan, KSME-South Korea, AMIME-Mexico, KIVI-The Netherlands, IPENZ-New Zealand, NSF-Norway, PSME-Philippines, SIMP-Poland, OE-Portugal, RSME-Romania, RAN-Russia, IE-Singapore, SMES-Slovakia, ZSITS- Slovenia, SAIMEchE-South Africa, FAIIE-Spain, SMR-Sweden, TMMOB-Turkey USME/NAS-Ukraine, IE-United Kingdom, IMechE-United Kingdom, AICHe, AIME, ASCE, IEEE-United States, CIV-Venezuela, SMEITJ-Yugoslavia, Costa Rica - Colegio de Ingenieros Tecnologos, Ethiopia - Ethiopian Society of Mechanical Engineers, Iran - Iranian Society of Mechanical Engineers, Kuwait - Kuwait Society of Engineers, Serbia & Montenegro - Union of Mechanical and Electrical Engineers and Technicians of Serb & Montenegro, Trinidad & Tobago - The Association of Professional Engineers of Trinidad & Tobago.

AWARDS AND TICKET SALES

Many Division and Society awards are given at the Congress. Tickets for all functions may be purchased on-site at the ASME Registration Desk located at the Ernest Morial Convention Center in Exhibit Hall A/Foyer Area.

ASME MEMBER INFORMATION EXCHANGE

ASME members and non-members are encouraged to stop by the ASME Membership Booth at the Ernest Morial Convention Center in Exhibit Hall A/Foyer Area to inquire about the exciting new benefits programs that ASME has to offer. Come by and update your record, ask questions or just stop by with a suggestion.

PUBLICATION SALES AND CONFERENCE CDS

The 1,619 technical papers published as the Proceedings of the 2002 Congress are provided on three CDs. These papers have been organized based on their assigned session number, which identifies the subject matter and the sponsoring Division or Track, with the exception of Fluid-Structure Interaction, Aeroelasticity, and Flow-Induced Vibration and Noise, the papers for which have sponsorship by multiple divisions. The breakdown of CDs and the accompanying contents are shown below.

Volume 1 consists of 600 papers in the following categories:

- Applied Mechanics
- Bioengineering
- Biomedical Technology
- Fluids Engineering
- Heat Transfer

Volume 2 consists of 423 papers in the following categories:

- Design Engineering
- Dynamic Systems and Control
- Electrical Systems and Photonic Design
- Electronic and Photonic Packaging
- Fluid Power Systems and Technology
- MEMS
- Microelectromechanical Systems
- Nanotechnology

Volume 3 consists of 596 papers in the following categories:

- Advanced Energy Systems
- Energy Conversion: Fuels and Combustion Technology; Nuclear Engineering
- Engineering Business Management
- Engineering/Technology Management: Safety and Risk Analysis, Technology and Society

- Environment and Transportation: Aerospace, Noise Control and Acoustics, Rail Transportation
- Fluid-Structure Interaction, Aeroelasticity, and Flow-Induced Vibration and Noise
- Manufacturing
- Materials and Structures: Materials, NDE, Pressure Vessels and Piping
- Materials Handling
- Mechanical Engineering Technology
- Process Industries
- Textile Engineering
- Transportation

Congress CD-ROMs are available on-site. Printed versions of the proceedings will be available in December; these can be purchased after the conference.

In addition, other ASME conference proceedings, Codes and Standards, Transaction Journals, ASME Press publications, ASME Publications Catalogs, and other Society information is available in the Publication Sales Area in the Ernest Morial Convention Center. During the conference, all publications are sold at the ASME member price.

Prepaid orders will be taken for publications not available at the Congress. You will be billed for shipping and handling charges. Within the U.S., postal service, airmail, first class, or any other expedited shipment must be specified, if desired, and charges will be billed to you.

PAYMENT FOR PUBLICATIONS

ASME accepts payment in cash, checks, VISA, MasterCard, American Express, Diners Club and Discover. Conference volumes and technical papers may be ordered after the Congress by contacting ASME Order Department, 22 Law Drive, PO Box 2300, Fairfield, NJ 07007-2900, or by calling 800-THE-ASME. Payment must accompany order (check or credit card) and California, Georgia, Illinois, and Texas purchasers must add the appropriate state sales tax or furnish an exemption certificate. International and Canadian checks will not be accepted, unless payable through a U.S. bank.

PUBLICATION SALES HOURS

Sunday, November 17	Noon - 6:00pm
Monday, November 18	8:00am - 7:00pm
Tuesday, November 19	8:00am - 6:00pm
Wednesday, November 20	8:00am - 5:00pm
Thursday, November 21	8:00am - 5:00pm
Friday, November 22	8:00am - Noon

ASME VIRTUAL PAVILION

Located in the Publication Sales Area, the Virtual Pavilion is your on-site guide to the latest information from ASME, and your source for information on key events at the 2002 ASME International Mechanical Engineering Congress.

Take a virtual tour of ASME at the Pavilion's information kiosks or pick up printed literature and learn how ASME's education programs, reference tools, and technical information can benefit you.

BADGES ARE REQUIRED FOR ADMISSION TO ALL EVENTS

The Official Congress 2002 badge is required for admission to all Congress events, including the technical program, R&D Expo, committee meetings, catered events and tours.

General Information

BUSINESS CENTERS

The Business Center at the Hilton New Orleans Riverside is located in the Riverside Lobby. The hours of operation are Monday - Friday 7:00am - 8:00pm, Saturday - Sunday 10:00am - 3:00pm. Phone Number (504) 568-1721 ext. 3939.

Rhino Business Services located in Exhibit Hall A/Foyer Area/Ernest Morial Convention Center. Hours are: Sunday, November 17, 10:00am-5:00pm; Monday, November 18-Thursday, November 21, 9:00am-5:00pm; Friday, November 22, 9:00am-Noon.

CAREER FAIR

A two-day Career Fair is free to ASME members and available to mechanical engineers at all levels, including those in senior and management positions. Students (with student ID) are also welcome. Be prepared to meet with recruiters from today's leading companies--and bring lots of resumes! Located in Exhibit Hall A, the Career Fair is open as follows:

Tuesday, November 19	10:00am - 6:00pm
Wednesday, November 20	10:00am - 5:00pm

CHILD CARE

The New Orleans Hilton has recommended the following child care providers:

Dependable Kid Care (504) 486-4001
Kinder Friends Sitting Service (504) 469-5059
Accent on Arrangements (504) 524-1227

EARN PROFESSIONAL DEVELOPMENT HOURS AT THE CONGRESS

In keeping with the ongoing need of engineers to monitor their continuing professional development, Congress attendees can earn PDH credits. One session hour equals one PDH. Please note: approval of credits rests with each state's licensing board and individuals must keep track of their PDH credits.

E-MAIL STATIONS

Come check your e-mail at stations located in the Publications Sales area, Exhibit Hall A of the Ernest Morial Convention Center.

EMERGENCY PHONE NUMBERS & MEDICAL SERVICES

Hilton New Orleans Riverside: Dial 55 from any house phone
Morial Convention Center: Pick up the red telephone and dial 1911 or 582-3040.

At the Morial Convention Center, medical services are available in the Lobby B medical office as follows:

Sunday, November 17	7:00 am-6:00 pm
Monday, November 18	7:00 am-9:00 pm
Tuesday, November 19	7:00 am-7:00 pm
Wednesday, November 20	7:00 am-8:00 pm
Thursday, November 21	7:00 am-5:00 pm
Friday, November 22	7:00 am-noon

Emergency Information on Reverse Side of Congress Badge

Please take a moment and complete the information requested on the reverse side of your badge. This will help you in case of emergency. Thank you.

EQUIPMENT IN SESSION ROOM

All session rooms are equipped with one overhead projector and (one) LCD Projector with Screen, VCR's and 35 mm slide projectors are provided only if requested in advance (by October 15, 2002). It is recommended that authors bring all visual aids, overheads, photocopies etc. with them.

GUEST PROGRAM

A separate guest activities program is available at the registration desk in the Ernest Morial Convention Center, Exhibit Hall A/Foyer Area. The Grand Salon Section 3/First Floor in the Hilton is being set aside as the Guest Hospitality Lounge and is open from 8:00am - 5:00pm, Monday, November 18 through Thursday, November 21. Complimentary coffee is served from 8:00am - 9:00am.

MEDIA RELATIONS AND PRESS HEADQUARTERS

A press room, located in the Ernest Morial Convention Center/Exhibit Hall A/Foyer Area assists members of the press in attendance at the Congress. The hours are as follows:

Monday, November 18	8:00am - 5:00pm
Tuesday, November 19	8:00am - 5:00pm
Wednesday, November 20	8:00am - 5:00pm
Thursday, November 21	8:00am - 1:00pm

MEETING INFORMATION/MESSAGE DESKS

Meeting Information and Message Desks are available. The desks are staffed during registration hours at both the Hilton and the Ernest Morial Convention Center.

SAFETY TIPS FOR ATTENDEES

Fire Safety

Locate the fire exits on your floor as soon as you check in.

In case of a Fire

- Never open a door without first checking for smoke or heat.
- If smoke is present don't walk upright...crawl.
- Fill the tub with water, it might be needed for fire fighting.
- You will also need towels and sheets to put around doors and cracks to prevent smoke from seeping in.
- Let someone know you are in the room. Use the phone to call for help or hang a sheet out of the window to signal for help.

SESSION FOLDERS

Session Folders for Session Chairs and Vice Chairs will be delivered to technical session meeting rooms at 7:00am each day.

SPEAKER PRACTICE ROOM

Room #202, 2nd Floor of the Ernest Morial Convention Center has been set aside as the Speakers Practice Room. Speakers may run through their slides and get acquainted with some of the other Congress participants. Please be sure that visual aids are easily readable when projected on the screen. The room is equipped with the one screen, one 35 mm slide projector, one overhead projector, and one LCD Projector. Computers are available at a cost directly payable by the speaker/author, or you may bring your own.

TAX DEDUCTIBILITY

Expenses of attending professional meetings such as registration fees and cost of technical publications are considered tax deductible as ordinary and necessary business expenses to U.S. citizens.

TECHNICAL PAPERS AND INDEX TO CHAIR/CO-CHAIR, AUTHOR/PANELISTS

Numbers have been assigned to all ASME papers and symposia volumes recommended for presentation and publication. These numbers appear after the title and papers in this program. See pages 123-139 for index to chair/co-chair, authors/panelists.

Special Events

NOTE: All tickets may be purchased at the ASME Registration Desk, Ernest Morial Convention Center, Exhibit Hall A/Foyer Area. All tickets will be sold up to 24 hours prior to event, based on availability.

SATURDAY, NOVEMBER 16

ENGINEER-HISTORIAN AWARD DINNER

7:00pm - 10:00pm

Ascot/Third Floor, Hilton Hotel

Tickets: \$60.00

Sponsored by the History and Heritage Committee.

The 2002 Engineer-Historian Award is presented.

Presider: R. Michael Hunt, Chair, History and Heritage Committee

SUNDAY, NOVEMBER 17

STUDENT DESIGN CONTEST FINALS

8:00am - 5:00pm

Grand Ballroom A/First Floor, Hilton Hotel

Sponsored by CMA and COE

Presider: Charles Hurst, ASME Student Design Committee

The participants in the contest are the winning teams from ASME's 13 Regions. The Design Problem is titled "Baseball Frenzy." A sporting goods company is looking for a device that will detect defective baseballs before they are packaged. The prototype system designed by the student teams must be placed into a prescribed starting location with 30 baseballs ready for tossing. On command, the system must toss the balls, one at a time, as rapidly as possible, at the three targets. The team with the highest score wins.

ASME/ABET EC2000 PREPAREDNESS WORKSHOP

8:30am - 2:30pm

Grand Salon Section 3/First Floor, Hilton Hotel

Sponsored by the Board on Engineering Education

Presider: Kip Nygren, U.S. Military Academy, West Point, NY

This workshop is for department heads, engineering faculty, and others who are interested in an intensive discussion of the content of Engineering Criteria 2000 and the latest implications of this approach to accrediting engineering programs. This workshop provides an opportunity for interactive discussions on topics that will help your department implement EC2000, facilitated by current and recent ASME members of the Engineering Accreditation Commission (EAC). The program also features a luncheon discussion with the ME department Heads who had EC2000 visits and discussions on sustaining program assessment activities beyond the first EC2000 visit.

22ND YOUNG ENGINEERS FORUM - CAREER ESSENTIALS

(8:00am Registration on-site)

9:00am - 6:00pm

Grand Ballroom C/First Floor, Hilton Hotel

Moderator: David Riddick, Intralox Engineer

"How to Enjoy an Engineering Career and How to Have Your Abilities Recognized"

William L. Dean, PE, Turkey Engineering Company, Inc.

Learn how to interact and interconnect in a new or existing career and how to expand your initial knowledge of engineering. Hear how to take advantage of change and diversity in the marketplace and also acknowledge opportunities that will help you build a success career.

"Global Collaboration: When in Rome...What Do Engineers Do?"

Patrick Gnazzo, Vice President, Business Practice, United Technologies Corporation

Today's engineers are expected to navigate language, culture, custom and national differences just as deftly as they develop stress analysis modeling or perform project management tasks -- but with far less training or experience. Drawing on his experience managing UTC's business practice unit across 200 countries, Mr. Gnazzo leads us through the challenges of doing business internationally by providing insight into different cultural value systems and supplying some tips and tools for global collaboration.

"The Art of Persuasion - Influence without Authority"

Dale Carnegie Training

Learn how to influence outcomes - even if you're not in charge. Responsibilities in the workplace are increasing and employers expect their staff to take the lead on a variety of projects and tasks without any authority. Develop credibility to create strong relationships up, down, and across the organization.

Panel Discussion - Competing In The Job Market

A diverse group of successful engineers discusses "Competing in the Job Market", sharing experiences and offering advice on what is expected from engineers in the early stages of their career. What are the characteristics of a successful engineer? Why soft skills are so important. You have the opportunity to ask specific career questions and learn how to prepare for your professional future.

Panelists:

Stacey Bright Culver, Manager of Group Insurances, Jay R. McDermott

Brett North, Patent Attorney, Garvey Smith Nehrbass & Doody

John J. Tracy, General Manager-Engineering, Aircraft and Missiles-Southern California, The Boeing Company

John Coles, New Orleans Chairman, Service Corps of Retired Executives (SCORE)

James Bellows, Fellow Engineer, Siemens Westinghouse

Job Hunting Skills Clinic - Reception

Intermingle with professionals from industry in an informal setting to discuss career-related questions like resumes, interviewing, networking and negotiation.

STUDENT RECEPTION & STUDENT DESIGN CONTEST AWARDS

6:30pm - 8:00pm

Grand Ballroom B/First Floor, Hilton Hotel

Sponsored by Entergy Operations

SAFETY ENGINEERING AND RISK ANALYSIS DINNER

6:30pm - 9:00pm

Oak Alley/Third Floor, Hilton Hotel

Tickets: \$51.00

Sponsored by Safety Engineering & Risk Analysis Division

Presider: Bryan F. Gore, Pacific Northwest National Lab

Speaker: Amos Holt, Southwest Research Institute

Special Events

MONDAY, NOVEMBER 18

STUDENT BREAKFAST

7:30am - 9:00am **Marlborough A/Second Floor, Hilton Hotel**
Sponsored by the International Southwest Region X and Southeastern Region XI

PRESIDENT'S LUNCHEON

Noon - 1:15pm **Grand Ballroom A/First Floor, Hilton Hotel**
Tickets: \$40.00
Presider: William A. Weiblen, *Past President*
Speaker: Susan H. Skemp, *ASME President*

The following Awards and Medals are presented:

PER BRUEL GOLD MEDAL FOR NOISE CONTROL AND ACOUSTICS

IRA DYER, Member ASME, Massachusetts Institute of Technology

THOMAS A. EDISON PATENT AWARD

HOOSHANG HESHMAT, Fellow ASME, Mohawk Innovative Technology, Inc.

WILLIAM T. ENNOR MANUFACTURING TECHNOLOGY AWARD

RANGA KOMANDURI, Fellow ASME, Oklahoma State University

HENRY LAURENCE GANTT MEDAL

ALEXANDER W. DREYFOOS, JR., Photo Electronics Corp./The Dreyfoos Group

SOICHIRO HONDA MEDAL

JOHN H. JOHNSON, Member ASME, Michigan Technological University

INTERNAL COMBUSTION ENGINE AWARD

WARREN E. SNYDER, Life Member ASME, Milwaukee School of Engineering

BERNARD F. LANGER NUCLEAR CODES & STANDARDS AWARD

KENNETH R. BALKEY, Member ASME, Westinghouse Electric Corp.

ALFRED NOBLE PRIZE

Kevin W. Cassel, Member ASME, Illinois Institute of Technology

NADAI MEDAL

SIA NEMAT-NASSER, Life Fellow ASME, University of California, San Diego

EDWARD F. OBERT AWARD

CRISTIAN CARRARETTO, University of Padova
ANNA STOPPATO MANZONI, Member ASME, University of Padova
ALBERTO MIRANDOLA, Member ASME, University of Padova

PERFORMANCE TEST CODES MEDAL

JOHN M. BURNS, Life Fellow ASME, Burns Engineering Services Inc.

DIXY LEE RAY AWARD

MOHAMMAED A. AL-SARAWI, 2002 Award Recipient, Kuwait Environmental Public Authority

JOHN F. ELTER, 2001 Award Recipient, Member ASME, Plug Power Inc.

J. HALL TAYLOR MEDAL

ALLEN SELZ, Fellow ASME, Pressure Sciences Incorporated

WORCESTER REED WARNER MEDAL

TSU-WEI CHOU, Fellow ASME, University of Delaware

PAUL PIAZZA & SONS SEAFOOD INDUSTRY TOUR

12:45pm - 2:00pm

Tickets: \$25.00

This is a family-owned business, which operates year-round. It is a freezing plant that processes shrimp. They operate nine complete lines of Laitram peeling equipment (including peelers, cleaners, separators, graders, etc.) In addition, the tour members see raw-material graders and packaging systems.

Buses depart from the Ernest Morial Convention Center Blvd. near Exhibition Hall A.

HENRY ROBINSON TOWNE LECTURE

4:00pm - 5:00pm

Rm. #209/2nd Floor,

Ernest Morial Convention Center

Sponsored by the Management Division

Presider: John Bozewicz, *Naval Surface Warfare Center*

Speaker: Steve Lewis, *Ford Motor Company*

Topic: "How to Instill a Diverse Consumer Focus Into the Educational Process of Future Engineers"

BUSINESS MEETING

5:00pm - 5:30pm

Rm. #221/2nd Floor,

Ernest Morial Convention Center

Call to Order by President Susan H. Skemp

Report on proxies received in the election of officers

President 2003 - 2004

Board of Governors

Vice Presidents

Ratification of Auditor

Report by Treasurer

Annual Report by the Executive Director

Other Business

Adjournment

KEYNOTE ADDRESS

5:45pm - 7:00pm

La Louisiane Ballroom/1st Floor, Ernest Morial Convention Center (Nearest Exhibit Hall A)



J. M. Bernhard, Jr., Chairman, President and CEO
The Shaw Group Inc., Baton Rouge, Louisiana

J. M. Bernhard, Jr., founder of the The Shaw Group, has been the President and Chief Executive Officer since the company's inception in September 1987. He has been one of the directors since the The Shaw Group's inception and has been Chairman of the Board since August 1990. Mr. Bernhard has spent over 21 years in the pipe fabrication business. Immediately prior to his position with The Shaw Group, Mr. Bernhard was Vice President and General Manager of Sunland Services, a pipe fabrication company, and served on the board of directors of Barnard and Burk Engineers & Constructors.

CONGRESS

Special Events

MONDAY, NOVEMBER 18, *continued*

The Shaw Group Inc is the world's only vertically integrated provider of complete piping systems and comprehensive engineering, procurement and construction services to the power generation industry. Shaw is the largest supplier of fabricated piping systems in the United States and a leading supplier worldwide, having installed piping systems in power plants with an aggregate generation capacity in excess of 200,000 megawatts. The Company also engages in pipe fabrication and comprehensive engineering, procurement and construction services for the process industries, including petrochemical, chemical and refining, and the environmental and infrastructure sectors.

R&D EXPO OPENING & CONGRESS RECEPTION

7:00pm - 8:30pm **Exhibit Hall A/1st Floor, Ernest Morial Convention Center**
Flagship Sponsor - EDS

The reception is held at the Ernest Morial Convention Center/Exhibit Hall A, immediately following the Keynote Address. **ADMISSION IS COMPLIMENTARY, BUT YOU MUST WEAR YOUR OFFICIAL CONGRESS 2002 BADGE.**

SECURING A SUCCESSFUL ACADEMIC CAREER

8:30pm - 10:00pm **Marlborough A/Second Floor, Hilton Hotel**
Sponsored by the ASME Manufacturing Engineering Division

Have you ever thought about a career in which you are your own boss, always work on things you enjoy, be surrounded with young and bright people, travel around the world, and still been paid a good salary? Sounds untrue, but that is the life of a college professor. If you are interested in such a career, plan to attend a special event organized by the MED during a panel of established faculty members and department chairs will talk about what need to be done to secure a successful academic career, including job search, tenure, and promotion.

FOSTERING COLLABORATION BETWEEN ACADEMIA AND INDUSTRY

8:30pm - 10:00pm **Melrose/Third Floor, Hilton Hotel**

The event provides an informal and relaxed environment in which IMECE attendees from academia and industry with an interest in manufacturing can mingle and get to know each other better. Getting to know one another is the first step in building a trusting working relationship. The atmosphere is intended to also promote the sharing of industry problems and ideas for solutions - discussions that serve as the seed in building a collaborative interaction. All MED members and others with an interest in manufacturing engineering as invited to join us for this event. A cash bar is available with complimentary beverage tickets for the first arrivals.

TUESDAY, NOVEMBER 19

RTA NEW ORLEANS STREET CAR BARN INDUSTRY TOUR

8225 Willow Street, New Orleans

12:30pm - 2:30pm

Tickets: \$25.00

This is a ASME historical Landmark. The tour includes the oldest surviving interurban-urban passenger rail transport system in the United States. The St. Charles Avenue Streetcar Line is the oldest surviving interurban-urban passenger rail transportation system in the United States. Originally incorporated as the New Orleans Carrollton Rail Road in 1833, service began in 1835. A variety of motive power had been used including horses, mules, overhead cable, steam engines, and ammonia engines before electrification in 1893. The 900-series cars presently in service were designed

and built by the Perley A. Thomas Car Company of High Point, North Carolina, in 1923 to 1924. They operate on the original fifteen-mile right-of-way with a 5-foot, 2 1/2-inch gage track that was adopted in 1929. The RTA is currently building 23 new cars which some will be in process during the Congress. Buses depart from the Ernest Morial Convention Center Blvd. near Exhibition Hall A.

MATERIALS LUNCHEON

Noon - 1:30pm **Grand Salon Section 4/First Floor, Hilton Hotel**
Tickets: \$40.00

Sponsored by the Materials Division

Presider: William Curtin, *Brown University*

ADVANCED ENERGY SYSTEMS LUNCHEON

1:00pm - 2:30pm **Melrose/Third Floor, Hilton Hotel**
Tickets: \$40.00

Sponsored by the Advanced Energy Systems Division

Presider: S. A. Sherif, *University of Florida*

AUXILIARY LUNCHEON

12:30pm - 3:00pm **Marlborough A/Second Floor, Hilton Hotel**
Tickets: \$40.00

Everyone attending the Congress is invited to the luncheon sponsored by the ASME Auxiliary.

NADAI LECTURE

2:00pm - 3:30pm **Rm. #217/2nd Floor, Ernest Morial Convention Center**

Sponsored by the Materials Division

Presider: William Curtin, *Brown University*

Speaker: Sia Nemat-Nasser, *University of California at San Diego*

Topic: "Compression-Induced Ductile Failure of Brittle Materials and Brittle Failure of Ductile Materials: Experiments and Modeling"

FREEMAN SCHOLAR LECTURE

5:30pm - 7:00pm **Rm. #206/2nd Floor, Ernest Morial Convention Center**

Sponsored by the Fluids Engineering Division

Presider: Michael L. Billet, *Applied Research Laboratory*

Speaker: Efstathios E. Michaelides, *Tulane University*

Topic: "Particles, Bubbles and Drops in Fluids and Heat Transfer Engineering Process"

JOINT MANAGEMENT & TECHNOLOGY AND SOCIETY DINNER

7:00pm - 9:30pm **Marlborough A/Second Floor, Hilton Hotel**
Tickets: \$60.00

Sponsored by the Management and Technology and Society Divisions

FLUIDS ENGINEERING RECEPTION

7:00pm - 8:30pm **Grand Salon Section 12/First Floor, Hilton Hotel**
Sponsored by the Fluids Engineering Division

Presider: Upendra Rohatgi, *Brookhaven National Lab*

HEAT TRANSFER DINNER

7:00pm - 9:00pm **Napoleon Ballroom/Third Floor, Hilton Hotel**
Tickets: \$60.00

Sponsored by the Heat Transfer Division

Presider: Yogesh Jaluria, *Rutgers University*

MANUFACTURING ENGINEERING DINNER

7:00pm - 9:30pm **Belle Chasse/Third Floor, Hilton Hotel**
Tickets: \$60.00

Sponsored by the Manufacturing Engineering Division

Presider: Amit Bagchi, *MTD Products, Inc.*

Special Events

WEDNESDAY, NOVEMBER 20

MEMBERS AND STUDENTS LUNCHEON

Noon - 1:15pm

Grand Ballroom D/First Floor,
Hilton Hotel

Tickets: Members: \$40.00
Students: \$20.00

Presider: Susan H. Skemp, ASME President

The following Awards and Medals are presented:

EDWIN F. CHURCH MEDAL

WILLIAM S. HAMMACK, Member ASME, University of Illinois

GUSTUS L. LARSON MEMORIAL AWARD

THOMAS R. KURFESS, Member ASME, Georgia Institute of Technology

CHARLES T. MAIN STUDENT SECTION AWARDS

Gold

AMIP SHAH, Student Member ASME, University of California at Berkeley

Silver

STEPHANI FERRUFINO, Student Member ASME, Virginia Polytechnic Institute and State University

OLD GUARD PRIZES

Winners to be announced

OLD GUARD YOUNG ENGINEERS AWARD

SUSAN M. SHUMATE, Member ASME, Eastman Chemical Company

PI TAU SIGMA GOLD MEDAL

ASSIMINA A. PELEGRI, Member ASME, Rutgers University

CHARLES RUSS RICHARDS MEMORIAL AWARD

SALVATORE TORQUATO, Fellow ASME, Princeton University

BEN C. SPARKS MEDAL

CHITTARANJAN SAHAY, Fellow ASME, University of Hartford

STUDENT SECTION ADVISOR AWARD

MASSIMO CAPOBIANCHI, Member ASME, Gonzaga University

ARTHUR L. WILLISTON MEDAL

ANNE M. HINES, Student Member, Virginia Polytechnic Institute and State University

ROBERT H. THURSTON LECTURE

1:00pm - 2:00pm

Rm. #206/2nd Floor,
Ernest Morial Convention Center

Sponsored by the Basic Engineering Technical Group
Presider: Carl T. Herakovich, University of Virginia

HONORS ASSEMBLY

5:45pm - 6:45pm

Grand Ballroom A&B/First Floor,
Hilton Hotel

The Board of Governors cordially invites you and a guest to attend the Honors Assembly. This special program convenes after technical sessions conclude so that all members may attend the audiovisual awards presentations and biographical narrations about the honors recipients. Look for your complimentary pass in your registration packet to attend this special event.

The following Awards and Medals are presented:

HONORARY MEMBERSHIP

Honorary Membership is the Society's highest honor and its first honor. It is conferred for distinguished service that contributes significantly to the attainment of the goals of the engineering profession.

The Recipients are:

JAN D. ACHENBACH, Fellow ASME, Northwestern University

BEI TSE CHAO, Life Fellow ASME, University of Illinois at Urbana-Champaign

AMOS E. HOLT, Fellow ASME, Southwest Research Institute

ASME MEDAL

L. S. "SKIP" FLETCHER, Honorary Member ASME, NASA Ames Research Center

MELVIN R. GREEN CODES & STANDARDS MEDAL

DONALD R. FRIKKEN, Fellow ASME, Solutia, Inc.

M. EUGENE MERCHANT MANUFACTURING MEDAL OF ASME/SME

RICHARD E. DAUCH, American Axle & Manufacturing

RALPH COATS ROE MEDAL

DEAN KAMEN, Member ASME, DEKA Research & Development

SPIRIT OF ST. LOUIS MEDAL

THOMAS J. KELLY (deceased)

HONORS RECEPTION AND DINNER

6:45pm - 9:30pm

Tickets: \$78.00

Reception: Chemin Royale Foyer/First Floor

Dinner: Grand Ballroom D/First Floor,
Hilton Hotel

The Honors Reception takes place after the Honors Assembly. All are invited to attend this cash bar reception at which time you will have an opportunity to meet our honors recipients and other Congress attendees. No ticket is required for attendance at this reception.

THURSDAY, NOVEMBER 21

RAIL TRANSPORTATION AUTHORS BREAKFAST

7:00am - 7:45am

Marlborough B/
Second Floor, Hilton Hotel

Sponsored by the Rail Transportation Division
All authors of the Rail Transportation Thursday sessions are invited to attend.

Special Events

THURSDAY, NOVEMBER 21, *continued*

RAIL TRANSPORTATION LUNCHEON

12:00n - 2:00pm Melrose/Third Floor, Hilton Hotel
Tickets: \$40.00
Sponsored by the Rail Transportation Division
All authors of the Rail Transportation Thursday sessions are invited to attend.

RAYLEIGH LECTURE

3:45pm - 5:15pm Rm. #218/2nd Floor,
Ernest Morial Convention Center
Sponsored by the Noise Control and Acoustics Division
Presider: Richard Marboe, *Pennsylvania State University*
Speaker: Ilene Busch-Vishniac, *Johns Hopkins University*
Immediately following the lecture there is a wine and cheese reception from 5:30pm - 7:00pm

KOITER MEDALIST LECTURE

5:30pm - 6:30pm Rm. #221/2nd Floor,
Ernest Morial Convention Center
Sponsored by the Applied Mechanics Division
Presider: Stelios Kyriakides, *University of Texas*
Speaker: James Knowles, *California Institute of Science*

LISSNER AWARD PRESENTATION AND RECEPTION

5:30pm - 7:00pm Rm. #206/2nd Floor,
Ernest Morial Convention Center
Sponsored by the Bioengineering Division
Presider: Sohi Rastegar, *Virginia Commonwealth University*
Speaker: Kenneth Diller, *University of Texas*

EPPD/K16 AND THE JOURNAL OF ELECTRONIC PACKAGING RECEPTION

7:00pm - 8:30pm Marlborough A/Second Floor, Hilton Hotel
Sponsored by the EPPD/K16 Committee/Journal of Electronic Packaging
Presider: Jeffrey Suhling, *Auburn University*

APPLIED MECHANICS DINNER

7:00pm - 9:30pm Grand Salon B/First Floor, Hilton Hotel
Tickets: \$60.00
Sponsored by the Applied Mechanics Division
Presider: Stelios Kyriakides, *University of Texas*

BIOENGINEERING DINNER

7:30pm - 10:00pm
Tickets: \$74.00
Sponsored by the Bioengineering Division
Presider: Sohi Rastegar, *Virginia Commonwealth University*
Dinner will be held aboard the Paddlewheeler Creole Queen Boat. Boarding is at the Spanish Plaza Dock on the Riverwalk.

DYNAMIC SYSTEMS AND CONTROL DINNER

7:30pm - 10:00pm Grand Salon C/First Floor,
Hilton Hotel
Tickets: \$60.00
Sponsored by the Dynamic Systems and Control Division
Presider: Jeffrey Stein, *University of Michigan*

FRIDAY, NOVEMBER 22

RAIL TRANSPORTATION AUTHORS BREAKFAST

7:00am - 7:45am Marlborough B/Second Floor, Hilton Hotel
Sponsored by the Rail Transportation Division
All authors of the Rail Transportation Friday sessions are invited to attend.

Student Activities

Sunday, November 17

22nd Young Engineers Forum
Grand Ballroom C/First Floor, Hilton Hotel
8:00am - 6:00pm

Sunday, November 17

Student Design Contest
Grand Ballroom A/First Floor, Hilton Hotel
8:00am - 5:00pm

Sunday, November 17

Student Reception & Student Design Contest Awards
Grand Ballroom B/First Floor, Hilton Hotel
5:30pm - 8:00pm

Monday, November 18

Student Breakfast
Marlborough A/Second Floor, Hilton Hotel
7:30am - 9:00am

Monday, November 18

Keynote Address
La Louisiane Ballroom/First Floor, Ernest Morial Convention Center
5:45pm - 7:00pm

Tuesday, November 19

Old Guard Competition
Grand Salon Section 15 & 18/First Floor, Hilton Hotel
8:30am - 4:45pm

Wednesday, November 20

Members & Students Luncheon
Grand Ballroom D/First Floor, Hilton Hotel
Noon - 1:15pm

Alumni Reception

TRIANGLE FRATERNITY RECEPTION

Tuesday, November 19
6:30pm - 9:00pm
Ascot Room, Third Floor, Hilton Hotel

DON'T MISS EXCITING PRIZE DRAWINGS THROUGHOUT THE R&D EXPO!

Laptops, PDAs, Cameras...and More!

Remember - you must be present to WIN!

Monday, November 18th	Drawing #1 - 8:00 pm
Tuesday, November 19th	Drawing #2 - 11:00 am
	Drawing #3 - 12:15 pm
	Drawing #4 - 1:30 pm
	Drawing #5 - 3:45 pm
Wednesday, November 20th	Drawing #6 - 11:00 am
	Drawing #7 - 12:15 pm
	Drawing #8 - 1:30 pm
	Drawing #9 - 3:45 pm

Note: Drawing open to registered attendees of R&D Expo/ASME Congress only. Attendees must be present to win - must claim their prize within five minutes of announcement or another name will be drawn.

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Boeing v. Regents Univ. Cal.

Track Sessions

(See Individual Track Sessions in this program for further details.)

Biomedical Technology Track

Cutting edge technologies at the intersection of engineering and medicine touch health care and the associated biomedical systems. Experts present the latest technologies including cellular and tissue engineering, bio-reactor design and devices to aid the disabled. The director of the new NIH Institute for Biomedical Imaging and Bioengineering leads a discussion on research funding issues.

Wednesday

9:30 AM - 11:00 AM Rm. #220, 2nd Floor
TBMT-1: Bioreactor Design

11:15 AM - 12:45 PM Rm. #220, 2nd Floor
TBMT-2: Panel on Cell and Tissue Engineering Education

2:00 PM - 3:30 PM Rm. #220, 2nd Floor
TBMT-3: Biomechanics Education

3:45 PM - 5:15 PM Rm. #220, 2nd Floor
TBMT-4: Panel on Biofluid Mechanics Education

6:45 PM - 8:15 PM Rm. #220, 2nd Floor
TBMT-5: Panel on Bioheat and Mass Transfer Education

Thursday

7:45 AM - 9:15 AM Rm. #221, 2nd Floor
TBMT-6: Biomechanics in Sports

9:30 AM - 11:00 AM Rm. #221, 2nd Floor
TBMT-7: Biomedical Engineering Research Funding

11:15 AM - 12:45 PM Rm. #221, 2nd Floor
TBMT-8: Biomedical Engineering Research Funding - Q&A

2:00 PM - 3:30 PM Rm. #221, 2nd Floor
TBMT-9: Assistive Technology and Rehabilitation Education

3:45 PM - 5:15 PM Rm. #221, 2nd Floor
TBMT-10: Educational Needs for the Medical Device Industry

Friday

7:45 AM - 9:15 AM Rm. #206, 2nd Floor
TBMT-12: Modeling Across Scales for Heterogeneous Systems

9:30 AM - 11:00 AM Rm. #206, 2nd Floor
TBMT-13: Mechananics of Heterogeneous Soft Tissue

11:15 AM - 12:45 PM Rm. #206, 2nd Floor
TBMT-14: Biomechanics and Occupant Protection I

2:00 PM - 3:30 PM Rm. #206, 2nd Floor
TBMT-15: Biomechanics and Occupant Protection II

Electrical Systems and Photonics Design Track

Electrical systems are changing with the introduction of micro (MEMS) and nano scale technologies and photonics into their processes. The focus is on the tools required for design and manufacturing to facilitate these changes.

Tuesday

3:45 PM - 5:15 PM Rm. #209, 2nd Floor
TESD-2: Symposium on Mechanical Issues in Microelectronics & Photonics: Structural Integrity of Microelectronic Packaging-I

Wednesday

7:45 AM - 9:15 AM Rm. #209, 2nd Floor
TESD-3: Symposium on Mechanical Issues in Microelectronics & Photonics: Structural Integrity of Microelectronic Packaging-II

2:00 PM - 3:30 PM Rm. #208, 2nd Floor
TESD-4: Microelectronic Manufacturing, Reliability and Quality Assurance Testing-II

3:45 PM - 5:15 PM Rm. #212, 2nd Floor
TPHT-4: Symposium on Mechanical Issues in Microelectronics & Photonics: Stress Related Issues in Photonic Devices & Packages-I

Thursday

7:45 AM - 9:15 AM Rm. #203, 2nd Floor
TPHT-6: Photonics Packaging - Process and Reliability Issues

11:15 AM - 12:45 PM Rm. #207, 2nd Floor
TESD-8: Panel on System Floor Thermo/Mechanical Modeling in Electronic Packaging

2:00 PM - 3:30 PM Rm. #204, 2nd Floor
TPHT-7: Workshop on Photonics In Transportation

3:45 PM - 5:15 PM Rm. #204, 2nd Floor
TPHT-8: CAD/CAM: Case Studies in Photonics Packaging

Please note: All Track Sessions are held at the Ernest Morial Convention Center.

2002 CONGRESS

Track Sessions

(See Individual Track Sessions in this program for further details.)

Energy Track

National experts discuss issues affecting our national and global energy strategies such as global climate change, international developments, national security, energy industry restructuring and the politics of energy. Members of industry, technology developers and research leaders address the future of nuclear, coal, natural gas, oil, solar, and renewable energy. Developments in energy efficiency, engine technology and innovative power systems are reviewed.

Monday

8:30 AM - 11:00 AM Rm. #208, 2nd Floor
TENER-1: Panel on Global Warming-I

8:30 AM - 11:00 AM Rm. #208, 2nd Floor
TENER-2: Panel on Global Warming-II

11:15 AM - 12:45 pm Rm. #208, 2nd Floor
TENER-3: Panel on National Energy Strategy

2:00 PM - 3:30 pm Rm. #208, 2nd Floor
TENER-4: Panel on Electricity Restructuring

3:45 PM - 5:15 pm Rm. #208, 2nd Floor
TENER-5: Panel on Global Energy Development & Challenges

Tuesday

8:30 AM - 11:00 AM Rm. #205, 2nd Floor
TENER-6: Panel on Future of Oil and Gas-I

8:30 AM - 11:00 AM Rm. #205, 2nd Floor
TENER-7: Panel on Future of Oil and Gas-II

11:15 AM - 12:45 PM Rm. #205, 2nd Floor
TENER-8: Panel on Future of Nuclear

2:00 PM - 3:30 PM Rm. #205, 2nd Floor
TENER-9: Panel on Future of Coal

3:45 PM - 5:15 PM Rm. #205, 2nd Floor
TENER-10: Panel on Future of Solar and Renewables

Wednesday

8:30 AM - 11:00 AM Rm. #208, 2nd Floor
TENER-11: Panel on Energy Infrastructure Security-I

8:30 AM - 11:00 am Rm. #208, 2nd Floor
TENER-12: Panel on Energy Infrastructure Security-II

11:15 AM - 12:45 PM Rm. #208, 2nd Floor
TENER-13: Energy Efficient Technologies

3:45 PM - 5:15 PM Rm. #208, 2nd Floor
TENER-14: Panel on Unconventional Power

Engineering Business Management Track

Cutting edge technologies at the intersection of engineering and medicine will touch health care and the associated biomedical systems. Experts present the latest technologies including cellular and tissue engineering, bio-reactor design and devices to aid the disabled. The director of the new NIH Institute for Biomedical Imaging and Bioengineering leads a discussion on research funding issues.

Emphasis is on entrepreneurial ventures ranging from gaining access to funds to operating in accordance with honest, ethical methodologies. There are workshops on engineering profit centers, managing intellectual property, partnering to enhance technical capabilities and project management. The current state of ethical morass in the business world is reviewed by the ASME Industry Advisory Board, explaining problems and giving suggestions for improvement. Education is provided on the definitions of business ethics in different cultures.

Monday

9:30 AM - 11:00 AM Rm. #209, 2nd Floor
TEBM-2: Panel on Engineering Entrepreneurship - Raising Capital to Fund the Venture

11:15 AM - 12:45 PM Rm. #209, 2nd Floor
TEBM-3: Panel on Managing Strategic Technology Transfer and Partnering

2:30 PM - 3:45 PM Rm. #209, 2nd Floor
TEBM-4: Panel on Protecting Your Company's Intellectual Property: Recent Trends and Strategies

1:00 PM - 2:15 PM Rm. #209, 2nd Floor
TEBM-5: Project Management for Entrepreneurs and Engineering Managers

Tuesday

7:45 AM - 9:15 AM Rm. #207, 2nd Floor
TEBM-6: Panel on Ethics; World Engineering Ethical Autonomy

9:30 AM - 11:00 AM Rm. #207, 2nd Floor
TEBM-7: Ethics and Culture-Managing from a Global Perspective

11:15 AM - 12:45 PM Rm. #207, 2nd Floor
TEBM-8: Panel on Ethics, Corporate Leaders Viewpoint

2:00 PM - 3:30 PM Rm. #207, 2nd Floor
TEBM-9: Management Challenges-Rapidly Emerging Technologies, Standards, and Markets

3:45 PM - 5:15 PM Rm. #207, 2nd Floor
TEBM-10: Strategic Role of Information Systems for Industry, Society and Management

5:30 PM - 7:00 PM Rm. #207, 2nd Floor
TEBM-11: The History of Manufacturing Engineering and Technology

Please note: All Track Sessions are held at the Ernest Morial Convention Center.

Track Sessions

(See Individual Track Sessions in this program for further details.)

MEMS Track

Two high level industry and government leaders are featured to present their views of the current state and future needs of micro-electromechanical systems. Developments in materials, mechanics and manufacturing are explored. These lead to review of foundaries, CAD, industrial applications and commercialization.

Wednesday

9:30 AM - 11:00 AM Rm. #214, 2nd Floor

TMMS-1: MEMS Track Keynote: The Current State of MEMS

11:15 AM - 12:45 PM Rm. #214, 2nd Floor

TMMS-2: Devices Mixed-Scale (nano/micro/meso)

2:00 PM - 3:30 PM Rm. #214, 2nd Floor

TMMS-3: Wafer Processing

3:45 PM - 5:15 PM Rm. #214, 2nd Floor

TMMS-4: Mechanics Issues in MEMS

6:45 PM - 8:15 PM Exhibit Hall A, 1st Floor

TMMS-5: MEMS/FED Joint Poster Session

Thursday

7:45 AM - 9:15 AM Rm. #220, 2nd Floor

TMMS-6: MEMS Foundries

9:30 AM - 11:00 AM Rm. #220, 2nd Floor

TMMS-7: MEMS Design/CAD

11:15 AM - 12:45 PM Rm. #220, 2nd Floor

TMMS-8: Deformation and Damage Characterization of Micro/Nano Materials

2:00 PM - 3:30 PM Rm. #220, 2nd Floor

TMMS-9: panel on Education Issues in MEMS

3:45 PM - 5:15 PM Rm. #220, 2nd Floor

TMMS-10: BioMEMS/Cellular Mechanics

5:30 PM - 7:00 PM Rm. #220, 2nd Floor

TMMS-11: MEMS Fabrication

Friday

9:30 AM - 11:00 AM Rm. #214, 2nd Floor

TMMS-12: MEMS Applications

2:00 PM - 3:30 PM Rm. #217, 2nd Floor

TMMS-14: MEMS Commercialization

3:45 PM - 5:15 PM Rm. #217, 2nd Floor

TMMS-15: Panel on Design of Future ASME MEMS Tracks

Nanotechnology Track

Leading edge discoveries in nano-science and engineering arising out of multiple disciplines are reviewed. Experts share findings in the design, synthesis, manipulation and control of nano- and micro-scale systems leading to integration. Fabrication, applications and paths leading to commercialization are also addressed.

Sunday

3:45 PM - 5:15 PM Rm. #210, 2nd Floor

TNANO-1: Nanomanufacturing-I: Challenges, Promises and the State-of-the-Art

5:30 PM - 7:00 PM Rm. #210, 2nd Floor

TNANO-2: Panel on Nanomanufacturing-II: Issues in Advanced Materials and Manufacturing for Integrated Systems

Monday

7:45 AM - 9:15 AM Rm. #210, 2nd Floor

TNANO-3: Nanocomposite Materials and Structures-I

9:30 AM - 11:00 AM Rm. #210, 2nd Floor

TNANO-4: Modeling and Experiments on Micro/Nanosystems-I

11:15 AM - 12:45 PM Rm. #210, 2nd Floor

TNANO-5: Modeling and Experiments on Micro/Nanosystems-II

2:00 PM - 3:30 PM Rm. #210, 2nd Floor

TNANO-6: Microfluidics/Nanofluidics Symposium-I

3:45 PM - 5:15 PM Rm. #210, 2nd Floor

TNANO-7: Panel on Microfluidics II: Tutorial on Micro and Nano-Scale Fluid Mechanics

Tuesday

7:45 AM - 9:15 AM Rm. #209, 2nd Floor

TNANO-8: panel on Nanotechnology Startups: Experiences and Lessons Learned

9:30 AM - 11:00 AM Rm. #209, 2nd Floor

TNANO-9: Panel on Integrated Nanosystems Update

11:15 AM - 12:45 PM Rm. #209, 2nd Floor

TNANO-10: Nanomanufacturing Advances & Applications

Please note: All Track Sessions are held at the Ernest Morial Convention Center.

CONGRESS

Track Sessions

(See Individual Track Sessions in this program for further details.)

Transportation Track

Noise, vibration and harshness of ride are at the heart of improving speed and comfort in the travel mode. Safety is explored through crashworthiness modeling and testing. Improvements are sought through the implementation of biometrics standards, use of composites and application of remote sensing.

Tuesday

7:45 AM - 9:15 AM Rm. #208, 2nd Floor

**TTRSP-1: Transportation
Crashworthiness Applications for LS-
DYNA**

9:30 AM - 11:00 AM Rm. #208, 2nd Floor

**TTRSP-2: Crashworthiness of Rail
Vehicles & Aircraft**

11:15 AM - 12:45 PM Rm. #208, 2nd Floor

**TTRSP-3: Crashworthiness
Improvements for Highway Trucks,
including Suspensions**

2:00 PM - 3:30 PM Rm. #208, 2nd Floor

**TTRSP-4: Crashworthiness of
Composites and Light Weight
Structures-I**

3:45 PM - 5:15 PM Rm. #208, 2nd Floor

**TTRSP-5: Crashworthiness of
Composites and Light Weight
Structures-II**

5:30 PM - 7:00 PM Rm. #208, 2nd Floor

**TTRSP-6: Durability and Damage
Tolerance of Heterogeneous Materials -
Experimental Techniques and Processes**

Wednesday

7:45 AM - 9:15 AM Rm. #210, 2nd Floor

**TTRSP-7: Workshop on The Latest
Trends in Reducing Noise, Vibration and
Harshness for Large Commercial
Vehicles**

9:30 AM - 11:00 AM Rm. #210, 2nd Floor

**TTRSP-8: Issues in Noise & Vibration of
Large Vehicles-Heavy Trucks, Railway
Locomotives and Transit Buses**

2:00 PM - 3:30 PM Rm. #203, 2nd Floor

**TTRSP-9: Remote Sensing for
Transportation-Application Potential for
Rail System Management**

6:45 PM - 8:15 PM Rm. #203, 2nd Floor

**TTRSP-10: Panel on Research
Opportunities in Transportation-A Vision
for the Future**

Thursday

7:45 AM - 9:15 AM Rm. #224, 2nd Floor

**TTRSP-11: Remote Sensing in
Transportation-Applications to
Infrastructure Safety and Transportation
Planning**

9:30 AM - 11:00 AM Rm. #224, 2nd Floor

**TTRSP-12: Damage in Heterogeneous
Structures**

11:15 AM - 12:45 PM Rm. #224, 2nd Floor

TTRSP-13: Aluminum Crashworthiness

2:00 PM - 3:30 PM Rm. #205, 2nd Floor

TTRSP-14: Vehicle Crashworthiness-I

3:45 PM - 5:15 PM Rm. #205, 2nd Floor

TTRSP-15: Vehicle Crashworthiness-II

Please note: All Track Sessions are held at the Ernest Morial Convention Center.

Thank You

ASME and the International Congress Committee would like to thank the Group and Program Representatives for their valuable contribution to this year's technical program.



Robert T. Simmons
Engineering &
Technology Management



Mardi Hastings
Ohio State University
Environment & Transportation



William Endres
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Materials & Structures



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ASME and the International Congress Committee would also like to thank the following Group & Program Representatives for their valuable contributions:

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FRIDAY (continued)

2:46 PM

The Stability and Energy Absorbing Behavior of Reinforced Aluminum Honeycomb—W. SCHERZINGER, Sandia National Laboratories

3:09 PM

Experimental Analysis of Notch Strength Enhancement in Metallic Cellular Solids—A. ANTONIOU, A. BASTAWROS, Iowa State University

FRIDAY, 2:00 PM–3:30 PM

Rm. #211, 2nd Level

AMD-15C: ADVANCES IN CHARACTERIZATION OF DYNAMIC RESPONSE OF MATERIALS AND STRUCTURES-IV

Sponsored by the Experimental Mechanics and Dynamic Response of Materials Committees of the Applied Mechanics Division

Chair: **D. FREW**, Sandia National Laboratories

Co-Chair: **K. RAVI-CHANDAR**, University of Texas at Austin

2:00 PM

Crack Tip Fracture Parameters and Constraint Effects in Dynamically Loaded Functionally Graded Syntactic Foams—M. A. EL-HADEK, H. V. TIPPUR, Auburn University

2:18 PM

Dynamic Response and Failure of Naturally Occurring Porous Composites—G. RAVICHANDRAN, California Institute of Technology

2:36 PM

Heat Generation During Mode I Dynamic Fracture of PMMA: Experimental Observation and Theoretical Modeling—T. BJERKE, Army Research Laboratory, J. LAMBROS, University of Illinois at Urbana-Champaign

2:54 PM

Stress Waves in NiTi Shape Memory Alloys—K. RAVI-CHANDAR, University of Texas at Austin

3:12 PM

Dynamic Response of Layered Materials and Structures: Real-Time Failure Visualization—L. R. XU, Vanderbilt University, A. J. ROSAKIS, California Institute of Technology

FRIDAY, 2:00 PM–3:30 PM

Rm. #213, 2nd Level

AMD-15D: SYMPOSIUM ON DAMAGE IN HETEROGENEOUS STRUCTURES

Sponsored by the Fracture and Failure Committee of the Applied Mechanics Division

Chair: **V. PRAKASH**, Case Western Reserve University

2:00 PM

Fracture of Polymer Based Functionally Graded Materials—J. ABANTO-BUENO, J. LAMBROS, University of Illinois at Urbana-Champaign

2:23 PM

Inverse Analysis and Instrumented Indentation to Determine FGM Parameters—Y. GU, T. NAKAMURA, State University of New York

2:46 PM

Observations and Analyses of the "Picture Frame" Cracking of Several BC/DLC Coatings—S. NEKKANTY, M. E. WALTER, Ohio State University

3:09 PM

Energy Dissipation During Dynamic Failure of Brittle-Ductile Laminates—R. P. SINGH, B. G. KUMAR, State University of New York, V. PARAMESWARAN, University of Rhode Island

FRIDAY, 3:45 PM–5:15 PM

Rm. #212, 2nd Level

AMD-16A: MODELING ACROSS SCALES FOR HETEROGENEOUS SYSTEMS-IV

Sponsored by the Elasticity Committee of the Applied Mechanics Division

Chair: **H. GAO**, Max-Planck-Institut fuer Metallforschung, Germany

3:45 PM

Modeling Point Defects in Nematic Elastomers—J. DOLBOW, Duke University, E. FRIED, University of Illinois at Urbana-Champaign, A. Q. SHEN, Harvard University

4:08 PM

Micro-Electromechanical and Phenomenological Constitutive Models for Ferroelectrics—C. LANDIS, Rice University

4:31 PM

The Void Size Effect on the Void Growth Rate in Ductile Materials—Y. HUANG, B. LIU, University of Illinois at Urbana-Champaign, X. QIU, K. C. HWANG, Tsinghua University, M. LI, Alcoa, C. LIU, Los Alamos National Laboratory

4:54 PM

Microstructure Evolution During the Chemo-Mechanical Swelling of Hydrogels—E. FRIED, H. JI, University of Illinois at Urbana-Champaign, J. DOLBOW, Duke University

FRIDAY, 3:45 PM–5:15 PM

Rm. #209, 2nd Level

AMD-16B: INSTABILITIES IN SOLIDS AND STRUCTURES

Sponsored by the Instabilities in Solids and Structures Committee of the Applied Mechanics Division

Chair: **E. CORONA**, University of Notre Dame

Co-Chair: **K. RAVI-CHANDAR**, University of Texas at Austin

3:45 PM

Wrinkling of Thin Films Under Tension—K. RAVI-CHANDAR, University of Texas at Austin, E. CERDA, University of Santiago, Chile, L. MAHADEVAN, University of Cambridge, United Kingdom

4:03 PM

Modeling Post-Buckling Fracture Instabilities Using Enriched Crack Tip Elements—H. F. NIED, Lehigh University

4:21 PM

Modeling Point Defects in Nematic Elastomers—J. DOLBOW, Duke University, E. FRIED, University of Illinois, A. Q. SHEN, Harvard University

4:39 PM

Cyclic Bending of Elastic-Plastic Beams—S. YIN, E. CORONA, University of Notre Dame

4:57 PM

Multiaxial Compressive Instabilities in 2D Triaxial Braided Composites—S. QUEK, A. WAAS, University of Michigan, K. SHAHWAN, V. AGARAM, DaimlerChrysler

FRIDAY, 3:45 PM–5:15 PM

Rm. #211, 2nd Level

AMD-16C: UNCERTAINTY AND PROBABILISTICS IN MECHANICAL ENGINEERING

Sponsored by the Uncertainty and Probabilistics Committee of the Applied Mechanics Division

3:45 PM

Probabilistic Approaches in Material Design: Closed-Form Percolation Solutions—A. M. SASTRY, Y. B. YI, University of Michigan

4:00 PM

A Roadmap to Uncertainty Propagation with Nonlinear Computational Mechanics Models—V. J. ROMERO, Sandia National Laboratories

4:15 PM

Time-Varying Modal Identification by Monte Carlo Filters/Smoothers—A. MASUDA, Kyoto Institute of Technology, Japan, M. NOORI, North Carolina State University

4:30 PM

Uncertainty Analysis of a Cemented Hip Replacement Device—L. HUYSE, B. THACKER, D. P. NICOLELLA, Southwest Research Institute

4:45 PM

Theoretical and Monte Carlo Study of Lifetime Distribution for Fibrous Composites in Creep-Rupture Loading—S. L. PHOENIX, Cornell University, S. MAHESH, Los Alamos National Laboratories

5:00 PM

The Quantification of Disorder in Heterogeneous Materials—S. TORQUATO, Princeton University

FRIDAY, 3:45 PM–5:15 PM

Rm. #213, 2nd Level

AMD-16D: DAMAGE AND FAILURE AT COATING INTERFACES

Sponsored by the Fracture and Failure Committee of the Applied Mechanics Division

Chair: **M. E. WALTER**, Ohio State University

3:45 PM

Adhesion Measurements of Ultrathin Multilayers Using Glass-Modified Stress Waves—V. GUPTA, V. KIREEV, University of California at Los Angeles

Continued

FRIDAY (continued)

4:03 PM

Measurement of Mixed-Mode Interfacial Failure in Thin Films Using Laser Induced Stress Waves—J. WANG, N. R. SOTTOS, R. L. WEAVER, University of Illinois at Urbana-Champaign

4:21 PM

Mixed-Mode Fracture in Epoxy/Quartz Interphases—A. MELLO, K. M. LIECHTI, University of Texas at Austin

4:39 PM

Damage and Toughness Loss at Thermal Barrier Coating Interfaces—J. BEUTH, Q. MA, Carnegie Mellon University, G. H. MEIER, F. S. PETTIT, M. J. STIGER, University of Pittsburgh

4:57 PM

Contact-Induced Dislocation Damage Near a Nano-Grain Coating Layer—H. YU, K. S. KIM, Brown University, Y. T. CHENG, General Motors

Bioengineering

FRIDAY, 7:45 AM–9:15 AM

Rm. #219, 2nd Level

BED-7A: HEMODYNAMICS OF CARDIOVASCULAR DEVICES-I

Sponsored by the Fluids Committee of the Bioengineering Division

Chair: **A. S. ANAYIOTOS**, University of Alabama at Birmingham

Co-Chair: **B. LIEBER**, University of Miami

7:45 AM

A Modal Decomposition Approach to Noninvasive Cardiac Output Monitoring via Multi-Channel Blind System Identification—Y. ZHANG, H. ASADA, Massachusetts Institute of Technology, A. T. REISNER, Massachusetts General Hospital (IMECE2002-32579)

8:00 AM

Multi-Channel Blind System Identification for Noninvasive Cardiovascular Monitoring—Y. ZHANG, H. ASADA, Massachusetts Institute of Technology, A. T. REISNER, Massachusetts General Hospital (IMECE2002-32580)

8:15 AM

Phasic Variations and Magnitude of Pressure Recovery Distal to Human Coronary Artery Stenoses During Angioplasty—R. BANERJEE, University of Cincinnati, L. BACK, California Institute of Technology, M. R. BACK, University of South Florida (IMECE2002-32581)

8:30 AM

Reduction of Flow Rate Into a Saccular Aneurysm after Stenting—L. D. JOU, University of Tennessee (IMECE2002-32583)

8:45 AM

Stent-Induced Arterial Flow Disturbance: Whole Vessel and Cellular Considerations—L. G. SCHACHTER, D. K. LIEU, A. BARAKAT, University of California at Davis (IMECE2002-32584)

9:00 AM

Analysis of Fluid-Stent Interaction Via Digital Particle Image Velocimetry—S. MACE, P. VLACHOS, O. PIERRAKOS, S. YAZDANI, Virginia Polytechnic Institute and State University, J. BERRY, Wake Forest University (IMECE2002-32585)

FRIDAY, 7:45 AM–9:15 AM

Rm. #220, 2nd Level

BED-7B: BONE MECHANICS-I

Sponsored by the Solid Mechanics Technical Committee of the Bioengineering Division

Chair: **X. E. GUO**, Columbia University

Co-Chair: **O. AKKUS**, University of Toledo

7:45 AM

A Study of Structural Behavior in Osteoporotic Trabecular Bone: Comparison Between Finite Element Analysis and Experiments with Fused Deposition Models—J. N. EGGERT, P. K. WRIGHT, University of California at Berkeley (IMECE2002-32586)

8:03 AM

Multiscale Characterization of the Ultrastructure of Normal and Osteoporotic Human Trabecular Bone—M. A. RUBIN, I. M. JASIUK, Georgia Institute of Technology (IMECE2002-32591)

8:21 AM

Comparison of Image Generation and Processing Techniques for 3D Reconstruction of the Human Skull—B. V. MEHTA, R. MARINESCU, Ohio University (IMECE2002-32592)

8:39 AM

Effects of Vertebral Body Changes on Cervical Spine Load Sharing—J. ZHANG, N. YOGANANDAN, F. A. PINTAR, Medical College of Wisconsin (IMECE2002-32594)

8:57 AM

The Effect of Bone Modulus on the Stress Distribution in a Dental Implant: A 3D Finite Element Analysis—D. BOZKAYA, S. MUFTU, Northeastern University (IMECE2002-32595)

FRIDAY, 7:45 AM–9:15 AM

Rm. #221, 2nd Level

BED-7C: JOINT MECHANICS

Sponsored by the Design and Rehabilitation Committee of the Bioengineering Division

Chair: **D. GIURINTANO**, National Hansen's Disease Programs

Co-Chair: **D. J. DIANGELO**, University of Tennessee Health Science Center

7:45 AM

Quantitative Assessment of Glenohumeral Joint Forces in Positions of Overhead Activities: Effects of Shoulder Arthroplasty—T. Q. LEE, M. SCHAMBLIN, B. Y. YANG, M. H. MCGARRY, R. GUPTA, Veterans Affairs Healthcare System and University of California at Irvine (IMECE2002-33021)

8:00 AM

Effects of Supraspinatus Tear and Repair on Glenohumeral Joint Biomechanics—M. H. MCGARRY, J. L. BISSELL, B. Y. YANG, R. GUPTA, T. Q. LEE, Veterans Affairs Healthcare System and University of California at Irvine (IMECE2002-33024)

8:15 AM

Biomechanical Effects of Failure Modes in Repeated Anterior Inferior Glenohumeral Joint Dislocations—T. Q. LEE, B. Y. YANG, J. E. TIBNOE, P. J. MCMAHON, Veterans Affairs Healthcare System and University of California at Irvine (IMECE2002-33026)

8:30 AM

Effect of Extension Osteotomy of the 1st Metacarpal on Laxity of the Thumb Carpometacarpal Joint—M. F. KOFF, N. SHRIVASTAVA, A. E. ABBOT, B. E. HEYWORTH, T. R. GARDNER, R. J. STRAUCH, V. C. MOW, Columbia University (IMECE2002-33029)

8:45 AM

Effect of Tapered Geometry on the Load Transfer of an Idealized Cemented Hip Implant—N. NUNO, Université du Québec, Canada (IMECE2002-33032)

9:00 AM

Development and Verification of a Dynamic TKR Model—J. P. HALLORAN, P. J. RULLKOETTER, University of Denver, A. J. PETRELLA, DePuy Orthopaedics, Inc. (IMECE2002-33035)

FRIDAY, 7:45 AM–9:15 AM

Rm. #224, 2nd Level

BED-7D: VEHICULAR BIOMECHANICS

Sponsored by the Solid Mechanics Technical Committee of the Bioengineering Division

Chair: **A. SANCES**, University of California at Santa Barbara

Co-Chair: **S. KUMARESAN**, University of California at Santa Barbara

7:45 AM

Biomechanical Analysis of Soft Tissue Neck Injury During Pedestrian Fall—A. SANCES, JR., S. KUMARESAN, University of California at Santa Barbara (IMECE2002-32638)

8:00 AM

Vertical Impulse Analysis of Seat Belt Buckles—R. CLARKE, Clarke Automotive Consultants, A. SANCES, JR., University of California at Santa Barbara (IMECE2002-32639)

8:15 AM

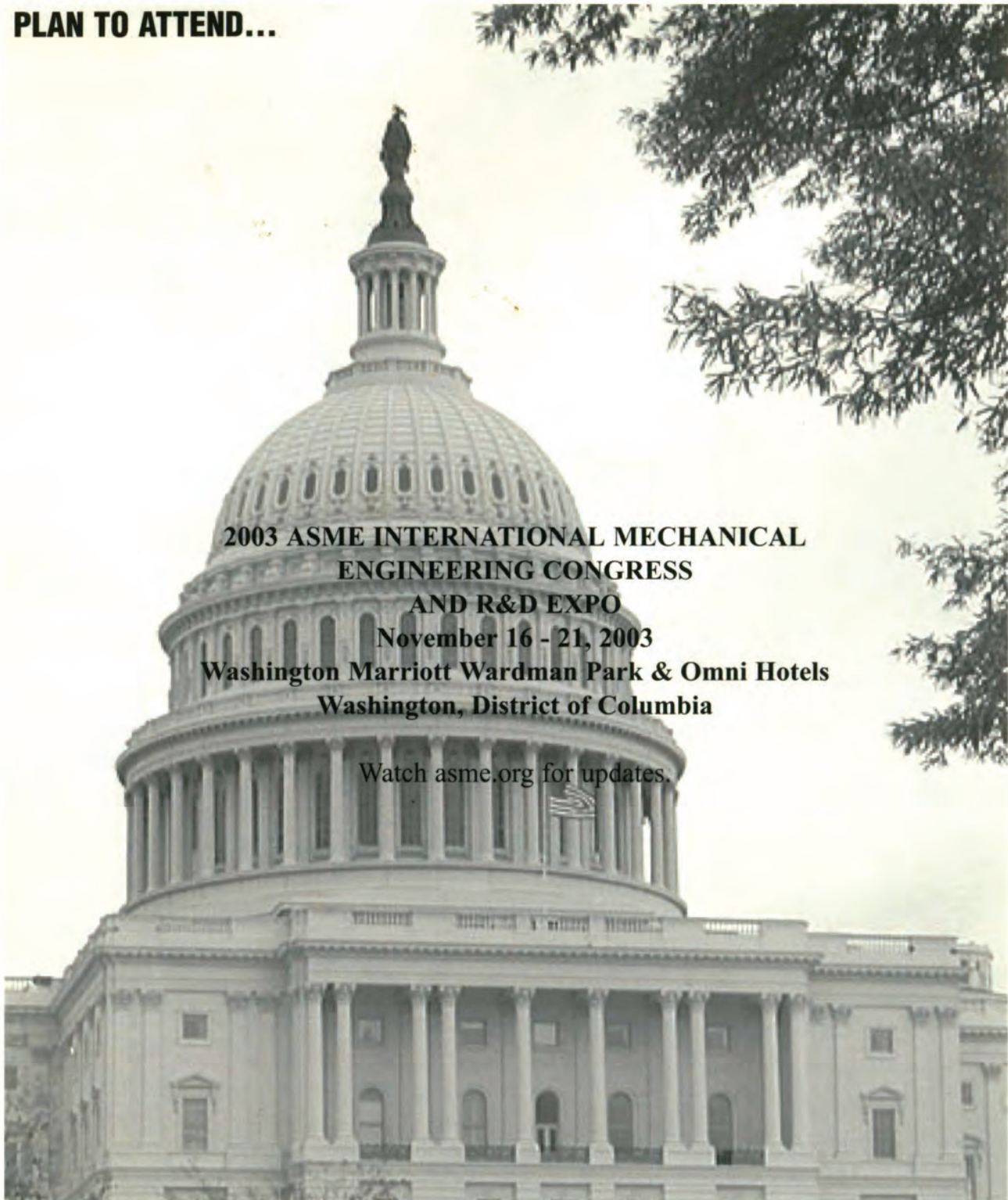
Biodynamics of Stand-Up Rider Lift Truck Accidents—M. ZOGHI-MOGHADAM, A. M. SADEGH, C. B. WATKINS, City College of the City University of New York, D. DUNLAP, Crown Equipment Corp. (IMECE2002-32641)

8:30 AM

Effect of Head Restraint Position on Neck Injury Criteria in Rear Impact—J. DEROSIA, N. YOGANANDAN, F. A. PINTAR, Medical College of Wisconsin (IMECE2002-32642)

Continued

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