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MATERIALS

Materials Division Newsletter

Paul F. Joseph, Editor *Fall 1999*

Message from the Chair

Brian Cox

The story of the Materials Division through the 1990's has been one of extraordinary success and growth from a position of near-terminal neglect. Three years ago, one of my predecessors recollected in this column the serious consideration given by ASME to abolishing the Materials Division altogether, which would have been a sorry end to 70 years of history. Yet here we are now enjoying the fact of being at least in some regards one of ASME's model divisions. Like a surfer who just happened to be paddling in the right place when the big wave came by, I have had the privilege of being swept along in this exciting process of regeneration.

The division's restoration was no accident. It can be traced very directly to the tremendous vision and work of a succession of outstanding Executive Committee members and the surpassing efforts of our division's technical committees. I continue to be very pleasantly surprised by the number of rank and file members who step forward to volunteer substantial services. It is these contributions that are the life of the division. To all of these volunteers, I extend my genuine appreciation of the quality of their work and my thanks for its quantity.

But the process is not over by any means. Just as the world of research has evolved over the last ten years to meet the needs of the new imperative "business before defense" so the division must evolve. Serving the needs of research-oriented members through meetings and publications is no longer enough. We must also find ways to embrace our members from industry and to promote ASME as a place where industrial members and researchers can form meaningful and productive relationships. This is a huge challenge, because it implies new paradigms for divisional activities. But the rewards for both our research and commercial sectors are potentially very great.

Some new ideas for moving in this direction are already in effect, including joint industry / research technical sessions at meetings, student competitions, and joint symposia with ASME divisions that have traditionally been much closer to industry. But as ever, real progress will flow from the ideas and efforts of our volunteering members. So here is a challenge for each one of us. If you have ideas on how the division can create industry / research partnerships, let's hear them! Please think them through and bring them and yourself to our technical committee meetings and our open executive committee meeting in Nashville. But be prepared for some action. The committees have become quite popular places now and you should expect to find plenty of potential allies and opponents there with you!

(continued on page 2)

MESSAGE FROM THE OUTGOING CHAIR

Theodore Nicholas

It seems like only yesterday when I became a member of the Executive Committee of the Materials Division of ASME in 1994. Time flies, and it's time for new leadership. I would like to take this opportunity to thank my fellow members: Brian Cox, Rishi Raj, Sue Cunningham and Bill Curtin for their wonderful support during this past year. I feel we have kept the Materials Division moving forward and I foresee nothing but continued improvement over the next five years. With Daniel Davis as our new member, I see a Division with strong leadership in place for the next five years. It has been a very exciting and challenging opportunity to serve as a member of the Executive Committee of a Division which has continued to prosper over the past decade. To Brian Cox I wish the best of success as the incoming Chair. To the others in the Materials Division and at ASME, thanks for helping make this such a successful Division. It has been a real pleasure to participate in this activity and I wish all of you only the best in the future.

Theodore Nicholas

Message from the Chair

(continued from page 1)

Ted Nicholas has left the Executive Committee, at least formally, after completing his five year stint with obvious enjoyment and enthusiasm. We are all in Ted's debt for keeping the momentum rolling. I feel especially indebted to Ted, because he has filled in for me on occasions too numerous for me to count (although Ted probably remembers the number very well) when I have had to plead unavailability for some reason. But I suspect that Ted is going to invent some new roles for retiring chairs so that he and then I in my turn can make even further contributions.

Dan Davis of NSF joins the Executive Committee as its incoming member. Dan has resigned from the Metals Committee to make himself available, but not before recruiting Winston Soboyejo of Princeton to do that important job in his place. We welcome Dan and Winston into their new positions.

Others who have newly become Technical Committee chairs are Martin Ostoja-Starzewski of the Institute of Paper Science and Technology and Georgia Tech in the AMD / MD joint Committee on Constitutive Equations; Bob Wetherhold of the State University of New York at Buffalo in the Composites Committee; John P. Coulter of Lehigh University in the Committee on Materials Processing; and Vipin Kumar of the University of Washington in the Polymers Committee. I welcome these four gentlemen and congratulate them on their election. I also offer the division's thanks to the four chairmen they replace, George Voyiadjis, Stephen Swanson, Cengiz Altan, and H. P. Wang. These four technical committees have been exceptionally strong and much credit must go to their recent chairs.

The Nadai Medal, in its second year of medal status, has been awarded to John Hirth of Washington State University. I am very pleased to extend my own congratulations to John for the many outstanding contributions he has made in our field.

Yiu-Wing Mai of Sydney University was recently elevated to Fellow status upon the nomination of the division's Honors and Awards Committee and we congratulate him on this well-earned distinction.

May you all continue to enjoy the benefits of the Materials Division's success. My best wishes to you all in your careers as we flip up that magic 2 on the calendar.

Brian Cox

1999 NADAI MEDAL AWARD LECTURE

John Hirth

The Nadai Medal is awarded in recognition of significant contributions and outstanding achievements which broaden the field of materials engineering. The Nadai Award was established by the Materials Division in 1975, and changed to the Nadai Medal in 1998, to honor Arpad L. Nadai, who was a pioneer in the field of materials engineering, contributing particularly to the area of plasticity as well as developments in fatigue and high temperature behavior. The recipient of the Nadai Medal for 1999 is John P. Hirth, formerly Battelle Distinguished Professor of Mechanical and Materials Engineering at Washington State University.

John Price Hirth received his B.S. and M.S. degrees in Metallurgical Engineering from Ohio State University in 1953. He obtained his Ph.D. from the Carnegie Institute of Technology (now Carnegie Mellon University) in 1958. He was in the U.S. Air Force in 1953-57; a Fulbright Fellow at Bristol University (England), 1957-58; an Assistant Professor at Carnegie 1958-61; and was at Ohio State University, where he became Professor in 1964, in 1961-1988. He was appointed to his present post as Professor at Washington State University in 1988. He served as Visiting Professor at Stanford in 1968-69 and spent visiting terms at Oslo University, Harvard, Colorado School of Mines, and the University of Mexico.

His awards include the Hardy Gold Medal of AIME, 1960; ASM Bradley Stoughton Award, 1964; ASEE Curtis W. McGraw Award, 1967; Fellow, American Society for Metals, 1971; Campbell Lecturer, ASM, 1972; Z. Jeffries Lecturer, ASM, 1974; Fellow TMS-AIME, 1974; McDonald Lecturer, Canadian Metal Physics Society, 1978; R.F. Mehl Medal and IMD Lecturer, TMS-AIME, 1980; Matthewson Gold Medal, AIME, 1982; C. S. Barrett Lecturer and Medalist, ASM, 1986; A.E. White Distinguished Teaching Award, ASM, 1989; Acta Metallurgica Gold Medal, 1989; TMS Electronic, Magnetic and Photonic Materials Division Luncheon Lecturer, 1992; ASM Gold Medal,1994;. Dickson Prize for Science, Carnegie Mellon University, 1997; and Albert Sauveur Achievement Award, ASM, 1997. He was elected to the National Academy of Engineering in1974, to the Norwegian Academy of Science and Letters in 1992 and to the National Academy of Sciences in 1994. At Ohio State, he received the University Distinguished Research Award in 1979, presented the Commencement Address in March 1987, was named a Presidential Professor in 1987, received the. B.G. Lamme Meritorious Achievement Gold Medal in 1993 and an honorary D. Sc. degree in 1995.

His committee activity includes service with the Materials Advisory Board, 1961-64; Chairman of the Physical Metallurgy Gordon Conference, 1967; Chairman, Physics and Chemistry of Metals Committee, AIME, 1967; Chairman, ASM Transactions Committee, 1969, and Materials Science Division, 1972-73; and advisory or visiting committees at the National Bureau of Standards, 1969-72; Argonne National Laboratory, 1969-73; Carnegie-Mellon University, 1968-89; Los Alamos National Laboratory Materials Science Center, 1982-88; and DOE Materials Science, 1987-89. He was on the Board of Overseers of the Academy for Contemporary Problems, 1970-75, and a member of the ARPA Defense Sciences Research Council, 1968-97.

John P. Hirth is receiving the Nadai Medal for his pioneering and sustained contributions to the understanding of the effects of dislocations on plastic deformation, strength, embrittlement and fracture of bulk and / or thin-film materials. He has contributed significantly to the understanding, characterization and modeling of the behavior of materials at the atomic and microstructural levels. He is most noted for his fundamental theoretical and experimental contributions to the study of line defects (dislocations) in materials which are key to the strength and deformation characteristics of materials. His work covers an extremely broad range of materials and classes of material behavior and encompasses the range from fundamental scientific understanding to engineering applications. He is the author or coauthor of 442 technical articles, including two books, on nucleation and growth processes, dislocation theory, and physical metallurgy. He was Editor of Scripta Metallurgica (now Scripta Materialia), 1974-1994.

Dr. Hirth will give the Nadai Lecture at the Nashville IMECE on Thursday, November 18 from 5:30 to 7:00 PM. He will discuss various aspects of his work in a talk entitled "Dislocations in Multiscale Modeling of Deformation".

AFTER DINNER SPEAKER- ROBERTA GLEITER:

Roberta Gleiter

Ms. Roberta Gleiter will be the after dinner speaker at the Materials Division Banquet at the Nashville IMECE. Ms. Roberta Gleiter is the FY99 National President of the Society of Women Engineers. She holds a B.S. in Chemical Engineering from Purdue University and a M.S. in Systems Management / Technical Systems from the University of Southern California.

Ms. Gleiter has served the National Science Foundation both on a Federal Advisory Committee and as a panelist evaluating engineering research grant proposals. She also has been invited by the White House as well as the National Academy of Engineering to discuss issues related to women in the workplace. Ms. Gleiter was a participant in the Summit on Women in Engineering held recently in Washington, D.C. and has just returned from Chiba, Japan where she represented U.S. women engineers at an international conference of women engineers and scientists.

Ms. Gleiter was recently elected Vice Chair of the American Association of Engineering Societies (which represents over one million engineers), and is active on the Engineering Ethics Committee. She is a member of the American Institute of Chemical Engineers, American Society of Mechanical Engineers, Institute of Hazardous Materials Management, and International Council on Systems Engineering.

Ms. Gleiter was named an Aerospace Corporation Woman of the Year; and recognized with a YWCA Leadership Award, and Chi Omega National Woman of Achievement Award. She received an Aerospace Group Achievement Award for her work in effecting a change in NASA developmental policy and implementing technical changes to DoD / NASA hardware contracts. She has been a member of ASTM and the Joint Army Navy NASA Air Force Propellant Committee.

As a Project Engineer / Technical Manager at the Aerospace Corporation, Ms. Gleiter is responsible for spacecraft projects on the SBIRS High program. She is the author of publications in the areas of program management, systems safety, and propellant protection system development.

The subject of Ms. Gleiter's talk is: Building Stronger Bonds.

MATERIALS DIVISION SYMPOSIA FOR IMECE 99 IN NASHVILLE

The seven committees of the Materials Division are sponsoring eleven symposia over a total of 36 sessions at the IMECE 99 to be held in Nashville, Tennessee from November 14-19, 1999. Additional sessions are being contributed to these symposia at this Congress from other Divisions of the ASME through co-sponsorship. These divisions include Applied Mechanics, Aerospace, Noise Control, Heat Transfer, and Pressure Vessels and Piping. In total, the Materials Division is sponsoring 124 papers.

The committee chairs and those interested in organizing sessions for IMECE 00 which will be held in Orlando, Florida from November 5-10, 2000, should please submit their requests to the 2000 Program Representative, Bill Curtin at Brown University, Division of Engineering, Providence, RI, 02914 401-863-1418, e-mail: curtin@engin.brown.edu.

The symposia for IMECE 99, organizers of the symposia, and technical committees of the Materials Division sponsoring these symposia are given below:

Composites (Chair: Robert Wetherhold):

* Symposium on Durability and Damage Tolerance Of Composite Materials and Structures (A. Pelegri, W. Chan, A. Haque, M. Hosur, S. Narayanaswamy), jointly with Applied Mechanics Division
* Symposium on Design and Manufacturing of Composites (S. White), jointly with Applied Mechanics Division
* Symposium on Multifunctional Materials and Structures (E. Ayorinde, A. Dasgupta, M. Dunn, R. Gibson), with a Keynote Session featuring Y. Rajapakse on Naval Research in Multifunctional Materials and J. Hwang on High Performance PSA Bonding Solutions, jointly with Aerospace and Noise Control and Acoustics
* Symposium on Application of Porous Media Methods (R. Sullivan), jointly with Applied Mechanics Division, Heat Transfer Division, and CONCAM.

Constitutive Equations (Chair: Martin Ostoja-Starzewski)

* Symposium on Physical Modeling of Dynamic Failure Processes (T. W. Wright, A. M. Rajendran, M. Zikry)

Electronic Materials (Chair: Minoru Taya):

* Symposium on Electronic Packaging *(M. Dadkhah, Y. Guo)*

Materials Processing (Chair: John Coulter):

* Symposium on the Science, Automation, and Control of Materials Processes Involving Coupled Transport and Rheology Changes (S. Ilegbusi, G. Oyeleye)

Metallic Materials (Chair: Daniel Davis):

* Symposium on Integration of Scientific and Engineering Aspects of Structural Materials in High Temperature Applications (R. Mohan, R. Raj), jointly with Materials Division Ceramics Committee and Pressure Vessels and Piping Division
* Symposium on Fatigue (D. Davis, T. Nicholas, S. Mall), jointly with Aerospace

Polymers (Chair: Vipin Kumar)

* Symposium on Polymer Systems (A. Saigal, K. Ramani)

Program Chair: Susan Cunningham

Schedule of Materials Division Events at the Nashville IMECE

Nadai Lecture
Professor John P. Hirth
Thursday, November 18 from 5:30 to 7:00 PM

Materials Division Banquet
After-Dinner Speaker, Ms. Roberta Gleiter
Thursday, November 18 from 7:00 PM to 9:00 PM

Committee Meetings:

Monday, November 15
AMD-MD Joint Committee on Constitutive Equations, 11:00 AM to 12:00 Noon

Tuesday, November 16
Ceramics, from 9:00 AM to 10:00 AM
Composites, from 3:30 PM to 4:30 PM

Wednesday, November 17
Executive Committee (Closed Session), from 1:00 PM to 4:00 PM

Thursday, November 18
Polymers, from 8:00 AM to 9:00 AM
Metallic Materials, from 9:00 AM to 10:00 AM
Materials Processing, from 10:00 AM to 11:00 AM
Electronic Materials, from 11:00 AM to 12:00 Noon
Executive Committee (Open Session), from 1:00 PM to 4:00 PM

ASME JOURNAL OF ENGINEERING MATERIALS AND TECHNOLOGY

The Journal continues to develop an increasingly prominent role as a leading source of high quality research papers in the various branches of materials engineering, including constitutive models for behavior, materials processing, environmental effects, failure analysis, fatigue and fracture mechanics, creep, friction and wear, lifetime prediction, structure-property relationships, and test procedures. The audience includes university, government and industry researchers and practitioners engaged in design, materials selection, structural analysis, materials processing and failure analysis.

The Journal emphasizes broad coverage of the interface between experimental characterization and state-of-the-art modeling of the processing and behavior of engineering materials, including constitutive equation development for deformation, fracture and fatigue and process/structure/property relations. The focus is on real materials and their structure, including experimentally observed behaviors and models that address pertinent issues. Papers focusing on either pure analysis or pure experiment, taken by themselves, rarely offer a glimpse into the underlying complexity of real materials and processes that are crucial to the mission of JEMT.

Our strategy continues to focus on maintaining and enhancing timely, high quality reviews and publishing special lectures and special issues of the Journal. These special issues typically emerge from symposia or workshops that enhance the development of new directions in research and development. We have sought to solicit and publish high quality special issues of the Journal to develop a healthy, but not excessive, backlog. To this end, we are proud of two extremely high quality special issues that have appeared in the first two issues of 1999. The 111 page January 1999 special issue on shape memory alloys was guest-edited by Professor Huseyin Sehitoglu and Dr. Yuriy Chumlyakov. It is a great example of the kind of mechanics/materials linkage that JEMT is featuring. Along similar lines, the 134 page April 1999 special issue on "Multiscale Modeling of Deformation and Fracture" was guest-edited by Professors Hussein Zbib, John Hirth and Tariq Khraishi of Washington State University and Dr. Robb Thomson of NIST; the issue was based on papers presented at the September 1998 SES meeting in Pullman, WA. These two special issues will undoubtedly serve as important reference volumes for some time to come.

Two more special issues of the Journal have been committed to appear in the coming year. The first is an October 1999 special issue on "Damage and Durability of Heterogeneous Media" to be guest-edited by Professors Ann Marie Sastry and Robert C. Wetherhold. The July 2000 issue will be dedicated to the "Integration of Scientific and Engineering Aspects of Structural Materials in High Temperature Applications" and will be guest-edited by Dr. Raj Mohan and Professor Rishi Raj.

Special review articles have been invited in the coming year on mechanics and materials connections in nonlocal theories and in advances in application of computational polycrystal plasticity to metal forming applications. Furthermore, we expect to publish a form of the 1998 Nadai Lecture by Professor Ali Argon of MIT this next winter.

From July 1, 1997 to December 31, 1998, the Journal received 116 papers. Of these, 35 have been accepted for publication, with another 35 still in the review process. The annual page allocation presently stands at 590 pages per year. Over the past few years, the average waiting time for a paper has been about nine months.

Responsive and technically well-respected Associate Editors are instrumental in promoting the quality of any journal. To this end, we are grateful to Professor David Allen of Texas A&M University who stepped down this past December to take sabbatical leave in Paris. His wide-ranging expertise and wise judgement will be missed. Professor Fu-Pen Chiang resigned last November to address other priorities; his service to the Journal is also very much appreciated.

We are pleased to have approval from ASME for a second three-year term for both Romesh Batra of Virginia Tech and Shaker Meguid of the University of Toronto as Associate Technical Editors of JEMT. They will continue along with current Associate Editors Kwai Chan of Southwest Research Institute, Cate Brinson of Northwestern University, G. Ravichandran of Cal Tech, Huseyin Sehitoglu of the University of Illinois, Namas Chandra of FAMU/FSU, Hussein Zbib of Washington State University and Subhendu Datta of the University of Colorado. In addition to this fine group, we have just added the five new Associate Technical Editors: Esteban Busso of the Imperial College in London, Didier Marquis of Ecole Normale Superieure de Cachan, George Johnson of the University of California-Berkeley, Arunachalam Rajendran of the Army Research Laboratory, and Shankar Mall of the Air Force Institute of Technology. The addition of Drs. Busso and Marquis certainly enhances the visibility of JEMT in Europe, a region of high vitality and activity in areas of interest to the Journal.

Finally, I would like to take this opportunity to invite readers of the Journal to submit their papers for publication, and to thank both the Materials Division and its Executive Committee for their continued support. I especially thank Connie Monahan at ASME and Ms. Joyce Jones at Georgia Tech for their professional, efficient performance in assisting the Journal through its various phases of publication this past year.

David L. McDowell, Technical Editor

2001 ASME Mechanics and Materials Conference

We are pleased to invite you to the 2001 Joint Applied Mechanics and Materials Summer Conference, which will be held from June 27-29, 2001, on the campus of the University of California, San Diego (UCSD) in La Jolla, California. This conference is a major scientific meeting, jointly sponsored by the Materials Division and the Applied Mechanics Division of the American Society of Mechanical Engineers.

The aim of this conference is to provide a forum for scientific exchange amongst researchers in mechanics and materials, and to promote integration of applied mechanics and materials science and engineering. All areas of materials science and applied mechanics are included.

DEADLINE FOR ONE-PAGE ABSTRACTS: January 30, 2001. Acceptance/Declination Letters will be mailed on or before February 28, 2001. Submit abstracts via e-mail to ljacobs@halebopp.ucsd.edu, or mail your abstract to Mrs. L. Jacobs-Cohantz, UCSD, 9500 Gilman Drive, La Jolla, CA 92093-0416.

ADDITIONAL INFORMATION: Contact Mrs. Lauri Jacobs-Cohants, ljacobs@halebopp.ucsd.edu, Tel: 858 534-4772, Fax: 858 534-2727. Future information will be posted on the website http://www-ceam.ucsd.edu/mmconf/

NOTE: An extended version of this article is on the MD website.

Materials Division Web Site

An extended version of this Newsletter is available at the Materials Division Web Page at http://widget.ecn.purdue.edu/~asmemd/.

The web editor is Prof. Karthik Ramani from Purdue University.

NEWS FROM THE TECHNICAL COMMITTEES

AMD-MD Joint Committee on Constitutive Equations

In August 1998 Martin Ostoja-Starzewski (Institute of Paper Science and Technology, and Georgia Tech) took over as Chair of the committee from George Voyiadjis (Louisiana State University). Subsequently, Hussein Zbib (Washington State University) was elected as Vice-Chair, which began in the summer of 1999. At the last meeting the operational rules of this committee were amended to emphasize publication of high quality results in both the Journal of Applied Mechanics and the Journal of Engineering Materials and Technology.

The committee members have been active putting together various symposia at the ASME conferences. At the IMECE 98 (Anaheim, CA) three symposia were organized by the committee members: (i) "Symposium on Constitutive Relations for Engineering Materials" by A. Rajendran and R.C. Batra; (ii) "Symposium on Phase Transformations and Active Composites" by D. Lagoudas and K. Bhattacharya; and (iii) "Symposium on Scale Effects in Heterogeneous Materials" by M. Ostoja-Starzewski.

At the ASME summer 1999 Mechanics and Materials meeting held at Virginia Tech, Blacksburg, VA, H. Haslach, G. Kyanka, M.K. Ramasubramanian and R. Perkins organized the "Symposium on Mechanics of Cellulosic Materials".

Finally, for the IMECE 99 (Nashville, TN), a Symposium on "Physical Modeling of Dynamic Failure Processes" is being organized by T.W. Wright, A.M. Rajendran, and M. Zikry.

The webpage of the committee also lists other conference activities that our members are involved with. This address is: http://www.asme.org/divisions/amd/constit.html.

Martin Ostoja-Starzewski, Chair

Ceramics Committee

The Ceramics Committee exists to promote all aspects of the advancement of engineering and science related to ceramic materials. This includes sponsoring symposia at major ASME conferences such as the annual ASME summer conference and the ASME IMECE held in November. For example, in 1998, Dr. Ahmet C. Kaya (General Electric Research and Development) organized a very successful Symposium on Ceramic Coatings at the ASME IMECE in Anaheim, CA. This symposium consisted of five sessions that included such topics as materials characterization & testing, stress analysis, modeling, and failure mechanisms for various ceramic coatings, with a particular emphasis on thermal barrier coatings. It should be noted that this symposium contained a balanced mix of industrial and university participation. Planning for future Ceramics Committee sponsored symposia is currently underway. Tentative plans are being made for ceramics related symposia at the IMECE in Orlando, FL for November 2000. For example, Irene J. Beyerlein (irene@lanl.gov) and Yuntian T. Zhu (yzhu@lanl.gov) at Los Alamos National Laboratory are planning a joint symposium with Composites entitled: "Microstructural & Mechanical Property Relationships in Advanced Composites." If you are interested in participating in this symposium, please contact the symposium organizers directly. The Ceramics Committee will meet in Nashville during this year's IMECE to review these plans and to solicit new symposium topics. Look for the room location in the final conference program. The Ceramics Committee invites all members to participate in these activities. If you are interested in organizing a ceramics related symposium or would like to participate as a co-organizer or session chair, you are encouraged to attend this meeting. For the future, the committee is especially interested in hosting joint symposiums with other ASME technical divisions and other technical societies. Members interested in joining the Ceramics Committee should contact me directly, e-mail hfn2@lehigh.edu or phone (610)-758-4128.

Herman F. Nied, Chair

Composites Committee

The Materials Division Composites Committee works to represent the interests of ASME members who are active in composite materials, and to promote the technology of composite materials through technical conferences. The committee actively seeks members who have technical interests in the processing, manufacturing, and design of composites. The Committee has three themes around which IMECE symposia are organized: Design and Manufacturing, Durability and Damage Tolerance, and Smart/Multifunctional Materials. The emphasis and content of symposia varies from year to year, based on the interests of committee members. The Committee is interested in coordinating Symposia with other Committees, and is open to additional Symposia suggestions. Committee meetings are held during the IMECE and interested prospective members are invited to attend. The current Committee Chair is Prof. Robert Wetherhold, Dept. of Mech. & Aero Eng'g, State University of NY, Buffalo [(716)-645-2593 x2241, mecr-cw@acsu.buffalo.edu], while the current Vice-Chair is Prof. Scott White, Dept. of Aero & Astro Eng'g, Univ. of Illinois at Urbana-Champaign [(217)-333-1077, swhite@uiuc.edu].

The Committee meeting held at the 1998 IMECE in Anaheim was attended by 25 people. The Committee organized three Symposia held during the IMECE: Durability and Damage Tolerance of Heterogeneous Materials, organized by Ann Marie Sastry, Assimina Pelegri, and Robert Wetherhold; Multifunctional Materials-Structural Health Monitoring, organized by Fu-kuo Chang and Abhijit Dasgupta; and Micromechanics and Laminate Analysis-A Symposium in Honor of Dr. N. Pagano's 65th Birthday, organized by Ajit Roy, Jeff Paine, and Steve Donaldson. These symposia were highly successful in terms of technical content and attendance.

Plans are also underway to organize or participate in three symposia for the 1999 IMECE: Durability and Damage Tolerance, organized by Assimina Pelegri, Wen Chan, A. Haque; Design and Manufacturing, organized by Scott White and Ann Marie Sastry; Multifunctional Materials and Structures, Marty Dunn and Emmanuel Ayorinde (co- sponsored with Noise Control and Acoustics Division's Material Characterization Committee); and Applications of Porous Media Methods for Engineered Materials, Roy Sullivan. In addition, preliminary plans are in place for a symposium in Textile Composites to be held at the 2000 IMECE, organized by Larry Dickinson and Robert McMeeking; industry input is particularly sought for this symposium.

Robert Wetherhold, Chair

MD-EEPD Joint Committee on Electronic Materials

The activity of the Electronic Materials Committee (EMC) for the last year was to sponsor the workshop on Pacific Rim Distance Learning on Electronic Packaging and Microelectronics (EPM). This workshop was held at Maui Westin, Hawaii, June 18, 1999, during the last Inter Pak 99 meeting on electronic packaging, sponsored by both ASME and JSME. The organizers of the workshop were M. Taya (AMSE) and R. Watanabe (JSME). The aim of the workshop was to discuss future plans for the Pacific Distance Learning on EPM. The workshop attracted 15 attendees, mostly from JSME and ASME, who are active in education on EPM. The main focus was software and hardware issues for distance learning, particularly the manner of communication by which an instructor in a classroom or office lectures and/or answers to stu-

dents at a remote classroom. Prof. Hwang's talk on the method of distance learning attracted much attention from the audience. Some of the other subjects that were covered were the preliminary results of distance learning between Japan and China, US distance learning on EPM at Georgia Tech, and the televised educational program at National Television University at Colorado.

New ideas on organizing sessions within ASME or jointly with other societies are most welcome as well as new memberships to the EMC.

Minoru Taya, Chair

Materials Processing Committee

During the past year, the material processing committee continued to promote the development and dissemination of material processing technology through both internal and external efforts. At the November 1998 International Mechanical Engineering Conference and Exhibition held in Anaheim, the committee co-sponsored a symposium focused on an extremely important material processing issue, which is the "Rheology and Fluid Mechanics of Nonlinear Materials." This symposium explored a rapidly developing field that encompasses intriguing phenomena not observed in the case of materials with linear constitutive behavior. The potential for improved material processing capabilities through a better understanding of nonlinear material rheology is enormous. The symposium was very well received, and was made up of 30 invited and contributed papers from authors around the world. The proceedings of the symposium were published as ASME MD-Vol. 81. The committee greatly appreciates the efforts of Professor Dennis Siginer from the New Jersey Institute of Technology and Daniel De Kee from Tulane University who together organized this successful symposium.

For the 1999 IMECE in Nashville, Tennessee, the committee has sponsored a symposium on "The Science, Automation, and Control of Processes Involving Coupled Material Transport and Rheology Changes." This symposium is intended to focus on both fundamental science and industrial implementation issues related to such processes, and is being jointly organized by Professor O. J. Ilegbusi of Northeastern University and Dr. G. O. Oyeleye of AMP Incorporated. The symposium will be held on Friday, November 19, 1999 as part of the Nashville conference, and consists of 3 sessions containing presentations related to a variety of manufacturing processes. Those interested in attending this symposium are encouraged to contact either Professor Ilegbusi [(617) 373-4121, ilegbusi@coe.neu.edu] or Professor John Coulter of Lehigh University [(610) 758-4503, john.coulter@lehigh.edu] for further information.

As far as planning for the 2000 IMECE is concerned, the committee has initiated the sponsorship of a symposium on "Materials Processing During Polymer and Composite Product Manufacturing." The principle organizer of the symposium is Professor M. Cengiz Altan of the University of Oklahoma. Individuals interested in participating in or contributing to this symposium are encouraged to contact Professor Altan [(405) 325-1737, altan@mailhost.ecn.uoknor.edu]. Likewise, planning has begun for a large symposium to be co-sponsored by other committees in 2001. This symposium will focus on "Advances in Materials Processing Science" and will be organized by a committee of individuals led by Drs. Dennis Siginer (NJIT), John Coulter (Lehigh), and Ranga Pitchumani (Univ. of Connecticut). The intention of the materials processing committee is to assist with the hosting of such a large symposium on manufacturing science advancements every four years.

In addition, in recognition of the size and breadth of the material processing industry, the committee has formed a group of interested individuals representing a wide variety of disciplines, employers, and / or professional societies. The purpose of the group is to promote improved technological advancement and deployment in the material processing area by better integrating broadly applicable and inter-disciplinary developments. Persons interesting in being involved in this activity are encouraged to contact Professor John Coulter or the current material processing committee Vice-Chairman, Professor Devdas Pai of North Carolina A&T State University [(336) 334-7620, ext. 316, pai@garfield.ncat.edu].

Those interested in any of the above mentioned activities, or in becoming a member of the material processing committee, are invited to attend the next committee meeting, which will be held at the upcoming Nashville IMECE.

John P. Coulter, Chair

Metallic Materials Committee

The beginning of the 1999 / 00 year will bring a change in the Metallic Materials Committee. I will be stepping down from this position to join the Executive Committee of the Materials Division as Secretary. We are fortunate that Dr. Winston Soboyejo, now of Princeton University Department of Mechanical and Aerospace Engineering, has agreed to assume the Chair position of the Metallic Materials Technical Committee. I want to thank all those who have participated in the Committee sponsored symposia and sessions of the past few years. Your efforts are the true reasons for this great revival of the Metallic Materials Technical Committee within the Division.

I would hope that the interests of the Committee remain focused toward supporting fundamental research, development, processing and application of metal alloys, superalloys, metallic composites and intermetallics as related to engineering systems and components. As well I hope there will remain a strong interest in industrial applications.

The Metallic Materials Division has a very full program for the IMECE 99 in Nashville. A symposium "Integration of Scientific and Engineering Aspects of Structural Materials in High Temperature Applications" organized by Drs. R. Mohan and R. Raj offers eight (8) technical sessions. This symposium is jointly sponsored by the Ceramics Committee and the PVP Division. Three (3) IMECE "highlight" sessions on power plants, gas turbines and high temperature coatings are included. The second symposium, "Symposium on Fatigue", was organized by Drs. D. Davis, T. Nicholas and S. Mall. This symposium, consisting of three (3) technical sessions, is jointly sponsored by the Aerospace Division.

Hope to see all of you at the 1999 IMECE in Nashville, and please check the Final Program for the time and location of the Metallic Materials Committee Business Meeting. We still have a lot to accomplish.

Daniel C. Davis, Chair

Polymer Committee

At the 1998 IMECE in Anaheim, the polymer committee featured three symposia. The first was a symposium on "Porous, Cellular and Microcellular Materials" that Vipin Kumar organized at the University of Washington. This was the fourth symposium on this topic since 1992, held every two years. The second symposium was on "Rheology and Processing of Nonlinear Materials", organized by Dennis Signer of the New Jersey Institute of Technology, to which we were a cosponsor. The third symposium was entitled "Phase Transformations in Polymer Processing" organized by Karl Jacob of Georgia Tech.

This year, at the 1999 IMECE in Nashville, a symposium on Polymer Systems organized by Prof. Saigal of Tufts and Prof. Ramani of Purdue. The symposium will focus on all polymeric systems with an emphasis on joining of composites, adhesion and interface evolution in joining, and durability.

The membership of the committee is open to all. The committee meets once a year at the IMECE. The primary purpose of this meeting is to plan future polymer related symposia. All interested are invited to attend our meeting at the Nashville IMECE in November 1999.

Vipin Kumar, Chair

ASME JOURNAL OF ENGINEERING MATERIALS AND TECHNOLOGY

The Journal continues to develop an increasingly prominent role as a leading source of high quality research papers in the various branches of materials engineering, including constitutive models for behavior, materials processing, environmental effects, failure analysis, fatigue and fracture mechanics, creep, friction and wear, lifetime prediction, structure-property relationships, and test procedures. The audience includes university, government and industry researchers and practitioners engaged in design, materials selection, structural analysis, materials processing and failure analysis.

The Journal emphasizes broad coverage of the interface between experimental characterization and state-of-the-art modeling of the processing and behavior of engineering materials, including constitutive equation development for deformation, fracture and fatigue and process / structure / property relations. The focus is on real materials and their structure, including experimentally observed behaviors and models that address pertinent issues. Papers focusing on either pure analysis or pure experiment, taken by themselves, rarely offer a glimpse into the underlying complexity of real materials and processes that are crucial to the mission of JEMT.

Our strategy continues to focus on maintaining and enhancing timely, high quality reviews and publishing special lectures and special issues of the Journal. These special issues typically emerge from symposia or workshops that enhance the development of new directions in research and development. We have sought to solicit and publish high quality special issues of the Journal to develop a healthy, but not excessive, backlog. To this end, we are proud of two extremely high quality special issues that have appeared in the first two issues of 1999. The 111 page January 1999 special issue on shape memory alloys was guest-edited by Professor Huseyin Sehitoglu and Dr. Yuriy Chumlyakov. It is a great example of the kind of mechanics / materials linkage that JEMT is featuring. Along similar lines, the 134 page April 1999 special issue on "Multiscale Modeling of Deformation and Fracture" was guest-edited by Professors Hussein Zbib, John Hirth and Tariq Khraishi of Washington State University and Dr. Robb Thomson of NIST; the issue was based on papers presented at the September 1998 SES meeting in Pullman, WA. These two special issues will undoubtedly serve as important reference volumes for some time to come.

Two more special issues of the Journal have been committed to appear in the coming year. The first is an October 1999 special issue on "Damage and Durability of Heterogeneous Media" to be guest-edited by Professors Ann Marie Sastry and Robert C. Wetherhold. The July 2000 issue will be dedicated to the "Integration of Scientific and Engineering Aspects of Structural Materials in High Temperature Applications" and will be guest-edited by Dr. Raj Mohan and Professor Rishi Raj.

Special review articles have been invited in the coming year on mechanics and materials connections in nonlocal theories and in advances in application of computational polycrystal plasticity to metal forming applications. Furthermore, we expect to publish a form of the 1998 Nadai Lecture by Professor Ali Argon of MIT this next winter.

From July 1, 1997 to December 31, 1998, the Journal received 116 papers. Of these, 35 have been accepted for publication, with another 35 still in the review process. The annual page allocation presently stands at 590 pages per year. Over the past few years, the average waiting time for a paper has been about nine months.

Responsive and technically well-respected Associate Editors are instrumental in promoting the quality of any journal. To this end, we are grateful to Professor David Allen of Texas A&M University who stepped down this past December to take sabbatical leave in Paris. His wide-ranging expertise and wise judgement will be missed. Professor Fu-Pen Chiang resigned last November to address other priorities; his service to the Journal is also very much appreciated.

We are pleased to have approval from ASME for a second three-year term for both Romesh Batra of Virginia Tech and Shaker Meguid of the University of Toronto as Associate Technical Editors of JEMT. They will continue along with current Associate Editors Kwai Chan of Southwest Research Institute, Cate Brinson of Northwestern University, G. Ravichandran of Cal Tech, Huseyin Sehitoglu of the University of Illinois, Namas Chandra of FAMU / FSU, Hussein Zbib of Washington State University and Subhendu Datta of the University of Colorado. In addition to this fine group, we have just added the five new Associate Technical Editors: Esteban Busso of the Imperial College in London, Didier Marquis of Ecole Normale Superieure de Cachan, George Johnson of the University of California-Berkeley, Arunachalam Rajendran of the Army Research Laboratory, and Shankar Mall of the Air Force Institute of Technology. The addition of Drs. Busso and Marquis certainly enhances the visibility of JEMT in Europe, a region of high vitality and activity in areas of interest to the Journal.

Finally, I would like to take this opportunity to invite readers of the Journal to submit their papers for publication, and to thank both the Materials Division and its Executive Committee for their continued support. I especially thank Connie Monahan at ASME and Ms. Joyce Jones at Georgia Tech for their professional, efficient performance in assisting the Journal through its various phases of publication this past year.

David L. McDowell, Technical Editor

2001 ASME Mechanics and Materials Conference

June 27-29, 2001

University of California, San Diego

We are pleased to invite you to the 2001 Joint Applied Mechanics and Materials Summer Conference, which will be held from June 27-29, 2001, on the campus of the University of California, San Diego (UCSD) in La Jolla, California. This conference is a major scientific meeting, jointly sponsored by the Materials Division (MD) and the Applied Mechanics Division (AMD) of the American Society of Mechanical Engineers (ASME).

The aim of this conference is to provide a forum for scientific exchange amongst researchers in mechanics and materials, and to promote integration of applied mechanics and materials science and engineering. Scientists from all over the world are encouraged to participate in the conference. All areas of materials science and applied mechanics are included.

The conference will consist of plenary speakers, symposia on a variety of issues (both invited and contributed papers), and a poster session. Each speaker will be allotted 20 minutes for presentation and discussion of the paper. The talks and posters will be held in a central location, in and around the Price Center (the main student center), with comfortable housing available within easy walking distance on campus. Hotel rooms are also available near campus. Meals will be served in the campus dining facilities, with a reception on Tuesday evening and a banquet on Thursday evening.

We encourage persons interested in organizing a symposium to contact the chair of the conference, at the address

(continued on page 7)

2001 ASME Mechanics and Materials Conference

(continued from page 4)

noted below, or an appropriate chair of the MD or AMD technical committee. They should indicate the theme of the symposium, an approximate number of sessions; such proposals will be considered on a first come, first-serve basis. The conference proceedings will consist of one-page abstracts in 12 pt. font. There will be opportunities to publish specific symposium proceedings as a special issue of several archival journals; the symposium organizers are welcome to make their own arrangements for publishing full length papers presented at their symposia. Neither ASME, nor the local organizing committee will be responsible for the technical contents and the cost of publishing these proceedings.

The UCSD Local Organizing Committee consists of Sia Nemat-Nasser (Chair), David Benson, Anne Hoger, Juan Lasheras, Xanthippi Markenscoff, Joanna McKittrick, Hidenori Murakami, Michael Kassner (Oregon State University), Vitali Nesterenko, Sutanu Sarkar, and Frank Talke.

DEADLINE FOR SUBMITTING ONE-PAGE ABSTRACTS: January 30, 2001. Acceptance / Declination Letters will be mailed on or before February 28, 2001. Preliminary program mailing date is March 31, 1999.

MAILING ADDRESS FOR ABSTRACTS: Submit via e-mail to ljacobs@halebopp.ucsd.edu, or MAIL your abstract to Mrs. L. Jacobs-Cohantz, UCSD, 9500 Gilman Drive, La Jolla, CA 92093-0416.

FOR ADDITIONAL INFORMATION: Contact Mrs. Lauri Jacobs-Cohants, ljacobs@halebopp.ucsd.edu, Tel: 858 534-4772, Fax: 858 534-2727. Future information will be posted on the website http://www-ceam.ucsd.edu/mmconf/

NOTE: The local organizing committee does not have available funds to support travel expenses, whether full or partial, for potential participants!

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Recent Fellows

The following ASME members, with the Materials Division as their primary or secondary division, were recently elected to the Fellow grade:

Suresh G. Advani
Isaac M. Daniel
Arturo J. Egli
Faramarz Gordaninejad
Costas P. Grigoropoulos
Y. W. Mai
Robert M. McMeeking
Brian Moran
Toshio Mura
Robert N. Pangborn
Kamlakar P. Rajurkar
Choon F. Shih
Richard N. Smith
Tirumalai S. Srivatsan
Klaus J. Weinmann
Kaspar J. Willam

Past Nadai Awardees

A. Argon	1998
David L. McDowell	1997
J. R. Rice	1996
N. D. Cristescu	1995
O. Richmond	1994
W. E. Sharpe, Jr.	1993
G. J. Dvorak	1992
J. W. Hutchinson	1991
S. D. Antolovich	1990
H. T. Corten	1988
E. Krempl	1987
W. F. Brown, Jr.	1986
S. Yukawa	1985
T. J. Dolan	1984
A. J. McEvily, Jr.	1983
I. Finnie	1982
S. S. Manson	1981
M. M. Manjoine	1980
L. F. Coffin, Jr.	1979
F. A. McClintock	1978
G. R. Irwin	1977
E. A. Davis	1976
G. M. Sinclair	1975

Past Materials Division Chairs

T. Nicholas	1998	S. Yukawa	1975
S. Nemat-Nasser	1997	D. K. Felbeck	1974
S. Suresh	1996	I. LeMay	1973
A. D. Freed	1995	C. H. Wells	1972
V. K. Stokes	1994	J. H. Thompson	1971
G. J. Weng	1993	A. J. McEvily, Jr.	1970
M. Taya	1992	R. M. Goldhoff	1969
A. A. Tseng	1991	A. Rubio	1968
C. W. Merten	1990	G. M. Sinclair	1967
R. M. Horn	1989	T. W. Eichelberger	1966
C. K. H. Dharan	1988	I. Finnie	1965
T. A. Auten	1987	H. R. Voohees	1964
J. R. Whitehead	1986	M. E. Shank	1963
A. E. Carden	1985	H. T. Corten	1962
J. E. Williams	1984	L. W. Smith	1961
C. Niemczewski	1983	W. E. Cooper	1960
W. Owens	1982	M. J. Manjoine	1959
W. A. Van Der Sluys	1981	W. E. Trumpler	1958
J. P. Gallagher	1980	J. B. Rutherford	1957
T. U. Marston	1979	J. O. Smith	1956
A. Blelloch	1978	W. L. Fleischmann	1955
E. Krempl	1977	R. G. Sturm	1954
J. M. Kraft	1976		