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MATERIALS

Materials Division Newsletter

Paul Joseph, Editor *Fall 2001*

Chair's Message

Susan Cunningham

The Materials Division has continued to strengthen over the last year under the leadership of Rishi Raj. We have a stable financial position and membership and I would like to thank Rishi for the outstanding job he has done as the chair of the Materials Division Executive Committee.

The 2000-2001 year was a successful one for the Materials Division. Our presence at the 2000 Congress in November was extremely strong with over 50 technical sessions. This success was due in part to the work of Bill Curtin and the technical committee chairs, and I would like to thank these individuals for their outstanding effort.

Further, the Materials Division, through the University of California San Diego's Center of Excellence for Advanced Materials (CEAM), hosted the 2001 Joint Applied Mechanics and Materials Summer Conference. This conference was jointly represented by ASME Materials Division (MD) and the Applied Mechanics Division (AMD), ASCE's Engineering Mechanics Division and the Society of Engineering Sciences (SES) to promote integration of applied mechanics and materials science and engineering. The conference was quite successful with over 750 people attending. Sia Nemat-Nasser has been instrumental in leading this conference and making it a success. I extend the thanks of the Division to Sia for his work.

I would also like to announce the next Joint MD-AMD conference will be held in 2003, and will be hosted by AMD. We are currently requesting proposals for hosting the 2005 Joint MD-AMD Summer Meeting. Individuals interested in leading this meeting may reply to me via email or phone.

The Journal of Engineering Materials and Technology (JEMT) continues to be a superb publication promoting technological developments in engineering and engineered materials. Four years ago, David McDowell from the Georgia Institute of Technology undertook the task to strengthen the Journal and bring it into the forefront of Engineering Materials publications. He has been extremely successful in developing the Journal. Today it has a strong backlog of papers in line to be published. Our gratitude is extended to Dr. McDowell for the quality of his work and for his tireless efforts.

I welcome Robert Wetherhold from the State University of New York at Buffalo as the newest member of the MD Executive Committee who begins his tenure in July 2001 for a five-year term. Robert was formerly the chair of the Materials Division's Composite Technical Committee. I would like to thank him for his strong leadership on this committee and welcome the next chair of that committee, Scott White of the University of Illinois Urbana-Champaign.

The 2001 International Congress of Mechanical Engineering proves again to be a solid program for the Materials Division. We look forward to this year's presentations and especially to the Nadai Medal

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Outgoing Chair Message

The principal mission of the Materials Division is to advance the leading edge of the science and application of materials. To achieve this mission, our technical divisions and members sponsor vigorous symposia at IMECE and summer meetings. The hugely successful 2001-summer meeting in San Diego which was sponsored in cooperation with the Applied Mechanics Division as well as SES and ASCE, is another step in that direction. A similar meeting will be held in 2005.

In order to continue this leadership role we must recognize the high dynamics of the field of materials science and engineering at large. New materials are often designed to serve multiple functions that encompass mechanical, thermal, chemical, electrical, magnetic, optical and biological phenomena. The microstructure is designed to optimize two or more of these functions simultaneously. Furthermore the design of these functions is being done at the molecular level. The new era of small scale engineering is unleashing great diversity of function and design of systems, creating even a greater need for science based innovation of many different kinds of multifunctional materials.

The Materials Division, with its strong science and engineering base is ideally positioned to lead this revolution. I urge all our members, the leaders of the Technical Committees and the Executive Committee to seek innovative says to move us forward in this direction. Possible mechanisms are rethinking the structure of our Technical Committees, and additional, more topical summer meetings and workshops.

Rishi Raj

Chair's Message

(continued from page 1)

Lecture to be given by Bill Nix as this year's Nadai Medallist. The Nadai Medal is awarded annually to recognize "distinguished achievements and contributions to the field of engineering materials." Dr. Nix has spent his career furthering the education of young people in engineering materials and mechanics. He has made significant contributions in our field. I congratulate Bill on being selected as this year's Medallist and look forward to an interesting and insightful discussion in November.

We're also looking forward to hearing Dr. John Slaughter, President of the National Action Council for Minorities in Engineering and former Director of the National Science Foundation as this year's Congress after dinner speaker. I encourage as many people as possible to attend the dinner as a celebration of our year-long efforts and to hear what we can do to encourage and foster minority participation in engineering. I would like to extend my genuine appreciation to Dan Davis for his efforts in organizing the symposia for this year's Congress, and in getting such a distinguished individual for our after dinner talk.

Finally, I would like to encourage our members to look forward to strengthening the foundation of the Division by taking on several challenges. First, the history of the Division has been one of setting trends; I feel now is the time to evaluate the trends in materials engineering research and development to make sure we are addressing the future needs of industry and government in our Technical Divisions. Rishi Raj has initiated an effort to assess our organization with a forward-looking scope, and I intend to continue this activity during my term.

Second, we need to continue the efforts lead by former Chair, Brian Cox, in finding ways to strengthen the collaboration between industry and academia. Brian said it very well: "we need to embrace our members from industry and promote ASME as a place where industrial members and researchers can form meaningful and productive relationships". The ideas that Brian promoted, including joint industry/research technical sessions, student competitions and joint symposia, will be fostered with the vision that ASME will become a stronger ally for industry technological advancement.

Third, I challenge all of us to promote diversity in our own circles by welcoming new paradigms of thought and by encouraging minority participation in engineering education and industry. It takes both, and the potential rewards are enormous.

I am excited about this year together with ASME and will do my best to leave a prosperous and forward-looking Division to Bill Curtin, next year's incoming Chair.

Susan Cunningham

ASME Journal of Engineering Materials and Technology

The Journal continues to develop into 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. To this end, we are proud of two extremely high quality special issues that have appeared this past year. The October 2000 issue on "Durability and Damage Tolerance of Composite Materials and Structures" (111 pages), an outcome of ASME IMECE held November 14-19, 1999 in Nashville, was guest-edited by Mina Pelegri (Rutgers), W.C. Chan, (UT-Arlington), A. Haque (Tuskegee University) and U.K. Vaidya (N. Dakota State University). A special issue on "Advances in Metal Forming" based on papers presented at the IMECE in Orlando held in November 2000 will appear in the October 2001 issue, guest-edited by Jian Cao and Wing K. Liu (Northwestern) and Cedric Xia (Ford). A special issue on "Micromechanics in Crystal Plasticity" is set for January 2002, to be guest-edited by Laszlo Toth (LPMM), Mohamed Cherkaoui (CNRS/LPMM), and Said Ahzi (University of Strasbourg I) as an outcome of the fifth Asia Pacific symposium on Advances in Engineering Plasticity, held June 12-16, 2000 in Hong Kong. Special issues are already committed for July 2002 and October 2002.

From July 1, 1999 to December 30, 2000, the Journal received 126 papers. Of these, 45 have been accepted for publication, with another 16 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 from initial submission to acceptance or rejection has been about 5-8 months.

Responsive and technically adept Associate Editors are instrumental in advancing the quality of any journal. To this end, we are grateful to Professor George Johnson of UC-Berkeley for his service over the past few years prior to his resignation to pursue new administrative responsibilities. New Associate Editors approved in 2001 include Professor Min Zhou of Georgia Tech and Dr. R. Craig McClung of Southwest Research Institute. Min's expertise is in dynamic behavior of materials and fracture mechanics of heterogeneous materials, while Craig has considerable experience in various aspects of fatigue of materials and elastic-plastic fracture.

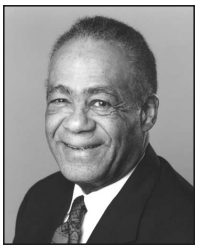
Other ongoing Associate Editors include Professors Ann Marie Sastry of the University of Michigan, Golam Newaz of Wayne State University, L. Cate Brinson of Northwestern University (on sabattical this year in Germany), Esteban Busso of the Imperial College at the University of London, Namas Chandra of Florida State University, Ewald Werner of the Technical University of Munich, Arunachalam Rajendran of the U.S. Army Research Office, Hussein Zbib of Washington State University, and Shankar Mall of the Air Force Institute of Technology.

I am grateful for the long and meritorious service given to the journal by Romesh Batra of Virginia Tech, Shaker Meguid of the University of Toronto, and Didier Marquis of Institut Francais de Mecanique Avancee, whom will complete their terms as Associate Editors in 2001. Their sense of quality and high standards for the Journal have helped to increase its stature markedly.

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. Cecelia Jones of Georgia Tech for their professional, efficient performance in assisting the Journal through its various phases of publication this past year.

D. L. McDowell
Editor, ASME JEMT

Dr. John Slaughter: After Dinner Speaker for the Materials Division at IMECE '01



John Slaughter

The Materials Division is very pleased to have Dr. John Brooks Slaughter as the after dinner speaker at the Materials Division Banquet on Thursday, Nov. 15 at 7:30 p.m. The topic is "NACME - Building Diversity into the Engineering Workforce." Dr. Slaughter is president and CEO of NACME, Inc. - The National Action Council for Minorities in Engineering.

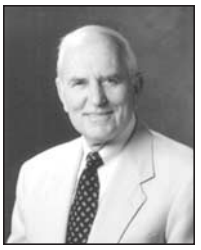
A former Director of the National Science Foundation, President of Occidental College in Los Angeles and Chancellor at the University of Maryland, College Park, Dr. Slaughter has a long and distinguished background as a leader in the education, engineering and the scientific communities. A member of the National Academy of Engineering - where he has served on the Committee on Minorities in Engineering and chairs its Action Forum on Engineering Workforce Diversity - he is also a fellow of the American Association for the Advancement of Science, the Institute of Electrical and Electronic Engineers (IEEE), the American Academy of Arts and Sciences and the Tau Beta Pi Honorary Engineering Society. In 1993, Dr. Slaughter was named to the American Society for Engineering Education Hall of Fame.

Dr. Slaughter began his professional career as an electronics engineer at General Dynamics. He has also been Professor of Electrical Engineering at the University of Washington, Academic Vice President and Provost at Washington State University and most recently The Irving R. Melbo Professor of Leadership in Education at the University of Southern California. He serves on the board of directors at IBM, Northrop Grumman and Solutia, Inc.

Dr. Slaughter earned a Ph.D. in engineering science from the University of California, at San Diego; an M.S. in engineering from the University of California, Los Angeles (UCLA) and a B.S. in electrical engineering from Kansas State University. He holds honorary degrees from more than 20 institutions. Winner of the Martin Luther King Jr. National Award in 1997 and UCLA's Medal of Excellence in 1989, Dr. Slaughter was also honored with the first "U.S. Black Engineer of the Year" award in 1987.

Married for more than 40 years to Dr. Ida Bernice Slaughter, president of IBS Associates, Dr. Slaughter has two children, a son, Dr. John Brooks Slaughter, Jr., and daughter, Ms. Jacqueline Michelle Slaughter.

2001 Nadai Medal and Award Lecture



William D. Nix

The Nadai Medal is awarded annually on the nomination of the Materials Division's Nadai Medal Committee to recognize "distinguished achievements and contributions to the field of engineering materials." The medal takes its name from Arpad L. Nadai, one of the pioneers in the field of materials engineering, who contributed particularly in the areas of plasticity, fatigue, and high temperature behaviour. The Nadai Medal was established as the Nadai Award in 1975 and elevated to Medal status in 1998, after the establishment of a significant endowment fund for its support. This year's Medal has been awarded to Professor William D. Nix, Ph.D., Lee Otterson professor of engineering, Stanford University, California, *for research investigating the relationship between micro nano-structures and the mechanical properties of thin films and bulk structures, which is reflected in more than 300 scientific papers distributed worldwide.*

Dr. Nix has been a faculty member of Stanford University, California, since 1963. He was appointed full professor in 1972 and was named the Lee Otterson professor of engineering in 1989. He directed the Center for Materials Research from 1968 to 1970 and served as chairman of the Department of Materials Science and Engineering from 1991 to 1996.

At Stanford, Dr. Nix is engaged in research on the mechanical properties of solids. He is principally concerned with the relation between structure and mechanical properties of materials in both thin film and bulk form, and has trained 66 doctoral candidates in these subjects.

From the 1960s until the mid-'80s, Dr. Nix provided leadership in the mechanisms of deformation and fracture of metallic materials at high temperatures. His seminal contributions in the creep behavior of dispersion strengthened materials and the mechanisms of intergranular fracture played a role in the development of single crystal nickel base superalloys used today for gas turbine blades.

Since the mid-'80s his work has expanded into the mechanical properties of thin films. Dr. Nix has studied the dislocation and vacancy transport mechanisms in metallic thin films used as interconnects in microelectronics, and has developed new experimental techniques including nano-indentation to measure the properties of thin films.

The co-author of more than 300 publications in these and related fields, Dr. Nix also co-authored "The Principles of Engineering Materials" (Prentice-Hall, 1973), a classic textbook still in use today. He has given dozens of invited lectures and has served as a consultant to numerous industries.

A Fellow of the American Society for Metals and the Metallurgical Society of AIME (American Institute for Mining, Metallurgical and Petroleum Engineers), Nix is also a member of the American Society of Engineering Education (ASEE) and the Materials Research Society. He was elected to the National Academy of Engineering in 1987. His extensive list of awards includes ASEE's Western Electric Fund Award for Excellence in Engineering Instruction; the Champion Herbert Mathewson Gold Medal (1979), the Robert Franklin Mehl Award (1988) and the Educator Award (1995) from the Metallurgical Society of AIME; and the ASM Gold Medal (1998) from the American Society for Metals International.

Dr. Nix received his bachelor's degree in metallurgical engineering at San Jose State College, California, in 1959. He earned a master's degree in metallurgical engineering and a doctorate in materials science at Stanford University in 1960 and 1963, respectively. In 2001 he was awarded an honorary doctor of engineering degree by the Colorado School of Mines.

Professor Nix will deliver the Nadai Lecture at the New York IMECE on Thursday, November 15 at 5:30 p.m. His topic will be "Mechanisms of Stress Development in Thin Metal Films during Deposition."

Recent Fellows

The following ASME members, who have chosen the Materials Division as their primary or secondary division within ASME, were recently elected to the Fellow Grade: Lynden F. Davis, Alan D. Freed, Lorna J Gibson, Selcuk I. Guceri, Yong-Taek Im, Walter F. Jones, Erich F. Klementich, Dimitris C. Lagoudas, Martin Ostoja, Sunil Saigal, Ting-Leung Sham, Wei Shyy, William J. Stronge, Robert D. Tzou, Steven W. Van Sciver, Anthony M. Waas, and Y. Jack Weitsman.

Materials Division Web Site

The Materials Division Web Site has been transferred to the ASME system and is now located at http://www.asme.org/divisions/materials/. Members are encouraged to contact the Materials Division Chair Susan Cunningham if they have pertinent information for posting. We'd like to thank Bill Curtin for his effort in maintaining the website until now, and Rupal Mody of ASME for transitioning the site to the new system.

News from the Committees

AMD-MD Joint Committee on Constitutive Equations

This committee is the focal group at ASME promoting the state of the art and science of Applied Mechanics and Materials in the area of modeling mechanical and physical behavior of materials and structures.

At the IMECE-2000 Congress (Orlando, FL) we have had a Symposium on "Recent Trends in Constitutive Modeling of Advanced Materials" organized by Marwan Khraisheh (King Fahd University of Petroleum and Minerals) and Kaspar Willam (University of Colorado); and a Symposium on "Plasticity at Small Scales for Emerging Technologies" organized by Cemal Basaran (University at Buffalo, SUNY).

Our committee members continue to be active in many ways. For the IMECE 2001 Congress (New York, NY) one symposium is being finalized by Cemal Basaran (University at Buffalo, SUNY) on "Advances in Applied Mechanics for New Technologies." Also, our committee is giving support in the form of two sessions to a Symposium "Rheology and Fluid Mechanics of Nonlinear Materials," organized by Dennis A. Siginer (Wichita State University).

For the IMECE 2002 Congress a large symposium is being planned. The idea is to put together a meeting under a single unifying theme of our committee such as "Mechanics of Materials for Emerging Technologies."

Several related activities are being organized by our members. For this and other information about the committee your are welcome to visit http://www.asme.org/divisions/amd/constit.html.

In the summer 2001 Hussein Zbib (Washington State University) will take over as the new Chair of the committee. The new Vice-Chair/Secretary of the committee, Mohammed Zikry of North Carolina State University, was elected last Winter.

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, at the 2000 IMECE held in Orlando, FL, the Ceramics Committee sponsored a symposium on "Structural Properties of Advanced, Novel Composites" and co-sponsored a symposium on "Multicomponent Materials Systems" (with the Materials Processing Committee). 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 contact me by e-mail hfn2@lehigh.edu or phone (610)-758-4128. The usual time-table for organizing a symposium for the IMECE requires that a Call for Papers be sent to potential contributors with a request for abstracts and titles by the end of January. Publication of symposium papers is at the discretion of the symposium organizer, but if desired, the authors should submit the papers for review by early May. Usually, final papers on mats are due by the middle of June. As you can see, if you are interested in planning a symposium for next year's IMECE, now is the time to let me know! The Ceramics Committee is actively seeking new members who are active in ceramics technology and would be interested in planning future technical symposia.

Herman F. Nied, Chair

Composites Committee

The Materials Division Composites Committee serves as a focal point within ASME to bring together members who are interested in composite materials and their applications and to sponsor technical conferences devoted to composite material themes. The committee is open to any that have technical interests in the processing, manufacturing, design, and testing of composite materials. Every year the Committee sponsors a variety of IMECE symposia including: Design and Manufacturing, Durability and Damage Tolerance, and Smart/Multifunctional Materials, as well as special topics proposed by interested committee members. The Committee is interested in coordinating our efforts with other technical committees within ASME and continues to promote joint sponsorship of symposia. Committee meetings are held during the IMECE and interested prospective members are invited to attend. The Committee Chair is Scott White, Aeronautical and Astronautical Engineering Department, University of Illinois, Urbana, IL [217-333-1077, swhite@uiuc.edu]. The Vice-Chair is Ann Marie Sastry, Mechanical Engineering and Applied Mechanics Department, University of Michigan, Ann Arbor, MI [734-764-3061, amsastry@umich.edu].

There were 15 people who attended the last committee meeting held at the 2000 IMECE in Orlando. The four symposia for the 2000 IMECE organized by members of the Composites Committee were reviewed: *Multifunctional Materials* - 3 sessions organized by Nancy Sottos (Univ. of Illinois) and Abhijit Dasgupta (Univ. of Maryland), *Durability and Damage Tolerance of Composites* - 5 sessions organized by Ann Marie Sastry (Univ. of Michigan), Jianmin Qu (Georgia Tech) and Anwar Haque (Tuskegee Univ.), *Design and Manufacturing of Composites* - 10 sessions organized by Serge Abrate (So. Illinois Univ.) and Scott White, and *Functional Biomaterials* - 3 sessions organized by Noriko Katsube (Ohio State Univ.) and Wolé Soboyejo (Princeton Univ.). Several of the symposia papers will be published in special issues of technical journals this year.

Plans are also underway to organize and participate in four symposia for the 2001 IMECE in New York: (1) I organized by Mina Pelegri (Rutgers U.) and Ann Marie Sastry, (2) *Multifunctional Materials* organized by Ann Marie Sastry and Wolé Soboyejo, (3) *Composites for Space Applications* organized by Steve Donaldson (AFRL-ML) and Ajit Roy (Univ. of Dayton Research Institute), (4) *Design and Manufacturing of Composites* organized by Sue Mantell (Univ. Minnesota) and Scott White, and (5) *Fundamental Issues in Crashworthiness* of Composites organized by Golam Newaz (Wayne State Univ.).

Preliminary plans were made for several symposia for the 2002 ASME IMECE including: (1) *Damage in Heterogeneous Biomaterials* organized by Ann Marie Sastry and Noriko Katsube, (2) *Modeling and Characterization of Nanocomposites* organized by Tsu-Wei Chou (Univ. Delaware) and Ronald Gibson (Wayne State Univ.), (3) *Durability and Damage Tolerance* organized by Mina Pelegri and Phil McLaughlin (Villanova Univ.), (4) *Design and Manufacturing of Composites* organized by Julie Chen (U. Massachusetts), and (5) *Multifunctional Materials* organized by Robert Wetherhold (SUNY-Buffalo) and Mina Pelegri.

Scott White, Chair

Electronic Materials Committee

The Electronic Materials Committee serves the ASME members who are interested in material phenomena in device technologies. The rapid advances in microelectronics, photonics and MEMS pose great challenges to mechanics and materials. Examples include thin film plasticity and fracture, adhesion and transport at contacts, stability of small structures against deformation and mass transport, forces that assemble the self-

assembled nanostructures, novel structures and materials for sensors and actuators, and multifunctional materials. A unifying them is that devices integrate diverse materials at small feature sizes. The advances are so rapid that the interaction between academia and industries becomes requisite.

The main function of the Committee is to promote electronic materials research through organizing symposia within ASME. At IMECE 2000 in Orlando, the Committee sponsored a six-session symposium on "Mechanics and Materials for Better Micro Devices and Packages," organized by Zhigang Suo, Mahyar Dadkhah, and Brian Cox. The symposium brought academic and industrial researchers together, and aimed to link science to practice. At the 2001 Mechanics and Materials Summer Conference in San Diego, the Committee sponsored a five-session symposium entitled "Integration and Reliability of New Materials in Integrated Circuit Fabrication: Copper Interconnects and Low K Dielectrics," organized by Joost Vlassak, B. Daniels, and Ting Tsui. The symposium was on an important, timely topic, and was highly praised by the participants of the symposium.

At the IMECE 2001 in New York City, the Committee will sponsor three symposia: Nanoscale Materials and Structures, 4 sessions, organized by Zhigang Suo (Princeton University) and Reinhold Dauskardt (Stanford University). Integration and Reliability Challenges in Advanced Interconnects, 3 sessions, organized by Jun He (Intel Corporation). Material Characteristics at the Microstructure Length Scale, 2 sessions, organized by Ashraf Bastawros (Iowa State University).

Zhigang Suo chairs the committee from 2000 to 2002. At the Winter Meeting 2000 in Orlando, Joost Vlassak was elected to be the vice chair. He will become the chair in 2003. The committee members are volunteers, and meet at the ASME IMECE meeteings. If you believe that mechanics and materials will contribute to advancing the major technologies in the coming decades, then we are like-minded. Helping to organize activities is an effective way to express your vision, and to push ASME in the direction that fulfills your vision. (Have you complained lately that ASME is behind the time and not going in the right direction?) Please join us at the scheduled Committee Meeting in New York City, where future activities will be planned.

Zhigang Suo, Chair

Material Processing Committee

During the past year, the Material Processing Committee continued to promote the development and dissemination of material processing technology. At the November 2000 IMECE held in Orlando, the committee co-sponsored a symposium on "The Processing and Properties of Multicomponent Materials" which focused on fundamental science and industrial usage issues related to materials such as composites, filled polymers and ceramics, etc. The organizing committee for the symposium comprised Professor M. C. Altan of the University of Oklahoma, Professor M. Erdal of the Middle Eastern Technical University of Ankara, Turkey, and Professor A. Benard of Michigan State University and was published in Proceedings MD-Vol. 93.

For the 2001 IMECE to be held in New York, Professor D. Siginer of Wichita State University and Dr. S. I. Bakhtiyarov of Auburn University are organizing a 2-session symposium on "Non-Newtonian Rheology and Fluid Mechanics During Processing", and Professors J. Sankar and D. Pai of NC A&T State University are organizing a 2-session symposium on "Effects of Processing on Properties of Advanced Ceramics". Proceedings for these symposia will be available on CD-ROM.

For the 2002 IMECE in New Orleans, a committee comprising Professor J. Coulter of Lehigh University, Professor D. Siginer of Wichita State University, and R. Pitchumani of the University of Connecticut is seeking to sponsor a 4-8 session symposium on "Advances in Materials Processing Science" in collaboration with the Ceramics Committee of the Materials Division, the Heat Transfer Division and the Fluids Division.

Persons interested in any of the abovementioned activities, or in becoming a member of the Material Processing Committee are invited to attend the next committee meeting at the upcoming New York IMECE on Tuesday, November 13 from 9:00-11:00, or to contact Professor Devdas Pai [(336) 334-7620 x316, pai@ncat.edu] or the current Material Processing Committee Vice Chair, Professor A. Benard [(517) 432-1522, benard@egr.msu.edu].

Devdas M. Pai, Chair

Metallic Materials Committee

Once again, it has been a very active year for the Metallic Materials Committee. The year started with the organization of three highly successful symposia at the 2000 IMECE in Orlando. These included symposia on: Functional Biomaterials, Durable Surfaces and Probabilistic Approaches to Fatigue and Fracture.

The symposium on Functional Biomaterials was organized by Prof. Noriko Katsube (Ohio State), Prof. Wolé Soboyejo (Princeton University) and Prof. Michael Sacks (University of Pittsburgh). It was co-sponsored by the Bioengineering Division and it featured talks by a multidisciplinary group that included biologists, dentists, materials scientists and engineers. The proceedings have been published in a book entitled, "Functional Biomaterials" by Trans Tech of Zurich, Switzerland.

The symposium on Durable Surfaces attracted a wide range of researchers from universities, national labs and industry. It was co-organized by Dr. Daniel R. Mumm (Princeton University), Prof. Mark Walters (Ohio State University), Dr. Oludele Popoola (Ford Scientific Research Labs) and Prof. Wolé Soboyejo. The symposium featured sessions on thermal barrier coatings, environment barrier coatings and durable surfaces produced by a wide range of surface modification techniques. The proceedings from the sessions have been published in a well-illustrated book entitled, "Durable Surfaces" by Trans Tech Publications of Zurich, Switzerland.

The third symposium on Probabilistic Approaches to Fatigue and Fracture was organized by Prof. Alfred Soboyejo (The Ohio State University), Dr. I.R. (Wally) Orisamolu (United Technologies Research Center) and Prof. Wolé Soboyejo. The symposium brought together academic and industrial researchers to discuss theoretical concepts and practical applications of probabilistic methods to fatigue and fracture problems. The symposium was well attended by researchers and practitioners from the materials and applied mechanics divisions. The papers from the sessions have been published in a book entitled, Probabilistic Approaches to Fatigue and Fracture" by Trans Tech Publications of Zurich, Switzerland.

At the time of writing, four symposia are planned for 2001. Two of the symposia have been held at the ASME/ASCE/SES Materials and Mechanics Meeting in San Diego, CA June 27-29, 2001. Another two symposia will be held at the New York IMECE in 2001.

In June of 2001, two symposia were held at the San Diego Mechanics and Materials Meeting. These included a four-session symposium on Materials and Infrastructure for Development on June

27th, and a five-session symposium on The Fatigue of Advanced Materials on June 28th and 29th, 2001. Details of the two symposia are given below.

The Materials and Infrastructure symposium featured invited speakers from Africa, South America, Europe, Asia and the United States. It was sponsored by the Engineering directorate of the National Science Foundation (NSF), as a continuation of one of the break-out sessions from the highly successful NSF-sponsored U.S./Africa workshop that was held in Pretoria, South Africa, in August of 2001. The symposium was organized by Prof. Wolé Soboyejo, Prof. Dan Davis (Texas Southern University) and Prof. Alfred Soboyejo.

The symposium on the Fatigue of Advanced Materials brought together some of the leading researchers in this field. It featured talks on the fatigue of micro-electro-mechanical systems (MEMS), advanced intermetallics, multilayered structures, interfaces, micro-electronic packaging, aeroengine materials and advanced composites. The papers from the symposium will be peer-reviewed and published in the Mechanics and Materials Journal (Courtesy of Prof. Sia Nemat-Nasser, the Editor). The symposium was organized by Prof. Wolé Soboyejo, Prof. Reiner Dauskardt (Stanford University) and Prof. Rob Ritchie (University of California, Berkeley).

Two symposia are scheduled for the ASME Annual Meeting in New York, NY. These will include: a four-session series on The Mechanical Properties of Micro-Electro-Mechanical Systems (MEMS) and a ten-session series on Cellular and Porous Materials: Mechanics, Processing and Performance. The latter, which is being co-sponsored by the Materials, AMD and Experimental Mechanics, will bring together researchers from industry, academia and national labs to discuss issues related to the development of cutting-edge cellular materials. Papers from the symposium will be published in the Mechanics and Materials Journal. The symposium on Cellular and Porous Materials is being organized by Prof. Wolé Soboyejo, Dr. Tian-Jian Lu (Cambridge University), Prof. Anthony Evans (Princeton University), Prof. Iwona Jasuik (Georgia Tech), and Prof. Ashraf Bastawros (Iowa State University).

The symposium on the Mechanical Properties of MEMS Structures is being co-sponsored by the Metallic Materials and the Electronic Materials committees. The symposium will focus primarily on issues related to the development of mechanistically-based mechanics models for the prediction of MEMS reliability. The symposium is being organized by Prof. Wolé Soboyejo, Prof. Roberto Ballarini (Case Western Reserve), Dr. Stuart Brown (Exponent Failure Analysis and Associates) and Dr. Seyed Allameh (Princeton University).

Wolé Soboyejo, Chair

Polymer Committee

The Polymer Committee is organizing two symposia at the upcoming 2001 IMECE. The first symposium is on "Composites Processing," organized by Suresh Advani, University of Delaware and Ranga Pitchumani, University of Connecticut. This symposium is a joint effort with the Composites Committee. In addition we are also organizing a symposium on "Stress Induced Polymer Crystallization," organized by Karl Jacob, Georgia Institute of Technology. Other traditional symposia on CAE for Polymer Processing and cellular materials will be offered next year. All these symposia continue to involve industry participation.

The membership to our committee is open to all. We meet once a year during the IMECE to plan future symposia. We invite all that are interested in participating to attend our meeting on Thursday, Nov. 15 from 9:00 - 10:00 a.m.

Karthik Ramani, Chair

Schedule of Materials Division Events at the New York IMECE 01

Nadai Lecture

Professor W.D. Nix
"Mechanisms of Stress Development in Thin Metal Films during Deposition"
Thursday, November 15, 5:30 p.m.

Materials Division Banquet

Thursday, November 15, 8:00 p.m., reception at 7:30 p.m.
After-Dinner Speaker: Dr. John Slaughter
"NACME - Building Diversity into the Engineering Workforce"

Committee Meetings:

Tuesday, November 13
Materials Processing, 9:00-11:00 a.m.
Composite Materials, 10:00-11:00 a.m.

Wednesday, November 14
MD Executive Committee (Closed Session), 1:00-5:00 p.m.
AMD-MD Joint Committee on Constitutive Equations, 11:00-Noon
Metallic Materials, 1:00-2:00 p.m.

Thursday, November 15
Polymeric Materials, 9:00-10:00 a.m.
Ceramic Materials, 9:00-10:00 a.m.
Electronic Materials, 10:00-11:00 a.m.
MD Executive Committee (Open Session), 1:00-4:00 p.m.

Materials Division Executive Committee 2001–2002

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