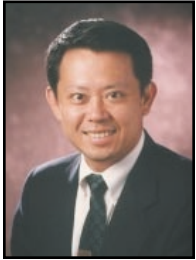




Manufacturing Engineering Division

NEWSLETTER SPRING 2007

EDITOR: Wei Li



MESSAGE FROM THE CHAIR ▼ *Steven Y. Liang*

Dear Fellow MEDers: I am extremely honored to serve you as the Division Chair for 2006-07. Our Division has seen significant growth

over the last few years under the leadership of Amit Bagchi, Jun Ni, Scott Smith, Dave Stephenson, and many others that have served as Chairs. Our Division is now as strong and vital as ever. Currently we have over 16,300 members – 7.5% more than we had a year ago – spanning throughout many industrial and academic sectors. As a flagship association in serving the professional needs of so many manufacturing engineers and researchers, the Division has been continuously retooling itself to offer more and better opportunities to its membership.

Our Executive Committee this year consists of Mike Monlar as the Vice-Chair, Jian Cao as the Program Chair, Bin Wei as the Treasurer, Lawrence Yao as the Member, and myself. Our primary staff support from ASME is Noha El-Ghobashy. It is great for us to be able to re-appoint Robin Stevenson as Chair of the Honors Committee, and we welcome Brad Kinsey as our liaison to IMECE. We are also blessed to have the leadership from the following in chairing the Technical Committees: Yong Huang for Manufacturing Processes, Burak Ozdoganlar for Manufacturing Equipment, Yuan-Shin Lee for Manufacturing Systems, John Roth for Quality and Reliability, Steven Skerlos for Life Cycle Engineering, Brian Paul for Nano/Micro/Meso Manufacturing, and Wei Sun for Biomanufacturing. Among them, the Biomanufacturing Technology Committee is a new entity initiated in January 2007 and we are excited to see its rapid growth in this emerging area.

In October 2006, the Division successfully launched the inaugural event of ASME

International Manufacturing Science and Engineering Conference (MSEC). This event is fully owned and operated by the Division as an alternative to participating in IMECE. Although the Division continues to take part in IMECE, the MED technical sessions there will be primarily devoted to inter-divisional, jointly-sponsored activities. The MSEC is a full-scale technical forum designed to be the Division's main annual venue for the dissemination of recent results from manufacturing research, development, and engineering communities. The inaugural MSEC, held in Ypsilanti, Michigan, was a big success as reflected by the paper quality, session organization, local hospitality, and attendance turn outs. I am sure that the success of MSEC will expand into our 2007 meeting in Atlanta, GA, our 2008 meeting in Evanston, IL, and our 2009 meeting in West Lafayette, IN.

Publication is another area that our membership benefits from. It is great for us this year to be able to re-appoint Kori Ehmann as the Technical-Editor for the Journal of Manufacturing Science and Engineering and to nominate Suhas Joshi, Shaochen Chen, and Jyhwen Wang as our new Associate Editors. Thanks go out to the excellent work of Kori's and all the associate editors' in evaluating our level of paper quality and shortening the publication cycle time. We are fortunate to install Wei Li as our new editor for the Newsletter. The publication of this on-line Newsletter represents a big accomplishment well achieved.

I would also like to bring to your attention the honor and award opportunities offered in our Division, namely the Blackall Machine Tool and Gage Award, the M. Eugene Merchant Manufacturing Medal, and the William T. Ennor Manufacturing Technology Award. These are the prestigious

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honors for us to celebrate the successes and contributions of our members. If you have individuals in mind, or even yourself, that could qualify for these awards please nominate or encourage them to apply. Our community will be brought to higher grounds through honoring our heroes and establishing new role models. To the young engineers in school now, we encourage them to consider submitting their manufacturing project works to our annual Student Manufacturing Design Competition for presentation. This is a great way to discuss their works with senior professionals at the conference and expand their learning horizon – at the financial support of MED.

The Manufacturing Engineering Division belongs to everyone in this technical
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A SUCCESSFUL ASME INTERNATIONAL MANUFACTURING SCIENCE AND ENGINEERING CONFERENCE (MSEC) IN YPSILANTI, MICHIGAN, OCT. 8-11, 2006 ▼ *By Albert Shih*

The Manufacturing Science and Engineering Conference (MSEC) is an annual forum sponsored by the Manufacturing Engineering Division (MED) of ASME International to disseminate the most recent results of manufacturing research and development on a global scale. The 2006 MSEC, hosted by the University of Michigan on Oct. 8-11 at Ypsilanti, Michigan, was an inaugural event replacing what had formerly been the MED technical sessions in the ASME International Mechanical Engineering Congress and Exposition (IMECE). The MSEC was a great success from both a technical and participating perspective.

In the opening ceremony on Monday, Oct. 9, Frank Ewasyshyn, Executive Vice President of Manufacturing at DaimlerChrysler, was the keynote speaker. He presented DaimlerChrysler's agile, lean manufacturing technology and strategy to enable the introduction of a record number of models to the market this year. The technical program consists of the presentation 133 peer reviewed technical papers in 13 symposia, seven student teams in the manufacturing design competition, and two panels on Global Automotive Manufacturing and Nanomanufacturing.

The attendance of this inaugural MSEC was 261: including 35 graduate students, 13 undergraduate students, 13 from industry, and 7 from government agency. One highlight of the conference was the MED dinner with more than 180 participants! Professor Yoram

Koren, recipient of the 2006 Eugene Merchant Manufacturing Medal of ASME/SME, delivered the keynote speech on the Global Manufacturing Revolution.

MSEC has proven to deliver a better value to MED members in the context of lower registration fees, lower hotel room rates, fully covered meal and social functions, and closer interaction with manufacturing colleagues. It is expected that the new format of MSEC will promote international research discussion more effectively and will bring together the manufacturing research community more closely in years to come.

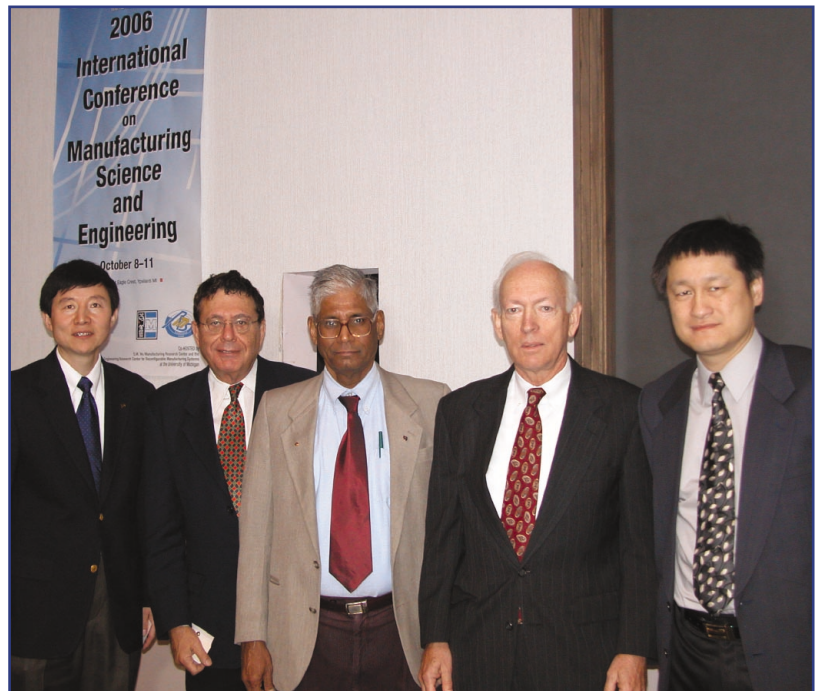
Three giants in manufacturing, Eugene Merchant, Milton Shaw and Moshe Barash, passed away only a few months before 2006 MSEC, which was the first time that the manufacturing community had gathered together to remember, honor, and celebrate their contributions and leadership. We were able to act quickly to change the conference program. A booklet with tributes to these three giants in manufacturing was prepared. In addition, three symposiums:

- **Eugene Merchant**
Symposium on Multiscale Mechanical Behavior and Simulation of Machining Processes
- **Milton Shaw**
Symposium on Micro-Manufacturing Process and Equipment
- **Moshe Barash**
Symposium Energy Field Manufacturing Processes

were dedicated to them. Richard Kegg, Ranga Komanduri, and Albert Shih presented the tributes and made the opening remarks in the first technical session of the symposium dedicated to Eugene Merchant, Milton Shaw, and Moshe Barash, respectively. Thanks to the arrangement by Mike Molnar of Cummins, SME had videotaped the tributes for archival purpose. ▼



Frank Ewasyshyn, Executive Vice President of Manufacturing at DaimlerChrysler, delivering the keynote speech at the opening ceremony.



Conference hosts, Prof. Jun Ni, Yoram Koren, and Albert Shih, posing with Prof. Ranga Komanduri and Prof. Richard Kegg.

The technical program committee for the 2006 MSEC was chaired by Professor Shreyes N. Melkote of Georgia Institute of Technology while Professor Robert E. Williams of the University of Nebraska at Lincoln served as the co-chair. For the most part, the program development process for the MSEC mirrored the process used for past MED programs at the IMECE.

A Call for Symposia Proposals was announced in July 2005. The MED Technical Committee (TC) chairs and vice-chairs played a key role in soliciting symposia proposals from the MED membership. In response to the Call for Proposals, fourteen (14) symposia proposals were received for consideration. The proposals were evaluated and ranked for content and relevance by the Program Chair/Co-Chair and the chairs and vice-chairs of the various MED TCs. Based on the rankings, the following thirteen (13) symposia proposals were selected for the 2006 MSEC (organizers in the parentheses):

- Energy Field Manufacturing Processes (Wenwu Zhang and Shuting Lei)
- Advanced Forming Process Technologies (Muammer Koc and Mike Wenner)
- Multiscale Mechanical Behavior and Simulation of Machining Processes (Yuebin Guo and David W. Yen)
- Materials Processing for Medical Devices (Afsaneh Rabiei and Rajiv Satsangi)
- Application and Implementation Ready Technologies (John T. Roth and Guoxian Xiao)
- Micromanufacturing Processes and Equipment (O. Burak Ozdoganlar and Donald G. Risko)
- Advanced Condition Monitoring and Maintenance Technologies (C. James Li and Suk Hwan Choi)
- Advances in Process and System Planning (Dusan Sormaz and Pravin Khurana)
- Manufacturing Systems: Design, Modeling and Analysis for Quality and Productivity (Wenzhen Huang and Zhenyu (James) Kong)
- Advances in Metrology (Thomas R. Kurfess and Andre A. Claudet)
- Quality and Reliability of Machining Systems (John T. Roth and Robert Ivester)
- New Developments in Sensors Integration (Jamie Camelio and Richard Gerth)
- Nano and Micro Mechanical and Related Hybrid Tools for Nanomanufacturing (Martin Culpepper, Curtis R. Taylor and Ajay P. Malshe)

The program featured several new topics including Energy Field Manufacturing Processes, Materials Processing for Medical Devices and Application and Implementation Ready Technologies.

Due to funding limitations, the abstract and paper solicitation, review and acceptance process was handled by the symposium organizers entirely via email. Although cumbersome and time consuming, this process worked reasonably well. The program chairs were given periodic status updates by the symposium organizers. Abstract submissions were strongly encouraged but not mandatory. Each paper was put through a minimum of 2 rigorous peer reviews with most receiving 3 peer reviews. Based on the reviews, 133 technical papers were accepted for final presentation and publication. These papers were grouped into 34 technical paper sessions with 3, 4, or 5 papers per session.

The conference hosts dedicated the following three symposia to honor three giants in the manufacturing field who recently passed away: Symposium on Micro-Manufacturing Machines and Equipment to honor the late Dr. Eugene Merchant, Symposium on Multiscale Mechanical Behavior and Simulation of Machining Processes to honor the late Professor Milton C. Shaw, and the Symposium on Energy Field Manufacturing Processes to honor the late Professor Moshe Barash.

The Program Chairs along with the symposium organizers and TC chairs handled the selection of the Best Paper Award (BPA) and the Best Organizer of Symposium and Sessions (BOSS) Award. Nominations for the BPA were sought from the symposium organizers based on paper reviews. In all 12 papers were nominated by various symposia. From the 12 papers, a final short list of 9 papers was created by the Program Chairs. These 9 papers were subjected to another round of reviews and ranking by the symposium organizers. The BOSS Award recipients were selected by the Program Chair and Co-Chair on the basis of organizational effort, promptness, and participation in various program development steps, enthusiasm, and quality of the symposium.

Based on the final ranking, the recipients of the Best Paper Award for the 2006 MSEC were Hitomi Yamaguchi, Takeo Shinmura, and Ryota Ikeda of Utsunomiya University, Japan for their paper "Study of Internal Finishing of Austenitic Stainless Steel Capillary Tubes by Magnetic Abrasive Finishing".

The recipients of the BOSS Award for the 2006 MSEC were Dr. Shuting Lei of Kansas State University and Dr. Wenwu Zhang of GE Global Research for co-organizing the Symposium on Energy Field Manufacturing Processes. ▼

CHAIR MESSAGE ▼ *continued*

profession, without position rank, company entity, or even political country borders. The very reason why we get together here is because of the existence of one another. Therefore I strongly urge you, as a MED member, to participate in our activities as much as possible – be it by chairing a technical

session, organizing a symposium, reviewing a technical paper, or nominating fellow members for awards. We would enjoy your presence and we would be indebted to your leadership and your influence. It would be the absolute best if you could also play an active role in our student chapters, local chapters, and international chapters to bring them into the Division programs – conferences,

publications, honors, etc. Our Division is a great place to amplify your professional energy through networking and knowledge dissemination, and our Division is counting on your professional energy to function properly and effectively.

I look forward to another productive year for the Division. ▼

STUDENT MANUFACTURING DESIGN COMPETITION AT MSEC 2006 ▼ *By Jian Cao*

Eight finalists were invited to make project presentations at the MSEC 2006, all were from the United States. Seven teams presented their work at the MSEC on Oct. 9, 2006, except for one team from Texas citing that students could not make it. Attachment A lists the complete information on each team.

A standard score sheet from last year with minor modifications was used as the template for evaluating and distributed to all the judges. Drs. Cao of Northwestern, Wei of GE, Shen of GM, Ozdoganlar of CMU and Li from University Washington participated in the judging process.

Judging was difficult as the quality of the projects presented were excellent. There was great diversity of projects, with some as heavily engaged teams of undergraduates working on large scope projects (e.g. manufacturing system design/build activities), and others as

individual undergraduate student with specific focus (e.g. process development). Each team presented via powerpoint, and most used multimedia to convey their projects, such as mpeg videos. All presenters adhered to the time constraints and competition criteria.

Using the score sheet and panel discussion, the winners are:

First Place (\$1000 award): Univ. of Florida

Student(s): Laura Locke, Gorang Gandhi, Jose Garcia, Jeffrey Thomas, Robert Hay, Jeffrey Lee

Advisor: R. Keith Stanfill

Second Place (\$750 award): Lake Superior State University

Student(s): John Benjamin, Brad Bertels, Greg Johnson, Kate Kuuskman, Ben Mitchell, Leith Nader

Advisor: Jim Devaprasad

Third Place (\$500 award): Univ. of Michigan, Ann Arbor

Students: Brandon Lloyd, David Ohrin, David Krumanaker

Advisor: Albert Shih

To encourage participation, the MED Executive Committee authorized supplemental travel support in the form of mileage reimbursement, up to \$300/team, as calculated by one auto round trip from their campus to MSEC. The method was via MapQuest distance multiplied by the current U.S. IRS reimbursement rate, then rounded to a nominal amount. Checks of \$300 are available to each team except for the UM team. ▼

Dr. Jian Cao with the winning team members



2006 NSF DESIGN, SERVICE AND MANUFACTURING GRANTEES AND RESEARCH CONFERENCE ▼ *By Ming Leu*

This premier National Science Foundation conference in design, service and manufacturing research was held in St. Louis, July 24-27, 2006. It drew an attendance of about 700 people from academia, industry and government. The conference was organized and chaired by Prof. Ming Leu of the University of Missouri-Rolla. It covered broad topics from conventional design methodologies and manufacturing processes to newer research trends such as nanomanufacturing, disruptive technologies, and auto-reconfigurable engineered systems enabled by cyber-infrastructure. More than 400 poster papers were presented by active grantees of the NSF Design and Manufacturing Innovation Division, plus about 70 more poster papers presented by student researchers. There were many plenary and parallel sessions that provided valuable information on research frontiers and technology trends, NSF programs and funding opportunities, various types of partnerships sponsored by NSF, etc. One of the sessions is the Research Program Development Workshop, where NSF Program Director Dr. George Hazelrigg presented several topics that are crucial

to planning, proposal writing, and the development of a sound academic research program. The keynote speech by Ms. Julie-Ellen Acosta, a Boeing vice president, described how Boeing developed and integrated breakthrough technologies in advanced engines, composite structures and others in the development of the 787 Dreamliner to provide significant fuel advantage and unique performance characteristics. Also covered are education issues including a keynote session on engineering vs. engineering science, where Dean Zulma Toro-Ramos of Wichita State University and Dean Mohammad Noori of California Polytechnic State University presented their views on what universities should teach in engineering followed by an open forum. The banquet speech, entitled "The nature of Lewis and Clark: American scientific exploration in the age of enlightenment," was given by Prof. John Allen of the University of Wyoming. In the concluding session, Dr. Warren DeVries, the Director of NSF Design and Manufacturing Innovation Division, gave a presentation on New Frontiers for Design and Manufacturing. ▼

The Manufacturing Engineering Technical Division proudly represented ASME International at a prestigious biannual summit between U.S. and Chinese technology experts. The 2006 Sino-American Technology and Engineering Conference (SATEC) brought together some 99 “experts” from the U.S. and China, hailing from companies, universities, laboratories, and various agencies. SATEC is entirely underwritten by the Chinese Ministry of Science and Technology, but coordination of the U.S. side was up to partnering organizations.

For this SATEC there were three areas of technology focus; Manufacturing Equipment, Environmental Protection, and Information Technology. ASME was the partnering organization for the Manufacturing Equipment conferences, and naturally the MED had a lead role in recruiting and coordinating the U.S. contingent.

SATEC’s objectives are to bring selected U.S. and Chinese experts together for information exchange, relationship-building, and ideas for collaborative work. Besides papers and presentations given by the US participants, there are multiple organized tours of factories and meetings with company and government officials. The end deliverable is a report on findings and recommendations given to senior government officials at the Great Hall of the People.

Several MED Executive Committee members agreed to serve as speakers to SATEC.

Each participant needed a technical paper and high quality presentation. Each focus group spent a week in different cities according to their themes, then joined together in Beijing for reporting their findings and recommendations to the Chinese government.

Current or former MED Executive Committee leaders participated as speakers:

- Bin Wei, presently MED Secretary and Treasurer, was the group coordinator, and presented a paper on Tool Electrode Design for ECM. Bin is a senior researcher at GE Global Research Center.

- Jian Cao, presently MED Program Chair, presented a paper on “Numerical Simulation and Control of Forming Processes” Jian is an Associate Professor of Mechanical Engineering at Northwestern University.
- Mike Molnar, presently MED Vice Chair, presented a paper on Reconfigurable Assembly Systems. I am Director of Quality and Capital Planning at Cummins Inc.
- Jun Ni, former MED Chair, presented a paper on CNC Machine Accuracy Enhancement. Jun is a professor at the University of Michigan and deputy director of the Reconfigurable Manufacturing Systems ERC.
- K.P. "Raju" Rajurkar, our MTG chair, presented a paper providing an overview of Micromachining Processes. Raju is a professor and interim chair of Industrial and Management Systems Engineering at the University of Nebraska-Lincoln.

It was a terrific event, with each participant learning a great deal. China from a manufacturing standpoint is booming yet is in a high state of change. By the detailed tours of companies and meetings with community and government leaders, we gained insight in the strengths and issues behind the dramatic growth and dynamic changes in the manufacturing sector. In state owned companies there is rapid consolidation (via mergers) and expansion as they try to gain size and scale to be competitive. Massive investment is taking place as equipment and machine tool companies respond to robust domestic demand. This expansion was in both gleaming new facilities in state-of-the-art campuses, and in new equipment for more efficient production. Privately held companies are also aggressively investing and expanding in product lines. During this boom few companies can do wrong, yet we saw great uncertainty on plans for future years, and a general lack of strategic planning to become technologically competitive.

There was intense interest in improving quality, efficiency, and gaining technology for a future soon arriving of self sufficiency in a changing competitive landscape. While there is a ways to go, several of our visited companies clearly were well positioned and had a healthy improvement glidepath to become world class enterprises. Interestingly, one of the most common questions received was how Chinese companies can better work with U.S. companies – including finding U.S. suppliers for products difficult to source in Asia. ▼



SATEC participants pictured in the Great Hall of China

NEW ASME/MED TECHNICAL COMMITTEE ON BIOMANUFACTURING ESTABLISHED

▼ *By Wei Sun*

A new MED Technical Committee on Biomanufacturing was established at the November 2006 MED Executive Committee meeting. Convergence in engineering and life sciences has spurred the emergence of a new field of biomanufacturing, which applies enabling mechanical engineering science and technology in design, development and manufacturing of bio- and cell-based products. The purpose of the new Biomanufacturing Technical Committee is to facilitate the promotion and exchange of knowledge and advances of sciences, engineering, and technology in this interdisciplinary field of biomanufacturing. Its broad applications include, but not limited to, the design and manufacturing of biomaterials, cell-based therapeutic and diagnostic products, tissue-engineered scaffolds and substitutes, artificial organs, implants, medical devices, bio-coatings, and the novel manufacturing processes for cell/organ printing, cell patterning, and cell self-assembly.

The Chair of the Biomanufacturing Technical Committee (TC) is Dr. Wei Sun from Drexel University. The Vice Chair is Dr. Wei Li from University of Washington. The TC currently has 24 US and 13 international working group members from both academia and industry. The newly established TC is co-sponsoring the following two symposia with other MED TCs at the 2007 MSEC.

1. A Symposium on Solid Freeform Fabrication for Biomedical and Tissue Engineering, co-Sponsored by ASME Manufacturing Engineering Division's Manufacturing Processes Technical Committee and Biomanufacturing Technical Committee.

TECHNICAL FOCUS

Advances in computer aided design, digital imaging, software engineering; material science and fabrication technologies have significantly impacted the design, simulation and manufacturing aspects of bioengineering

and tissue engineering. The proposed symposium highlights the emerging trends of this multi-disciplinary domain with a major thrust on solid freeform fabrication (SFF) technologies and processes for biomedical and tissue engineering applications. Presentations and panel discussions in the proposed symposium will facilitate discussions among the participating researchers, manufacturers and clinical doctors on recent advances in freeform biofabrication, scaffold design/fabrication, and cell-organ printing. Specific topics of interest include, but are not limited to:

- SFF in manufacturing of medical implants, devices, and artificial organs
- SFF based fabrication for tissue scaffolds and tissue engineered substitutes
- Advances in Cell/Organ printing technologies
- Development of standard test methods for bio-manufacturing

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MED HONORS COMMITTEE REPORT ▼ *By Robin Stevenson*

The Manufacturing Engineering Division administers two awards; the William T. Ennor Manufacturing Technology Award and the Blackall Machine Tool and Gage Award.

The William T. Ennor Manufacturing Technology Award was established in 1990 by the Production Engineering Division (now Manufacturing Engineering Division) of ASME in honor of William T., "Bill", Ennor who was the Assistant Director of Research at the Alcoa Aluminum Research Laboratories. The award recognizes "one (or a team of) individual(s) who has (have) developed or contributed significantly to the development of an innovative manufacturing technology, the implementation of which has resulted in substantial economic and/or societal benefits.

The 2006 William T. Ennor Manufacturing Technology Award was given to Jyotirmoy Mazumder as "..... [a] pioneering leader in [the] commercialization of laser aided manufacturing....."

The Blackall Machine Tool and Gage Award was established in 1954 by Frederick S. Blackall, Jr., Fellow and 72nd President of the Society. The Award is given to the best paper(s) clearly concerned with or related to the design or application of machine tools, gages, or dimensional measuring instruments, submitted to ASME for presentation and publication.

The recipients of the 2006 Blackall Machine Tool and Gage Award are W. Zhang, Y. L. Yao and I. C. Noyan for their papers 'Microscale Laser Shock Peening of Thin Films', Parts 1 and 2, *ASME Journal of Manufacturing Science and Engineering*, Vol. 126, pp. 10-24, 2004. The work reported in this paper is innovative since it merges two areas of mechanics (surface treatments and thin films)

and is uniquely applicable to decrease micro-crack initiation and propagation in thin films and to increase wear resistance.

For the first time, the awards were presented at two different ASME events: formal presentation of the Ennor Award was made at the 2006 International Mechanical Engineering Congress and Exposition; formal presentation of the Blackall Award was made at the 2006 Manufacturing Science and Engineering Conference. Presentation of the 2007 awards will follow the pattern set in 2006.

Complete nomination packages for the 2008 Ennor Manufacturing Technology Award and Blackall Machine Tool and Gage Award must be submitted before January 31, 2008 to the Manufacturing Engineering Honors Committee. Nomination forms and lists of past recipients are available at: <http://divisions.asme.org/med/awards/index.html>.

Nominators should note that Blackall Award nominations receive active consideration for two years after the date of publication, while Ennor Award nominations receive active consideration for five years after the date of submission. In the case of Ennor Award nominees, the committee suggests that nominators review pending nominations yearly and update them if merited. Nominators for the Ennor Award are also strongly urged to ensure that the nominee's contributions to final part of the award citation i.e. "...the implementation of which has resulted in substantial economic and/or societal benefits." are well documented.

The Division Honors Committee will provide help in preparing nominations if the request is received before December 1, 2007. ▼

SPECIAL ANNOUNCEMENTS

American Society of Mechanical Engineers (ASME) Student Manufacturing Design Competition At the 2007 International Manufacturing Science & Engineering Conference October 16, 2007 Atlanta, Georgia USA

Objective

The purpose of the competition is to foster students' interest in manufacturing, provide the manufacturing engineering community with fresh new perspectives on design, and create a forum for students to share their new and innovative ideas.

Technical Areas Covered by This Competition

Original student designs that focus on manufacturing engineering and science are sought. Any design of a system, component, or process that can be utilized to promote the art, science and practice of manufacturing engineering is acceptable. Technical areas include, but are not limited to:

- Computer integrated manufacturing and robotics
- Machine tools, sensors and controllers
- Manufacturing systems management and optimization
- Materials processing
- New areas of manufacturing engineering
- Evolution of new materials and processes
- Software and hardware contributing to improvements in manufacturing productivity and throughput

How To Participate In This Competition

A project can be entered in the competition by submitting a project description to the Student Manufacturing Design Competition Organizer. Entries must be received by May 31, 2007. Entries may be submitted electronically if all materials are letter size (8.5 x 11.0 inches, or A4). For oversized or nonstandard materials, one copy must be mailed and received by the deadline.

Finalists selected (individual or group) will be expected to give an oral presentation of their projects at the International Manufacturing Science and Engineering Conference. Use of visual aids and demonstration of actual working models are strongly encouraged. Each student team may apply for supplemental travel support with up to US\$300 per team.

Address for project description submission:

Dr. Bin Wei

Global Research Center
General Electric Company
One Research Circle (MB233)
Niskayuna, New York 12309
Phone: (518) 387 6530
Fax: (518) 387 6232
Email: weib@research.ge.com

About The Project Description

The project description should consist of a 1,500 to 3,000 word report with supporting figures and/or photographs. Items that should be included in the project description are:

- Project Title
- Names and permanent addresses of the participating students with one of the students indicated as the designated contact person

- Name and signature of a faculty sponsor with postal and email addresses, and phone and fax numbers
- Functional description of the concept/idea/model/system
- Design features, manufacturing engineering contents, and intended applications
- Analysis for assisting design or understanding the manufacturing process
- A description of any tools, equipment and/or computer-aided design procedures used, and how they enhanced the design process
- Discussion of the concept's practicality and how it improves upon existing designs that do the same or similar tasks
- A statement listing the percent contribution of the group members and of any outside assistants (faculty, shop personnel, etc.)

Eligibility

Any graduate or undergraduate student who is registered in school full time through spring of 2007 or beyond and a member of ASME is eligible to participate. Both individual and group projects are welcome. Individuals may participate in several entries provided each entry is on a different subject.

Judging Process

Judges for the competition will be invited from both industry and academe. The judges will conduct a panel review of the submitted project descriptions to select the finalists. The decisions will be based upon project creativity, practicality, manufacturability, broadness and depth of manufacturing knowledge, analysis integrity, and overall quality. The finalists will be notified by July 15, 2007.

The finalists will make a fifteen-minute presentation at the 2007 ASME International Manufacturing Science and Engineering Conference on 10/16 at Georgia Tech. Travel expenses to and from the conference will be the responsibility of the student and/or faculty sponsor. A travel fund of up to US\$300 per team is available upon request. Judging for the final round will be based on the presentation as well as overall project quality.

Awards

Cash prizes and awards will be presented at the Manufacturing Engineering Division's Banquet, which takes place at the same conference.

First Prize	\$1,000
Second Prize	\$750
Third Prize	\$500

Sponsors

Past industrial sponsors of the competition include Cummins Engine Company, Eastman Kodak, Eaton Corporation, Ford Motor Company, General Motors Company.

Visit <http://www.asme.org/divisions/med/studentprograms/index.html> for more information. ▼

UPCOMING EVENTS

North American Manufacturing Research Conference: NAMRC 35 May 22-25, 2007



Welcome to NAMRC 35!

We are pleased to invite you to the University of Michigan for the 35th Annual North American Manufacturing Research Conference!

NAMRC is the premier international forum for academic research and industrial applications in manufacturing. Global academic and industrial leaders in manufacturing attend this conference to interact with each other and advance the field.

In 2007, we see manufacturing at a technological crossroads and look to its future. We have planned an event ripe with interaction and discussion regarding the next generation of manufacturing technology and practice in the global economy. Your research will make an excellent contribution to this prestigious event, where you will benefit from the valuable insight of your colleagues. The forum will offer wide-reaching access and impact to your research. All accepted papers will be published in a strict peer-reviewed volume, Transactions of NAMRI/SME.

While participating in NAMRC 35 in Ann Arbor, we invite you to visit our new facilities which make up a thriving nucleus of manufacturing research. In addition to over a dozen individual research programs, there are four major centers which are supported by industry, the National Science Foundation, and other government agencies with research activities that either focus primarily on manufacturing, or have manufacturing as a significant component.

We will offer tours of these facilities, along with state-of-the-art factories and production centers in the greater Detroit area.

Guests to NAMRC 35 will have full access to the cultural hallmarks of southeast Michigan. The average temperature and precipitation for the time of year are perfect for outdoors enjoyment and comfort. We will organize a golf outing at the conclusion of the conference at the world-renowned University of Michigan golf course designed by Alister MacKenzie. We look forward to seeing you in Ann Arbor!

Regards,

Steve Skerlos

NAMRC 35 Conference Co-Chair

University of Michigan Elijah Kannatey-Asibu

Elijah Kannatey-Asibu

NAMRC 35 Conference Co-Chair

The University of Michigan S. Jack Hu

S. Jack Hu

NAMRC 35 Conference Co-Chair

The University of Michigan

Areas of research covered by NAMRC 35 are:

- Computer-aided design and manufacturing including robotics, automation and rapid prototyping
 - Design, dynamics, control and accuracy of machine tools
 - Environmentally conscious manufacturing
- Human factors and man-machine interactions relating to manufacturing processes and systems
 - Nano to micro scale manufacturing
 - Manufacturing networks
- Manufacturing systems, simulation, design and concurrent engineering
- Material behavior and tribology as related to manufacturing processes
- Mechanics and technology of material forming processes, powder consolidation, casting, welding, and processing polymer and composite materials.
- Mechanics and technology of material removal processes as well as non-traditional processes
 - Metrology
- Product lifecycle management and environmentally conscious manufacturing. ▼



**2007 ASME International
Manufacturing Science and
Engineering Conference
(MSEC 2007)
Atlanta, GA, USA
October 15-17**

Dear Colleagues: It is our great pleasure to invite you to the 2007 ASME International Manufacturing Science and Engineering Conference (MSEC) to be held in Atlanta on October 15-17.

The conference is an annual forum sponsored by the Manufacturing Engineering Division (MED) of the American Society of Mechanical Engineers (ASME) to disseminate the most recent results of manufacturing research and development on a global scale. Since its inauguration in 2006, the MSEC has replaced the participation of MED technical sessions in the International Mechanical Engineering Congress and Exposition (IMECE). With a different organizational structure than IMECE,

the MSEC aims to deliver to our MED membership better value in terms of stronger technical programming, lower registration fees, lower hotel room rates, and fully covered meal and social functions.

Our MSEC Program Committee will put together an excellent technical program and our host institution, Georgia Tech, has arranged outstanding meeting and function venues to ensure the success of this conference. Please consider registering early to take advantage of the low registration fees and hotel rates. We sincerely hope to see you at this exciting conference in October 2007.

Dr. Steven Y. Liang
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Symposia at 2007 MSEC include:

- SYMP-1: Advances in Rapid Manufacturing Technologies for Metallic Parts
- SYMP-2: Solid Freeform Fabrication for Biomedical and Tissue Engineering
- SYMP-3: Miniaturization of Molding and Casting Processes
- SYMP-4: Hybrid Macro/Meso/Micro Manufacturing Processes
- SYMP-5: Thermally-Enhanced Manufacturing
- SYMP-6: Micro-Manufacturing and Fabrication of Sensors
- SYMP-7: Communication Systems and Distributed Control in Manufacturing Enterprises
- SYMP-8: Collaborative and Digital Manufacturing for Advancing Product Quality
- SYMP-9: Diagnostics, Performance Prediction and Decision Making for Intelligent Maintenance of Manufacturing Systems
- SYMP-10: Advances in Quality Control in Multistage Manufacturing Systems
- SYMP-11: "Bottom-up" Nanomanufacturing
- SYMP-12: Biomedical Manufacturing
- SYMP-13: Nanomanufacturing Processes and Systems
- SYMP-14: Development and Applications of Micro Manufacturing Equipment
- SYMP-15: Design and Operations of Manufacturing Systems for Responsiveness
- SYMP-16: Advances in Metal Forming
- SYMP-17: Fracture Reliability of Fabricated Materials
- SYMP-18: Advances in Synergistic Effects of Materials and Processing

Important Dates for IMSEC 2007

- Submission of symposia proposals to TC Chairs: August 11, 2006
- Publication of Call for Papers by symposium organizers: Mid-October, 2006
- Statement of intent to submit paper (optional, but strongly encouraged): February 2, 2007
- Submission of full manuscript for review: March 30, 2007
- Acceptance notification to authors: May 31, 2007
- Submission of final manuscript and ASME Copyright Transfer form: July 25, 2007
- Submission of final manuscript and Agreement to Present Paper: August 22, 2007

CALL FOR PAPERS

Special Issue on Biomedical Manufacturing, Trans ASME: Journal of Manufacturing Science and Engineering

Biomedical manufacturing, spearheaded by health care, pharmaceutical and medical product industries, is assuming a highly visible position at the frontiers of manufacturing. It is an emerging field that is developing rapidly and is responsible for fast economic growth in many states and countries. Biomedical manufacturing reaches beyond the production of medical and biological devices. In addition to traditional pharmaceuticals and medical products, many novel health care concepts and devices are being envisioned and are under active research and development. These include, but are not limited to, tissue engineering, regenerative medicine, controlled drug release, disposable diagnostic, point-of-care, point-of-need devices, minimally invasive surgery, and hospital operations all of which require advanced manufacturing as the key enabling technology to design and fabricate devices/products with unsurpassed functionality and quality. Biomedical manufacturing thus presents itself with many challenges and opportunities to researchers in academia and industry alike in a new era in which health care-related industries and manufacturing may assume a very prominent role.

The exponentially increasing body of work in this field has been scattered over a large number of journals and publications failing, thereby, to convey a coherent and focused message on the importance of biomedical manufacturing technologies and their potential impact on medical treatment and health-care services. Given the diversity of biomedical technologies and products required in life sciences and medicine, this Special Issue shall focus on the fundamental science and engineering for biomedical manufacturing, including process physics, bio-materials (bio-compatible/bio-degradable), design, metrology, sensing, control, quality, reliability, service, to mention a few. It is the hope that this Special Issue will inspire manufacturing researchers to seek collaborators in the medical device and healthcare service fields allowing them to apply their knowledge and skills in making a marked impact on the critical issues in healthcare services.

A list of possible topics of interest is:

- 3D processing of biocompatible and biodegradable materials
- Fabrication of controlled drug release and gene delivery devices
- Fabrication of lab-on-a-chip and animal-on-a-chip devices for diagnostics and drug discovery
- Fabrication of tissue engineering scaffolds and tissue constructs
- Fabrication of innovative cell culture devices
- Production of imaging agents and molecular probes
- Innovative manufacturing methods for implants, surgical tools, and other medical devices
- Bio-assembly and joining, cell manipulation
- Bio-informatics and bio-simulation – biomedical imaging, CAD/CAE, digitally enabled tissue engineering
- Biomedical applications using meso/micro/nano fabrication technologies for bio-chips, bio-sensor and bio-devices

Timeline:

<i>April 15, 2007:</i>	Submission deadline.
<i>July 15, 2007:</i>	Reviews completed; authors contacted if revisions required.
<i>September 15, 2007:</i>	Final papers submitted.
<i>October 2007:</i>	<i>Special issue appears in print.</i>

Submission Guidelines:

All papers must be submitted in electronic form in accordance with ASME's standard submission procedures. Please access journaltool.asme.org for detailed instructions and procedures.

NOTE: All papers will be peer reviewed following the same stringent standards as applied to regular papers submitted to the Journal.

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TECHNICAL COMMITTEE ▼ continued

- Clinical considerations in using 3D freeform fabricated tissues and organs
- Fabrication of oral prosthetics using integrated layered manufacturing and milling
- Virtual design and manufacturing of heterogeneous prosthetic devices

The Symposium Co-Organizers are Dr. Wei Sun from Drexel University, Dr. David W. Rosen from Georgia Institute of Technology, and Dr. Stephen Schmitt from Dental Implant Technologies.

2. A Symposium on Biomedical Manufacturing, co-Sponsored by the ASME Manufacturing Engineering Division's Nano/Micro/Meso manufacturing Technical Committee and Biomufacturing Technical Committee.

TECHNICAL FOCUS

Biomedical manufacturing is an emerging field that is developing rapidly. In addition to traditional pharmaceuticals and medical devices, there are many novel health care ideas and products that are currently under active research. These include, for example, devices for controlled drug release, disposable diagnostics, point-of-care and

point-of-need services, engineered tissue model systems, and tissue engineering approach to regenerative medicine. All of these require manufacturing as enabling technology for design and fabrication with unsurpassed functionality and quality. Biomedical manufacturing thus presents many challenges and opportunities to researchers from academia and industry alike.

Topics that are of interest in biomedical manufacturing include, but not limited to:

- Processing of biocompatible and biodegradable materials
- Design and fabrication of controlled drug release, lab-on-a-chip, and animal-on-a-chip devices
- Fabrication of tissue engineering scaffolds and tissue constructs
- Design and fabrication of nano devices for biomedical applications
- Innovative manufacturing methods for implants, surgical tools, and other medical devices
- Modeling, metrology, sensing, and control of biomedical products and processes

The Symposium Co-Organizers are Dr. Wei Li from University of Washington and Dr. BiaoYang Lin from Institute for Systems Biology.

For more information about the symposia, please visit the 2007 MSEC website <http://www.pmrc.gatech.edu/IMSEC/> ▼

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JOURNAL OF MANUFACTURING SCIENCE AND ENGINEERING ▼ *By Kornel F. Ehmann*

Another exciting year has just begun for the Journal. I am proud to announce that the number of submissions has been increasing steadily. Currently, there are about 147 papers in progress in the system and another 126 accepted and in production! 2006 was a great year for the journal as we received 384 submissions. This was the second year in a row that the Journal has had more than 300 submissions in a year.

In order to handle the increased number of submissions, the Journal has officially moved from quarterly to a bi-monthly publication. At the same time, the Journal's page allocation has also increased from 900 to 1100 pages. We will now be able to accommodate the rising number of submissions and accepted papers. At this time, the February 2007 issue has been published. The February issue has 22 papers and 3 technical briefs for a total of 222 pages. We also already have 25 papers assigned to each the April and June 2007 issues.

The Journal has also seen a steady impact factor rise in the past year. We have been working hard to make the Journal more attractive to high quality submissions and to decrease the length of time for the review process. The length of time for reviews for 2006 was just over 5 months. The average time from submission to final manuscript approval was only 10 months. The increased number of submissions and the reduced review time are helping improve the impact factor for the Journal as authors and subscribers consider the Journal an excellent place for publication and for reference. I encourage

all reviewers of JMSE to continue the good work. Your assistance with expediting the review process is instrumental in the success of the Journal.

The Associate Editors of JMSE deserve much of the thanks for the improvements in the past year. Their diligence, persistence, and hard work are the main reasons for the Journal's improvements. Currently JMSE has 18 active Associate Editors along with 2 whose terms have been extended to complete current paper reviews. On behalf of everyone, I would like to thank them for all their hard work.

A special issue on "Biomedical Manufacturing" is in the works for the October 2007 issue of JMSE. The Guest Editors are Professor Albert Shih of the University of Michigan and Professor Dong-Woo Cho of Pohang University of Science and Technology. All of the special issue papers will be peer reviewed following the same stringent standards as applied to regular papers submitted to the Journal. I would like to thank the Guest Editors in advance for contributing to a great special issue.

Overall, JMSE is doing well. I am pleased to see an increase in the number of submissions and an increase in the impact factor. On behalf of the Editorial Board, I would like to thank everyone for their continued support of the Journal and I would like to encourage everyone to keep up the good work!

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