

# Manufacturing Engineering Division

NEWSLETTER FALL 2010

EDITOR - Jaime Camelio

## Message from the Chair

Dear Colleagues,



On behalf of the Manufacturing Engineering Division of ASME, I am pleased to bring you another edition of the MED Newsletter. As seen, the MED has just sponsored a successful MSEC 2010 and is moving forward with the first-ever collocation of MSEC with NAMRC/SME and ICM&P/JSME in 2011. I would also like to report that the MED is participating in drafting a position statement on behalf of ASME on revitalizing manufacturing in the U.S.

The 2010 International Manufacturing Science and Engineering Conference (MSEC 2010) hosted by Penn State Erie featured an Early Career Forum, four industrial panels and excellent invited speakers. The industrial participation reached about one third of the total attendance. Thanks go to many volunteers and especially to the host, Prof. John Roth for his extraordinary effort in bringing the conference to a new height. John successfully engaged the local industry on topics having societal impact and relevance to the manufacturing research community. Thanks also extend to the technical program co-chairs, Profs. Yong Huang and Kevin Chou, and the Forum organizer, Prof. Brad Kinsey.

As many of us know, the next MSEC will be collocated with the North American Manufacturing Research Conference of Society of Manufacturing Engineers (NAMRI/SME) and International Conference on Materials and Processing of Japanese Society of Mechanical Engineers (ICM&P/JSME) at Oregon State University in June 2011. The recommendation for collocation was made as the result of a study by a task force composed of both ASME and SME members. The task force conducted a survey in June 2009 with about 500 total respondents from both organizations including strong participation from industry. Overwhelming support for conference collocation motivated the acceptance of the task force recommendation by executive committee of MED/ASME and the Board of NAMRI/SME.

Collocation of these conferences is expected to draw more academic and industry leaders, create higher international participation, improve networking, and improve conference reputation for both ASME and SME. Perhaps the greatest benefit of collocation is the creation of a larger, higher-impact event to better serve the needs of the manufacturing research community. Like any changes, however, efforts are being made to address potential issues particularly in scheduling, overall organization, etc. More importantly, how to fully realize the potential benefits takes careful planning and a bit faith and persistence as well. Planning for the collocated conferences at OSU is well underway. An overarching

website with three satellite sites has been created for paper submission and handling and an overall conference program has been drafted. The host, Prof. Brian Paul, has already looking into various forms of activities, which may help attract industry and international participations. Please provide your suggestions to Brian, the technical program chair, Prof. Kevin Choi, and the coordinating committee chair, Prof. Jian Cao.

Last but not the least is that, working with the Government Relations Office and Manufacturing Technology Group of ASME, the MED is participating in the creation of a position statement on revitalizing manufacturing in the U.S. As you perhaps know, the White House has recently released “A Framework for Revitalizing American Manufacturing” and President Obama has named a senior counselor for manufacturing policy. It is important for the manufacturing research community to be heard. Stay tuned for further information and/or requests for participation.

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Chair, MED Executive Committee Chair (2010-2011)

## **In Memory of – Klaus Juergen Weinmann (1937-2010)**



Professor Klaus J. Weinmann, Ph.D. passed away in his sleep on November 3, 2010. Dr. Weinmann was the Chair of the Mechanical Engineering – Engineering Mechanics Department at Michigan Technological University from 1993 through 1997. He joined the faculty at Michigan Tech in 1970. Upon his retirement he was named an Emeritus and Research Professor. After his retirement, he was served as an adjunct professor at the University of California at Berkeley. He was a Fellow of ASME, SME, and CIRP. A native of Germany, he emigrated to the U.S., attended high school in Illinois, living with his foster family. He then attended the University of Illinois Urbana-Champaign where he earned his BS in 1962 and MS in 1965. In 1969 he earned his Ph.D. in Mechanical Engineering under the direction of Dr. B.F. von Turkovich. Dr. Weinmann held numerous editorial and administrative positions at CIRP (International Institution of Production Engineering Research). He was also an associate editor and reviewer for numerous journals. Professor Weinmann was a life long member of NAMRI/SME, holding a number of positions including president. He was famous for attending all thirty eight of the conferences. The NAMRC in 2011 will be the first that he will not have attended. In 2009, he gave the NAMRI/SME Founders Lecture and he, along with Dr. B.F. von Turkovich were awarded the NAMRI/SME Outstanding Lifetime Service Award. Dr. Weinmann mentored over 29 M.S. and 11 Ph.D. students to the completion of their degrees. He was extremely proud of his students accomplishments and would boast to his current students of the achievements of previous students, so that during the course of their work, they had a sense of the history of the laboratory in which they worked. Klaus Weinmann is survived by his wife, Dr. Sigrid Weinmann who is an emerita professor in humanities at Michigan Tech, and their two daughters. Those of who knew him will remember his warm friendship and his ability to put into historical context the topics under discussion. Many of his former students maintained their connection with him throughout the years.

# **ASME International Manufacturing Science And Engineering Conference Hosted by Penn State Erie, Erie, PA, Oct. 12-15, 2010. Technical Program Report**

**By Yong Huang and Kevin Chou- Program Chairs**

This was the fifth year for the ASME International Manufacturing Science and Engineering Conference (MSEC). Selected from 191 draft papers, this year's program included 169 technical presentations in 20 symposia with topics ranging from traditional manufacturing areas such as machining and forming to new topics such as energy manufacturing and biomanufacturing. Nine student manufacturing designs had been presented at the conference. Four panel sessions also helped to define the future of manufacturing with discussions regarding "Strategies to Reduce the Transportation Sector's Energy Consumption", "Next Generation Composites and Textiles for Transportation Vehicles", "Impact of Manufacturing Uncertainty on Commercializing Innovations in Transportation", and "Advances in the Electrification of Transportation". A poster session with 21 posters was included for the third year to provide an opportunity for authors to present new results and exchange ideas. In addition, an Early Career Forum was organized under the leadership of Prof. Brad Kinsey with 12 panelists from academia, industry, and national laboratories. MSEC is truly an international conference, with authors from all over the world. Since its inception in its current format, MSEC has grown steadily to a premier conference in manufacturing in both quantity and quality.

The symposium organizers nominated eight papers for the Best Paper Award. These eight papers were subjected to another round of reviews and ranking by the symposium organizers, MED executive committee, and past and present technical program chairs. The recipients of the Best Paper Award were Lei Ma, Shreyes N. Melkote, John B. Morehouse, James B. Castle, and James W. Fonda for their paper entitled "On-Line Monitoring of End Milling Forces Using a Thin Film Based Wireless Sensor Module". The other finalists for the best paper award were Ji Li and Gary J. Cheng for their paper "Effect of Multiple Pulses on the Deformation Behavior of Ultrathin Metal Foils in 3D Micro-Scale Laser Dynamic Forming" and Raul E. Riveros, Hitomi Yamaguchi, Taylor Boggs, Ikuyuki Mitsuishi, Kazuhisa Mitsuda, Utako Takagi, Yuichiro Ezo, Kensuke Ishizu, and Teppei Moriyama for their paper "Magnetic Field Assisted Finishing of Silicon MEMS Micro-Pore X-Ray Optics".

The technical program chairs also selected the recipients of the Best Organizer of Symposium and Sessions (BOSS) Award. The recipients for this year's award were Gracious Ngaile and Serhat Kaya for their symposium entitled "Advances in Materials Forming". These organizers not only were responsive to requests from the technical program chairs but took a leadership role in determining tasks for all symposium organizers. Finally, they held a very high standard for the papers accepted to their symposium, which lead to superior quality technical sessions.

This year the National Science Foundation provided student participants with travel funding, supporting total 50 students to attend MSEC. Of these students, 78% were Ph.D. students, and 26% were from groups underrepresented in engineering education. This support is gratefully acknowledged.

The Technical Program Chair for the 2010 MSEC conference was Prof. Yong Huang from Clemson University and Prof. Kevin Chou from the University of Alabama served as the Co-Chair.

## **Student Manufacturing Design Competition at MSEC 2010**

**By Cedric Xia - Student Competition Coordinator**

The Student Manufacturing Design Competition was established in 1995 by the Manufacturing Engineering Division (MED) of ASME to recognize students for "any design of a system, component or process that can be used to promote the science and practice of manufacturing engineering." The purpose of the competition is to foster 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. It is held annually during the Manufacturing Science & Engineering Conference (MSEC).

Nine finalists were invited and presented their work at this year's MSEC on Oct. 13, 2010. The majority were undergraduate design projects on manufacturing systems and processes, and each team consists of up to 12 students. They were balanced by graduate design projects out of research work. The competition was judged by Dr. Mary Toney of National Science Foundation, Dr. Cedric Xia of Ford Motor Company, and Dr. Xiaoping Yang of Cummins Inc. The creativity, practicality, and the depth of manufacturing knowledge were evident throughout the projects, which made the selection process very difficult. The final winners are:

**First Place Winner** (\$1000 award): Jaron Koppers and Casey Hoffman, Rensselaer Polytechnic Institute  
Winning Project: "Specialized Elastomeric Tooling for Advanced Thermoset Composites"  
Faculty Advisor: Prof. Daniel Walczyk

**Second Place Winner** (\$750 award): Wei Huang, Southern Methodist University  
Winning Project: "Development of a Real-time Laser-based Machine Vision System to Monitor and Control Welding Processes"  
Faculty Advisor: Prof. Radovan Kovacevic

**Third Place Winner** (\$500 award): James Magargee and Morgan McHugh, Northwestern University  
Winning Project: "Design and Fabrication of Micro-Wedge Device for Compression and Cyclic Mechanical Testing of Microscale Metal Sheets"  
Faculty Advisor: Prof. Jian Cao

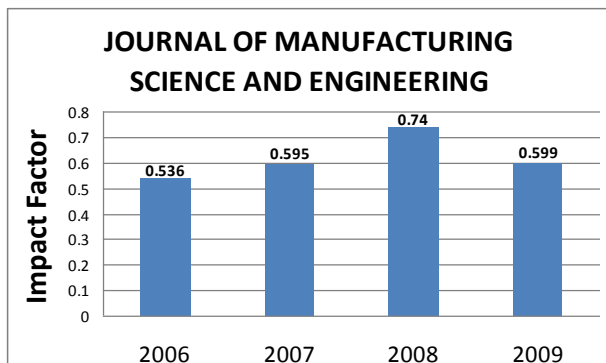
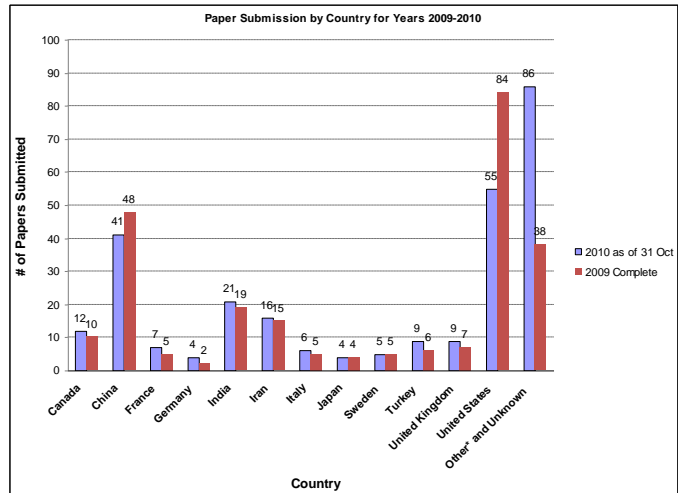
Special thanks go to the National Science Foundation (NSF) for providing travel grants to some of the students, the Executive Committee of MED for providing the winning prizes and the supplemental travel support, and all student teams who participated in this year's Manufacturing Design Competition.

# ASME Journal of Manufacturing Science and Engineering – Status Report

Submitted by Kornel Ehmann

Overall, the Journal is on solid grounds. The submission rate is well-above 300 manuscripts annually and has remained steady over the past few years. What is notable, however, is that the Journal is receiving a steadily increasing stream of submissions from all over the world (see enclosed graph).

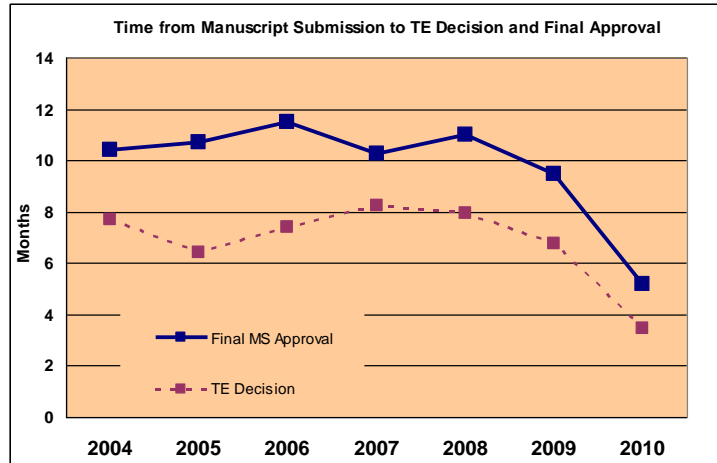
The Journal's impact factor is around 0.6 representing a drop after reaching its maximum of 0.74 in 2008 (see graph). The reason for this is difficult to interpret, but is most likely related to fluctuations in the time between submission and publication although this time is steadily decreasing. As it can be seen from the review statistics in the enclosed diagram, there is still room for improvement in terms of shortening the review process. The most decisive factors in this are the time a manuscript spends in the reviewer's hands and the time it takes



the authors to make their revisions and also the time that elapses between the Technical Editor's (TE) approval and submission of the final manuscript by the author. Therefore, it is up to the manufacturing engineering community to respond in the shortest possible time to an Associate Editor's (AE) request for a review or a request by the Journal's secretary to send in the revised or final manuscript. The Editorial Board is very hesitant to implement certain policies employed by a number of the Journal's "competitors" to artificially boost its impact factor.

In the last year there have been a number of changes in the Journal's Editorial Board, namely, four new AEs were added, the terms of three AEs have been extended and a number of AEs have completed their two consecutive three-year terms. The current Editorial Board consists of 17 members including the TE. The names of the currently active AEs appear in the Journal's masthead in its printed and electronic versions along with the areas of their primary expertise. The manufacturing engineering community is indeed indebted to these colleagues for their hard work, dedication and their continued efforts to elevate the standing of the Journal.

This year a special project that has resulted in a Special Issue of the Journal (June 2010) on Nanomanufacturing has been completed. A new Special Issue on "Advances in Plastic Forming of Metals," tentatively planned for the December issue of 2011, will be shortly announced. Details about this initiative can be found on the Journal's website at [journaltool.asme.org](http://journaltool.asme.org).



On behalf of the Editorial Board I would like to thank the authors and reviewers for their continued support of the Journal. Also, I would like to ask all members of the manufacturing engineering community to send me your comments on how to serve you better and make a good journal even better.

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## ASME Milton C. Shaw Medal



**PROFESSOR MILTON C. SHAW**  
 (May 27, 1915 – September 7, 2006)

The ASME Manufacturing Engineering Division (MED) is pleased to announce that the ASME Committee on Honors (COH) has approved the establishment of a society-level award in honor of Late Professor Milton C. Shaw. The approval has been finalized by the ASME Board of Governors. The idea was initiated and championed by Prof. Ranga Komanduri of Oklahoma State University and endorsed by the MED, with the support of numerous friends, colleagues, and fellow researchers all over the world. Professor Shaw was one of the most distinguished and influential researchers and educators in the 20th century in the field of manufacturing engineering, not only in the United States but internationally. Throughout some 60 years of pioneering research and excellence in teaching, Shaw elucidated, innovated, and advanced the art and science of material removal processes for the benefit of industry and the society in general.

Professor Shaw educated a number of people all over the world and became a role model and a mentor for several generations of researchers in manufacturing engineering. His research interests include metal cutting, grinding, polishing, tribology, and mechanical design.

His research has opened up new opportunities for technological development, and his scholarship has been the inspiration to countless older as well as younger generations of engineers and educators. He

brought dignity and respect to manufacturing engineering research and education by practicing at the Massachusetts Institute of Technology, the country's premier educational institution initially, followed by Carnegie-Mellon University, and Arizona State University.

Professor Shaw published over 300 technical papers, 3 books (Metal Cutting Principles, the Principles of Abrasive Processing, and Engineering Problem Solving). He edited several conference volumes in the materials processing and manufacturing areas. He held 19 U.S. and foreign patents. He was a consultant for some 150 companies in the U.S. and abroad.

Professor Shaw was very active in various professional societies, especially the ASME. He was an active member of the Production Engineering Division (now Manufacturing Engineering Division). He was an Honorary Member of ASME. He delivered ASME Thurston Lectureship in 1971 on Mechanical Fuse. He received ASME Meyo Hersey Award in 1967, ASME Pittsburgh Section Outstanding Engineering Award in 1975, ASME Centennial award in 1980 and the ASME Medal in 1985. Shaw was a member of the National Academy of Engineering and Honorary Member of many other societies.

The following are details of the award.

**Citation:** The Milton C. Shaw Manufacturing Research Medal recognizes significant fundamental contributions to the science and technology of manufacturing processes.

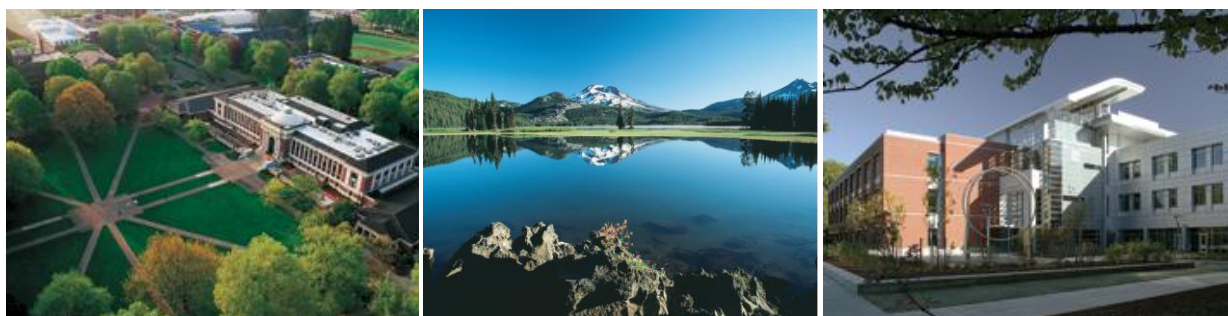
**Nominee Requirements:** There are no restrictions on the nominees. It is the policy of the Society that a recipient of one award is not eligible for another award unless the body of work is significantly different than the work cited in support of that award.

**Frequency of Award:** While it is anticipated that annual awards will be made, the MED Honors committee may, at its sole discretion, decline to make any recommendation to the ASME COH if none of the active nominations under consideration are deemed consistent with the citation.

**Length of time nominations remain active:** All nominations shall receive active consideration for a period of three years after receipt. Nominators are expected and encouraged to update and expand nomination materials during the 3 year period during which the nomination remains active.

**Nomination Deadline:** Nominations should be received by February 1 of the year in which the award may be bestowed.

## Upcoming Events



Dear Colleagues:

It is our great pleasure to invite you to the 2011 ASME International Manufacturing Science and Engineering Conference (MSEC) to be hosted by Oregon State University in Corvallis, OR on June 13-17, 2011.

MSEC 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) and this is the sixth year in such format following the excellent events in the previous years. 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.

In addition, in 2011, the 6th MSEC will be collocated with another two leading international manufacturing and materials processing conferences: the 39th NAMRC – An International Forum, sponsored by SME and the 4th JSME/ASME 2011 International Conference on Materials and Processing (ICM&P) co-sponsored by JSME and ASME. With registration to MSEC (or NAMRC, ICM&P), you can attend any sessions of all three conferences. Please consider registering early to take advantage of the low registration fee and hotel rates. We sincerely hope that you will join us at this exciting conference and look forward to seeing you in Corvallis next June.

This conference will highlight cutting edge manufacturing research in technical paper, poster, and panel sessions. The deadline for full-length draft paper submissions is December 1, 2010. The conference will be accepting submissions (<http://www.asmeconferences.org/MSEC2011/>) to the following symposia:

**Track 1: Materials**

- 1-1: Polymer and Polymer Matrix Composites
- 1-2: Metal and Metal Matrix Composites
- 1-3: Ceramics and Ceramic Matrix Composites
- 1-4: Adhesion and Interface
- 1-5: Functional/Multi-functional Materials
- 1-6: Smart Materials and Structures
- 1-7: Recycling of Composites

**Track 2: Processing**

- 2-1: Advances in Plastic Forming of Metals and Other Materials
- 2-2: Advanced Casting and Semisolid Forming Techniques
- 2-3: Advanced Powder Processing Technique
- 2-4: Advanced Welding and Bonding Technology
- 2-5: Thermal and Cold Spray Coatings
- 2-6: Green Energy Manufacturing
- 2-7: Advances in Nontraditional/Hybrid Manufacturing
- 2-8: Manufacturing with Soft Materials
- 2-9: Advances in Biomanufacturing
- 2-10: Advances in Modeling, Analysis, and Simulation of Manufacturing Processes

**Track 3: Properties, Applications and Systems**

- 3-1: Mechanical Characterization and Measurement Techniques
- 3-2: Contact Surface Mechanics, Fracture and Reliability
- 3-3: Surface Modification Technology, Wear and Tribology
- 3-4: Dynamic Behavior of Materials and Structures
- 3-5: Monitoring, Sensing, and Control for Intelligent Machining and Inspection
- 3-6: Manufacturing Research Toward Sustainable Transportation
- 3-7: Advances in Quality and Process Control in Manufacturing Systems
- 3-8: CAD Based Information Integration in Product and Production Development
- 3-9: Advances in Pervasive Sensing and Computing for Manufacturing Systems
- 3-10: Nondestructive Testing
- 3-11: Manufacturing System Operations

**Track 4: Micro and Nano Technologies**

- 4-1: MEMS, NEMS and Biologic Application
- 4-2: Nanomaterials, Nanofabrication and Their Applications
- 4-3: Sustainable Nanomanufacturing
- 4-4: Advances in Traditional Nano/Micro/Meso Manufacturing Processes
- 4-5: Micro-Nano Assembly Systems and Applications

4-6: Laser Based Meso/Micro/Nano ManufacturingMindy H. Grinnan <GrinMH@jea.com>

4-7: Ultra-Precision and Micro/Nano Forming of Materials

### **Important Dates**

Submission of Abstract/Full-Length Draft Paper for Review – *December 1, 2010*

Paper Reviews Completed – *February 7, 2011*

Initial Author Notification of Acceptance/Revision Requirements – *February 14, 2011*

Electronic Copyright Form Submission Process Opens – *February 14, 2011*

Submission of Revised Paper for Review (if required) – *February 21, 2011*

Author Notification of Acceptance of Revised Paper – *March 7, 2011*

Submission of Copyright Form – *February 14 to March 11, 2011*

Submission of Final Paper – *March 14, 2011*

Author Registration Deadline – *March 21, 2011*