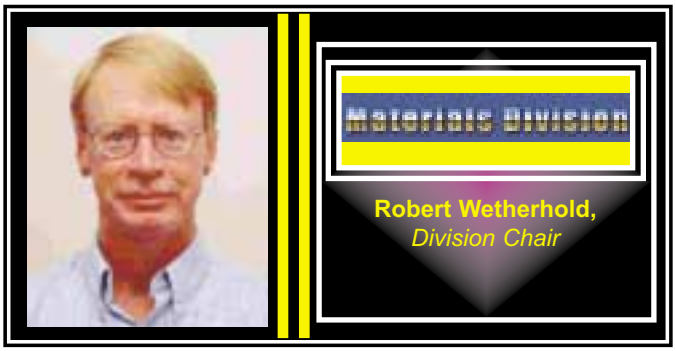
Materials Division

Chair's Message



The Materials Division has more than 80 years of distinguished history. Since the 1990's, MD has experienced extraordinary success and growth and is now established as one of the premiere divisions within the society. This emphasizes that the technical achievements which are possible in a modern society depend on the materials which are available; an age is defined by its materials. MD serves as a gathering place for researchers and practicing engineers who wish to explore and to utilize new materials.

In addition to our annual awarding of the ASME's **Nadai medal**, we are choosing the second awardees of the MD's **Orr Award** for Best Paper on Fracture or Failure Analysis. This award has been made possible through a generous gift to ASME from Dr. Leighton and Margaret Orr. The area of fracture and failure analysis was Dr. Orr's specialty and he wanted to highlight the need to recognize individuals in this area. The selection process for the "Best Paper" has been formulated with the help of **Huseyin Sehitoglu**, Editor of JEMT, and will be announced shortly.

The re-organization of Technical Committees carried out last year has proven successful. In particular, The **Composites and Heterogeneous Materials Committee** covers polymer, ceramic and metal-based composites, high-temperature materials, nanomaterials, alloys, semiconductors, optical materials and coatings, multi-scale, multi-functional and smart materials. The **Multifunctional Materials Committee** reflects current research trends in the materials community which have shifted the emphasis from materials type to their functions within a structure. These two committees, along with the very active **AMD-MD Joint Committee on Constitutive Equations, Polymers Committee, Electronic Materials Committee, and the Materials Processing** Committee, cover the many directions in which materials research is being driven today. The applications span a variety of size scales and must not only withstand the mechanical loads, but must often adapt to the surroundings, be an active part of the structure, and remain stable and predictable over long lifetimes.

The preliminary report by **Devdas Pai**, 2005 IMECE Orlando Program Chair, reports that we will have 42 technical sessions involving 215 presentations sponsored by the Materials Division. These sessions are organized into 27 distinctly-themed Materials Division sponsored symposia or sessions. We share additional sessions with Aerospace and Fluids Engineering Divisions.

The Nadai Medal http://www.asme.org/divisions/materials/awards/index.html 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 behavior. 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 2005 Medal has been awarded to Dr. Theodore Nicholas, who has had a distinguished 40-year career in Materials Engineering. He has consistently produced outstanding theoretical and experimental research embodying a remarkable wide range of materials engineering topics. He will present a lecture on "High Cycle Fatigue in Metals". I am very pleased to extend my own congratulations to Ted for the many outstanding contributions he has made in our field.

I wish to thank those current members of the Executive Committee (EC), who have ably represented the interests of the materials community. Prof. **Mark Horstemeyer**, is the Vice Chair and he will assume the Chair position in June 2006. I also wish to thank **Thomas Siegmund** for his contribution as editor of this Newsletter, and extend a welcome to **Dennis Siginer** of Wichita State University as the new member of the Executive Committee of the Materials Division. He has been active for many years in the Materials Processing Committee of MD and we welcome his energy and insight.

Robert Wetherhold,
Division Chair

ASME Journal of Engineering Materials and Technology

This Journal publishes original research papers in the various branches of materials engineering, including constitutive models for mechanical behavior, materials processing, environmental effects, failure analysis, fatigue and fracture mechanics, friction and wear, lifetime prediction, structure-property relationships, and test procedures. The journal has also been publishing research related to emerging areas of nano-materials and nano-mechanics.

The Journal's target audience is university, government and industry researchers and practitioners engaged in design, materials selection, structural analysis, materials processing and failure analysis. Its goal is to be considered the leading international journal in the selected niche area by attracting high quality manuscripts from the world's leading researchers and practitioners of this subject matter, and publishing in a selective, timely manner.

Leighton E. and Margaret W. Orr Award for Outstanding JEMT Publication

The Journal is pleased to announce a new annual award to recognize the author/s of the best paper published within one of four specified areas of fracture and fatigue in the Journal each year. The recipient will receive a certificate and an honorarium. The award will be conferred at the annual ASME IMECE meeting following the year of publication.

The establishment of this award by the Materials Division was made possible by a donation from Dr. Leighton E. Orr and his wife Margaret. Dr. Orr, who headed the physical testing at PPG Industries Research Laboratory in Pittsburgh before he retired in 1972, was nationally known for his work on the properties of fractured glass. He was a long time ASME member and very interested in encouraging continuing scholarship in this field. Dr. Orr passed away in 2004.

Special Issues

Our strategy continues to focus on discernment in the review process and publication of targeted, high quality special issues of the Journal. These special issues typically emerge from symposia or workshops that foster new directions in research and development.

The July 2004 issue contained a special section, guest-edited by Yonggang Huang (University of Illinois, Urbana-Champaign), on "Mechanics and Mechanical Properties of Carbon Nanotubes." A special section on the "Fatigue of Advanced Materials," guest edited by W. Soboyejo (Princeton University) and A. Soboyejo (Ohio State University) appeared in the January 2005 issue.

Two special issues are in production for the 2005-06 year. A special section of the October 2005 issue will be devoted to "Nanomaterials and Nanomechanics." Guest-edited by Min Zhou (Georgia Institute of Technology), it includes a survey of current research activities and some of the latest research results on the behavior of materials at the nanoscale and the behavior of nanocomponents such as nanowires and nanotubes. A special issue on "Time Dependent Behavior in PMCs and Polymers," co-edited by Richard Hall and Greg Schoeppner (Wright-Patterson AFB), will appear in the January 2006 issue. This special issue is based on papers presented at a symposium on the same topic during the ASME IMECE Conference in Nov. 2004.

Additional special issues are in the planning stages. Mohammed Cherkaoui (Université de Metz) and Yves Berthelot (Georgia Tech) have agreed to co-edit a special issue on "Damping of Shape Memory Alloys, Composites and Foams," Assimina Pelegri (Rutgers) is working on a special issue on "Interfaces in composites," and Richard Hall has agreed to guest-edit a second special issue on "Time Dependent Behavior in Polymer Composites and their Matrices," based on papers presented at a 2004 ASME symposium on the topic. All are expected to appear in 2006 or 2007.

Statistics

During the period July 1, 2004 through June 30, 2005, the Journal received one hundred fifty-three papers. Of these, thirty-five were accepted for publication, eight were rejected after external review administered by associate editors, seventy-one were rejected by the editor upon initial reading as either outside the scope of JEMT or as substandard, two papers were withdrawn, and thirty-seven were still in review on June 30, 2004. Over the past year, the average review time for a paper from initial submission to acceptance or rejection has been a little over eight months.

The annual page allocation presently stands at five hundred ninety pages per year. In the four issues published between July 2004 through June 2005, the total number of published pages was five hundred twenty-six (sixty-one papers).

Associate Editors

During the period July 1, 2004 through June 30, 2005, JEMT was served by thirteen active associate editors and two guest editors. On June 30, 2005, Wole **Soboyejo** completed his term as associate editor, and we would like to express our appreciation for his contributions. The current active associate editors are: Mohammed **Cherkaoui** (Georgia Tech), Subhendu **Datta** (University of Colorado, Boulder), Kenneth **Gall** (University of Colorado, Boulder), Hamid **Garmestani** (Georgia Tech), Somnath **Ghosh** (Ohio State), Mark **Horstemeyer** (Mississippi State), Craig **McClung** (Southwest Research Institute), Matthew **Miller** (Cornell), Golam **Newaz** (Wayne State), Assimina **Pelegri** (Rutgers), Ann Marie **Sastry** (University of Michigan), and Min **Zhou** (Georgia Tech).

Sincerely,
Huseyin Sehitoglu

2005 Nadai Medal and Award Lecture

Dr. Nicholas taught at both Cooper Union and Columbia University before he joined the Air Force Materials Lab where, for 36 years, he engaged in research in dynamic behavior of materials, impact phenomena, and fatigue and crack growth behavior in engine alloys. He later headed a major program on high cycle fatigue. For many years he was group leader of a research program on the fatigue and crack growth behavior of materials and damage tolerance in engine structures. He retired in June 2002 and joined the University of Dayton Research Institute as a Distinguished Research Engineer. In November, 2002, he was appointed to the Air Force Institute of Technology as a Visiting Research Professor under the government's IPA program.

He is the author of over 260 technical papers and is co-author of two books on impact dynamics and one on Metal Matrix Composites. He is currently completing a manuscript for a new book on High Cycle Fatigue. He is a frequently invited speaker at symposia and universities and has served regularly as a technical representative on government technical planning committees and was a consultant to the Columbia Accident Investigation Board. He is a reviewer for a large number of technical journals and is on the editorial board of International Journal of Fatigue and Mechanics of Materials.

Nadai Lecture 2005: High Cycle Fatigue of Metals
Dr. Ted Nicholas, Air Force Institute of Technology

Abstract

The current state-of-the-art in high cycle fatigue (HCF) is reviewed including a historical perspective. It is established that high cycle fatigue design is a very simple problem involving translating laboratory data to structural design. The main issues with HCF today center around the determination of the effects of other damage on the resulting HCF properties. In gas turbine engines, the three types of damage of greatest significance are low cycle fatigue, contact or fretting fatigue, and foreign object damage (FOD). Each of these types of damage may not lead to failure by itself, but it can have a deleterious effect on the HCF capability of a material in a component. FOD, for example, can reduce the fatigue limit strength of titanium by a factor of six, even when the damage is of a very small size. LCF can produce a reduction in the threshold for crack propagation as well as accelerate itself due to superimposed HCF even below the HCF threshold. Fretting fatigue, while producing high stresses in a very localized region, can be the cause of premature failure in components even when cracks of an undetectable size are produced. Each of these subjects will be discussed using examples from the author's research and published literature. Aspects of the Goodman diagram and the Kitagawa-Takahashi diagram will also be discussed with respect to their usefulness in HCF design. Finally, some scientific observations on aspects of HCF in the form of quotations from some famous as well as not-so-famous scientists and engineers will be used to illustrate the progress that has been made, or not made, in this subject area.

Statistics for Materials Division Symposia for IMECE 05 in Orlando, FL

Technical Committee	# of symposia or distinctly themed sessions	If joint, partner division/s?	# of sessions	# of presentations	# of draft papers accepted
Composites	7	Polymers TC	10	54	24
Constitutive Equations	6		7	31	13
Electronics	2		7	39	7
Multifunctional Materials	4		6	32	6
Materials Processing	3	Fluids Div	7	35	25
Polymers	5	Composites TC	5	24	9
TOTAL	27		42	215	84

Devdas Pai

Executive Committee 2005–2006

Chair
Robert C. Wetherhold
State University of New York
Dept. of Mech. &
Aerospace Engineering
606 Furnas Hall, North Campus
Buffalo, NY 14260-0001
Tel : 716-645-2593
Fax: 716-636-3875
Email: mecrcw@acsu.buffalo.edu

Vice Chair
Mark F. Horstemeyer
Mechanical Engineering Dept.
Mississippi State University
206 Carpenter Blvd., P.O. Box ME
Mississippi State, MS 39762
Tel: 662-325-7308
Fax: 662-325-7223
Email: mfhorst@me.msstate.edu

Honors and Awards Committee Chair
Devdas M. Pai
Dept of Mechanical Engineering
North Carolina A&T State University
Greensboro, NC 27411
Tel: 336-334-7620x316
Fax: 336-334-7417
Email: pai@ncat.edu

Program Committee Chair
Hussein M. Zbib
Washington State University
Computational Mech & Mat Lab
School of Mech & Materials Engrg.
P.O. Box 642920
Pullman, WA 99164-2920

Secretary and Treasurer
Dennis Siginer, Ph.D.
Wichita State University
Dept. of Mech. Engineering
1845 N. Fairmont Avenue
Wichita, KS 67260-0133
Tel: 316-978-6300
Fax: 316-978-3236
Email: dennis.siginer@wichita.edu

ASME
Richard Ulvila
Manager, K&C
Three Park Avenue, M/S 22W3
New York, NY 10016
Tel : 212-591-7863 Fax: 212-591-7671
Email: UlvilaR@asme.org

Jacinta McComie-Cates
Administrator, Unit Support
Three Park Avenue, M/S 22W3
New York, NY 10016
Tel : 212-591-7052 Fax: 212-591-7671
Email: mccomiej@asme.org

Technical Committees 2005–2006

AMD-MD Joint Committee on Constitutive Equations
Mohammed Zikry
North Carolina State University
Mechanical & Aerospace Engineering
Box 7910 Rm # 2412, Broughton Hall
Raleigh, N.C. 27695
Tel: 919- 515-5237
Fax: 919-515-7968
Email zikry@eos.ncsu.edu

Committee on Composite and Heterogeneous Materials
Committee Chair
Uday Vaidya
1510 10th Ave.S BEC 254
The University of Alabama at Birmingham
Birmingham, AL 35294
Phone: 205-934-9199
Fax: 205-934-8485
Email: uvaidya@uab.edu

Materials Processing
Ram V. Mohan, Ph.D
Department of Mechanical Engineering
Fort IRC Bldg., Suite 130
North Carolina A&T State University
Greensboro, NC 27411
Tel : 336-256-1151, ext. 2272
Fax: 336-256-1153
Email: rvmohan@ncat.edu

Technical Editor - *Journal of Engr. Materials & Technology*
Huseyin Sehitoglu
Department of Mechanical and Industrial Engineering
University of Illinois at Urbana-Champaign
140 Mechanical Eng. Building, MC-244
1206 West Green Street
Urbana, IL 61801
Tel: 217-333-4112
Fax: 217-244-6534
Email: huseyin@uiuc.edu

Polymers
Karl I. Jacob
Georgia Institute of Technology
MRDC 4509 School of Textile & Fiber Engrg
Atlanta, GA 30332-0001
Tel : 404-894-2541
Fax: 404-894-9766
Email: Karl.Jacob@tfe.gatech.edu

Electronic Materials
Joost J. Vlassak
Harvard University
Deparment of Engineering & Applied Science
Pierce Hall 311, 29 Oxford Street
Cambridge, MA 02138
Tel : 617-496-0424
Fax: 617-495-9837
Email: vlassak@esag.harvard.edu

Multifunctional Materials (Metallic Materials)
Anette M. Karlsson
Department of Mechanical Engineering
University of Delaware
Newark, DE 19716-3140
Tel: 302.831.6437
Fax: 302.831.3619
Email: karlsson@me.udel.edu

Newsletter Editor
Thomas Siegmund
School of Mechanical Engineering
Purdue University
585 Purdue Mall
West Lafayette, IN 47907
Tel: 765 494 9766
Fax: 765 496 7536
Email: siegmund@ecn.purdue.edu

News from the Technical Committees

AMD-MD Joint Committee on Constitutive Equations

The Technical Joint Committee (TJC) on Constitutive Equations (CE) of the Applied Mechanics Division (AMD) and Materials Division (MD) of the American Society of Mechanical Engineers (ASME) exists to promote, support, and advance the state of the art and science of Applied Mechanics and Materials in the area of modeling the mechanical and physical behavior of materials and structures. The committee's interests pertain to the understanding and the prediction of physical phenomena and material behavior through modeling and experiments that span scales from the nano to the macro levels.

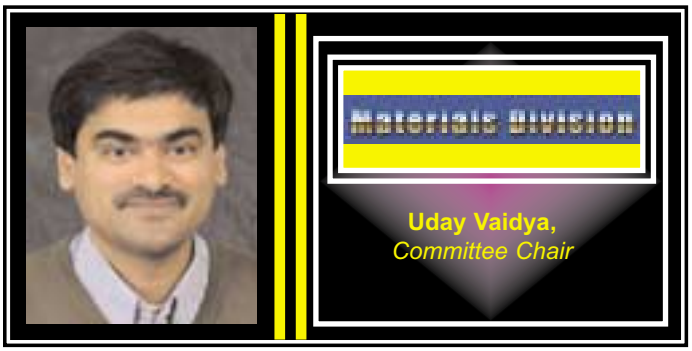
The committee holds its annual meeting during the regular ASME Congress, its last meeting was held at the IMECE 2004 in Anaheim, California. Professor Mohammed Zikry from North Carolina State University assumed the chairmanship from Professor Hussein Zbib from Washington State University for the term 2004-2007. Professor George Voyiadjis, Louisiana State University was elected Vice- Chair for the term 2004-2007. The committee would like to extend its gratitude to Professor Zbib for his selfless leadership and guidance over the past three years.

The committee discussed proposed symposia for the forthcoming IMECE2004 and approved the six following proposals: 1) Symposium on the Formability of Lightweight Materials, organized by Professors Xin Wu, xwu@eng.wayne.edu, Chi L. Chow, clchow@umich.edu, and Ming Li, ming.li@alcoa.com; 2) Symposium on Time Dependent Behaviors of Polymeric Composites and Their Matrices organized by Drs. R. Hall, Richard.Hall@wpafb.af.mil) and G. Schoeppner, Gregory. Schoeppner @wpafb.af.mil; 3) Symposium on Low-Cycle and Ratcheting Fatigue Failures of Structures and Materials, organized by Professors T. Hassan, thassan@eos.ncsu.edu and R. Neu, rick.neu@me.gatech.edu; 4) Symposium on Characterization and Constitutive Modeling of Nanostructured Materials, organized by Professors J. Li, j.li@ccny.cuny.edu and L. Sun, lizhi-sun@uiowa.edu; 5) Symposium on Recent Progress in the Mechanics of Embedded Inclusions and Related Problems organized by Dr. Y. Mikata, aquarius_ym@hotmail.com and Professor P. Sharma, psharma@uh.edu; 6) Multi-scale, Multi-paradigm and Multi-physics Modeling of Materials organized by Drs. Y. Mikata, aquarius_ym@hotmail.com), M. Buehler, mbuehler@caltech.edu, and Professor J. Kysar, jk2079@columbia.edu.

Committee meetings will be held at all ASME conferences, current members are encouraged to bring new ideas and symposia proposals, and new members are always welcome.

Mohammed Zikry, Committee Chair

Composites and Heterogeneous Committee



The Composites and Heterogeneous Materials Committee had yet another active and successful year. Technical sessions were hosted in several topic areas at the 2004 Anaheim meeting, including - Durability and Damage Tolerance of Heterogeneous Materials, Design and Manufacturing of Composites and Dynamic Response of Advanced Materials and Structures, and Sandwich Composites. As a follow-up to the technical presentations made at the 2003 Washington DC meeting for the 'Design and Manufacturing of Composites' sessions, thirteen full-length papers have now appeared in a Special Issue of the *Journal of Composite Materials*, co-edited by Mahesh Hosur and Julie Chen, Volume 38, No. 21, 2004. Eight papers presented in the Dynamic Response of Advanced Materials and Structures sessions have appeared in a special issue of *Composite Structures* co-edited by Serge Abrate and Uday Vaidya, Volume 67, Issue 3, March 2005.

The Composites and Heterogeneous Committee of the Materials Division continues to play an important role in ASME to provide a forum for advancing the state-of-the-art in science and engineering of composite materials, systems and structures. The areas of interest for the committee include (but are not restricted to) polymer, ceramic and metal-based composites, high-temperature materials, nanomaterials, alloys, semiconductors, biological, optical materials and coatings, and multi-scale smart materials.

The 2005 IMECE Orlando meeting promises to be a success. Nine sessions will be hosted by the committee with symposia in the following topics; (a) Design and Manufacturing of Composites (Mahesh Hosur, Krisha Pillai and Uday Vaidya), (b) Durability and Damage Tolerance of Heterogeneous Materials (Iwona Jasiuk), (c) Time Dependent Behaviors of Polymeric Composites and Their Matrices (Richard Hall), (d) Blast and Ballistic Mitigation Using Advanced Composite Materials and Structures (Uday Vaidya, Jim Davidson), (e) Contact Deformation and Damage in Layered Materials (Noriko Katsube), and (f) Nanocomposites (Yuri Dzenis).

The outgoing chair of the committee is Uday Vaidya and Julie Chen will take over as Chair at the Orlando IMECE. Mahesh Hosur, Tuskegee University was elected Vice-Chair at the 2004 Anaheim elections.

Uday Vaidya, Committee Chair

Materials Division Web Site

The web site for the Materials Division is located at

http://www.asme.org/divisions/materials/

Members are encouraged to contact the web editor if they have pertinent information for posting.

Electronic Materials Committee

The Electronic Materials Committee serves those ASME members who study materials used in device technologies, including microelectronics, photonics, and MEMS. Such devices integrate extremely different materials at small feature sizes. The structural complexity and the small feature sizes pose sustainable research challenges, both experimental and computational. Research in this area is advancing rapidly thanks to exceptional interaction between academia and industry. The Committee functions mainly by organizing symposia that serve as discussion forums for researchers involved in experimental as well as more theoretical work.

At the 2004 Winter Meeting in Anaheim, the Electronic Materials Committee sponsored two symposia:

- Mechanical Integrity and Reliability of Electronic Materials. This six-session symposium was organized by Ting Tsui (Texas Instruments), Alex Volinsky (University of Southern Florida), and Xi Chen (Columbia University). These sessions continue a tradition of symposia in this general area of research.
- Symposium in Honor of Professor Leon Keer's 70th Birthday. Professor Leon Keer has been an active researcher and educator in the area of the mechanics of materials, including materials for electronic packaging and the characterization of surfaces and interfaces of materials. The Committee sponsored two sessions on Active and Sensing Materials in this symposium organized by Minoru Taya (University of Washington).

At the Committee meeting in Anaheim, several great ideas were proposed for symposia at the 2005 Congress in Orlando. Eventually, only two of those were selected due to limited session availability:

- Formation of Nano-scale Structures in Electronic Materials. This four-session symposium focuses on all aspects of nano-fabrication, with a special emphasis on the formation of nanostructures during device fabrication and their evolution during subsequent operation. The objective is to bring together a group of researchers from both academia and industry under a uniform theme. This symposium is organized by Wei Lu (University of Michigan, Ann Arbor), Alexander Parkhomovsky (Seagate Technology), Harley Johnson (University of Illinois at Urbana-Champaign), Rui Huang (University of Texas at Austin), and Rob Kukta (SUNY at Stony Brook).
- Structure-Property and Stability of Nano-scale Electronic Materials: This symposium will have three sessions and is organized by Aman Haque (Penn State), Taher Saif (University of Illinois at Urbana-Champaign), Cynthia Volkert (Karlsruhe Institut fuer Materialforschung), and Alexander Parkhomovsky (Seagate Technology).

Joost Vlassak will complete his three-year term as Chair of the Committee at the Congress in Orlando. Taher Saif of the University of Illinois at Urbana-Champaign will take over as Chair at the next Committee meeting. Taher Saif has been very active in the Committee in recent years and the Committee looks forward to his continued service.

Anyone interested in organizing a symposium at next year's meetings is requested to send Joost Vlassak (vlassak@esag.harvard.edu) a one-page proposal, including title of the symposium, short narrative, number of 90-minute sessions requested, and a list of potential speakers. In the future, the Committee would like to explore emerging electronic materials – possibly in the area of flexible electronics or organic electronic materials. Proposals in these areas are encouraged. Symposia that foster interactions between industry and academia will be given priority. The Committee will discuss the proposals at its next meeting and present the selected proposals to the Materials Division. Please join us at the Committee Meeting in Orlando this November to plan future activities. The Committee Meeting is open to all.

Joost Vlassak, Committee Chair

Material Processing Committee

I am pleased to report that the membership of the Materials Processing Technical Committee continues to actively and successfully pursue organizations of platforms for the exchange of information on the latest findings concerning issues of current interest to the research community. Participating authors and presenters are encouraged to submit their work to affiliated ASME Journals for wider dissemination of the research results. As was announced last year in the columns of this Newsletter the Materials Processing Technical Committee intends to sponsor the publication of selected papers presented at the Symposia sponsored by the Committee in a special issue of an affiliated ASME Journal after the regular review process of the Journal on a yearly basis. A special issue of the Journal of Fluids Engineering dedicated to selected papers drawn from Symposia on "Electric and Magnetic Phenomena in Micro and Nano Scale Systems" and "Rheology and Fluid Mechanics of Non-linear Materials" held in Anaheim during IMECE 2004 and edited by Dennis Siginer will appear in January 2006. The issue will contain sixteen selected papers. A similar effort to publish selected papers from IMECE 2005 in a special issue of the same Journal is initiated by Dennis Siginer and is in progress. The Materials Processing Technical Committee intends to continue supporting these initiatives.

The Committee sponsored three successful Symposia for the upcoming IMECE 2005 in Orlando, Florida: "Advances in Processing of Materials for Challenging Environments", "Electric and Magnetic Phenomena in Micro and Nano Scale Systems" and "Rheology and Fluid Mechanics of Non-linear Materials" with a total of 15 sessions and sixty papers/presentations. Seven of these sessions were allocated from the Materials Division. The last two Symposia are jointly sponsored by the Materials Division and the Fluids Engineering Division. The former and the latter contributed four sessions and eight sessions, respectively, to the Symposia on "Electric and Magnetic Phenomena in Micro and Nano Scale Systems" and "Rheology and Fluid Mechanics of Non-linear Materials". The breakdown of these sessions and the number of participants are outlined below. The Committee is committed to supporting Symposia and Fora with multidivisional sponsorship and extends an invitation to the members of the Materials community to contact the Chair with proposals.

The Symposium on "Advances in Processing of Materials for Challenging Environments" is organized by Devdas Pai from North Carolina A&T State University. His co-organizers are Ram Mohan, Jagannathan Sankar and Sergey Yarmolenko, all hailing from Noth Carolina A&T State University. The Symposium is structured around three sessions with sixteen papers/presentations addressing issues ranging from "fuel cells", "epoxy nanocomposites","nanomaterial lubricants" to "automotive applications". The goal of this symposium is to bridge the gap between processing, materials science and engineering and modeling with the special focus on materials. Topics of interest include, but are not limited to, tribological and environmental aspects of engineered coatings, nano-engineered materials and composites, sensors, innovative process developments and applications, integrated material processing techniques, modeling and simulations in material processing and other related topics.

The Symposium on "Electric and Magnetic Phenomena in Micro and Nano Scale Systems" is organized by Dennis Siginer from Wichita State University and Boris Khusid from the New Jersey Institute of Technology, and is jointly sponsored by the Fluids Engineering Division and the Materials Division with four sessions in the program of the former and three sessions in the program of the latter. Full archival papers accepted and participation in the Symposium with "presentation only" total twenty four. The sessions are anchored around four invited speakers, all experts in different aspects of the field. This Symposium is part of a continuing series which started several years ago with joint sponsorship with other Divisions. Material behavior at the micro and nano scale combined with fluid flow at these scales either driven and/or influenced by electric and magnetic fields is incrasingly becoming central to a host of industries, to cutting edge technology and to issues related to national security. This platform is intended to address fundamental phenomena at the micro and nano scale as well as the design, performance and characterization of devices at the micro and nano scale. Examples are electroosmotic flow, microfluidic devices, chains of paramagnetic particles, dielectrostriction and piezoresistance, electrorheological materials/fluids.

The third Symposium sponsored by the Materials Processing Committee this year is on "Rheology and Fluid Mechanics of Non-linear Materials" and is organized by Dennis Siginer from Wichita State University and Sayavur Bakhtiyarov from the New Mexico Institute of Mining & Technology. The Symposium is structured around five sessions with a total of twenty papers/presentations. It is also jointly sponsored by the Materials Division and the Fluids Engineering Division and and is part of an established continuing series held during IMECE with a fifteen year history whose origins go back to the early years of the last decade. Issues which greatly impact the processing of materials are addressed in this Symposium ranging from "suspensions of magnetic nanoparticles", "ferrofluids", "nanosized particles and heat transfer with Brownian motion", "stretch blow molding" to "flocculation". The purpose of this Symposium is to provide a platform for the reporting of the latest results concerning issues related to various aspects of the rheological and flow properties of nonlinear materials, and in particular advanced materials for the 21st century. Fundamental issues such as flow instabilities, inverse problems in Rheology and constitutive formulations appropriate for electrorheological fluids, thin films, suspensions, slurries, emulsions, oil field fluids, paper making fluids such as black liquor, laminar and turbulent flows of polymeric and other non-Newtonian liquids, are included as well as various transport processes, bubble motions, sprays, extrusion phenomena, fibre spinning, film blowing, industrial coatings.

The present plans call for the Committee to continue sponsoring three Symposia for IMECE 2006 in Chicago, Illinois. These are tentatively entitled "Advances in Processing of Materials for Challenging Environments", "Electric and Magnetic Phenomena in Micro and Nano Scale Systems" and "Rheology and Fluid Mechanics of Non-linear Materials". The lead organizer for the former is Devdas Pai and the last two are organized by Dennis Siginer.

The Committee welcomes opportunities to expand its activities in particular through multi-divisional sponsorship. Proposals for Symposia and Fora are invited from the members of the Materials Research Community. In particular proposals emphasizing national priorities and research directions of current interest are encouraged.

Dennis Siginer, Committee Chair

Polymer Committee

The Polymer Committee has been active over past year, sponsoring two symposia at the 2004 IMECE in Anaheim, California. One first symposium was on nanocomposites organized by Steve Bechtel (Ohio State) and Karl Jacob (Georgia Tech) with four sessions and the second joint symposium with the Composites Committee on polymer composites having two sessions. For the 2005 IMECE, our Committee is sponsoring three symposia, one on Nanostructured Polymer Systems (1 session) organized by Karl Jacob (Georgia Tech) and Vipin Kumar (Univ Washington), second one on Cellular Materials by Vipin Kumar (Univ of Washington) with one session, a symposium with two sessions on Structure Property Relationship in Polymers by Josh Wong (Univ Akron) and Karl Jacob (Georgia Tech) and one session on Time Dependent Behavior of Polymers – IV organized by Richard Hall (Air Force laboratory). Please contact me (karl.jacob@tfe.gatech.edu) if you like to participate in the activities of Polymer Committee or to attend our Committee Meeting at the 2005 IMECE.

Karl Jacob, Committee Chair

The Multifunctional Materials Committee

The Multifunctional Materials Committee has finished its first year as an ASME committee within the Division of Materials. The current chair of the committee is Professor Anette M. Karlsson of University of Delaware.

The kick-off meeting for the committee was held at the Winter Annual Meeting (IMECE) November 2004 in Anaheim, CA, where a five-session symposium entitled Multifunctional Materials and Structures was held. The four topics where: Materials for Clean Energy; Bio-medical and Bio-inspired Materials; Novel Multifunctional Structures; and Small Structures (N/MEMS). The committee is also sponsored one session titled "Advanced Topics in Metallurgy," was held to honor the inherence of form our old committee: metallic materials. The sessions were organized by Anette Karlsson (University of Delaware), Wolé Soboyejo (Princeton University) and Seyed Allameh (Northern Kentucky University). All sessions were highly attended, encouraging us for our future work.

The next activity is planned for the Winter Annual Meeting (IMECE), November 2005, in Orlando, Florida, where we will have our annual meeting. All members are welcome as well as individuals who would like to join our committee. At this meeting, we are planning to sponsor six sessions within the Division of Materials, and three within the Aerospace Division. The response we had for soliciting talks to our symposium was significantly larger than we expected. We managed to place a number of talks within other sessions, but unfortunately had to reject several high quality talks due to the lack of sessions. We do apologize for this, and hope that the authors will submit new papers again for future meetings. The sessions organized include Materials for Clean Energy (organizer: A.M. Karlsson, University of Delaware); Bio-medical and Bio-inspired Materials (Pranav Shrotriya and Shriram Sundararajan, Iowa State University); Novel and Adaptive Multifunctional Material Structures (Zoubeida Ounaies, Texas A&M and Hilary Bart-Smith, University of Virginia); Nano and Micro-Structures (Junlan Wang, UC-Riverside and Rui Huang, UT-Austin).

If you are interested in joining our committee, please contact Prof. Karlsson (karlsson@me.udel.edu). We are particularly interested in adding members representing industry and National Laboratory to diversify the committee.

Anette Karlsson, Committee Chair

Calling all mechanical engineers who would like to:

- Influence the career and academic choices of student engineers;
- Help young engineers find their way in the profession
- Contribute to the future of mechanical engineering
- Participate in a program that fits into your busy schedule

How can you do all these things, plus
derive the satisfaction of passing on your experience?
By becoming a mentor to an ASME student member or young engineer.
Young engineers eligible for ementoring have been out of school for 5 years or less.
To learn more about ementoring or to become a mentor visit:
www.asme.org/ementoring.