http://divisions.asme.org/med

Manufacturing Engineering Division

MED NEWSLETTER FALL 2008

Newsletter Editor: Wei Li

CHAIR'S MESSAGE - Michael F. Molnar

Dear Colleagues:

I am pleased to share that our division is active, strong, and growing in membership. Our premier technical conference – the International Manufacturing Science and Engineering Conference (MSEC) successfully completed its second year, hosted very capably by our friends at Georgia Tech. Seven technical committees remain active including new Bio Manufacturing committee. And our technical journal, the ASME Journal of Manufacturing Science and Engineering, is strong and growing.

Wait a minute. The newspapers consistently say that manufacturing (as well as structured professional organizations like ASME) is in chronic decline. What's going on here? Much of this is misperception with a healthy dose of confusion.

First, we are an international division and manufacturing the world over is generally booming. Most of our members reside in the United States and here is where misperception is rampant. US industrial production has never been higher, hitting a record in 2007 (see sources such as the Federal Reserve's G.17 data of US Industrial Production).Newspapers headline plant closures and to be sure there are many companies struggling and sectors undergoing change.

It really is hard to believe that the US is today still the world's largest manufacturer. Depending on the data,

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China will overtake that claim next year or will in a few years, yet as we have seen again and again this is not a zero sum game and both countries will flourish.

Our US sited conferences are international, and we partner with other sister organizations worldwide. This year for example we are holding MSEC jointly with the Japanese Society of Mechanical Engineers (International conference on Materials and Processing) in Chicago, and are partners with the Chinese Mechanical Engineering Society on International Conference on Frontiers of Design and Manufacturing in Tianjing, China.

Second, change is threatening, yet when have we not been in a period of change? The "new" idea of creative destruction (introduced in 1942 by the economist Joseph Schumpeter) has never been more true – innovation and disruptive technologies change the game and for the betterment of society. Large, vertically integrated companies are under stress and have been outsourcing the manufacturing of parts or products which are not strategic or where they are uncompetitive. All those outsourced manufactured items are still being made but now by someone else who is more efficient. The net result is a marvel of efficiency and productivity which serves to raise the standard of living writ large.

Manufacturing engineering is at the core of this multi-decade story of continuous improvement and higher productivity levels. Exciting new process technologies will enable amazing new future products, and make more efficient the products of today. I saw today news of a 1 terabyte personal computer hard drive which will be available soon. It reminded me that I was very proud of my second computer, which had an amazing 10mb hard drive (the first had no hard drive). This was purchased when I was an engineering intern at IBM designing automation for making… hard drives. Visionaries I met then in the 1980's did foresee very large drives, but the idea of a single drive with a terabyte capacity for a mainframe was revolutionary – let alone for a personal computer. The product and process technologies responsible for this example product is simply amazing, and due to engineering. Look closely at virtually any sector today and you will see similar stories of transformational development.

Lastly, the concept of sustainable development is becoming mainstream. Here too manufacturing engineers have a key role. I have heard this described in complex ways, down to a simple idea – look at the total system including the full lifecycle costs of a product. Lifecycle here would expand to consider the design, manufacturing, sale and distribution, service, repair or remanufacturing, and retirement (reuse, recycle or dispose) of products. What we consider as part of the system is certainly expanding, and for the betterment of society. This is why I remain bullish about manufacturing and manufacturing engineering.

Yes, things continue to change. The best way for an engineer to remain competitive is to stay on top of new technologies, acquire and sharpen skills, and continue growing a professional network.
And on that count, professional organizations like ASME and the Manufacturing Engineering Technical Division are strategic enablers. This is why I remain bullish about ASME and our division.

With very best wishes for a safe and productive 2008-2009.

Michael F. Molnar PE FASME
Cummins Inc.
Chair - ASME Manufacturing Engineering Division, 2007-08

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Technical Committee Reports

Biomanufacturing – Wei Sun

The committee has co-sponsored the following activities in the past year: 1) NSF Bio/Nano Manufacturing Workshop, and 2) 2008 MSEC Symposium: Bioprinting and Solid Freeform Fabrication for Regenerative Medicine.

The objective of the NSF Bio/Nano Manufacturing Workshop is to bring together researchers in the emerging fields of biomanufacturing and nanomanufacturing to explore synergies and opportunities at the interface of bio and nano manufacturing. The workshop identified, discussed and recommended possible collaborative areas for bio-nano manufacturing. Detailed information about the workshop can be found at the Workshop Homepage: http://www.bionanomfg2020.info/program.html.

The 2008 MSEC Symposium on Bioprinting and Solid Freeform Fabrication for Regenerative Medicine highlights the emerging trends of this multi-disciplinary domain with a major thrust on solid freeform fabrication (SFF) technologies and bioprinting processes for biomedical and tissue engineering applications. Presentations and panel discussions in the proposed symposium will facilitate interactions among the participating researchers, manufacturers and clinicians on recent advances in freeform biofabrication, scaffold design/fabrication, and cell-organ printing. The Co-organizers of this symposium are Dr. Dietmar W. Hutmacher form Queensland University of Technology, Australia and Dr. Michael A.K. Liebschner from Rice University.

Life Cycle Engineering – Steve Skerlos and Fu Zhao

The Life Cycle Engineering group has re-started activities within MED since NAMRC 35. Specifically, two sessions at MSEC 2008 were established: 1) Environmentally Sustainable Manufacturing Systems (Prof. Steve Skerlos of UM and Prof. Dave Dornfeld of Berkeley), and 2) Materials for Sustainable Manufacturing (Prof. Fu Zhao of Purdue, Prof. Andres Clarens of Virginia, and Dr. Hyung-Ju Kim from UM). Both sessions were populated with papers though a larger number of papers was expected given the extensive amount of advertising and the Japan connection at MSEC 2008. The committee is thinking to combine both sessions into a single session for MSEC 2009 and to find more channels for advertising. It is expected with the growth in interest in environmental research over the last few years that the number of papers could increase in the

coming years. We are looking forward to seeing everyone in Evanston this Fall.

Manufacturing Equipment - Burak Ozdoganlar

In 2008, three (3) symposia in MSEC were organized by the Manufacturing Equipment Technical Committee. The chair (Ozdoganlar) is hosting the International Conference on Micro-Manufacturing at Carnegie Mellon University, Pittsburgh, PA, U.S.A. This conference is expected to have possible synergetic connections with the manufacturing equipment TC.

In 2007 there were many professional conferences, at both national and international levels, in which manufacturing equipment and related topics were presented. These included *ASME International Mechanical Engineering Congress and Exhibition, American Society for Precision Engineers Annual Conference, North American Manufacturing Research Conference, CIRP General Assembly, International Conference on Micro-Manufacturing, and Microfactory Workshop*.

The Manufacturing Equipment Technical Committee would like to make the following suggestions and recommendations to the MED:

1. The participation by the TC members (e.g., in proposing symposia) is very low. We need to pursue aggressive ideas to increase the participation

2. The TC chair would like to nominate Prof. Martin Jun of U. of Victoria as the new co-chair.

Manufacturing Processes – Yong Huang

The TC Chair Yong Huang of Clemson will finish his two-year term and Co-Chair Santosh Ranganath of United Technologies will be the new Chair for 2008-2010. Eight (8) new members have been added to the TC during the past year. All new members were chosen based on their participation in organizing manufacturing process oriented symposia at an ASME sponsored conference. The TC plans to evaluate the feasibility about introducing a 4-year membership term in order to better manage the TC membership. Biomanufacturing activity has spun off from MP TC as an individual TC from January 2007. The MP TC Chair Yong Huang will be the Program Co-Chair for MSEC ’09. Symposium proposals have been solicited for MSEC ’09.

The TC has sponsored five symposia proposals for MSEC ’08 as follows:

1. Manufacturing Processes for Biomedical Applications: Theory, Applications, and Education by Yong Huang,

Douglas Chrisey and David B. Wallace (also co-sponsored by the Biomanufacturing TC)

2. Semiconductor Materials Manufacturing Processes by ZJ Pei and Anand Tanikella
3. Advances in Materials Forming by Richard Onyancha and George Luckey
4. Miniaturization of Molding Processes for Microfabrication by Donggang Yao and J. Wally Cruz
5. Innovative Cutting Tool Technologies for Modern Machining Challenges by Kevin Chou and Raja Kountanya

The TC past Chair Bob Williams was the Program Chair for MSEC '07. The TC actively solicited symposia proposals for MSEC '07. A total of five symposia were selected. They are: Advances in Rapid Manufacturing Technologies for Metallic Parts, SFF for Biomedical and Tissue Engineering, Miniaturization of Molding and Casting Processes, Hybrid Meso/Micro Manufacturing Processes, and Thermally-Enhanced Manufacturing. Drs. Kevin Chou of Alabama and Mary E. Kinsella of the Air Force Research Laboratory were selected to receive the BOSS Award for their MSEC'07 symposium, titled "Advances in Rapid Manufacturing Technologies for Metallic Parts."

Honor Committee Report – Robin Stevenson

The Manufacturing Engineering Division Honors Committee is charged with making recommendation to the ASME Committee on Honors on the award of the Blackall Tool and Gage Award and the William T. Ennor Manufacturing Technology Award.

Blackall Tool and Gage Award:

Five papers were nominated for this award – 3 new nominations and two holdover nominations (nominations remain active for two years from date of publication of the paper). The committee felt strongly that the most worthy paper was that of A. Honegger, S. G. Kapoor and R. E. DeVor, entitled "A Hybrid Methodology for Kinematic Calibration of Micro/Meso-Scale Machine Tools (mMTs)". This paper presents a novel apparatus and method for determining the error compensation parameters of machine tools at reduced scale and is fully consistent with the Blackall Award citation - **"…..clearly concerned with or related to the design or application of machine tools, gages, or dimensional measuring instruments,……"**

William T. Ennor Manufacturing Technology Award:

The committee reviewed and evaluated three nominations for this award. (Nominations for the Ennor Award remain active for 5 years and nominators are encouraged to revise and expand nominations in subsequent years as additional information in support of a candidate becomes available.)

There was general agreement by the committee members that the strongest candidacy was that of Richard C. Liu which was initially submitted in 2007 and in revised and expanded form, resubmitted this year. His citation reads **"For his seminal research on the integrity and fatigue performance of finish machined surfaces leading to significant impact on the cost, reliability and safety for load-carrying components made of hardened steels."**

Suggestions to Nominators:

Complete nomination packages for the 2009 Ennor Manufacturing Technology Award and Blackall Machine Tool and Gage Award must be submitted before January, 2009 to the Manufacturing Engineering Honors Committee. Nomination forms and lists of past recipients are available at: www.asme.org/divisions/med/awards

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 the 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, 2008.

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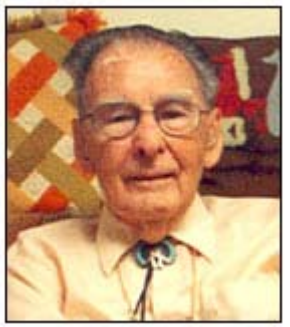
Proposed ASME Milton C. Shaw Medal – Ranga Komanduri

The ASME Manufacturing Engineering Division is proposing to establish a society-level award in honor of Late Professor Milton C. Shaw, 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 MILTON C. SHAW
(May 27, 1915 – September 7, 2006)

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 in1971 on Mechanical Fuse. He received ASME Meyo Hersey Award in 1967, ASME Pittsburgh Section Outstanding Engineering Award in1975, 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 some details of the proposed award endorsed by the Executive Committee of MED. It will be submitted to the ASME Committee on Honors (COH) for their approval as a society-wide award, followed by the approval of the ASME Board of Governors.

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: Once the award is established, nominations should be received by December 1 of the year prior to the first year in which the award may be bestowed.

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Report on Journal of Manufacturing Science and Engineering - Kornel F. Ehmann

As of May 2008, the journal has 21 Associate Editors with 3 appointments terminating in June 2008. Four new Associate Editors have been added to the list. These are:

- Raffaello Levi, Politecnico Di Torino (November 2007 – November 2010)
- Wei Li, University of Washington (March 2008 – March 2011)
- Eric Marsh, The Pennsylvania State University (March 2008 – March 2011)
- Burak Ozdoganlar, Carnegie Mellon University (March 2008 – March 2011)

The term of Associate Editor Shreyes Melkote, Georgia Institute of Technology, has been renewed to June 2008 – June 2011.

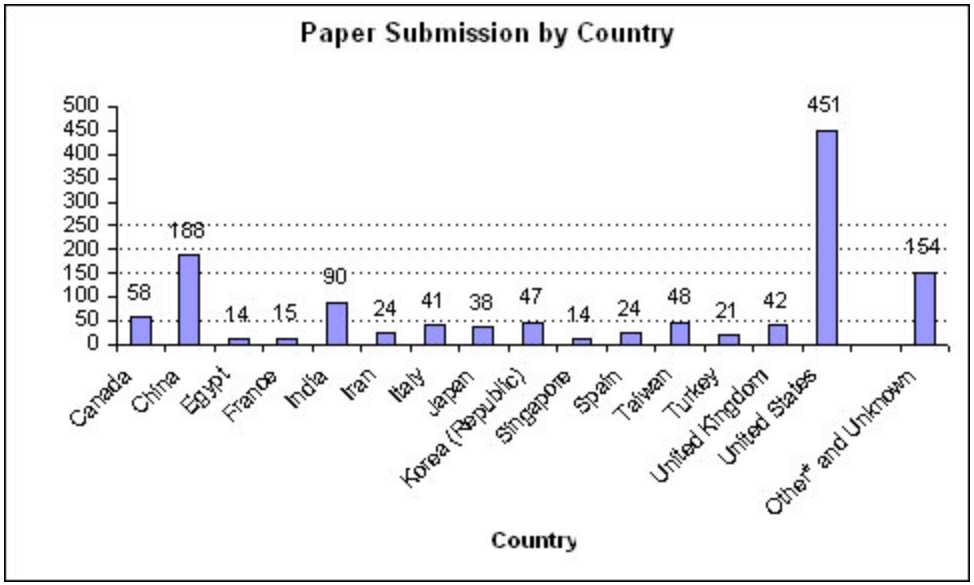
A special issue on "Biomedical Manufacturing" was published in April 2008 with 18 papers and 3 technical briefs. Special thanks are due to the Guest Editors, Dr. Albert J. Shih (University of Michigan) and Dr. Dong-Woo Cho (Pohang University of Science and Technology), for their great effort and excellent work on this project. The June 2008 issue of the Journal is designated as a Special Issue on "Micromanufacturing."

We are pleased with the results of switching the Journal to a bi-monthly publication schedule starting with the February issue in 2007. There are now a total of 6 issues per year. There is an apparent drop in the submission rate to the journal. As of yet, there is no plausible explanation. Submission statistics indicate that the rate of submission from other countries is still increasing. The Journal Tool (electronic submission system) has been recently upgraded with much more sophisticated monitoring and reporting functions. The time from manuscript submission to final acceptance continues to decrease as shown in the figure blow. This is a positive trend, as it helps improve the Journal's impact factor.

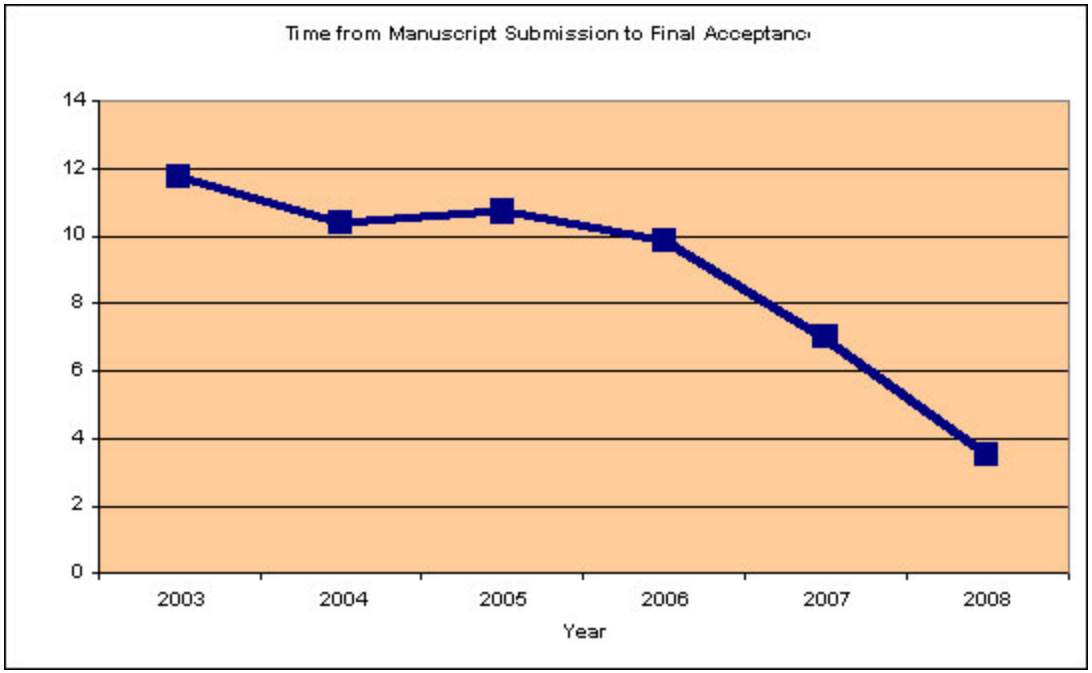
JMSE Submissions Per Year:

1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
222	192	165	167	183	165	174	158	170	227	233	305	384	363	124*

* as of May 15, 2008



*Other = 39 countries with under 10 submissions each



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Up Coming Events

2008 ASME International Conference on Manufacturing Science and Engineering (MSEC 2008)
October 7-10, 2008
Evanston, IL, USA

The international Manufacturing Science and Engineering Conference (MSEC), is the flagship annual forum sponsored by the Manufacturing Engineering Division (MED) of the American Society of Mechanical Engineers (ASME) to disseminate the most recent results in manufacturing research and development through both technical papers and panel sessions. This is the 3rd MSEC since its inauguration in 2006 and has been recognized as the premier meeting of our division.

This year's MSEC will be co-located with the 3rd JSME/ASME International Conference on Materials and Processing (ICM&P). ICM&P 2008 is an international conference on engineering materials and materials

processing technology. In 2008, it coincides with the 16th JSME Materials and Processing Conference (M&P 2008) and the 3rd JSME/ASME International Conference on Materials and Processing – 2008. The conference is sponsored by the Materials and Processing Division (M&P) of JSME and is recognized as the premier meeting on materials and processing technology in Japan.

Conference Program

	Tuesday Oct. 7, 2008	Wednesday Oct. 8, 2008	Thursday Oct. 9, 2008	Friday Oct. 10, 2008	Saturday Oct. 11, 2008
7:30am		Registration and Breakfast	Registration and Breakfast	Breakfast	Breakfast
8:30am		Welcome and opening remarks	Announcements	9 Concurrent Technical Sessions	NSF Summer Institute Short Course *Fundamentals and New Opportunites of Materials* **Metal :** Prof. Fine **Shape Memory Alloys:** Prof. Brinson **Metallic Foam:** Prof. Dunand **Ceramics:** Prof. Faber Students, Post-docs: $30 Others: $100
9:00am		Plenary talks	Plenary talks		
10:00am		Coffee Break	Coffee Break	Coffee Break	
10:30am		9 Concurrent Technical Sessions	9 Concurrent Technical Sessions	9 Concurrent Technical Sessions	
12:00pm		Lunch	Lunch	Lunch	
1:30pm		9 Concurrent Technical Sessions	9 Concurrent Technical Sessions	9 Concurrent Technical Sessions	
3:00pm		Coffee Break	Coffee Break	Coffee Break	
3:30pm		9 Concurrent Technical Sessions	9 Concurrent Technical Sessions	9 Concurrent Technical Sessions	
5:00pm	Registration and Reception				
		Spirit of Chicago			

6:00pm		Dinner Cruise	Reception		

For more information about the conference, e.g., plenary speakers, paper sessions, poster sessions, student manufacturing design competition, sponsors and short courses, visit http://msec2008.northwestern.edu.

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Special Announcements - Ranga Komanduri

Call for Donations to Establish the ASME Milton C. Shaw Medal Award

Dear Colleagues:

Professor Milton C. Shaw, who passed away at the age of ninety-one, two years ago, was one of the most distinguished and influential researchers and educators in manufacturing science and engineering, and widely recognized and honored around the world. Throughout some sixty years of pioneering research, he analyzed and improved the art and science of material-removal processes. With boundless energy and numerous lectures, technical papers, and books, he educated and inspired countless number of students/researchers. With sustained enthusiasm in the classroom, he became a role model and a mentor to generations of researchers and teachers, as well as bringing academic recognition and respect for research and education in manufacturing engineering.

Although his activities were focused mainly on fundamental aspects of machining and grinding processes, his interests and creative ideas on diverse topics were indeed vast, beginning with his groundbreaking research in the early 1940s on chemical reactions in metal cutting, a topic that, because of its complex interacting features, cannot be investigated in a test tube but only by studying actual machining processes. His research led to opportunities for new developments in industry, while his consistently scholarly and comprehensive approach became an inspiration to us all.

Several of his colleagues, former students, and fellow researchers have proposed to establish an award, namely, ASME Milton C. Shaw Manufacturing Research medal, in his honor. The MED Executive Committee has endorsed it. We will now approach the ASME Committee on Honors (COH) to establish this as a society-wide award in recognition of Professor Shaw's numerous contributions to manufacturing. For such an award to be established, ASME rules require that we raise a minimum of $40,000. I kindly invite you to become a member of this special group and contribute towards the establishment of this award, as well as to encourage others to join us in this noble cause of honoring a colleague, we were privileged to know. We suggest a contribution of $ 250, $ 500, or $1000 although it is entirely up to you, the amount you wish to contribute. Those of you in industry may also consider approaching your company's Foundation for additional support. If you wish to participate, please address your check to "ASME Foundation," indicating on it "M. C. Shaw Award," and mail it

to me to the address given below:

Professor R. Komanduri
Mechanical & Aerospace Engineering
218 Engineering North
Oklahoma State University
Stillwater, OK 74078

Call for Donations to Establish ASME Chao and Trigger Young Manufacturing Researcher Award

Dear Colleagues:

Machining researchers generally consider the 1950s as the Golden Age of Metal Cutting because for the first time, machining was being transformed from an art to a science. This was also the period when the discussions by various researchers to technical papers in the ASME Transactions in this area were as significant as the papers themselves.

Late Professor Kenneth Trigger and Emeritus Professor B. T. Chao of the University of Illinois Urbana/Champaign played an important role in machining research, particularly on the thermal aspects of metal cutting in the 1950s and 60's. They conducted pioneering research on a wide range of thermal problems, which is still widely used by researchers in academia, industry, and national laboratories all over the award. Their studies included temperature measurement in machining, using the chip-tool thermocouple method, and they were first to point out that heat partition at the chip-tool interface is not a constant but varies along its contact length. They approached the problem of variable heat partition using an iterative technique and solved

it numerically. They also investigated the geometry of tool inserts and the performance of controlled-contact cutting tools, a precursor to the built-in chip-breakers. Trigger and Chao's investigations also involved fundamental studies on tool wear, especially crater wear, and showed that the maximum temperature in the tool occurs not at the tool tip but at some distance away, coinciding with the location of crater wear.

A significant feature of their studies was the active collaboration between two researchers with vastly different expertise, an effort that led not only to a better understanding of the physics of machining but also enabled advances in the analytical aspects of heat transfer in other manufacturing processes as well. Such collaborative efforts with complementary skills are now often solicited by funding agencies and industry and became a necessity for advancing various fields.

In recognition of their seminal contributions, we are proposing to establish "ASME Chao & Trigger Young Manufacturing Researcher Award" to recognize young and promising researchers (under 40 years) in the field of manufacturing. It is intended to be awarded annually to an individual for significant contributions to the fundamentals of the manufacturing processes and systems. To be considered for this award, the candidate should also be a member of ASME.

To establish a Divisional award, we need to raise funds in the amount of $25,000. MED Executive Committee has endorsed this proposal and pledged to support this award to the tune of $ 10 K. With this and other support we received thus far, we are more than halfway through in meeting our goal. Once rest of the amount is raised, a request for the establishment of the award will be made to the ASME Committee on Honors (COH) for their approval as a Divisional award and subsequent approval by the ASME Board of Governors. ASME Manufacturing Engineering Division (MED) will administer the award via the members of the MED Honors and Awards Committee and others. Details of the award will be worked out, once we reach our financial target. It will then be announced to our community for nominations.

We kindly invite you as a member of the manufacturing community, a member of the heat-transfer community, or as a corporate sponsor to generously contribute towards the establishment of this award to honor two of our distinguished colleagues. We especially encourage alumni and students of Professors Chao and Trigger to play an active part by donating generously and seeking support from others. We suggest you consider contribution of $ 250 to $ 1000 for individuals and $ 1000 to $ 5000 for corporate sponsors, although the actual amount to be donated is entirely up to you. Kindly issue your check in the name of ASME Foundation and mail it to me to the following address: Dr. Ranga Komanduri, Mechanical & Aerospace Engineering, 218 Engineering North, Stillwater, OK 74078. For further details, please contact me at: voice (405) 744-5900, or by e mail: ranga.komanduri@okstate.edu.

Yours truly,

Ranga Komanduri

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ASME International - Manufacturing Engineering Technical Division Leadership Team

Role	Name	Term
Exec Committee		
Chair	Mike Molnar	2007-2008
Vice-Chair	Jian Cao	2007-2008
Program Chair	Bin Wei	2007-2008
Secretary/treasurer	Lawrence Yao	2007-2008
New member	Matt Bement	2007-2008
Mfg Technical Group Chair	K. P. Rajurkar	2005-2008
ASME Sr. Program Manager	Lee Hawkins	n/a
ASME Assistant E.P.	Abraham Hassan	n/a
Technical Committee Chairs		
Manufacturing Processes	Yong Huang	2006-2008
Manufacturing Equipment	Burak Ozdoganlar	2006-2008
Manufacturing Systems	Yuan-Shin Lee	2006-2008
Quality & Reliability	John Roth	2006-2008
Life Cycle Engineering	Steven Skerlos	2006-2008
Nano/Micro/Meso Manufacturing	Xiaochun Li	2007-2009
Biomanufacturing	Wei Sun	2007-2009
Technical Committee Vice-Chairs		
Manufacturing Processes	Santosh Ranganath	2006-2008
Manufacturing Equipment	Diana Rincon	2006-2008
Manufacturing Systems	Zhijian Pei	2006-2008
Quality & Reliability	Dragan Djurdjanovic	2006-2008
Life Cycle Engineering	Fu Zhao	2006-2008
Nano/Micro/Meso Manufacturing	TBA	2007-2009
Biomanufacturing	Wei Li	2006-2008

Technical Conferences		
Congress 2006	John Roth	2005-2006
Congress 2007	Brad Kinsey	2006-2007
Congress 2008	TBA	
MSEC 2006	Shreyes Melkote	2005-2006
MSEC 2007	Bob Williams	2006-2007
MSEC 2008	John T. Roth	2007-2008
MSEC 2009	Brad Kinsey	2007-2008
Honors Committee (Chair)	Robin Stevenson	2006-2009
JMSE Technical Editor	Kornel Ehmann	2006-2012
Newsletter	Wei Li	2006-2008
Web Liaison	Jaime A. Camelio	2007-2008
Long Range Planning Comm	Steven Liang	2006-2008
	David Stephenson	2005-2007
Nominating Committee (Chair)	Jian Cao	2007-2008
Student Contest (Chair)	Bin Wei	2006-2007
	Lawrence Yao	2007-2008
	Matt Bement	2008-2009
Advisory Committee	Steven Liang	2007-2012
	David Stephenson	2006-2011
	Scott Smith	2005-2010

	Jun Ni	2004-2009
	Amit Bagchi	2003-2008

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