



Michigan **Engineering**

University of Michigan  
College of Engineering

# 1997-98 Annual Report

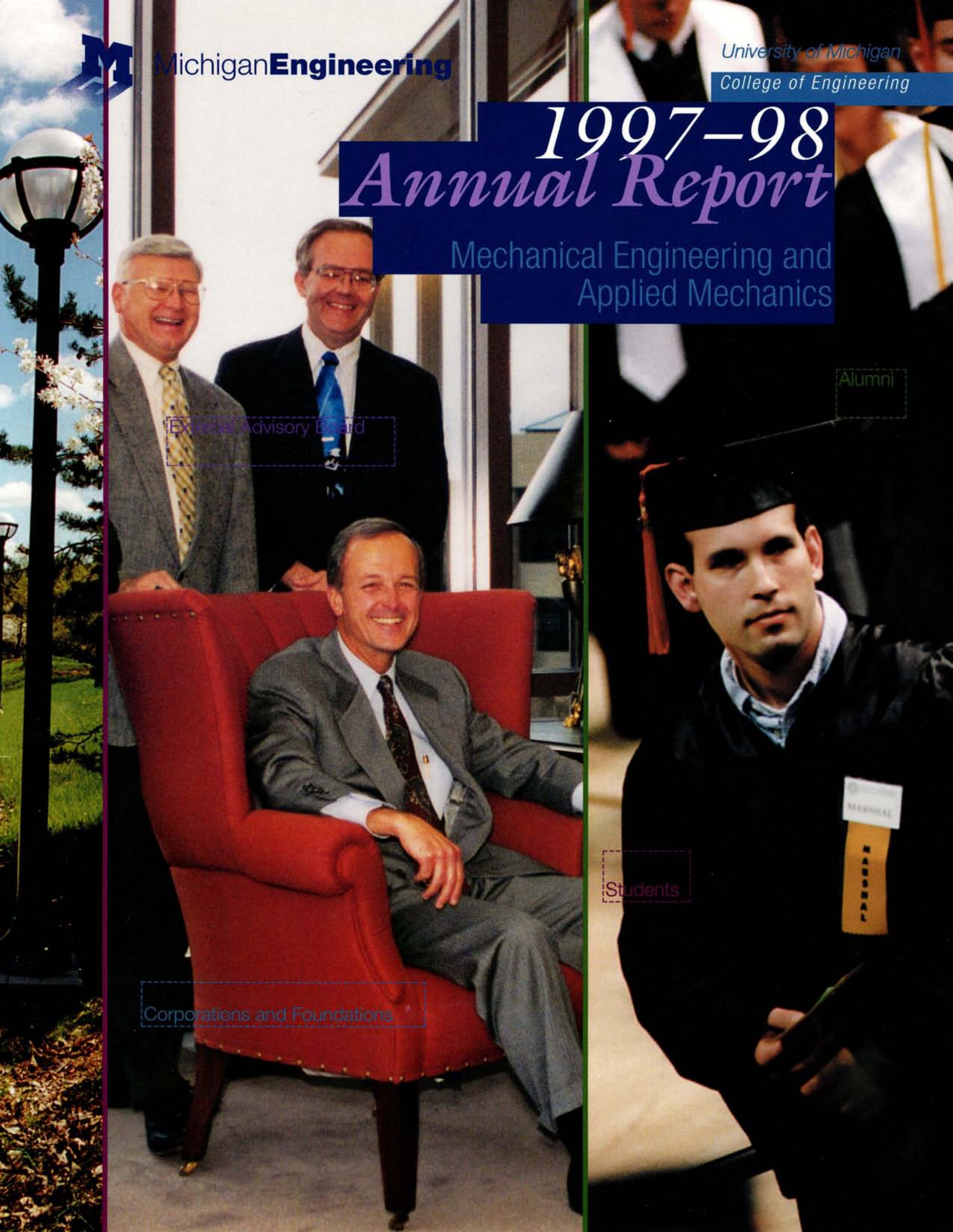
Mechanical Engineering and  
Applied Mechanics

External Advisory Board

Alumni

Students

Corporations and Foundations





The Department of Mechanical Engineering and Applied Mechanics (MEAM) went through a formal review in Spring 1998. The members of the External Review Committee were:

**Professor Richard O. Buckius**, Head, Department of Mechanical and Industrial Engineering, University of Illinois–Champaign-Urbana; **Professor Ronald K. Hanson**, Chair, Department of Mechanical Engineering, Stanford University; **Professor J. Karl Hedrick**, Department of Mechanical Engineering, University of California-Berkeley; **Dr. Roger L. McCarthy**, Chairman of the Board, Failure Analysis Associates; **Dr. William Powers**, Vice-

President for Research, Ford Motor Company; **Professor Nam P. Suh**, Chair, Department of Mechanical Engineering, Massachusetts Institute of Technology (MIT); and **Professor David Wormley**, Dean, College of Engineering, Pennsylvania State University–University Park.

This distinguished group spent two days with MEAM faculty, students, and staff. They also toured the facilities, visited various laboratories, and were provided with a detailed

report on the Department compiled by an Internal Review Committee chaired by former MEAM Chair Professor Richard E. Sonntag.

**The following are some brief excerpts from the External Review Committee's report:**

*"...we found evident, justified, and growing pride in the continued improvement of the Department in all areas: faculty, staff, students, and facilities."*

*"In summary, we believe that the Department has made very significant progress in the past five years and has a good foundation to move forward."*

## A Message from the Chairs

**They also urged MEAM to look ahead, with...**

*"...the development of a strategic vision, and consensus-building process, while maintaining a strong focus on continued recruitment of top students and the development of outstanding faculty."*

We take pride in their positive assessment of the state-of-the-Department and appreciate their advice for moving ahead in the coming years.

This 1997–98 MEAM Annual Report summarizes our activities for the past year. You will find described in the following pages some of the specific accomplishments that contributed to the conclusions of the External Review Committee. Even as we celebrate these recent accomplishments by MEAM students, faculty, and staff, we look forward to the future. This is a highly opportune time in the history of the Department to reaffirm our commitment to excellence and innovation in all of our core activities.

**Panos Y. Papalambros**  
MEAM Chair, 1992–98

**A. Galip Ulsoy**  
MEAM Chair, 1998–02

The Department of Mechanical Engineering and Applied Mechanics (MEAM), originally Mechanical Engineering, was founded in 1868 and has had 15 Chairs over the past 130 years. Another change in leadership is occurring in September 1998, as Panos Y. Papalambros completes six years as MEAM Chair and A. Galip Ulsoy begins a five-year term.



Professor Panos Y. Papalambros (rt.) hands over the keys to Professor A. Galip Ulsoy.





# 1997-98 *Annual Report*

## Mechanical Engineering and Applied Mechanics

**University of Michigan College of Engineering**



photos: U-M MEAM CPO / Shekinah Errington

External Advisory Board (EAB) members Michael E. Korybalski (l.) and George S. Springer (ctr.) accompany Professor Panos Y. Papalambros on a tour of MEAM facilities, during the Spring EAB meeting.

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# Integrated Manufacturing Systems Laboratory

WuMRC

ERC/RMS

I/UCRC



Above: A view of the "High Bay" from the mezzanine of the new Integrated Manufacturing Systems Laboratory (IMSL) in the Herbert H. Dow Building, dedicated on May 26, 1998. Top right: ERC/RMS staff members Kim Ficaro, administrative associate II, seated, and Zbigniew Pasek, program manager, move in. Top left: U-M art school student, Tara Lindstrom, works on the imposing mural in the IMSL.



ARC

1997-98

GM Satellite Research Laboratory

Combustion and Synthesis  
Kinetics and Diagnostics Laboratory

# MEAM: *on the move...*

MEMS

CLAIM

- **A major relocation** of all of MEAM's machining research activities into a new Integrated Manufacturing Systems Laboratory (IMSL) in the Herbert H. Dow Building.
- **A new \$5 million General Motors Satellite Research Laboratory** located in MEAM as a joint effort of University and industry researchers.
- The creation of a new **Combustion and Synthesis Kinetics and Diagnostics Laboratory** and further **growth of such ongoing interdisciplinary ventures** as research on **mobility in older adults**, development of a microassembly process for microelectromechanical (MEMS) devices, the **Center for Laser Aided Intelligent Manufacturing (CLAIM)**, and the **National Science Foundation (NSF) Engineering Research Center for Reconfigurable Machining Systems (ERC/RMS)**, to name just a few.
- A more open, user-friendly atmosphere in the **newly remodeled and reorganized Academic Services Office (ASO)**—including the addition of an undergraduate peer counselor and a graduate student recruiter.

**T**hese are just some of the exciting activities of growth and development that marked the 1997-98 academic year at the College of Engineering's (CoE) Department of Mechanical Engineering and Applied Mechanics (MEAM).

In every corner—from faculty research and discovery to student achievement and success—MEAM reached forward to new heights, strengthened in large part by a **wide range of innovative partnerships and collaborations**. As MEAM continued to forge close working relationships

between far-reaching disciplines at the University, throughout business and industry, and with higher education here and abroad, the Department continued its pursuit of excellence.

The following takes a closer look at some of MEAM's major accomplishments during the 1997-98 school year.



This SMS Machining Center was the largest piece of equipment brought to the new IMSL.



**MEAM's Undergraduate Program** saw many changes during the academic year. Associate Professor Michael Thouless accepted the position of undergraduate program chair. MEAM's new 4x4x8 undergraduate course structure was put in place. In addition, MEAM created a new peer counselor position, filled by ME graduate student, **Scott Partridge (BS ME '96)**, to help students better understand the curriculum changes and graduation requirements and serve as an information source as students consider summer internships, career choices, and graduate school programs. The peer counselor is very accessible—students may stop by his office without an appointment.

**MEAM's Graduate Program**, which continued to be **ranked in the top five programs in the country** by *U.S. News and World Report*, nearly completed the restructuring of its new curriculum. Enrollment remained strong and steady, with growth in the Master of Automotive Engineering (MEng Auto) program.

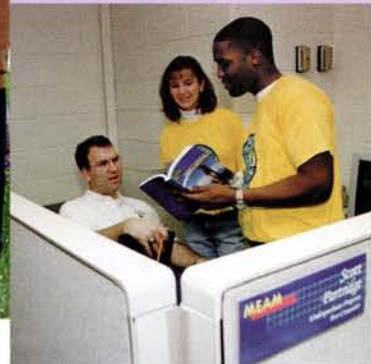
The Graduate Program continued to intensify its efforts to recruit the very best students in the country. It created a new graduate student recruiter position. For the second year in a row, it held a **prospective graduate student weekend**, successfully recruiting nearly 50 percent of those students who attended.

Academic Services Office (ASO) staff members and faculty chairs now share space in an expanded office in GG Brown.



photos: U-M/MEAM CPO / Shekinah Errington

Peer Counselor Scott Partridge talks with MESLB students.



# The Academic Program

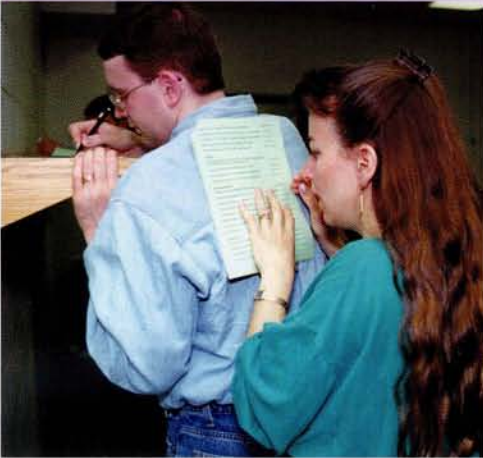
The new undergraduate peer counselor and graduate student recruiter positions were part of an **expansion of the Academic Services Office (ASO)** that took place during 1997-98. A major renovation of the space in 2206 G.G. Brown combined all Undergraduate and Graduate Programs' faculty and staff members in one place. The remodeled space not only has a more open feel, including a larger central area for students, it also allows the staffs to work more closely together.



**T**he Mechanical Engineering Student Leader Board (MESLB) continued to make valuable contributions to MEAM, with the goal of improving communication and fostering a greater sense of community and cooperation among students. The MESLB is comprised of the presidents and/or representatives of MEAM's five student organizations (see below) as well as other

# The Student Experience

Husband and wife graduate students complete surveys as part of Departmental review.



U-M MEAM CPO / Shekinah Errington

student representatives and the Department's administrative associate. One of the MESLB's major activities was to **write and administer a student survey** to be used as part of an overall Department review. Students were asked to complete comprehensive surveys about their educational experiences in MEAM.

Many MEAM students spend time actively involved in **MEAM's student societies and organizations**, which offer many service, academic, professional, and social activities throughout the school year. They include the American Society of Mechanical Engineers (ASME); Pi Tau Sigma (IITΣ/PTS) National Mechanical Engineering Honor Society; Society of Automotive Engineers (SAE);

Underrepresented Minorities in Mechanical Engineering (UMME); and Graduates in Mechanical Engineering (GRIME).

Pi Tau Sigma's U-M Pi Rho Chapter received some national attention this academic year as the **host of the 1997 National Pi Tau Sigma Convention** in October. More than 125 students from 36 chapters across the U.S. attended the three-day annual convention. The keynote speaker was William S. Warren, director of engineering, Delphi Energy and Engine Management Systems, Flint, Michigan.

Below: Pi Tau Sigma's U-M Pi Rho chapter hosted the 1997 National Pi Tau Sigma (IITΣ/PTS) Convention in October 1997.



photos: U-M MEAM CPO / Shekinah Errington



Left: UMME members celebrate the last day of classes by handing out free popsicles and ice cream bars at the annual CoE SpringFest.



**M**EAM's internationally recognized group of faculty continued to create an academic atmosphere dedicated to learning and investigation. In 1997-98, MEAM successfully **recruited two new faculty members** in the area of thermal and fluid sciences, including **Associate Professor Volker Sick**, who joined the faculty in September 1997, and **Assistant Professor Margaret S. Wooldridge**, who will begin in September 1998.

MEAM gratefully acknowledges the dedicated efforts and contributions of **Professor Richard E. Sonntag (BSE ME '56, MSE '57, PhD '61), scheduled to retire** December 1998, after a distinguished career spanning more than 35 years. Sonntag served as Department Chair from 1981 to 1992, earning a strong reputation of exemplary leadership, vision, and commitment.

Several MEAM faculty received outstanding national honors and recognitions during 1997-98. Six MEAM faculty members earned prestigious **Early Career Development Awards from the National Science Foundation (NSF)**, including **Assistant Professors Ellen M. Arruda, William J. Endres, S. Jack Hu (MSE '86, PhD '90), Liwei Lin, Huei Peng, and Ann Marie Sastry**. **Sastry** was also one of 60 researchers selected to receive the **second annual Presidential Early Career Awards for Scientists and Engineers (PECASE)**, the highest honor bestowed by the U.S. government to outstanding scientists and engineers beginning their careers.

*Professor Richard E. Sonntag was scheduled to retire after a distinguished career of more than 35 years.*



U-M MEAM CPO / Rodney Hill

## MEAM's Acclaimed Faculty...



*Vennema Professor of Mechanical Engineering and Applied Mechanics, Albert (Al) B. Schultz, is an internationally recognized authority in the field of biomechanics.*

MEAM faculty members were involved in a wide range of **groundbreaking research and activities** in the Department's major centers and in their individual laboratories. **Some highlights include:**

MEAM completed a move of all its machining research activities into a **new Integrated Manufacturing Systems Laboratory (IMSL) in the Herbert H. Dow Building**. The NSF Engineering Research Center for Reconfigurable Machining Systems (ERC/RMS), NSF Industry/University Cooperative Research Center (I/UCRC), S.M. Wu Manufacturing Research Center (WuMRC), and other machining-related projects were relocated to 20,000 square feet of renovated space. The CoE Program in Manufacturing (PIM) was also relocated there. The new facility brings together



research laboratories and equipment that had been housed throughout the G.G. Brown and Electrical Engineering and Computer Sciences (EECS) buildings. It also includes **a testbed that houses state-of-the-art equipment for testing new RMS ideas** and for training industry engineers in how to use RMS techniques and methodologies.

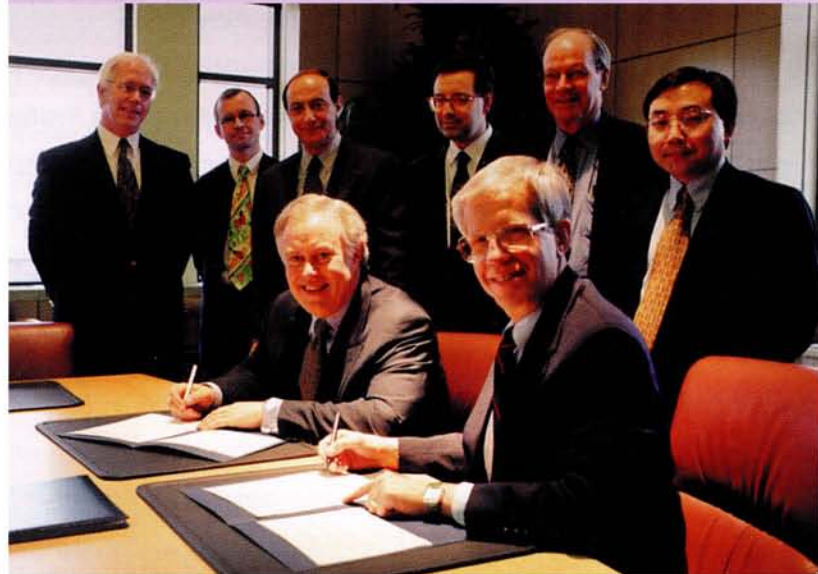
**A new \$5 million GM Satellite Research Laboratory** was established at the University of Michigan. A letter of understanding was signed in January 1998 between the U-M College of Engineering and General Motors Global Research and Development Operations. Co-directors of the new research laboratory will be

**Professor Panos Y.**

**Papalambros** and Dr. Hazem Ezzat, head, Manufacturing and Design Systems Department and chief scientist, Delphi Saginaw Steering Systems.

**Professor Albert B. Schultz** and Senior Research Scientist **James A. Ashton-Miller** received

*MEAM plays a major role in a new GM Satellite Research Laboratory at U-M. A letter of understanding was signed on January 30, 1998, by representatives from the CoE and GM.*



U-M MEAM CPO / Shekinah Errington

## ...and Research Activities

renewal of their National Institutes of Health Institute of Aging Program Project Grant. **The five-year, \$3.2 million grant** funds "Fundamental Aspects of Mobility in Older Adults," which includes three projects, "Multiple Impairments, Task Demands, and Mobility in Older Adults" (project leader: Neil B. Alexander, MD, a geriatrician in the Department of Internal Medicine, U-M Medical Center); "Physical and Psychological Factors in Mobility" (project leader: J. Ashton-Miller); and "Biomechanics of Falls and Fall Arrests in Older Adults" (project leader: A. Schultz).

**Assistant Professor Liwei Lin** received a three-year grant from the Defense Advanced Research Project Agency (DARPA) of the U.S. Department of Defense for developing a **massively parallel micropackaging process to selectively encapsulate, trim, and adjust microelectromechanical (MEMS) devices**. This project is in collaboration with Professor Kensall D. Wise in the Department of Electrical Engineering and Computer Science. Lin also received three NSF grants for developing MEMS post-packaging processes, MEMS sensors for disk/head contact interfacial problems, and integrated mesoscopic electromechanical manufacturing.



MEAM opened a new **Combustion and Synthesis Kinetics and Diagnostics Laboratory** under the direction of **Professor Arvind Atreya**, and **Associate Professor Volker Sick**. They are using a range of advanced laser-based diagnostics and computer simulations to investigate fundamental processes that are related to combustion, especially combustion-generated pollutants, combustion-assisted materials synthesis, chemical fire suppression, and sprays. The laboratory will also serve as a resource for the thermo-fluid science faculty and will be used for graduate student teaching in this area.

**The Center for Laser Aided Intelligent Manufacturing (CLAIM)** received funding to investigate the use of solid free-form fabrication or rapid prototyping to produce three-dimensional components with some of the most difficult engineering alloys to a significant degree of accuracy.

**Professors Jyoti Mazumder** and **Noboru Kikuchi**, **Associate Professor Debasish Dutta**, and Professor Amit Ghosh, Department of Material Sciences (MSE), will apply this technology to produce designed materials. Their work has the potential to revolutionize the field of solid free-form fabrication.

**The NSF Industry/University Cooperative Research Center (I/UCRC) and S.M. Wu Manufacturing Research Center (WuMRC) created a new stamping facility**, thanks to the leadership of the Auto Body Consortium, a group of industrial companies. The Minster Press Co. donated one of its state-of-the-art presses, fully equipped with advanced sensors and controllers contributed by the Helm Co., Data Instruments Co., Rockwell Allen-Bradley Co., and Alliance Co. gave an ôsmartö motor. Allen-Bradley also donated a second press with sophisticated die sets being made by General Motors Corp. In addition, Chrysler Corp. contributed materials analysis and testing equipment.

**The Automotive Research Center (ARC)**, under the leadership of **Professor Panos**

**Y. Papalambros**, received renewal of its funding from

the U.S. Army TARDEC National Automotive Center, with a five-year, \$12.5 million grant.



*Left and above: A new stamping facility with state-of-the-art presses was created at the S.M. Wu Manufacturing Research Center (WuMRC).*



*Professor Jyotirmoy Mazumder hosts External Advisory Board (EAB) members in the Center for Laser Aided Intelligent Manufacturing (CLAIM).*



Professor A. Galip Ulsoy led a tour of the new Integrated Machining Systems Laboratory (IMSL) for EAB members.



U-M MEAM CPO / Shekinah Errington

## MEAM's External Advisory Board (EAB)

MEAM's External Advisory Board (EAB) continued to give substantive input and support to the Department during 1997–98. At its Spring meeting, MEAM welcomed **new Board members Bronce Henderson**, chairman and chief executive officer of DCT, Inc., Detroit, Michigan, and **Michael Korybalski (BSE ME '69, MSE '73, MBA '80)**, chairman and chief executive officer of Mechanical Dynamics, Inc., Ann Arbor, Michigan.

MEAM expressed its deep appreciation to **Kenneth K. Kohrs**, who stepped down this year as EAB Chair. Kohrs, the founding chair of the EAB since its inception in 1993, has provided invaluable guidance and support to MEAM. He is vice president of the Large and Luxury Car Vehicle Center for Ford Motor Co., Dearborn, Michigan. EAB member **Eugene De Fouw (BSE ME '69)**, president of the De Fouw Corp., in Camas, WA, succeeds Kohrs as EAB Chair.

### MEAM Moves Forward

As MEAM experienced many exciting accomplishments during the 1997–98 school year, it continued to plan for future growth and development. It undertook

# MEAM's External Advisory Board

**an extensive Departmental Review**, including input from an Internal Self-Assessment Committee and an External Review Committee. Both committees—whose members Robert J. Vlasic Dean of Engineering Stephen W. Director appointed—conducted interviews and surveys with faculty, staff, and students.

The Internal Self-Assessment Committee, comprised primarily of MEAM faculty, was formed in January 1998, and submitted an in-depth report of its findings and recommendations to the Dean and the CoE Executive Committee in June. The External Review Committee, which included representatives from other universities and industry, visited MEAM for two days in May 1998.

The Departmental Review coincided with the **decision by MEAM Chair Panos Y. Papalambros not to continue as Chair for a third term**. A MEAM Chair Search Committee was formed in December 1997. A new Chair is expected to be appointed by the Dean during the 1998–99 Academic Year.



# MEAM Supporters Strengthen

July 1, 1997 to June 30, 1998

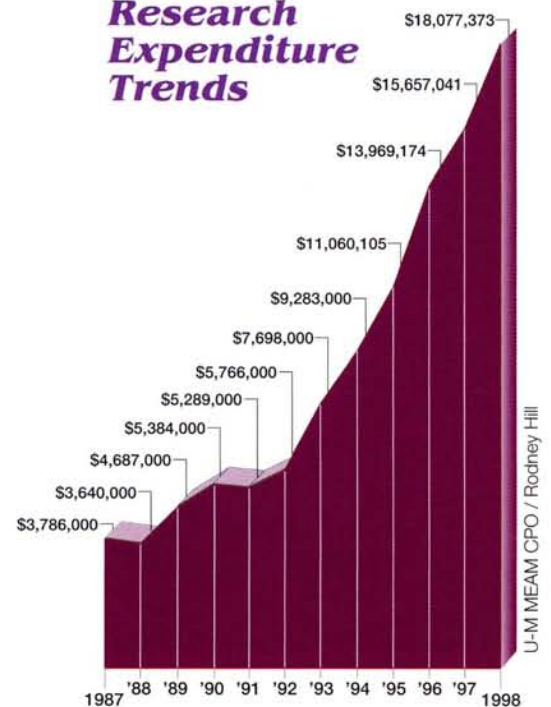
**MEAM gratefully acknowledges** the contributors to our Department who support our ongoing quest for excellence. Their generous investment in MEAM allows us to continue to attract the very best faculty and students and to conduct groundbreaking research.

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## Research Expenditure Trends



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MEAM / Univ of Michigan CoE  
 2250 GG Brown Lab  
 2350 Hayward St  
 Ann Arbor MI 48109-2125

*You can ensure that your gift will be used by our Department if you make your check payable to: U-M College of Engineering-MEAM.*



# Our Mission of Excellence

## Donor List

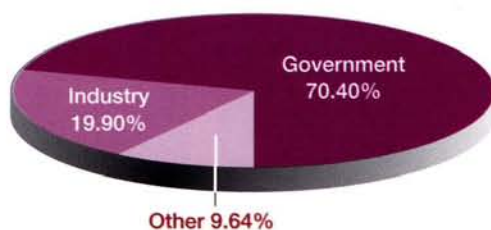
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 Panasonic Industrial Company  
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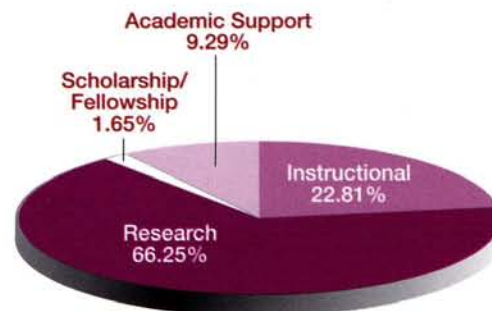
## New Research Funding Distribution by Source \$18.15 million

MEAM's partnerships with government and industry remain strong.



## Total Expenditures Distribution by Use \$18.08 million

MEAM's research expenditures primarily support graduate education.





**MECHANICAL ENGINEERING  
STUDENT LEADER BOARD  
(MESLB)**

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Michelle (Shelly) Sanborn (MEAM  
Planning Committee)  
Hilary Wilson (UMME)

# MEAM Student News

## *Student Leaders*

- Tricia Allam** Treasurer (F97), Pi Tau Sigma (IITΣ/PTS).
- Raegan Barnes** Secretary (97–98), American Society of Mechanical Engineers (ASME).
- John Barrientos** UMEC/Undergraduate Representative (97–98), Underrepresented Minorities in Mechanical Engineering (UMME).
- Fred Barrigar** Vice-President (97–98), Society of Automotive Engineering (SAE).
- Christopher Clarke** President (97–98), Underrepresented Minorities in Mechanical Engineering (UMME).
- Brian Forster** President (F97), Pi Tau Sigma (IITΣ/PTS).
- John Geis** Corresponding Secretary (F97); Vice President (W98), Pi Tau Sigma (IITΣ/PTS).
- Cathy Hedding** Treasurer (F97), American Society of Mechanical Engineers (ASME).
- Michael Hitchingham** President (F97), American Society of Mechanical Engineers (ASME).
- Ryan Kulcsar** Vice-President (97–98), American Society of Mechanical Engineers (ASME).
- Michael McGuire** President (W98), American Society of Mechanical Engineers (ASME).
- Jason Morris** Secretary (97–98), Underrepresented Minorities in Mechanical Engineering (UMME).
- Jaime Roehrig** Vice President (F97); President (W98), Pi Tau Sigma (IITΣ/PTS).
- Ben Sabo** Treasurer (W98), Pi Tau Sigma (IITΣ/PTS).
- Shelly Sanborn** Secretary of Affairs (F97), Pi Tau Sigma (IITΣ/PTS).
- Justin Shriver** President (97–98), American Society of Engineering in Education (ASEE).
- Doug Spearot** Corresponding Secretary (W98), Pi Tau Sigma (IITΣ/PTS).
- Nathan Stott** Secretary of Affairs (W98), Pi Tau Sigma (IITΣ/PTS).
- Hilary Wilson, Jr.** Vice-President (97–98), Underrepresented Minorities in Mechanical Engineering (UMME).
- Michael Yeaster** Treasurer (W98), American Society of Mechanical Engineers (ASME).



## **Undergraduate Student Scholarships and Awards**

**Amoco Foundation Inc. Scholarship**  
*Rachel Bautista*

**David Aspland Scholarships**  
*McAllister Daniel, Jr.*  
*David S. Fedewa*  
*Michael J. Forbis*  
*William B. Kasiske*

**Mildred and Steele Bailey Prize**  
*Rahul Tendulkar*

**William J. Bandemer Scholarships**  
*Amy D. Denault*  
*Jennifer A. Gruits*  
*Jennifer E. Krause*  
*Elizabeth E. Oatley*

**Charles Barth, Jr. Prize**  
*Nader Shwayhat*

**Carlos R. and Gloria W. Bell Scholarship**  
*Daniel J. Giszczak*

**Boeing Scholarship**  
*April M. Nelson*

**Joseph Boyer Scholarship**  
*Mari Endo*

**Carl A. and Isabelle M. Brauer Scholarship**  
*Michael R. Farina*

**Budd Student Aid**  
*Michelle Hahn*

**J.A. Bursley Prize**  
*Amy Van Loon*

**Robert M. Caddell Memorial Undergraduate Scholarship**  
*Robert W. Brown*

**Chrysler Corporation Engineering Scholarships**  
*Tricia M. Allam*  
*Benjamin P. Bulat*  
*Carolyn Dodge*

**CoE Class of 1931 Scholarships**  
*Jason M. DeWeerd*  
*Timothy J. Jacobs*  
*Meenakshi Jain*  
*Andrew Leutheuser*

**CoE Class of 1939 Scholarship**  
*Fernando Jimenez*

**CoE Distinguished Achievement Awards**  
*Gustavo Freitag (dual degree, Aerospace Engineering)*  
*Jeffrey Sanko*

**CoE Opportunity Grants**  
*Jermahl Gray*  
*Kristoffer Hall*  
*Fernando Jimenez*  
*Jason A. Morris*

**CoE and Scholarship Aid**  
*Michelle C. Carpenter*  
*Benjamin D. Libert*

**Lawrence D. Corlett Scholarship**  
*Roberto A. Franco*

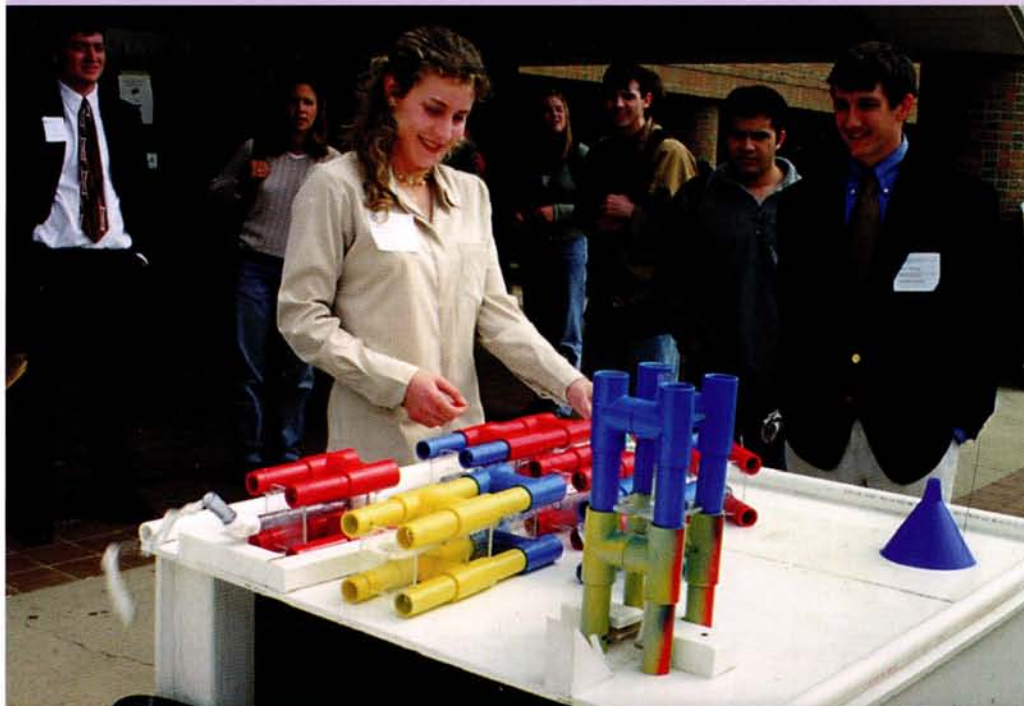
**John Deere Award**  
*Nicolas Minbiole*

**Cornelius and Margaret Donovan Scholarships**  
*Tom B. Campbell*  
*Erin L. Worrell*

**Dow Chemical Scholarships**  
*Giuseppe Cusumano*  
*Timothy J. Jacobs*

**Richard Earhart Scholarship**  
*John P. Barrientos*

*Cathy Hedding (BSE ME '98) demonstrates her team's Conservation of Energy project at the ME 450 Senior Design Expo in April 1998.*



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**Henry Ford II Prize***Suzanne Volkman***General Motors****Corporation Scholarships***Michelle Hahn**Timothy J. Jacobs**Michelle L. Sanborn**Adam M. Szymczak***Herbert J. and Mabel M.****Goulding Scholarship***Timothy Wittrock***Clarence E. Groesbeck****Memorial Scholarships***Jeffrey M. Aneiros**Constantine D. Hatzis**Ryan P. Schrieber***Gene Hirs Scholarship***Brandy M. Taylor***Hiler H. Horton Scholarship***Kevin Storch***Eveleen Harriet Hunt Scholarship***Phillip H. Kang***Information Handling Service****(IHS) Scholarship***Jeffrey Sanko***Donald B. Kennedy****Engineering Scholarship***Isma'il D. Curtis***Martin Luther King, Jr.****Spirit Awards***Roberto Franco**Jaime Roehrig**Rahul Tendulkar**Hilary Wilson***Simon Madlebaum Scholarship***Arthur Geldres***Constance B. Mathias Scholarship***Daniel T. Herrera***McDonnell Douglas Scholarship***Michael Arciniaga***MEAM Distinguished Student Award***Jeffrey Sanko***George H. Miller****Memorial Scholarships***Amy Cazeault**David A. Depto**Albert J. Geldres**David S. Hsai**Jay D. Russell***Minnesota Mining and Manufacturing (3M)****Scholarship/Internships***Justina Cho, Junior**Jaime Roehrig, Senior***A.D. Moore Award***Jonathan Weinert***Ralph Murphy****Engineering Scholarship***Matthew M. Abbott***Burke E. Porter****Foundation Scholarship***Christopher Leja***1997-98 R&B Machine Tool****Company Scholar***Gregory Benz***Hugh Rumler Prize***Deepak D'Souza***Howard W. and Ruth Hoff Sheldon Scholarships***Jason A. Morris**Rodrigo A. Murua**Rafael Tejada***Arthur B. Singleton Prize***Yunn-Shing Ong***Society of Women Engineers (SWE) Outstanding Female Senior Engineer Award***Michelle L. Sanborn***Special Engineering Scholarships (Industry)***Adam R. Cole**Edward T. Downs**Anastasios (John) Hart**Michael Hitchingham**Timothy J. Jacobs**Sandeep Khattar**Jason Lee***General University Scholarships-Engineering***Raegan R. Barnes**Sara M. Bernal**Larry R. Berryhill**Bruno M. Bomis**Daniel S. Czach**Christopher L. Demoff**Katherine L. Eggleton**Michael P. Furmanek**Kevin T. Hatch**Richard R. Hofer**Ross Hunefeld**Ryan M. Kulcsar**Kevin Kwiatkowski**Peter S. Lazarevski**Ana Malusev**Amy S. Meyers**Kevin M. Mulligan**Chat (William) Picken**Nicole Robbins**Jeffry L. Schlutt**Kent P. Spencer**Aleta Sutterfield**Janet L. Swanson**John Swanson**Rafael Tejada**Alicia Vogel**Stuart M. Welden***Jay Wetzel Quality Scholarship for Excellence***Jaime Roehrig*

From left, MEAM students, Roberto Franco, Jaime Roehrig, Hilary Wilson, Kathryn Laberteaux, and Rahul Tendulkar, received CoE 1998 Martin Luther King, Jr., Spirit Awards.





## Graduate Student Scholarships and Awards

**American Society for Engineering Education (ASEE), Student Chapter Outstanding Graduate Student Instructor Award**  
*Amir Oliveira*

**Automobile & Transportation Interiors Award**  
*Andrew Argersinger*

**Robert M. Caddell Memorial Graduate Student Research Achievement Award**  
*Yenkai Wang*

**Honorable Mentions**  
*Jairam Manjunathaiah  
Jonathan Opdyke  
Amy Van Loon*

**CoE Distinguished Achievement Awards**  
*Jianmin Gu  
Michael Leamy*

**CoE Fellowship**  
*Catherine Bauby*

**Lawrence D. Corlett Fellowships**  
*Jonathan Cherry  
Andrew Dyer*

**Dean's Fellowship**  
*Joseph Clement*

**Dupont Mechanical Engineering Fellowship Program**  
*Stanislav Bohac*

**Ford Foundation Fellowship**  
*Kwok Siong Teh*

**Fulbright Scholarship, Technical University of Berlin**  
*Olak Kolk*

**Rollin M. Gerstacker Fellowship**  
*Robert Webbink*

**Graduate Degrees for Minorities in Engineering and Science (GEM) Fellowship**  
*Jason Lee*

**Martin Luther King, Jr. Spirit Award**  
*Kathryn Laberteaux*

**Ivor K. McIvor Memorial Awards**  
*Hanbum Cho  
Todd McDevitt*

**MEAM Departmental Fellowships**  
*Jennifer Liedtke  
Katherine Patek  
Shyam Raghunandan  
Douglas Rosenbaum*

**William Mirsky Memorial Award**  
*Michael Anderson*

**National Science Foundation (NSF) Fellowships**  
*Jeffrey Bischoff  
Nataliya Pukhlik  
David Reyes*

**National Science Foundation (NSF) Traineeships**  
*Matthew Bono  
Chad Darr  
Eric Endsley  
Jorge Sandoval  
Michelle Tokarz*

**Rackham Engineering Fellowships**  
*Paul Alexander  
Bjorn Christensen  
Cin-Young Lee*

**Rackham Merit Fellowships**  
*Sean Berhan  
Charles Hoffier  
Daphne Joachim  
Nnaemeka Nwosu  
Jorge Sandoval  
Paris von Lockette*

**Rackham Outstanding Teaching Assistant Awards**  
*Amir Oliveira  
Elizabeth Smith*

**Rackham Pre-Doctoral Fellowships**  
*Apoorva Agarwal  
Kathryn Laberteaux*

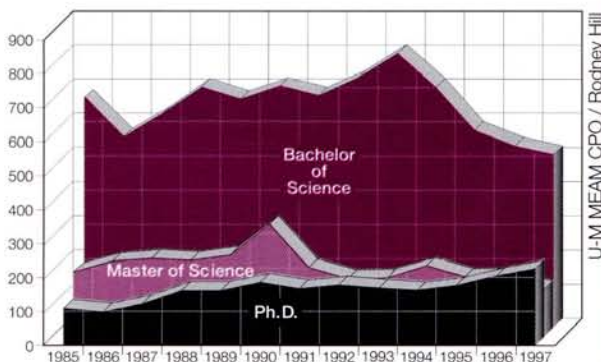
**Regents Fellowships**  
*Michael Brewer  
James Driscoll IV  
William Jarvis*

**Col. Jess G. Vincent Fellowship**  
*Devon Ferreira*

**Whirlpool Fellowship**  
*Brian Rood*

## Academic Year 1997-98

### Student Enrollment



### Enrollment and Degrees Granted

Numbers do not include students jointly enrolled in ME and other disciplines.

#### ENROLLMENT: FALL 1997

Doctor of Philosophy	194
Master of Science in Engineering	110
Bachelor of Science	506
<b>Total</b>	<b>810</b>

#### DEGREES AWARDED: FALL 1997, WINTER 1998, AND SUMMER 1998

Doctor of Philosophy	35
Master of Science in Engineering	102
Bachelor of Science	180
<b>Total</b>	<b>317</b>



# Doctoral Degrees Conferred

## Fall (December) 1997

### ABDULHAMID AL-ABDULJABBAR

*Effects of Pressure Sensitivity on Notch-Tip Fields in Plastics.*

Chair: J. Pan.

### DONG-WOON BAI

*Identification of Scuffing Process-Surface Plastic Deformation and Fracture.*

Chair: K.C. Ludema.

### WALID EMILE HABIB

*Constraint Propagation for Reasoning and Communicating About Sets of Design Possibilities.*

Chair: A.C. Ward.

### YU-CHING HOU

*Fatigue and Fracture Analyses of Automotive and Welded Structures.*

Chair: J. Pan.

### JOOSANG KIM

*Effect of Plastic Deformation on the Oxidation Rate of Steel.*

Chair: K.C. Ludema.

PhD candidate Paris von Lockette presents his research in the constitutive modeling of polymers during a MEAM graduate student seminar.



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### SIGURD A. NELSON II

*Optimal Hierarchical System Design via Sequentially Decomposed Programming.*

Chair: P.Y. Papalambros.

### GEORGE CHRISTOS PAPAGEORGAKIS

*Turbulence Modeling of Gaseous Injection and Mixing in DI Engines.*

Chair: D.N. Assanis.

### JAEIL SUH

*A Study of Gas Phase Fire Suppression Mechanisms in Laminar Counterflow Diffusion Flames.*

Chair: A. Atreya.

### DEREK MICHAEL YIP-HOI

*Methodologies for Computer-Aided Process Planning for Parallel Machining.*

Chair: D. Dutta.

## Winter (May) 1998

### LAURINE LEEP APOILONI

*Computations of Unsteady Pressure in Fluid Flows for Acoustic Analyses.*

Chair: D.R. Dowling.

### EDWARD PAUL BECKER

*An Empirical Model of Cylinder Bore Wear Developed by Simulation.*

Chair: K.C. Ludema.

### SUN-WEN CHENG

*Cavitation and Hysteresis Phenomena in Oil Flow through a Rotating Shaft with Radial Exit Branches.*

Chair: W.-J. Yang.

### HANBUM CHO

*Dynamic Stability of Frictional Slip.*

Chair: J.R. Barber.

### JAEHOON HAN

*Numerical Studies of Drop Motion in Axisymmetric Geometry.*

Co-Chairs: S.L. Ceccio, G. Tryggvason.

### TZE-ON SHAWN HUI

*Application of Multivariate Statistical Methodologies to Body-in-White Assembly Process.*

Co-Chairs: G.D. Herrin, R.A. Scott.

### PRASHANT M. KULKARNI

*Process Planning for the Layer Domain of Layered Manufacturing.*

Chair: D. Dutta.

### M. J. LEAMY

*Influence of Dry Friction in the Dynamic Response of Accessory Belt Drive System.*

Co-Chairs: J.R. Barber, N.C. Perkins.

### CHUAN LI

*Thermoelastic Contact Stability Analysis.*

Co-Chairs: J.R. Barber, M.M. Chen.

### HSING-SHENG LIANG

*Nucleate Pool Boiling on Micro-Graphite-Fiber Composite Surfaces with Applications in Microelectronic Cooling.*

Chair: W.-J. Yang.

### ARNALDO JOE MAZZEI, JR.

*Dynamic Stability of a Flexible Spring Mounted Shaft Driven through a Universal Joint.*

Co-Chairs: A. Argento, R.A. Scott.

### PETER JOSEPH SCHIHL

*Development of Global Mixing, Combustion, and Ignition Models for Quiescent Chamber Direct-Injection Diesel Engines.*

Chair: A. Atreya.

### JONGMIN SHIN

*A Numerical Study on Turbulent Flow and Heat Transfer in Flow Networks.*

Chair: W.-J. Yang.

### FUU-REN TSAI

*Vision Sensing, Modeling, and Control of Laser Weld Pool Geometry.*

Chair: E. Kannatey-Asibu, Jr.

### YENKAI WANG

*Mixed-Mode Fracture in Ductile Materials and Low-Cycle Multiaxial Fatigue Theory.*

Chair: J. Pan.

### JUN ZHANG

*Constitutive Modeling and Optimal Design of Polymeric Foams for Crashworthiness.*

Co-Chairs: N. Kikuchi, V.C. Li.



## Spring/Summer (August) 1998

### **APOORVA AGARWAL**

*Multi-Dimensional Modeling of Natural Gas Ignition, Combustion and Pollutant Formation in Direct Injection Engines.*

Chair: D.N. Assanis.

### **E-JUNE CHEN**

*Analysis of Crescent Former Paper Manufacturing.*

Co-Chairs: N.C. Perkins, W.W. Schultz.

### **HAN-KYOO KIM**

*A Study of NO<sub>x</sub> Production in Sooty Radiating Counterflow Diffusion Flames.*

Chair: A. Atreya.

### **SHYUE-YUH LEU**

*A Finite-Element Limit Analysis for Materials with Pressure Dependent Yield Behavior.*

Chair: W.-H. Yang.

### **WEN-HOU MA**

*Worst-Case Evaluation Methods for Vehicles and Vehicle Control Systems.*

Chair: H. Peng.

### **JAIRAM MANJUNATHAIAH**

*Analysis and a New Model for the Orthogonal Machining Process in the Presence of Edge-Radiused (Non-Sharp) Tools.*

Chair: W.J. Endres.

### **SHINJI NISHIWAKI**

*Optimum Structural Topology Design Considering Flexibility.*

Co-Chairs: N. Kikuchi, P.Y. Papalambros.

### **AMIR ANTONIO MARTINS OLIVEIRA**

*Effect of Particle- and Specimen-Level Transport on Product State in Compacted-Powder Combustion Synthesis and Thermal Debinding of Polymers from Molded Powders.*

Chair: M. Kaviany.

### **EMILIO CARLOS SILVA**

*Design of Piezocomposite Materials and Piezoelectric Transducers Using Topology Optimization.*

Chair: N. Kikuchi.



**Above:** Students, like John Dockstader, spend many hours in the MEAM student machine shops. **Below:** Professor and outgoing Department Chair, Panos Y. Papalambros, talks with future graduate students at the Winter Term 1998 MEAM Prospective Graduate Student Weekend.



photos: U-M MEAM CPO / Shekinah Errington



# Faculty and Staff News

## New Instructional Faculty



Volker Sick

**Volker Sick** Associate Professor (effective 09-01-97), received his doctor of natural sciences (Dr. rer. nat.) degree at the Physical Chemistry Institute of the University of Heidelberg in Germany in 1992. He most recently served as a senior research scientist at the Physical Chemistry Institute in Germany, where he was also the head of the 2D imaging research group. His primary research area focuses on the quantitative analysis of technical combustion processes using laser-based diagnostic techniques.



Ho Sung Lee



Mostafa (Moses) G. Mehrabi



Derek Michael Yip-Hoi

## New Primary Research Staff

**Ho Sung Lee** Assistant Research Scientist (effective 09-01-97), formerly a MEAM Research Investigator.

**Mostafa (Moses) G. Mehrabi** Assistant Research Scientist (effective 01-01-98), formerly a MEAM Visiting Research Investigator.

**Derek Michael Yip-Hoi** (PhD '97) Assistant Research Scientist (effective 01-21-98), formerly a MEAM Research Fellow.

## Promotions

### FACULTY

**Jun Ni** Associate Professor with tenure, to Professor with tenure (effective 09-01-97).

**Christophe Pierre** Associate Professor with tenure, to Professor with tenure (effective 09-01-97).

**Grétar Tryggvason** Associate Professor with tenure, to Professor with tenure (effective 09-01-97).

**Jingxia Yuan** Assistant Research Scientist, to Associate Research Scientist (effective 09-01-97).

### STAFF

**Susan Clair** Office Assistant IV, to Administrative Assistant II (effective 01-01-98).

**Pam Fitzgerald** Academic Secretary IV, to Executive Secretary (effective 12-01-97).

**Murrie Green** Engineering Technician II, to Engineering Technician III (effective 01-01-98).

**Maribel Munguia** Academics Services Secretary III, to Academic Secretary IV (effective 05-01-98).

**Mike Napolitan** Office Assistant IV, to Coordinator, Building Services (effective 01-01-98).



## Retirements

### FACULTY

**Kenneth C. Ludema** (BSE IE '55, MSE '56, PhD '63) Professor, retired (effective 05-31-98 from the MEAM faculty after a distinguished career spanning 35 years as an excellent educator and leading scholar in the field of tribology. He has received several awards, including the 1993 Tribology Gold Medal by the International Tribology Council and MEAM's 1995 Excellence in Research Award. He is the co-author of *Manufacturing Engineering: Economics and Processes*, and the author of the newly released, *Friction, Wear, and Lubrication: A Textbook in Tribology*.

### STAFF

**Duncan Kaufmann** Engineering Technician II, retired after almost twelve years of service with MEAM (effective 01-31-98).

**Beverly Pyle** Academic Secretary III, retired after almost 29 years of service with MEAM (effective 05-01-98).

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Professor Kenneth C. Ludema's latest research in tribology focuses on the dynamics of film growth on sliding parts in engines, films which form from the special constituents in oil and allowing an engine to last well beyond 200,000 miles.



# Faculty and Staff Honors

## Faculty Honors

### **DIONISSIOS (DENNIS) N. ASSANIS**

Professor, received the 1997 Internal Combustion Engineering Division Meritorious Service Award from the American Society of Mechanical Engineers (ASME).

### **JAMES A. ASHTON-MILLER**

Research Scientist, received the American Urogynecology Society (AUS) Best Paper Award for 1997 for his paper, "Patterns of Age-Related Striated Urogenital Sphincter Muscle Loss in the Adult Female Urethra," and the Wissenschaftspreis Award of the German Urogynecology Society, 1997 Annual Meeting, Munich, Germany, for his paper "Morphologic Changes in the Striated Urogenital Sphincter Muscle," co-authored with D. Perucchini, J.O.L. DeLancey, and M. Blaivas.

### **JAMES R. BARBER, C ENG**

Professor, was co-recipient of the 1998 A.F. Davis Silver Medal Award (Structure Design) from the American Welding Society (AWS), with E. Kannatey-Asibu, Jr. He gave the plenary lecture "Thermoelastic Instabilities in Brakes and Clutches," at the 26th National Conference of Italian Association for Stress Analysis (IAS), Catania, Sicily, Sept. 1997.

### **JOHANN BORENSTEIN**

Associate Research Scientist, was awarded the *Discover* Magazine Award for Technological Innovation (Robotics).

### **CLAUS BORGNACKE**

Associate Professor, was selected by the Michigan (Gamma) Chapter of Tau Beta Pi (TBPi) to be their first Professor-of-the-Year.

### **STEVEN L. CECCIO**

Associate Professor, shared the Best Paper Award from the Mechanical Engineering Division of the American Society for Engineering Education (ASEE) for 1998 with G. Tryggvason and D.M. Tilbury.

### **DARIUSZ (DAREK) J. CEGLAREK**

Assistant Research Scientist, was named a Dell K. Allen Outstanding Young Manufacturing Engineer for 1998 by the Society of Manufacturing Engineers (SME).

### **DAVID E. COLE**

Research Scientist, UMTRI; and Joint Appointment as Associate Professor, MEAM, received the 1998 Rene Dubos Environmental Award.

### **MARIA COMNINOU**

Professor, was the recipient of the 1998 Sarah Goddard Power Award.

### **DEBASISH DUTTA**

Associate Professor, was a keynote speaker at the Eighth International Manufacturing Conference, Singapore, Singapore, May 1998.

### **WILLIAM J. ENDRES**

Assistant Professor, received a 1997-98 National Science Foundation (NSF) CAREER Award, as well as the Blackall Machine Tool and Gage Award from the American Society of Mechanical Engineers (ASME-MED). He was also recognized as an Outstanding Reviewer of the Year by the *ASME Journal of Manufacturing Science and Engineering*.

### **RIDA T. FAROUKI**

Professor, was named Professor-of-the-Term by Pi Tau Sigma (PTΣ/PTS) for the Winter Term of 1998.

### **ELIJAH KANNATEY-ASIBU, JR.**

Professor, was co-recipient of the 1998 A.F. Davis Silver Medal Award (Structure Design) from the American Welding Society (AWS), with J.R. Barber.

### **BRUCE H. KARNOPP**

Associate Professor, continued as an Arthur F. Thurnau Professor (1996-99).

### **YORAM KOREN, PE**

Professor, had his endowed professorship renewed as the Paul G. Goebel Professor of Engineering (1993-98; 1998-03).

### **SRIDHAR KOTA**

Associate Professor, won the American Society of Mechanical Engineers (ASME) Leonardo da Vinci Award for 1997.

### **LIWEI LIN**

Assistant Professor, received a 1997-98 National Science Foundation (NSF) CAREER Award (ECS Division).

### **JYOTIRMOY (JYOTI) MAZUMDER**

Professor, continued his U-M CoE endowed professorship as the Robert H. Lurie Professor of Engineering (1996-01).

### **JWO PAN**

Associate Professor, was elected a Fellow of the American Society of Mechanical Engineers (ASME), Aug. 1997.

### **HUEI PENG**

Assistant Professor, received a 1997-98 National Science Foundation (NSF) CAREER Award.

### **CHRISTOPHE PIERRE**

Professor, was selected as a Fellow, Committee on Institutional Cooperation, Academic Leadership Program (CIC/ALP), Sept. 1997.

### **ANN MARIE SASTRY**

Assistant Professor, was presented the National Science Foundation (NSF) Presidential Early Career Award for Scientists and Engineers (PECASE) in Washington, D.C., Nov. 1997. She was the keynote speaker at the WISE Symposium of the Committee on Institutional Cooperation, Ann Arbor, Feb. 1998.

### **ALBERT B. SCHULTZ**

Professor, continued his endowed professorship as the Vennema Professor of Mechanical Engineering and Applied Mechanics (1983-open).



**RICHARD A. SCOTT**

Professor, received the Best Paper Award from the Noise Control and Acoustics Division at the 1997 International Mechanical Engineering Congress and Exposition (IMECE), Dallas, TX, Nov. 1997.

**VOLKER SICK**

Associate Professor, was elected Fellow of the Institute for Environmental Sciences, Engineering, and Technology (IESET) at U-M, June 1998. He was awarded the title "Privatdozent" from the University of Heidelberg, Germany.

**MICHAEL THOULESS**

Associate Professor, was named Pi Tau Sigma (ΠΤΣ/PTS) Professor-of-the-Term for Fall 1997.

**DAWN M. TILBURY**

Assistant Professor, was awarded the American Society of Mechanical Engineers (ASME) Educom Medal for 1997. She also shared the Best Paper Award from the Mechanical Engineering Division of the American Society for Engineering Education (ASEE) for 1998 with S.L. Ceccio and G. Tryggvason.

**GRÉTAR TRYGGVASON**

Professor, shared the Best Paper Award from the Mechanical Engineering Division of the American Society for Engineering Education (ASEE) for 1998 with S.L. Ceccio and D.M. Tilbury. Tryggvason also was the invited plenary lecturer at the 11th Japanese Computational Fluid Dynamics Conference, Tokyo, Japan, Dec. 1997.

**A. GALIP ULSOY**

Professor, had his endowed professorship renewed as the William Clay Ford Professor of Engineering (1996–98; 1998–01). He was awarded the Service Excellence Award by the College of Engineering for 1998.

**WEN-JEI YANG, PE**

Professor, was named an Honorary Member by the Combustion Institute of the Republic of China and elected a Fellow of the Visualization Society of Japan, 1998.

**Staff Honor**

**JANET GRENIER**

Supervisor, Laboratory Services, was a recipient of a CoE 1998 Excellence in Staff Service Award, June 1998.



Assistant Professor Ann Marie Sastry and her husband, Christian Lastoskie, at the White House, with their daughter, Katherine Rose, in November 1997, when Sastry received a Presidential Early Career Award for Scientists and Engineers



# MEAM Departmental Awards

## Alumni Society Merit Award



Christopher, San Mateo, CA

**WILLIAM P. SOMMERS** (BSE ME '55, ME '56, PhD '61), President and Chief Executive Officer of SRI International, for his contributions in the arenas of research, development, and management over the last 40 years. MEAM applauds his expertise in world-wide technology commercialization projects, consulting, and stimulating new areas of cross-disciplinary research between engineering and medicine. He is a former research associate with U-M's Institute of Science and Technology (IST) and a former member of the CoE's National Advisory Committee (NAC).

## Excellence in Research

**ARVIND ATREYA**  
Professor, for his experimental and theoretical research in combustion and combustion-related pollution. His work has made significant contributions to the socioeconomic and environmental knowledge base in pursuit of a more productive, healthful, and sustainable world.

**ELIJAH KANNATEY-ASIBU, JR.**  
Professor, for his prolific research in material processing applications for lasers, as well as intelligent welding systems, and a variety of other manufacturing process issues.

## Excellence in Service

**DAVID E. COLE** (BSE ME '60, BSE M '60, MSE '61, PhD '66) Research Scientist, UMTRI; and Joint Appointment as Associate Professor, MEAM, for the outstanding outreach activities of the Office for the Study of Automotive Transportation (OSAT), and his annual Management Briefing Seminars. He brings great national and international recognition to the Department, College, and University through his authoritative comments on the scientific and cultural issues of the automotive industry.

**DONALD E. GEISTER** (BS AA '57, MSE Aero '63) Research Scientist and Lecturer, Aerospace Engineering; and Joint Appointment as Lecturer, MEAM, for his seminal contributions to the development of computer and information technology at the Department, College, and University. For 25 years, he has been a guiding force in keeping our Department on the technological leading edge. At the same time he has been a mentor and teacher to a generation of students and researchers in design, manufacturing, and instrumentation.

## Excellence in Teaching

**DIONISSIOS (DENNIS) N. ASSANIS**  
Professor, for his outstanding teaching of combustion, fluid mechanics, and heat transfer at both the undergraduate and graduate levels.

**DAWN M. TILBURY**  
Assistant Professor, for her pioneering development of Web-based learning techniques in control systems education.

## Special Recognition

**STEVEN A. GOLDSTEIN** (MS '77, PhD '81) Professor, Orthopaedic Surgery, Medical School; Joint Appointment as Professor, MEAM; Joint Appointment as Professor, Biomedical Engineering; and Joint Appointment as Research Scientist, Institute of Gerontology, for his internationally acclaimed research in tissue engineering, the relationships between bone and soft tissues, and other orthopaedic biomechanical phenomena. His laboratory and technology transfer outreach program continually attracts the highest caliber of researchers.

## Robert M. Caddell Memorial Award

**S. JACK HU** (MSE '86, PhD '90) Associate Professor, received the Faculty Research Achievement Award.

## Excellence in Staff Service

**MICHAEL NAPOLITAN**  
Coordinator of Building Services, for his exemplary support service to the faculty, staff, and students of the Department of Mechanical Engineering and Applied Mechanics.

**DIANNE VAN HOOSEAR**  
Academic Secretary III, for her exemplary support service to the faculty, staff, and students of the Department of Mechanical Engineering and Applied Mechanics.

**KEY TO DEGREES NOTED:**  
U-M-Ann Arbor degrees are listed;  
MEAM alumni's degrees are boldfaced.



# Faculty Professional Activities

July 1, 1997 to June 30, 1998

*For brevity's sake, this list omits Departmental, College, and University of Michigan activities for the faculty and does not include their technical review contributions to authoritative journals and agencies.*

## **ELLEN M. ARRUDA**

**Guest Editor:** *ASME J. Engrg. Mater. and Technology*, 1997–present. **Symposium Co-Organizer:** "Characterization and Modeling of Polymeric Material Systems," Jt. ASME/ASCE/SES Summer Mtg., Evanston, IL, June 1997.

## **JAMES A. ASHTON-MILLER**

**Editor and Executive Committee Member:** *Proc. 10th Intl. Congr. on Mechs. in Med. and Biology*, Honolulu, HI. **Board of Editors Member:** *Clinical Biomechs.*, 1994–present; *Eur. J. Musculoskeletal Research*, 1991–present; *J. Orthop. Res.*, 1992–present.

## **DIONISSIOS (DENNIS) N. ASSANIS**

**Associate Editor:** *ASME J. Engrg. for Gas Turbines and Power*, 1996–99. **Session Organizer:** "Adiabatic and Miller Cycle Engines," SAE Intl. Congr. and Expo., Detroit, MI, Feb. 1997; "New Analytical Methods in Engine Design," ASME-IMECE Fall Tech. Conf., Symp. on "New Analytical Methods in Engine Design," Madison, WI, Sept.–Oct. 1997. **Student Activities Chair:** ASME-IMECE. **Panel Chair:** "Surface Engineering and Tribology," 1997 SAE Intl. Congr. and Expo., Detroit, MI, Feb. 1997. **Executive Committee Member:** ASME-IMECE. **Committee Member:** Advisory Powerplant, SAE; Passenger Car Readers, SAE; Vehicular Heat Exchanger and Heat Transfer, SAE. **Speakers' Group Member:** SAE.

## **ARVIND ATREYA**

**Subcommittee Member:** K-11 Fire and Combustion, ASME. **Ad Hoc Group Member:** Math. Fire Modeling, NIST. **Invited Lecturer:** "Formation and Oxidation of Soot and NO<sub>x</sub> in Diffusion Flames," Harvard College, Oct. 1997.

## **JAMES R. BARBER, C ENG**

**Editor:** *ASME J. Appl. Mech.* **Editorial Board Member:** *J. Thermal Stresses*. **Editorial Advisory Board Member:** *Intl. J. Mech. Sciences*. **Invited Presenter:** "Thermoelastic Effects in Automotive Disc Brakes and Clutches," École Polytechnique, Paris, France, June 1998.

## **CLAUS BORGNACKE**

**Session Co-Organizer:** "Combustion," SAE Passenger Car Conf. **Council Member:** Motor Vehicle, SAE. **Committee Member:** Engine, Passenger Car Activity, SAE.

## **DIANN E. BREI**

**Symposium Chair:** "Adaptive Structures and Material Systems," ASME, 1997. **Conference Session Chair:** Adaptive Structures Forum, AIAA, Long Beach, CA, Apr. 1998; N. Amer. Conf. on Smart Mater. and Structures, SPIE, San Diego, CA, 1997–98. **Organizing Committee Member:** Adaptive Structures Forum, AIAA, Apr. 1998. **Program Committee Member:** N. Amer. Conf. on Smart Mater. and Structures, SPIE, 1996–98. **Committee Member:** ASME Adaptive Structures and Mater. Systems.

## **STEVEN L. CECCIO**

**Committee Member:** ONR Cavitation, 1992–present; Multiphase Flow, ASME, 1992–present.

## **DARIUSZ (DAREK) J. CEGLAREK**

**Symposium Organizer:** "Assembly Modeling and Assembly Systems," ASME-IMECE, Dallas, TX, Nov. 1997. **Session Organizer:** "Process and Product Design Concepts for Quality Improvement," INFORMS '98, Seattle, WA, 1998. **Seminar Co-Organizer:** Fourth Sem. on "Tolerancing and Assembly Modeling," Anaheim, CA, 1998. **Executive Committee Member:** WuMRC, 1995–present. **Invited Participant:** NSF-sponsored Axiomatic Design Wkshp., MIT, Cambridge, MA, June 1998.

## **MICHAEL M. CHEN**

**Review Panel Member:** NSF, 1997. **Site-Visit Team Member:** NSF Univ. of California-Irvine, Feb. 1998.

## **DAVID E. COLE**

**Committee Assistant Chair:** Fundraising, Ann Arbor Hands-On Museum. **Board of Directors Member:** Automotive Hall of Fame. **Board of Trustees Member:** Hope College. **Advisor:** NAC, U.S. Army.

## **MARIA COMNINOU**

**Committee Member:** Univ. Intellectual Property, Amer. Bar Assoc.; Patent Contracts other than Government, Amer. Bar Assoc.; Air Quality Comm., Amer. Bar Assoc.; Superfund and Hazardous Waste, Amer. Bar Assoc.; Air Quality, MI Bar Assoc.

## **DAVID R. DOWLING**

**Session Organizer and Chair:** Special Session "Time Reverse Acoustic Propagation," 133rd Mtg. of the ASA, State College, PA, 1997. **Committee Member:** Underwater Sound Tech., ASA, 1997–present.

### **KEY TO ACRONYMS USED:**

Please refer to the Appendix on page 43.



**DEBASISH DUTTA**

**Guest Editor:** *ASME Transactions J. Mech. Design*. **Associate Editor:** *J. of Mfg. Systems; Mechs. of Structures and Machines*.  
**Conference Chair:** Design Automation, Sacramento, CA, 1997.  
**Program Committee Member:** Symp. "Intelligent Automation and Control," Third World Automation Congr., Anchorage, AK, 1998.  
**Invited Seminar Presenter:** Mech. and Aerospace Engrg. Colloquia, Cornell Univ., Nov. 1997; Univ. of California-Irvine, Dec. 1997; Arizona State Univ., Jan. 1998; Rutgers Univ., Feb. 1998.

**WILLIAM J. ENDRES**

**Symposium Co-Organizer:** "Quality of Traditionally Machined Surfaces-Modeling, Analysis and Measurement," ASME-IMECE, Dallas, TX, Nov. 1997; "Engrg. Mechs. in Mfg. Processes and Maters. Processing," Sessions on Metal Cutting Processes, Jt. ASME/ASCE/SES Summer Mtg., Evanston, IL, June 1997; "Reconfigurable Products, Services, and Manufacturing," ASME-IMECE, Dallas, TX, Nov. 1998.

**ROBERT D. ERVIN**

**Research Referee:** Public Good Science Fund of New Zealand. **Coordinating Council Member:** ITSA.

**RIDA T. FAROUKI**

**Activity Group Vice Chair:** Geometric Design, SIAM, 1993-present.  
**Invited Speaker:** Fourth Intl. Conf. "Mathematical Methods for Curves and Surfaces," Lillehammer, Norway, 1997.

**DONALD E. GEISTER**

**Chair:** Greenfield Coalition, Focus: HOPE. **Committee Member:** Greenfield Coalition Systems and Methodology.

**STEVEN A. GOLDSTEIN**

**Executive Committee Member:** U.S. Natl. Comm. of Biomechs., 1993-present; ASME-BIO, 1989-present. **Subcommittee Member:** Orthopaedic Basic Science Evaluation, 1995-present.

**KARL GROSH**

**Co-Editor:** with N.C. Perkins, *Computational Methods in Dynamics and Acoustics*, 16th ASME Conf. on Mech. Vibration and Noise, CD Vol., Sacramento, CA, Sept. 1997 (edited volume).

**SCOTT J. HOLLISTER**

**Editorial Board Member:** *Computer Methods in Biomechs. and Biomed. Engrg.*

**GREGORY M. HULBERT**

**Editor:** *ASME-PVP Newsletter*. **Associate Editor:** *Mechs. of Structures and Machines*. **Editorial Board Member:** *Finite Elements in Analysis and Design*. **Committee Vice-Chair:** Computing in Appl. Mechs., SME-AM; Computer Technology, ASME-PVP.

**ELIJAH KANNATEY-ASIBU, JR.**

**Executive Committee Chair:** ASME-ME.

**MASSOUD KAVIANY**

**Associate Editor:** *ASME J. Heat Transfer*, 1996-present. **Committee Chair:** Theory and Fundamental Research, ASME-HT, 1995-present.

**NOBORU KIKUCHI**

**International Advisory Committee Member:** IACM, 1992-present. **Executive Committee Member:** Computational Mechs., SES, 1981-present. **Committee Member:** Computing in Appl. Mechs., ASME, 1981-present; Math. Methods, ASCE-EM, 1982-present.

**YORAM KOREN, PE**

**Editorial Board Member:** *SME J. Mfg. Systems*, 1986-present; *Proc. CIRP Intl. Sem. on Mfg. Systems*, 1991-present. **Session Chair:** Scientific and Tech. Comm., 47th Annl. CIRP Gen. Assembly, Tianjin, China, Aug. 1997.

**SRIDHAR KOTA**

**Invited Lecturer:** Mech. Engrs. Sem. Series, Ohio State Univ.

**LIWEI LIN**

**Seminar Editor:** *Proc. Micro-Electro-Mech. Systems (MEMS)*, ASME-IMECE, 1997. **Call for Papers and Proceedings Organizer:** MEMS Symp., 1998 ASME-IMECE, Anaheim, CA, Nov. 1998. **Symposium Co-Organizer:** "Micro-Mechanical Systems," ASME-IMECE, Dallas, TX, Nov. 1997. **Panel Chair:** MEMS, ASME-DSC, 1997-present. **Committee Chair:** Establishing a New MEMS Div. in ASME, 1997-present. **Paper Review Committee Member:** MEMS Symp., ASME-IMECE, 1997-present. **Session Chair:** MEMS Symp., 1997 ASME-IMECE, Dallas, TX, Nov. 1997. **Executive Committee Member:** MEMS Subdiv., ASME, 1998-present. **Invited Lecturer:** Mech. Engrg. Dept., Johns Hopkins Univ.

**KENNETH C. LUDEMA**

**Editor:** *J. Wear* (N. Amer. Region). **Committee Chair:** Publication, ASME-TRIB, 1997-present.

**JYOTIRMOY (JYOTI) MAZUMDER**

**Editor-in-Chief:** *J. Laser Application*. **Editorial Board Member:** AIP. **Board of Governors Member:** LIA. **Advisory Board Member:** Lasers and Electro-Optics, Chapman and Hall.

**DAVID W. MEAD**

**Editor:** *J. Polymer Plastics Technology and Engrg.*, 1997.

**HERMAN MERTE, JR., PE**

**Advisory Committee Member:** Engrg. Curriculum-State of MI, Board of Professional Engrs., 1989-present.

**JUN NI**

**Editor:** *ASME-ME Newsletter*. **Associate Editor:** *SME J. Mfg. Systems*. **International Editorial Board Member:** *Coordinate Measuring Machines and Systems*. **Organizing Committee Member:** Fourth Annl. Symp. on Frontiers of Engrg., 1998. **Member:** Focus: HOPE; Greenfield Coalition for Mfg. Edu.



## **JWO PAN**

**Associate Editor:** ASME J. Pressure Vessel and Technology.  
**Symposium Organizer:** Sheet Metal Forming, ASME-IMECE, 1997.  
**Workshop Chair:** "Identification of Basic Mechanics and Materials Research Issues in the Automotive Industry," NSF-IMM, 1997.  
**Committee Member:** Fracture Mechs., ASME, 1995–present; Metallic Maters., ASME-MAT, 1996–present; Fabrication and Maters., ASME-PVP, 1996–present; Ferrous Maters., SAE, 1996–present.

## **PANOS Y. PAPALAMBROS**

**Editorial Board Member:**  
*J. Integrated Computer Aided Engrg.*, 1993–present; *J. Artificial Intelligence in Design and Mfg.*, 1987–present; *Intl. J. Engrg. Design*, 1989–present; *J. Structural Optimization*, 1997–present; *J. Engrg. Optimization*, 1992–present; *J. Design Optimization*, 1998–present. **Board of Directors Member:** R&B Machine Tool Co., 1997–98.

## **NOEL C. PERKINS**

**Associate Technical Editor:** ASME *J. Appl. Mechs.* **Co-Editor and Symposium Organizer** with K. Grosh: *Computational Methods in Dynamics and Acoustics*, 16th ASME Conf. on Mech. Vibration and Noise, CD Vol., Sacramento, CA, Sept. 1997 (edited vol.). **Editorial Board Member:** *J. Vibration and Control*. **Symposium Organizer:** "Recent Advances in Structural Dynamics," U.S. Natl. Congr. of Appl. Mechs., Univ. of Florida, June 1998. **Committee Member:** Honors and Awards, ASME.

## **CHRISTOPHE PIERRE**

**Associate Editor:** ASME *J. Vibration and Acoustics*, 1992–present. **Symposium Organizer:** "Mode Localization and Nonlinear Normal Modes," 16th ASME Biennial Conf. on Mech. Vibration and Noise, Sacramento, CA, Sept. 1997. **Advisory Board Member:** ASME-ND, 1994–present. **Committee Member:** Structures and Dynamics, Intl. Gas Turbine Inst., and **Subcommittee Chair,** Honors and Awards, ASME. **Technical Committee Member:** Vibration and Sound, ASME. **Invited Lecturer:** "Nonlinear Modal Analysis of Large-Scale Structural Systems," Università degli

Studi di Roma La Sapienza, Rome, Italy, Nov. 1997; "Localization Phenomena in Imperfect Engrg. Structures," Dept. of Mech. Engrg. Sem. Series, Ohio State Univ., Columbus, OH, Feb. 1998; "Reduced Order Modeling and Efficient Forced Response Statistics Prediction for Mistuned Bladed Disks," Third Natl. Turbine Engine High Cycle Fatigue Conf., San Antonio, TX, Feb. 1998; "Localization Phenomena in Imperfect Engrg. Structures," Dept. of Mech. Engrg. Sem. Series, Pennsylvania State Univ. Park, University Park, PA, Apr. 1998.

## **ANN MARIE SASTRY**

**Symposium Organizer and Chair:** Symp. on "Durability and Damage Tolerance," ASME-IMECE, Dallas, TX, Nov. 1997. **Session Organizer and Chair:** Eighth U.S./Japan Conf. on Composite Maters., June 1998. **Committee Member:** Composites, ASME-MAT; Composite Maters., ASME-AM. **Invited Colloquia Presenter:** Cambridge Centre for Micromechs., Dept. of Engrg., Univ. of Cambridge, May 1998; Dept. of Maters., Univ. of Oxford, May 1998; Mech. and Aerospace Engrg. Colloquia, Michigan Technological Univ., Dec. 1997. **Invited Seminar Presenter:** Univ. of Delaware, Sept. 1997; Dept. of Maters. Science and Engrg., U-M, Oct. 1997; the TMI Mfg. Sem., Ann Arbor, Sept. 1997. **Invited Speaker:** Reception for the NSF PECASE awardees, Washington, D.C., Nov. 1997.

## **ALBERT B. SCHULTZ**

**Editorial Board:** *J. Biomechs.*, 1981–present. **Advisory Panel Member:** Center on Aging, Duke Univ., 1993–present. **Invited Lecturer:** 1998 Louis Alley Lecture, Univ. of Iowa.

## **WILLIAM W. SCHULTZ**

**Faculty Advisor:** Student Chapter, ASME, 1995–present.

## **VOLKER SICK**

*The Eidgenoessische Technische Hochschule:* Zurich, Switzerland, May 1998, as part of an invited visit by ERCOFTAC, a Eur. research collaboration. **Co-Chair:** Biannual Conf. "Towards Clean Diesel Engines," Villigen, Switzerland, May 1998; LACEA, Orlando, FL, Mar. 1998; LACEA Mtg., OSA, Orlando, Mar.

1998. **Invited Lecturer:** "Present and Future Engines for Automobiles V," Engrg. Foundation Conf., San Diego, CA, Oct. 1997.

## **JEFFERY L. STEIN, PE**

**Secretary:** ASME, 1995–1998. **Executive Committee Member:** ASME, 1995–1998. **Committee Member:** Long Range Planning, ASME, 1993–present.

## **MICHAEL THOULESS**

**Associate Editor:** *J. Amer. Ceramic Soc.*, 1990–present. **Invited Lecturer:** "Fracture of Adhesives and Paints," Gordon Research Conf. on Mechs. of Thin Films, Plymouth, NH, June 1998. **Invited Participant:** NAE Third Annl. Symp. on Frontiers of Engrg., Irvine, CA., Sept. 1997.

## **DAWN M. TILBURY**

**Mailing List Coordinator:** Women in Control, IEEE, Control Systems Society, 1995–present.

## **GRÉTAR TRYGGVASON**

**Associate Editor:** *J. Computational Physics*, 1992–present. **Committee Member:** Multiphase Flow, ASME. **Invited Lecturer:** The 29th Computational Fluid Dynamics Lecture Series, the von Karman Inst. for Fluid Dynamics, Brussels, Belgium, Feb. 1998.

## **A. GALIP ULSOY**

**Technical Editor:** *Trans. Mechatronics*, IEEE/ASME, 1995–present. **Editorial Board Member:** *GSU J. Engrg. and Technology*, Istanbul, Turkey, 1996–present. **Executive Committee Member:** ASME-DSC, 1994–present. **Honors Committee Member:** ASME-DSC, 1992–1997. **Advisory Committee Member:** Turkish Mech. Engrg. Congr., 1997. **Committee Member:** External Proposal Review, Mfg. Research Center, Georgia Inst. of Technology, 1995–present. **Invited Seminar Presenter:** Univ. of Connecticut, Mar. 1998; Georgia Inst. Technology, Apr. 1998; The Amer. Control Conf., Philadelphia, PA, June 1998.

## **ALAN S. WINEMAN**

**Associate Editor:** *J. Math. and Mechs. of Solids*. **Board of Directors Member:** SES, 1997–2000.

## **XIN WU**

**Deputy Technical Director:** Near Zero Stamping Program, NIST-STP. **Member:** Autobody Consortium.



# Faculty Research Interests

**MEAM  
INSTRUCTIONAL  
FACULTY**  
1997-1998

	Design and Manufacturing										Dynamics, Systems and Controls									
	Design Methodology and Optimization	Kinematics and Machinery Design	CAD/CAE/CAM and Rapid Prototyping	Electromechanical Systems and MEMS	Forming and Net Shape Manufacturing Processes	Assembly and Joining	Machining Processes	Machine Tools	Process Control and Monitoring/Diagnostics	Manufacturing Systems	Structural Dynamics, Vibrations, and Acoustics	Multi-Body Dynamics	Nonlinear Dynamics	Biomechanics	Kinematics and Robotics	Sensing and Signal Processing	Modeling and Identification	Control Systems	Vehicle Dynamics and Control	Electromechanical Systems
Akhavan, Rayhaneh				○																
Arpaci, Vedat S.																				
Arruda, Ellen M.																				
Assanis, Dennis N.	○																			
Atreya, Arvind																				
Barber, James R.																				
Borgnakke, Claus																				
Brei, Diann E.	●	●	○	●	○		○	○	○	○	●			●	●				●	
Bridges, Michael M.										○	●		●	○	●	●	○			
Ceccio, Steven L.												○								
Chen, Michael M.																				
Comninou, Maria																				
Dowling, David R.				○						●	○	○								
Dutta, Debasish			●	○	○					○										
Endres, William J.						●	●	○	○	○					●	○				
Farouki, Rida T.		○	●				○							○						
Grosh, Karl										●	●	●	●		●	●		●	●	
Holmes, John W.	○	○			○															
Hu, S. Jack	○		○		●	●		●	●					○	●					
Hulbert, Gregory M.																				
Kannatey-Asibu, Jr., Elijah				○	●	●		●						●						
Karnopp, Bruce H.										●										
Kaviani, Massoud																				
Kikuchi, Noboru										●	○		●		○		○			
Koren, Yoram			○	●			●	●	●	●				●	●	●	●		●	●
Kota, Sridhar	●	●	○	●		○		●						●	●	●	●		●	●
Kuo, Arthur D.										○	●	○	●	●	●	●	●			
Lin, Liwei				●			○	○	○	○				○	●	○				●
Ludema, Kenneth C.																				
Mazumder, Jyotirmoy			●		●			●	●											
Mead, David W.															●					
Merte, Jr., Herman																				
Ni, Jun				○	○	●	●	●	○					○	○					
Pan, Jwo																				
Papalambros, Panos Y.	●	○	○				○													
Peng, Huei										○					●	●	●		○	
Perkins, Noel C.										●		●			○				●	●
Pierre, Christophe										●		●			○				●	●
Saitou, Kazuhiro	●		○	●		●			●	○				○					●	●
Sastry, Ann Marie													●							
Schultz, Albert B.										○			●	○						
Schultz, William W.																				
Scott, Richard A.										●		●								
Sick, Volker																				
Smith, Gene E.																				
Sonntag, Richard E.																				
Stein, Jeffrey L.										○	●			●	●	●	●			
Thouless, Michael																				
Tilbury, Dawn M.			○					○	●		○	●		●		○	●		○	
Tryggvason, Grétar																				
Ulsoy, A. Galip								●	●	●				○		●	●	●	○	
Wineman, Alan S.													●		●				●	●
Yang, Wei-Hsuin																				
Yang, Wen-Jei												●			○					

● Active in the field, conducts research, teaches courses, contributes papers.  
○ Interested in the field, small research grants, sometimes teaches courses.



**MEAM  
INSTRUCTIONAL  
FACULTY**  
1997-1998

	Materials and Solid Mechanics										Thermal and Fluid Sciences									
	Computational Mechanics	Fatigue and Fracture Mechanics	Viscoelasticity	Elasticity and Contact Mechanics	Plasticity and Metal Forming	Composites	Polymers	Material Selection and Design	Biomechanics	Law and Engineering	Thermodynamics	Fluid Mechanics	Heat Transfer	Combustion	Environmental	Biomedical	Complex Fluids, Phase Change and Porous Media	Manufacturing Turbulence and Flows	Power/Propulsion and Energy Conversion	
Akhavan, Rayhaneh											●	○	○	○			●	○		
Arpaci, Vedat S.											●	●	●				●	○		
Arruda, Ellen M.		○	○	●	○	●		○												
Assanis, Dennis N.									○	○	●	●	○				○	●		
Atreya, Arvind									○	○	●	●	○		○	○	●	●		
Barber, James R.	○	○	●																	
Borgnakke, Claus									●		○	○					●	●		
Brei, Diann E.					○															
Bridges, Michael M.																				
Ceccio, Steven L.										●	○			●	○		●			
Chen, Michael M.									○	●	●	○		○	○	●	○	○		
Comninou, Maria		○																		
Dowling, David R.						●		●			●				●	○		○		
Durta, Debasish																				
Endres, William J.																				
Farouki, Rida T.																				
Grosh, Karl	●		●				●													
Holmes, John W.		●			●			●												
Hu, S. Jack																				
Hulbert, Gregory M.	●				○		●	○												
Kannatey-Asibu, Jr., Elijah																				
Karnopp, Bruce H.																				
Kaviany, Massoud											●	○			●		●	○		
Kikuchi, Noboru	●		○	○	●	○	○	○												
Koren, Yoram																				
Kota, Sridhar																				
Kuo, Arthur D.																				
Lin, Liwei		○				○	○				○			○	○	○				
Ludema, Kenneth C.			○	○																
Mazumder, Jyotirmoy	●				●		●										●			
Mead, David W.						●				●					●	●				
Merte, Jr., Herman									○	○	●						●	○		
Ni, Jun																				
Pan, Jwo		●			●	○														
Papalambros, Panos Y.																				
Peng, Huei																				
Perkins, Noel C.																				
Pierre, Christophe																				
Saitou, Kazuhiro																				
Sastry, Ann Marie	●		●	○		●	●	●	●											
Schultz, Albert B.																				
Schultz, William W.										●			○		●	●	○			
Scott, Richard A.																				
Sick, Volker									○	○	○	●	●	○	○		●	●		
Smith, Gene E.									●									●		
Sonntag, Richard E.									●									●		
Stein, Jeffrey L.																				
Thouless, Michael		●				●	○													
Tilbury, Dawn M.																				
Tryggvason, Grétar										●		○			●	○	●			
Ulsov, A. Galip																				
Wineman, Alan S.			●		○	●	○	○												
Yang, Wei-Hsuin	●			●																
Yang, Wen-Jei				●					○	●	●			●	○	○				

● Active in the field, conducts research, teaches courses, contributes papers.  
○ Interested in the field, small research grants, sometimes teaches courses.



**MEAM PRIMARY RESEARCH SCIENTISTS, JOINT APPOINTMENTS, AND ADJUNCT FACULTY 1997-1998**

	Design and Manufacturing										Dynamics, Systems and Controls									
	Design Methodology and Optimization	Kinematics and Machinery Design	CAD/CAE/CAM and Rapid Prototyping	Electromechanical Systems and MEMS	Forming and Net Shape Manufacturing Processes	Assembly and Joining	Machining Processes	Machine Tools	Process Control and Monitoring/Diagnosis	Manufacturing Systems	Structural Dynamics, Vibrations, and Acoustics	Multi-Body Dynamics	Nonlinear Dynamics	Biomechanics	Kinematics and Robotics	Sensing and Signal Processing	Modeling and Identification	Control Systems	Vehicle Dynamics and Control	Electromechanical Systems
<b>RESEARCH SCIENTISTS</b>																				
Ashton-Miller, James A.			○						○	●		●	○	○	○	○				●
Borenstein, Johann														●	●			○		●
Castanier, Matthew P.									●		○							○		
Ceglarek, Dariusz J.	○	○		○	●			●	●					○	○	●				
Everest, David A.	○														○					
Filipi, Zoran S.																			○	
Landers, Robert G.	○	○		○	○	○	●	●	●	●	○			○	○	○	●			●
Lee, Ho Sung										○					○					
Ma, Zheng-Dong									●		○			●		●			●	
Mehrabi, Mostafa				●				●	●	●								●		
Michelena, Nestor F.	●	○	○													○		○		
Wu, Xin	○			●	●		○													
Yip-Hoi, Derek			●		○		●	●												
Yuan, Jingxia	○	○		●	●	●	●	○	○		○			●	●	●	○			○
Zhang, Hongyan	○			○	●		●					○								
<b>JOINT APPOINTMENTS</b>																				
<b>PROFESSORS</b>																				
Cole, David E.																			○	
Goldstein, Steven A.													●							
Hollister, Scott J.													●							
Jacobs, Stanley J.																				
Taylor, John E.									●		○	○								
<b>RESEARCH SCIENTIST</b>																				
Ervin, Robert D.															●	●	●	●	●	
<b>LECTURER</b>																				
Geister, Donald E.	○		●	○									○		○	○	○			
<b>ADJUNCT APPOINTMENTS</b>																				
<b>PROFESSORS</b>																				
Gillespie, Thomas D.																				●
Malen, Donald E.	○		○								●									●
Orlandea, Nicolae V.	●										●			●						
<b>RESEARCH SCIENTISTS</b>																				
Kuepper, Frank				●				●												
Segall, Stephen B.															●					
Upatnieks, Juris															●					
Ward, Alan C.	●														●					
<b>LECTURER</b>																				
Lenox, Hank	●																			

● Active in the field, conducts research, teaches courses, contributes papers.  
○ Interested in the field, small research grants, sometimes teaches courses.



**MEAM PRIMARY  
RESEARCH SCIENTISTS,  
JOINT APPOINTMENTS,  
AND ADJUNCT FACULTY  
1997–1998**

	Materials and Solid Mechanics											Thermal and Fluid Sciences										
	Computational Mechanics	Fatigue and Fracture Mechanics	Viscoelasticity	Elasticity and Contact Mechanics	Plasticity and Metal Forming	Composites	Processing of Polymers	Material Selection and Design	Biomechanics	Law and Engineering	Thermodynamics	Fluid Mechanics	Heat Transfer	Combustion	Environmental	Biomedical	Complex Fluids, Phase Change and Porous Media	Manufacturing	Turbulence and Multiphase Flows	Power/Propulsion and Energy Conversion		
<b>RESEARCH SCIENTISTS</b>																						
Ashton-Miller, James A.			○					●														
Borenstein, Johann																						
Castanier, Matthew P.																						
Ceglarek, Dariusz J.																						
Everest, David A.										●	○	○	●	○			○	○	●			
Filipi, Zoran S.										●		○	●	○				○	●			
Landers, Robert G.																						
Lee, Ho Sung																						
Ma, Zheng-Dong	○	○					○															
Mehrabi, Mostafa																						
Michelena, Nestor F.	○																			○		
Wu, Xin																						
Yip-Hoi, Derek																						
Yuan, Jingxia																						
Zhang, Hongyan																						
<b>JOINT APPOINTMENTS</b>																						
<b>PROFESSORS</b>																						
Cole, David E.																						
Goldstein, Steven A.																						
Hollister, Scott J.																						
Jacobs, Stanley J.											●								○			
Taylor, John E.																						
<b>RESEARCH SCIENTIST</b>																						
Ervin, Robert D.																						
<b>LECTURER</b>																						
Geister, Donald E.																						
<b>ADJUNCT APPOINTMENTS</b>																						
<b>PROFESSORS</b>																						
Gillespie, Thomas D.																						
Malen, Donald E.																				○		
Orlandea, Nicolae V.																						
<b>RESEARCH SCIENTISTS</b>																						
Kuepper, Frank																						
Segall, Stephen B.																						
Upatnieks, Juris																						
Ward, Alan C.																						
<b>LECTURER</b>																						
Lenox, Hank																				●		

- Active in the field, conducts research, teaches courses, contributes papers.
- Interested in the field, small research grants, sometimes teaches courses.



## Design and Manufacturing

**Area Coordinator:** Jun Ni

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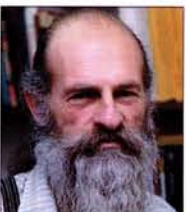
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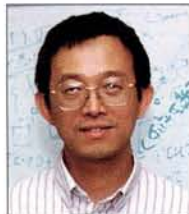
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MEAM's W.E. Lay Automotive Laboratory (at right) is in the heart of North Campus. The nearby diag features the Ann and Robert H. Lurie Tower.



**Below left:** Graduate student Ching-Hui Chiang conducts his research in Professor Ludema's Tribology Laboratory. **Center (l.-r.):** Beverly Smith, Temporary Financial Clerk, and Anna Babbitt, Administrative Associate II, distribute gift poinsettias to MEAM staff before U-M's holiday break. **Right:** MEAM's successful 1997-98 Seminar Series, organized by Assistant Professors Arthur D. Kuo and Ann Marie Sastry, brought prestigious speakers to G.G. Brown almost every Friday. Steven Wainwright of Duke University demonstrates to MEAM students the relationship between nature's materials and locomotion.



## Appendix: Acronyms Key

<b>AIAA</b>	American Institute of Aeronautics and Astronautics	<b>IEEE</b>	International Institute of Electrical and Electronics Engineers, Inc. <i>And its division:</i> <b>-CSS</b> Control Systems Society
<b>AIAS</b>	Italian Association for Stress Analysis	<b>ITSA</b>	Intelligent Transportation Society of America
<b>AIP</b>	American Institute of Physics	<b>LACEA</b>	Laser Applications for Chemical and Environmental Analysis
<b>ASA</b>	Acoustical Society of America	<b>LIA</b>	Laser Institute of America
<b>ASCE</b>	American Society of Civil Engineers <i>And its division:</i> <b>-EM</b> Engineering Mechanics	<b>MIT</b>	Massachusetts Institute of Technology
<b>ASEE</b>	American Society for Engineering Education	<b>NAC</b>	National Automotive Center
<b>ASME</b>	American Society of Mechanical Engineers <i>And its divisions:</i> <b>-AM</b> Applied Mechanics <b>-BIO</b> Bioengineering <b>-DSC</b> Dynamic Systems and Control <b>-FE</b> Fluid Engineering <b>-HT</b> Heat Transfer <b>-IMECE</b> International Mechanical Engineering Congress and Exposition <b>-MAT</b> Materials <b>-ME</b> Manufacturing Engineering <b>-ND</b> Nonlinear Dynamics <b>-PVP</b> Pressure Vessels and Piping <b>-TRIB</b> Tribology	<b>NAE</b>	National Academy of Engineering
<b>AUS</b>	American Urogynecology Society	<b>NIST</b>	National Institute of Standards and Technology
<b>AWS</b>	American Welding Society	<b>NSF</b>	National Science Foundation <i>And its division:</i> <b>-IMM</b> Institute for Mechanics and Materials
<b>CIRP</b>	International Institution of Production Engineering Research (non-English acronym)	<b>ONR</b>	Office of Naval Research
<b>IESET</b>	Institute for Environmental Sciences, Engineering, and Technology	<b>OSA</b>	Optical Society of America
<b>IACM</b>	International Association for Computational Mechanics	<b>ΠΤΣ/PTS</b>	Pi Tau Sigma
<b>ICLASS</b>	International Conference on Liquid Atomization and Spray Systems	<b>SAE</b>	Society of Automotive Engineers
		<b>SES</b>	Society of Engineering Science
		<b>SIAM</b>	Society of Industrial and Applied Mathematics
		<b>SME</b>	Society of Manufacturing Engineering
		<b>SOR</b>	Society of Rheology
		<b>SPE</b>	Society of Plastics Engineers <i>And its division:</i> <b>-ANTEC</b> Annual Technical Conference
		<b>SPIE</b>	Society of Photo-Optical Instrumentation Engineers, International Society for Optical Engineering
		<b>TBIT</b>	Tau Beta Pi
		<b>TMI</b>	Tauber Manufacturing Institute
		<b>WISE</b>	Women in Science and Engineering
		<b>WuMRC</b>	S.M. Wu Manufacturing Research Center



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### COVER PHOTOS

**Outside Back Cover (l. to r.):** U.S. Senator Spencer Abraham at the dedication of the Integrated Manufacturing Systems Laboratory (IMSL); Professor Christophe Pierre greets prospective graduate students; North Campus in springtime.

*photo credits: U-M MEAM CPO / Shekinah Errington*

**Outside Front Cover (l. to r.):** External Advisory Board (EAB) members, from left, Eugene A. De Fouw, Roger L. McCarthy, and Kenneth K. Kohrs (seated); J.W. Rossow, marshall, leads W98 undergraduates at the May CoE commencement.

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**Inside Back Cover:** U-M North Campus scenes.

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**Above:** Thanks to MEAM's External Advisory Board (EAB) for another great year of invaluable insight and consultation. Members at the Fall '97 EAB Meeting included (l.-r.) James G. Samra, Eugene A. DeFouw, Roger L. McCarthy, Richard T. Heglin, Carroll J. Haas, Sr., Hugo Pomrehn, George S. Springer, and seated, outgoing EAB Chair, Kenneth K. Kohrs, and MEAM Professor and outgoing Chair Panos Y. Papalambros. Also, not pictured: Robert J. Buckler.





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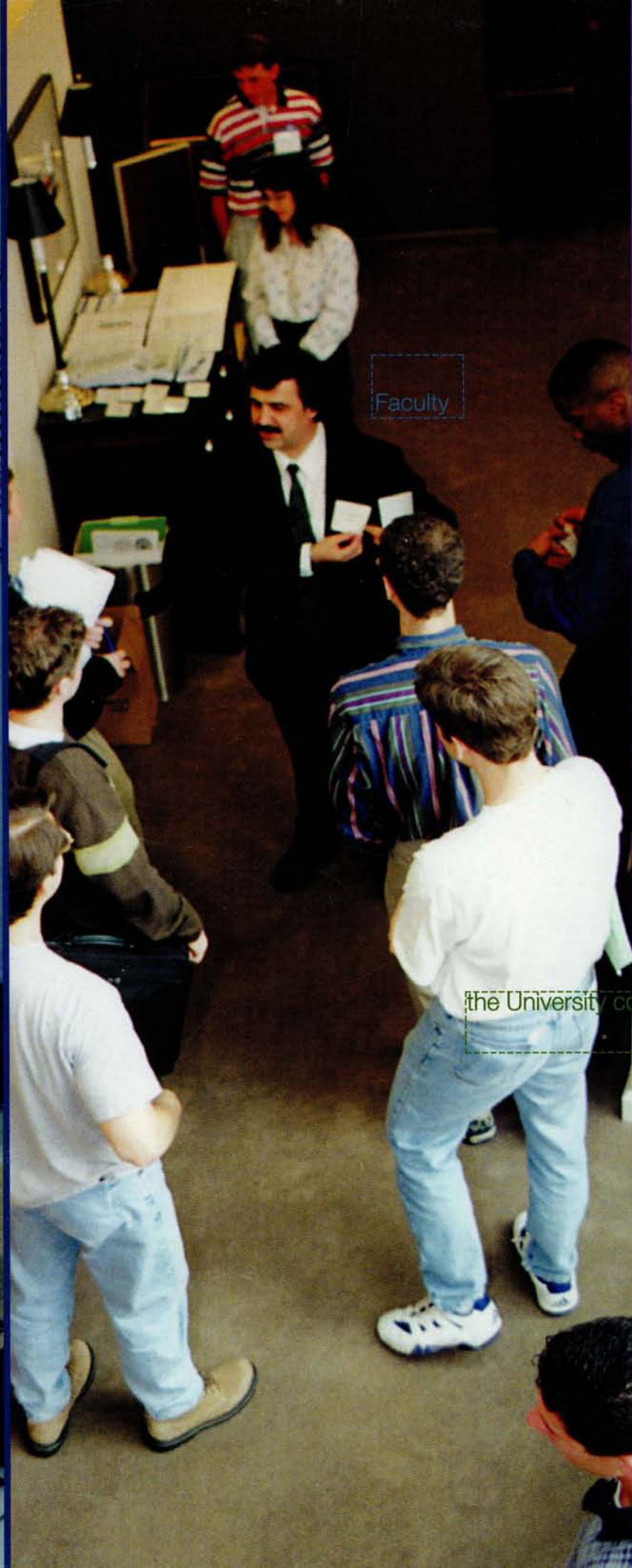
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