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ME-EM 2008 Annual Report

Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University

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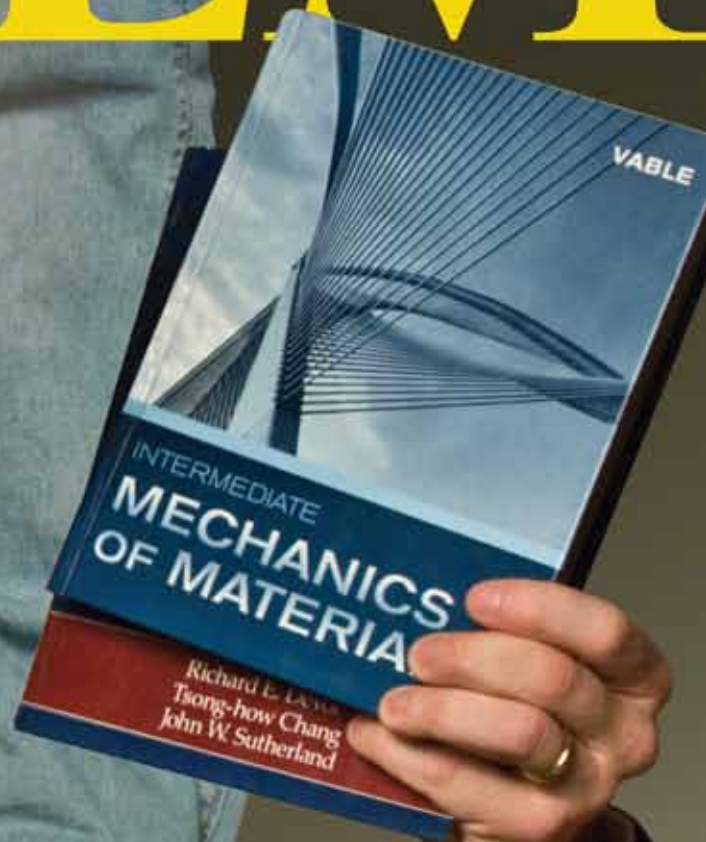
ME-EM

MECHANICAL
ENGINEERING

ENGINEERING
MECHANICS

2008

ANNUAL
REPORT



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ON THE COVER:
ME-EM Professor Dr. Jeff Allen (see p. 2) considers engineering education to be a balancing act

Message From the Chair



Sir Isaac Newton once wrote, “If I have seen further, it is by standing on the shoulders of giants.” Here in the ME-EM Department, we have enjoyed a great deal of success, always mindful of the fact that our present triumphs are only possible because of the hard work of those who have come before—our personal giants. It is with gratitude to our predecessors and pride in our current ME-EM community that I present this year’s annual report.

In the following pages, you will find the inspiring stories of our students, faculty, and staff, all of whom are doing their part to build the foundation for the next generation of mechanical engineers at Michigan Tech and worldwide. They are challenging convention to create solutions that will have an impact across cultural, economic, and geographical boundaries.

As individuals and as a department, we cross traditional boundaries in order to expand the role of mechanical engineering worldwide. This year, I am pleased to announce the creation of the Peace Corps Masters International Program (PCMI) in Mechanical Engineering. The program, which is the first and only one of its kind, will provide students and faculty with the opportunity to increase the influence of mechanical engineers in the farthest reaches of the planet.

In the ME-EM Department, we stress the importance of educational experiences across a range of venues: the classroom, the laboratory, in the field, and on the job. We are unique in that we conduct our industry-leading research through our students, so that they may benefit from hands-on experience early in their academic careers. Our faculty have created a legacy of classroom education, while programs like PCMI, Senior Design, and Enterprise programs offer project-based experience in a range of applications and settings. As our research grows, our efforts are equally directed toward maintaining a tradition of unparalleled education at all levels, from undergraduate to post-doctoral.

As you read through this annual report, I invite you to reflect upon the ways in which your own education shaped your professional development, and respond with suggestions and criticisms. As always, we welcome your feedback, participation, and support.

William W. Predebon

William W. Predebon
Professor and Department Chair

Research Overview

RESEARCH GROUPS

The 2008-2009 academic year is momentous for the ME-EM Department; it marks the end of our three-year research group experiment. In late spring, the faculty will vote to keep or modify the reorganized structure.

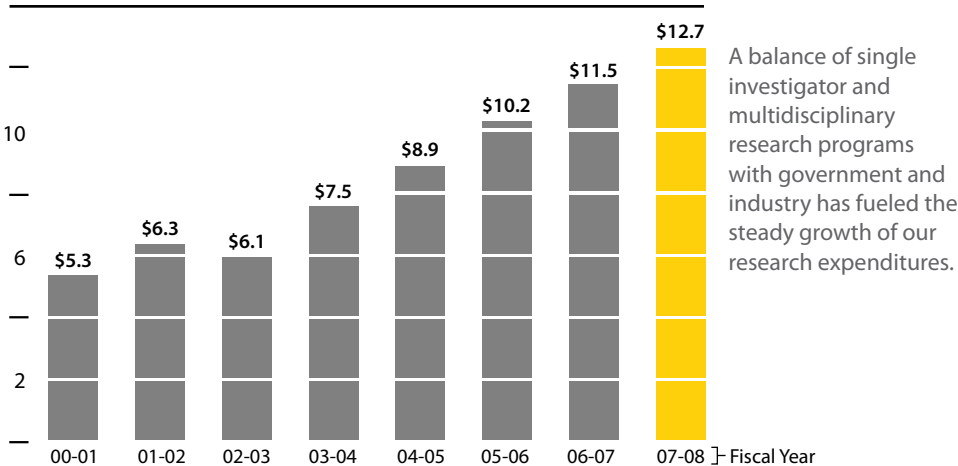
The ME-EM Department has long been known for a spirit of collegiality and collaboration, and it is my belief that the new structure reinforces this tradition. In support of the new research groups, we have focused our hiring strategically to increase the breadth and depth of expertise at Michigan Tech. One of the expected outcomes of this new research group structure was increased participation between universities, government labs, and industry. Some exciting progress in this arena has been made by ME-EM faculty member Dr. L. Brad King, who received funding to pursue an Industry/University Collaborative Research Center (I/UCRC). Research is a team effort; interdisciplinary work and cooperation are paramount to our success and growth.

RATINGS CONTINUE TO RISE

As they have over the past five years, our graduate and undergraduate programs continue to be ranked among the top in the nation. The 2008 U.S. News & World Report: America's Best Colleges ranked our undergraduate program 22nd, and the 2009 U.S. News & World Report: America's Best Graduate Schools ranked our graduate program 48th in the nation, both among doctoral-granting mechanical engineering departments—our best rankings ever. We have been in the top eight universities nationwide for BSME degrees granted for 25 consecutive years. Our Phase I Building for the Future Campaign invested \$3.4 million in 2000-2002 in undergraduate education laboratories, equipment, and learning facilities. Our Phase II Endowing Excellence Campaign, which began in 2003, has a goal of \$54 million by 2012 (also a part of the University Capital Campaign), has raised \$25 million in endowments mainly through planned gifts.

As always, our students are a source of great pride, continuing to demonstrate initiative and innovation. Our Senior Design Team 19 has undertaken a grain processor design project that will affect the lives of people in the most remote parts of Africa (see p. 8). To further the development of environmentally-friendly engine design, the ME-EM Department will host the 2009 SAE Clean Snowmobile Challenge with the Keweenaw Research Center March 16-21, 2009, as we have for the past six years. In every aspect of their academic and extracurricular involvement, ME-EM students display dedication, resourcefulness, and responsibility.

Research Expenditures (in millions)



MISSION

Prepare engineering students for successful careers

VISION

Be a nationally recognized mechanical engineering department that attracts, rewards, and retains outstanding students, faculty and staff—be a department of choice nationally

EXECUTIVE COMMITTEE

Dr. Jason R. Blough
Design and Dynamic Systems Area Director

Dr. John G. Gershenson
Manufacturing and Industrial Area Director

Dr. Tammy L. Haut Donahue
Solid Mechanics Area Director

Dr. Jeffrey D. Naber
Energy Thermofluids Area Director

Paula F. Zenner, M.S.
Director of Operations and Finance

Dr. Craig R. Friedrich
Associate Chair and Director of Graduate Studies

Chuck D. Van Karsen, M.S.
Associate Chair and Director of Undergraduate Studies

Dr. Gordon G. Parker
Research Director

Dr. William W. Predebon
Department Chair

RESEARCH GROUP DIRECTORS

Dr. Craig R. Friedrich
Multiscale Sensors & Systems

Dr. Tammy L. Haut Donahue
Mechanics of Multiscale Materials

Dr. L. Brad King
Space Systems

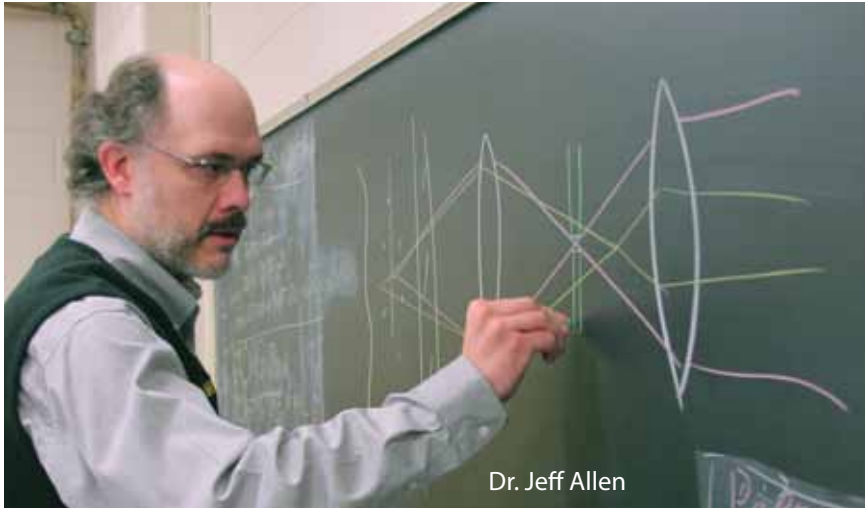
Dr. Jeffrey D. Naber
Advanced Power Systems

Dr. Sheryl A. Sorby
Engineering Education Innovation

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Dr. Jeff Allen

Research As Education

HANDS-ON ENGINEERING

Jeff Allen

NSF CAREER Award

ME-EM Assistant Professor Dr. Jeff Allen aims to characterize two-phase flow at the microscale level. With a 2008 National Science Foundation CAREER Award, a five-year grant totaling \$400,588, Allen and his research team seek to expand the understanding of microscale fluid mechanics. The grant will be used to develop instrumentation that will measure and predict flow thicknesses in capillary systems, and will continue Allen's groundbreaking two-phase flow research.

The project ventures into unexplored territory; the behavior of two-phase flow at this scale is not understood, but plays an important role in systems like boilers, condensers, and fuel cells. "In capillary systems that involve very narrow tubes with simultaneous gas and liquid flowing, there is a thin film on the wall of each channel; this film governs the behavior of the entire system," said Allen. In order to better engineer such systems, researchers must first develop a way to understand, measure, and predict the behavior of the film.

Flow characterization is a significant challenge; films are approximately 0.5 mm thick and often change flow regimes rapidly. To record accurate measurements, Allen and his team will use high-speed cameras and confocal microscopy, allowing them to focus on points as small as 0.00001 inches. The research results will be used to create design tools to improve the fluid management of systems like fuel cells, microelectrical-mechanical systems, and space-based processing.

Allen involves students directly in the research and development process to create a broader understanding of microscale devices and fuel cells. The NSF CAREER award will support two full-time PhD students, and the resulting technology will be used by eight graduate students and three undergraduate students in their research. Allen will also use the research results to create a module for the Michigan Tech Summer Youth program to introduce junior high and high school students to interfacial instabilities and capillary phenomena, using everyday objects such as magic markers and soap bubbles.

Jeff Naber

Flex Fuels, Flexible Controls

Jeff Naber is putting more flex into flexible fuel engines; he aims to allow drivers to mix fuels without sacrificing performance or generating excess emissions. Naber is the principal investigator of a \$1.4 million project that will result in improved models and controls for maximal efficiency with minimal emissions across the spectrum of flexible fuel mix ratios.

The grant, which was awarded in November of 2008 by the Michigan Public Service Commission as part of the Michigan Energy Efficiency Grant program, includes funding for two years of research. With his research team, Naber plans to achieve increased efficiency by optimizing the power train design and controls; areas of investigation will include combustion optimization, crank-start hydrocarbon reduction, and engine simulation.

One of the biggest problems with hybrid flex fuel engines, said Naber, is the injection of different fuels that have dramatically different properties. "We will study a specially designed, direct injection engine to examine and manage the efficiency of the varying optimal fuel-air ratios for a range of



Dr. Jeff Naber

automotive fuels, which will make a dramatic difference in the ability to meet EPA emissions standards,” he said. “Even during the first few crank rotations at startup, when it’s possible to get a burst of hydrocarbons, we will be modifying cam angles and fuel pump behavior to minimize the complete drive cycle emissions.”

Michigan Tech students will work directly with project investigators to develop the technology, which will eventually be used by General Motors to build fuel-efficient, clean hybrid vehicles. The grant will support nine graduate students and three undergraduate students, allowing hands-on experience in emerging engine technologies.

Co-investigators of the project will examine various aspects of engine development, from simulation, modeling, variable compression, and experimental techniques. The research team includes ME-EM professors Donna Michalek, John Beard, Seong-Young Lee, Scott Miers and Abhijit Mukherjee, Keweenaw Research Center Director Jay Meldrum, and Advanced Power Systems Research Center Staff Engineer Jeremy Worm.



Reza Shahbazian Yassar

NSF Research Instrumentation Grant

The ME-EM Department has gained a new set of eyes for nanoscale measurement. With a new electron microscopy system, Assistant Professor Dr. Reza Shahbazian Yassar is enhancing education and research through visualization and measurement.

Shahbazian Yassar has been awarded an NSF Major Research Instrumentation grant for an in-situ electrical-force nanoprobing system that will enable material scientists and engineers to observe changes in the internal structure of novel materials under the application of external forces and voltages. “The system is the first of its kind in the nation, and will provide many opportunities for Michigan Tech researchers to establish collaborations with other universities and to increase nanotechnology industry involvement,” he said.

The state-of-the-art system consists of a newly designed side-entry specimen holder that measures atomic force microscopy (AFM) and scanning tunneling microscopy (STM) inside Michigan Tech’s existing transmission electron microscope (TEM). The combination of AFM and STM will enable researchers to see nanoscale features such as carbon nanotubes and to measure electrical properties and strength of nanoscale materials; this clearer understanding of nanoscale properties will be used in developing novel and sustainable materials.

The AFM/STM-TEM system will also be used in undergraduate and graduate education; students will be able to observe various nanomechanisms that are not visible without the new instrumentation, including the deformation of



Dr. Reza Shahbazian Yassar

individual cellulose nanocrystals. “The system allows simultaneous imaging and experiments at the nanoscale, with the whole process recorded on video for classroom use,” said Shahbazian Yassar. His four PhD students will use the instrumentation to support their research, and other faculty and graduate students have also planned research activities around the AFM/STM-TEM capabilities.

The educational benefits of the system extend beyond the university level; as part of the grant, Dr. Shahbazian Yassar and co-investigators Dr. Yoke Khin Yap, Dr. Patricia Heiden, Dr. Yun Hu, and Dr. Greg Odegard, have also planned extensive outreach activities for grades K-12, including students who are traditionally underrepresented in the sciences. These events will expose students to cutting-edge scientific discoveries in nano-science and engineering.



Graduate Research

EDUCATION FOR THE LONG HAUL

Dr. John Johnson believes in a “taking responsibility” style of graduate education, in which the professor acts as a guide rather than a micro-manager. A firm believer in self-starting, he expects students to define their own research objectives and test plans, coming to him for feedback on defined approaches. This method, he says, encourages students to think for themselves, dig into the material, and learn from their mistakes. “I’m demanding, and I believe that this method is an effective educational model that serves students well in industry and academia,” he said. “Companies and universities are looking for employees who are proactive, employees that will keep the research or development projects moving.” He believes in a team approach to research, and has regularly involved other faculty members in his projects.

Hard work notwithstanding, students clamor to work under Johnson, eager to learn from his decades of

knowledge and expertise. During his long and prolific research career and seven years as the ME-EM Department Chair, Johnson used the same approach that made him a successful educator. He arrived at Michigan Tech in 1970, after two years serving as a project engineer in the U.S. Army Tank Automotive Center and over four years as the Chief Engineer, Applied Engine Research at International Harvester Co. During his years in the ME-EM Department, Johnson has added to the knowledge base of diesel engines and leveraged the discoveries of his predecessors to carefully plan and fund numerous groundbreaking findings as a result of his research.

Diesel Particulate Filter Research
One of Johnson’s major contributions to diesel engine research was linking the exhaust gas measurements to the actual conditions in the exhaust gas system. Because exhaust gas sampling takes place after gases have

traveled down the pipe, some of the compounds transfer to adsorptive states onto the carbonaceous particles from the gaseous states. In 1982, Johnson and a graduate student developed a seminal paper that described how to calculate the particulate concentrations in the dilution tunnel based on the exhaust hydrocarbon and particulate measurements in the exhaust.

The paper won the SAE Arch T. Colwell Merit Award, and led to the development of a modeling program to predict the partitioning of hydrocarbons between gas phase and adsorptive states. As a result of Johnson’s research, his team and others in industry were able to improve diesel engine design, leading to emission reductions and increased fuel economy. Johnson’s work is used even today by organizations planning instrumentation and modeling schemes. “Good research takes time,” he said. “The strongest research has staying power.”

With a comprehensive understanding of exhaust gas behavior, Johnson led numerous studies in diesel exhaust after-treatment technologies starting in 1980. Because diesel engines produce particles that represent an environmental risk, particle filters were developed to capture and oxidize them. However, the characterization of the behavior, performance, and control of the diesel particulate filter (DPF) has proved to be a significant challenge. Johnson's team has pursued effective tools for designing effective DPF systems, leading to the development of the MTU 1-D DPF model, a software tool that predicts the mass of diesel particulate matter as it accumulates along the axis of the DPF. The tool is currently being validated by industry research sponsors. A new version, to be published in 2009, will simulate the transient effects of light-off, where diesel fuel is injected upstream of the DPF and oxidizes the retained particles in a process called active regeneration. These filters became standard equipment in 2007 on heavy duty trucks and will soon be deployed on off-highway vehicles.

A Continuing Legacy

Throughout his years of research, Johnson has involved graduate students in every aspect of the process, from planning to execution to presentation. He places special emphasis on the importance of effective oral and written professional communication, saying, "I believe it is important for students to start to become effective communicators, and that this ability can be continually improved through the years of their professional career while doing planning, writing, and speaking. It is equally important that students be strong in both the work and in the sharing of the results." While not all graduate students have appreciated this demanding approach during their busy studies, many have commented to Johnson in subsequent years that it was foundational to their success. Johnson's no-nonsense style has proved bountiful; over the years, he has advised over 80 graduate students to the completion of their theses.

Johnson retired from classroom teaching in 2001, and maintains a significant involvement in both the Michigan Tech community and the worldwide diesel engine research community. A Presidential Professor Emeritus and Research Professor, he continues to co-advise five to six graduate students per year, and collaborates with ME-EM faculty to transfer his knowledge to the next generation of researchers. To further national understanding of diesel engine development, Johnson is active in committees within the Society of Automotive Engineers (SAE), the National Academy of Sciences, the Environmental Protection Agency (EPA), and the American Society of Mechanical Engineers (ASME). He received the ASME Soichiro Honda Medal in 2001, and sponsors the John Johnson Award for Outstanding Research in Diesel Engines, an annual SAE award for best student, industry, or government diesel engine research publication.



With over 200 publications and several patents to his name, Johnson has impacted diesel engine and after treatment design as few others have, contributing to both engine efficiency and emissions control technologies. Like the robust engines he has studied for decades, Johnson continues to work hard and operate effectively.

Career Highlights:

- ME-EM Department Chair, 1986-93
- SAE and ASME Fellow Grade Member
- Served as the SAE Board of Directors from 1982-1985, and proposed the creation of the Engineering Education Board (EEB), which is still in existence today.
- Proposed the creation of the SAE graduate student forgivable loan program, Chair of the committee from 1985-89
- Editor in Chief of the SAE Transactions Committee
- ASME Honda Award Committee Chair
- EPA Mobile Sources Technical Subcommittee
- National Academy of Sciences Committee to Review the 21st Century Truck Partnership Program, Chair
- National Academy of Sciences Committee on Light Duty Vehicle Fuel Economy



Dr. Madhukar Vable

A Classroom Legacy

ME-EM UNDERGRADUATE EDUCATION

There is no Substitute

“Has anyone ever ridden one of these?” says Dr. Thomas Grimm, holding up a folding metal scooter. “Yes? Who can tell me, then, which of the concepts we’ve covered apply to this scooter?” “Self-energizing brake,” calls one student. “Fasteners.” “Anti-friction bearings.” “TIG welding.” At that, Grimm grins, saying, “These particular welds aren’t beautiful, but they are strong; one of our professors rode it around the ninth floor, and he’s not a small guy.” The class laughs at the image, continuing to jot down notes and call out answers to questions. This type of real world example, says Grimm, is crucial to engineering education. “Students can learn math and science principles, but they really hit home when they can see them at work in a tangible, relatable object.”

The classroom, he said, provides a unique environment to present such examples. In a world where technology is constantly available as a primary information source, the classroom experience remains the nucleus of mechanical engineering education. Here, where one-to-one communication is not buffered by cell phones or computers, the mind is free to perceive and reflect. Isolated from distractions, the professor and students form a unique island of interaction and education. Together, they are able to focus on a single topic, concept, or procedure. “The ability to provide immediate feedback is crucial to active learning, which is foundational to engineering education,” says Grimm. “Nothing can substitute for this facet of education.”

Placing the Cornerstones

“In order to achieve effective communication, a professor must create an environment of trust,” says veteran ME-EM Professor Dr. Madhukar Vable. “Teaching is an interaction between two human beings, two minds. All elements that are important in human relationships are important in teaching. If the students know that you care, that you’re there to help, they push themselves. Distance education via video or email transforms teaching to instruction as the relationship is weakened between a teacher and a student. This aspect of teaching requires a lot of time and becomes progressively harder with increasing class sizes. One of the challenges of all teachers (from lack of time) and universities (from lack of funds) is to resist the temptation of transferring responsibility of teaching onto learning by the students.”

Dr. John Beard agrees. “The same is true across the board: people behave differently when other people know who they are.” Once a relationship of trust is established, he says, the class can begin to work through the engineering method. “The process is straightforward: when I present a problem, I ask what do we know, what do we know next, and how can we get there? We teach them



Dr. Gopal Jayaraman



Dr. Thomas Grimm

to be analytical, how to think.” In situations where distance education is necessary, the professor must be careful to keep the remote students in mind. Beard, who has taught almost as many distance learning classes as on-campus courses, says that the professor must go the extra mile to ensure that students understand the material. He uses extra question and answer sessions and often travels to the remote location once or twice per semester. This effort pays off, he said. “In person, students find it easier to ask questions; in these sessions, we often meet long after the scheduled time.”

Whether in the classroom or over video, ME-EM faculty have developed their individual methods of ensuring that concepts stay with students long after the semester ends. The classroom is a unique opportunity to reinforce the importance of study techniques, of problem-solving methods, and of critical thinking. Professor Dr. Gopal Jayaraman believes this, saying, “I use stories that make students stop and pay attention. I say, ‘I want you to memorize this set of equations until it becomes second nature. Know them so well that if I were to come to your house at three in the morning and wake you up, you would be able to

recite them to me even half-awake.” At this humorous image, the students laugh and yet realize that beyond the joke, Jayaraman is passionate about disciplined study.

Quality education in math and science is everyone’s challenge and responsibility. The nation’s economic welfare and security are at stake.
—National Science Board

Foundation of Engineering

The dedicated ME-EM professors ensure that classroom education in Mechanical Engineering is a unique and memorable experience, one that engages them with tangible examples and creates a relationship with educators to foster trust. In the ME-EM Department, undergraduate education is the foundation upon which all other programs are built; it ensures that young engineers are immediately supported in their engagement with engineering challenges. Success in the classroom is the first step toward greater achievements in the academic, research, and industrial worlds.



Dr. John Beard

DISTINGUISHED TEACHING AWARD

The Distinguished Teaching Award is given annually to a faculty member who is recognized for excellent classroom teaching through student evaluations.



Donna Michalek



Gordan Parker



William Predebon



John Sutherland



Madhukar Vable



Chuck Van Karsen



Education in the Field

INTERNATIONAL ENGINEERING

In much of sub-Saharan Africa, maize is the primary source of food for rural citizens. To keep hunger at bay, families must harvest crops by hand and trudge over 10 miles on foot in the intense heat to reach a grain processor. Fees for the grain mills—which are unreliable, expensive to run, and difficult to maintain—consume over 30% of each family’s yearly income. Machine failures, illness, and injury can prevent processing, jeopardizing food supply and threatening lives.

To improve the lives of these poverty-stricken families, the ME-EM Senior Design Team 19 is designing a human powered grain processor that will allow rural residents to process corn close to home, quadrupling their available food supply and eliminating the long walk. The processor project, funded by ME-EM alumnus Terry Woychowski (see p. 19), was

conceived, designed, and constructed entirely by students. “This simple solution will save the community considerable expense, effort, and time,” says team advisor John Beard. “That may mean that they will be able to plant more rows of corn to feed their families, or that their children will be able to attend school instead of walking back and forth to the mill. With one project, these students are changing lives.”

Peace Corps & the ME-EM Department Families in sub-Saharan Africa are not alone in the need for elegant engineering solutions to relieve extreme poverty; more than half of the world’s population lives on less than \$2 a day, and nearly one-third of rural residents worldwide lack access to safe drinking water, according to a recent study by the Population Reference Bureau.

Through a new joint venture with the Peace Corps, the ME-EM Department will provide students with the opportunity to address these and other engineering challenges across the developing world. In September of 2008, the department received approval to establish a Peace Corps Masters International (PCMI) program in mechanical engineering. The new program is the first and only one of its kind in the United States, and will allow students to earn their Masters degree while performing hands-on field engineering work.

The PCMI program focuses on direct involvement with communities in need; participants will be required to complete two years of in-country Peace Corps service, an additional mechanical engineering project to benefit their host community, and on-campus coursework. “The in-country component is invaluable because it is

critical that our students do not receive their education in a vacuum,” said Michele Miller, Associate Professor and PCMI Program Director. “International engineering projects provide students with unparalleled, hands-on experience in engineering innovation.”

Appropriate Technologies

Students who are involved in PCMI, Senior Design Team 19, and groups like Engineers Without Borders, focus on appropriate technologies, which are developed with consideration of the culture, environment, and economy of the target community. The solutions are often simple; for a large percentage of the world’s population, complex engineering solutions are rendered ineffective by a lack of resources, knowledge, or cultural acceptance. Appropriate technologies necessitate a return to the roots of mechanical engineering and students must pare down their designs to fit the essential constraints: economy, effectiveness, and feasibility. “These thoughtful, ‘low-tech’ solutions require a considerable amount of ingenuity and inventiveness,” said Miller.

“80% of the Earth’s inhabitants are not considered by designers of infrastructure, goods, and services.”

—Michigan Tech D80 Center

In order to create effective engineering solutions, students will also be required to develop a thorough understanding of cultural and social mores. In the PCMI program, participants will rely on knowledge gained from observation and interaction as they identify, plan, and execute individual mechanical engineering projects. To achieve buy-in by the local community, they will need to employ relationship-building skills and diplomatic communication tactics. “In the field, our students will be required to make engineering decisions based on available resources and social or environmental constraints,” said PCMI Research Director Dr. John Gershenson. “They will need to find innovative ways to use their mechanical engineering knowledge to create a meaningful project.” As a result, students will come out of the program with highly developed negotiation, analytical, and problem-solving skills that will serve them well in engineering careers.

In addition to engineering skills development, says Miller, students involved in appropriate technology projects will gain a broader world view. “Students will have exposure to the realities of design for people who live on less than a dollar a day, and they will also be able to see the direct positive impact of their work.”

Expanding Role of Mechanical Engineering

Historically, mechanical engineering has not been commonly associated with projects in the developing world; with a variety of programs like PCMI and international senior design projects, the ME-EM department is working to change that perception.

“Mechanical engineers are able to make a significant contribution to common problems like irrigation, food refrigeration, basic infrastructure, and sustainable energy solutions,” said Department Chair Dr. William Predebon. “We are proud to give students the opportunity to make a difference.”



Senior Design Team 19

Left to right (kneeling):

Eric Boeckers, Kate Olkkonen, Luke Winter

Left to right (standing):

Caleb Colyer, Tyler Blank

Not pictured: Nathan Fetting

New Faculty & Staff

Dr. Charles H. Margraves, Lecturer

PhD, University of Tennessee



Dr. Margraves' teaching experience and interests are in fluid mechanics, CAD, heat transfer, statics, dynamics, finite element method, and CFD. His PhD research was in visualizing and analyzing thermal, fluid, and bio-processes at the micro/nano-scale levels using a variety of microscopy techniques (fluorescence, TIRFM, DICM, IRCM, etc.).

Dr. Scott A. Miers, Assistant Professor

PhD, Michigan Technological University



Dr. Miers' research interests and expertise centers on experimental internal combustion engine research focusing on gasoline and diesel combustion including system efficiency and emissions reduction. He has a significant interest in alternative and renewable transportation fuels and has worked with biodiesel, ethanol, butanol, and Fischer-Tropsch synthetic fuels in both spark-ignition and compression-ignition engines.

Dr. Sheryl A. Sorby, Professor

PhD, Michigan Technological University



Dr. Sorby's teaching interests include advanced structural analysis, finite elements, and computer applications/mechanics. Her research interests include advanced composite materials for use in civil infrastructure, and 3-D computer graphics for visualization of complex behaviors. Her current research project is titled Visualization of Groundwater Pollutant Fate and Transport.

Dr. Seong-Young Lee, Assistant Professor

PhD, Penn State University



Dr. Lee's research is in combustion, including coal-based fuel flame characteristics, gas turbines, detonation engines, and internal combustion engines. Other research interests include soot formation processes in laminar and turbulent diffusion/premixed flames and alternative fuels including biofuels, coal-based fuel, jet fuel, syngas and their applications to advanced combustion engines.

Kim Hicks, User Support/Lab Coordinator



Kim Hicks joined the ME-EM staff in January 2008 as a User Support/Lab Coordinator. She is an Army veteran who served overseas. Kim is currently working towards her bachelor's degree in Business Information Technology.

Faculty & Staff Awards

Our commitment to excellence is reflected through this year's faculty and staff awards, recognitions, and promotions. The Mechanical Engineering-Engineering Mechanics Department honors the following faculty and staff for their achievements and success.

Dr. Jeffrey Allen

Received the prestigious NSF CAREER Award valued at over \$400,000.

Nancy Barr

Promoted to Technical Communications and Senior Design Program Administrative Associate.

Nancy Barr

Received the University's Making a Difference Award in the Rookie category.

Dr. John E. Beard

Recipient of the General Motors Technical Education Program (TEP) Outstanding Distance Learning Faculty Award.

Dr. Jason R. Blough

Named an Associate Editor of the Journal of Experimental Techniques, which is a publication of the Society of Experimental Mechanics (SEM).

Dr. Jason R. Blough

Recipient of the 2007 Distinguished SAE Faculty Advisor Award.

Dr. Jason Blough

Promoted to associate professor with tenure.

Dr. Bo Chen

Received the Best Paper in Computational Methods and Software Award at the 2008 IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications.

Dr. Roshan D'Souza and Dr. VC Rao Komaravolu

Highlighted in the PACE in Action, Partners for the Advancement of Collaborative Engineering Education quarterly report.

Dr. Roshan M. D'Souza

Selected to receive the 2008 ASME Computers in Engineering Young Engineering Award. Dr. D'Souza is being recognized for his Agent-Based Modeling Research.

Dr. Roshan D'Souza

Interviewed for ABC news regarding his research in capturing the computing power of video games to forecast and simulate complex biological systems interactions and their effects on the whole system. The interview can be seen at: <http://www.sciencentral.com/video/2008/10/24/video-games-biology/>. This research was also highlighted in the INSIDER Special Edition - Embedded Technology on October 13, 2008. The article was reprinted at: http://www.admin.mtu.edu/urel/news/media_relations/742/

Kathleen Goulette

Promoted to Executive Assistant.

Dr. Thomas R. Grimm

Honored for 30 years of service at the May 16, 2008 Employee Service Recognition Dinner.

Dr. Tammy Haut Donahue

Awarded first place for her presentation "Meniscal Tissue Degradation Following Periods of Disuse" at the 14th Bioengineering Conference, sponsored by the Royal Academy of Medicine in Ireland, January 25-26, 2008 in Sligo, Ireland.

Dr. Tammy Haut Donahue

Named a member of the National Institutes of Health's Center for Scientific Review Special Emphasis Panel.

Dr. John H. Johnson

Selected for membership on the National Research Council (NRC) Committee on Fuel Economy of Medium- and Heavy-Duty Vehicles. The NRC is part of the National Academies.

Paul M. Kilpela

Honored for 30 years of service at the May 16, 2008 Employee Service Recognition Dinner.

Marlene Lappeus

Promoted to Program Coordinator/Academic Advisor.

Dr. Donna Michalek

Guest speaker at the June 2008 ASME Annual Meeting in Orlando, FL, speaking on "An Insiders Look at ASME's Federal Government Fellows Program."

Dr. Jeffrey Naber

Granted tenure as Associate Professor.

Dr. Gregory Odegard

Received the Outstanding Graduate Mentor award from the Michigan Tech Graduate Student Council.

Dr. Gregory M. Odegard

Chosen to receive the American Society for Engineering Education (ASEE) 2008 Ferdinand P. Beer and E. Russell Johnston, Jr., Outstanding New Mechanics Educator Award.

Renee Ozanich

Promoted to Staff Assistant Level 6.

Dr. Sudhakar M. Pandit

Honored for 30 years of service at the May 16, 2008 Employee Service Recognition Dinner.

Dr. William W. Predebon

Honored for 30 years of service at the May 16, 2008 Employee Service Recognition Dinner.

Dr. William W. Predebon

Elected a fellow of the American Society of Mechanical Engineers (ASME).

Dr. VC Rao Komaravolu

Authored a User Guide on the newly created PACE SAE/Siemens Automotive CAD Professional Certificate.

Dr. Mohan Rao

Named a Fulbright Scholar. His assignment will start May 1, 2009, at the Indian Institute of Science and will last approximately four months.

Dr. John Sutherland

North and South America regional editor of the International Journal of Sustainable Manufacturing.

Dr. John W. Sutherland, Professor - MEEM/SFI, and Dr. David R. Shonnard,

Chemical Engineering/SFI, along with four other foreign experts, served as advisors to the "111" International Collaborative Research Project in Hefei, China, in Sept. 2008.

Charles Van Karsen

Authored the editorial "The Commodity Engineering Market," published in the December 2007 issue of Sound & Vibration magazine.



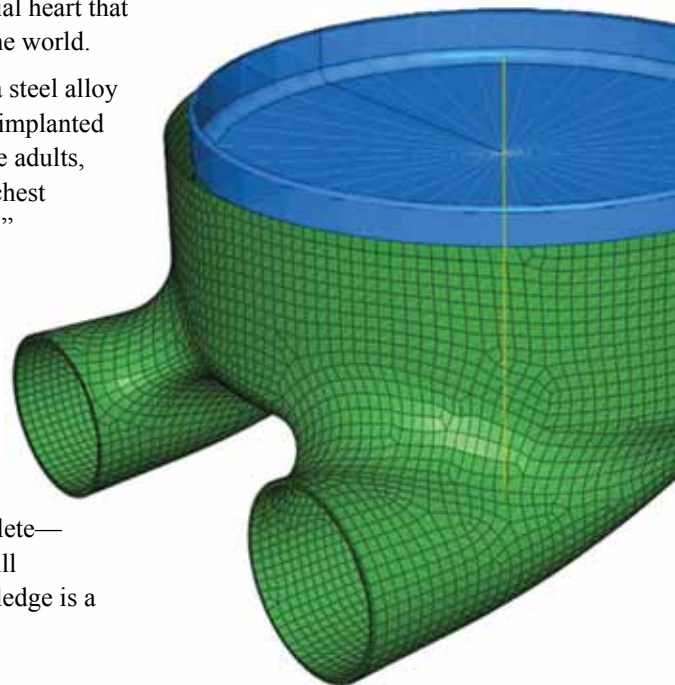
Research with a Heart

Dr. Tammy Haut Donahue is conducting research with a heart—literally and figuratively. In collaboration with researchers at Penn State Medical Center’s Division of Artificial Organs, she is assisting in the design of an artificial heart that will save the lives of women and children on heart donor lists across the world.

Artificial hearts—which are made of a segmented polymer pump and a steel alloy pusher plate, piston, and case—have been successfully developed and implanted in adult males, but are unsuitable for use in children and smaller stature adults, such as women. “When we try to scale down the heart to fit a smaller chest cavity, the pump experiences failure due to pump chamber thrombosis,” said Haut Donahue.

As part of the development of a smaller heart, Haut Donahue is creating a finite element model of the artificial heart and running a parametric analysis to determine how each geometric parameter affects the stresses in the blood sac, with the goal of minimizing blood sac stresses to increase life of the pump. She has been working on the project since 2000, and has developed 2D and 3D models.

The research is painstaking—one model takes nearly a month to complete—but worthwhile, says Haut Donahue. “Our completed artificial heart will help children stay alive until they can get a heart transplant; that knowledge is a powerful motivation.”



Right: Computer generated model of a polymer blood sac used in artificial heart replacements as well as in left ventricular assist devices ▶

Graduate Seminar Series

A committee of Michigan Tech faculty members puts together the dynamic ME-EM Graduate Seminar Series every year. Dr. Roshan D'Souza is the current Chair of the committee, which creates an agenda of compelling topics for both students and faculty. The seminars offer graduate students opportunities to expand their knowledge base to areas of study outside of their specific research. Composed of a diverse mix of renowned leaders representing academia, industry, and government; the 2008-2009 Academic Year Seminar Series featured the following leaders:

EXTERNAL SPEAKERS

Bahram (Bob) Farahmand

Boeing Technical Fellow with Boeing Company in Huntington Beach, California
Virtual Testing & Applications
(Multiscale Modeling & Simulation)

Subrata Mukherjee

Cornell University
BEM/FEM Analysis of MEMS With Thin Features

Judy Vance

Program Manager National Science Foundation
Shaking the Money Tree-Funding at NSF

Somnath Ghosh

Ohio State University
A Multiscale Characterization and Analysis Methodology for Ductile Fracture in Heterogeneous Metallic Materials

Greg Stark

GE Aviation
Navigation in Flight Management Systems and Future Challenges

John Balk

University of Kentucky
Deformation of Nanoporous Noble Metals: How Strong are They?

Paul Cefola

Massachusetts Institute of Technology
Comparison of US and Russian Space Surveillance Systems

T. Alan Lovell

Air Force Research Laboratory
Space Vehicles Directorate
Kirtland AFB, NM
An Overview of the Astrodynamics and Spacecraft Guidance, Navigation, and Control Efforts at the Air Force Research Laboratory

Robert Tilove

General Motors - Research and Development Smart Assembly

Mark Shannon

University of Illinois at Urbana-Champaign
Microcombustion for Small Scale Power Sources and Fuel Cells

A. Jeffrey Giacomini

University of Wisconsin
Core Deflection and Flash in Injection Molding

Kok-Meng Lee

Georgia Institute of Technology
Computational Intelligence in Machine Vision for Robotics, Automation and Mechatronics (MV-RAM)

Robert Spinner

Mayo Clinic
Intraneural Ganglia: A Complex Clinical Problem Begging for a Hydrodynamic Explanation

Debjyoti Banerjee

Texas A&M University
Nano-Devices for Enhanced Cooling and Explosives Sensing

Taher Saif

University of Illinois at Urbana-Champaign
Mechanics of Learning and Memory

Oleg Yakimenko

Dept. of Mechanical and Astronautical Engineering at the Naval Postgraduate School in Monterey, California
Rapid Prototyping of GN&C Algorithms for Aerospace Vehicles

Eric Stach

Purdue University
Understanding the Onset of Plasticity in Materials Using Quantitative In-Situ Nanoindentation

Tony Jun Huang

Department of Engineering Science and Mechanics at Pennsylvania State University
Fluidics: Interfacing Biology, Mechanics, and Photonics in the Micro/Nano Scale

Patrick Phelan

Director for the Thermal Transport Processes of the Chemical, Bioengineering, Environmental, and Transport Systems Division
National Science Foundation
Opportunities in Thermal Transport Processes Research at NSF

Amanul Haque

Department of Mechanical and Nuclear Engineering at Pennsylvania State University
Coupling Mechanics at the Nanoscale

Hassan Aref

Virginia Tech and Technical University of Denmark
150 Years of Vortex Dynamics

Georges Fadel

Clemson University
Multi-material Design and Manufacturing

Georges Gioia

University of Illinois
Nikuradse meets Kolmogórov, or: How to derive the diagram from the spectrum

MICHIGAN TECH SPEAKERS

Dennis Desheng Meng (ME-EM)

Fuel Delivery and CO₂ Byproduct Removal for Micro Direct Methanol Fuel Cells

Michele H. Miller (ME-EM) and **Debra D. Charlesworth**, Assistant to the Dean of the Graduate School
Problem Solving Obstacles in the Research lab: Perceptions of Graduate Students and Faculty



Engineering Across Boundaries

“Traditional mechanical engineering techniques can be applied in non-traditional ways to solve problems across a range of disciplines.”

—Karl Walczak

Mechanical engineering, according to Karl Walczak, is more than vehicles and machining. “As research becomes increasingly interdisciplinary, we begin to get a sense of the opportunities in non-traditional engineering projects,” he said. “Toxin-sensing, for example, is an area that traditional mechanical engineering techniques can be applied in non-traditional ways to solve problems in concert with a range of disciplines.”

Walczak is exploring some of those possibilities with his innovative, cross-disciplinary nanotechnology research. Under the guidance of advisor Dr. Craig Friedrich, Walczak created a bionanohybrid device that will be an integral part of a protein-based toxin nanosensor. The sensor is designed around the modulation of photovoltage generated by bacteriorhodopsin, a transmembrane protein that shifts a proton across the membrane upon exposure to light.

To create the bionanohybrid device, Walczak integrated bacteriorhodopsin with a single electron transistor (SET) to harness and utilize the protein’s

photovoltaic characteristics and the ultrasensitivity of the SET. The process was complex, requiring creative mechanical engineering and support from many departments at Michigan Tech. “I collaborated with professors in the biology department to produce and harvest cells and used the microfabrication and electron optics facilities in the materials science department to fabricate and examine devices. In the electrical engineering department, I learned how to design circuits and populate boards, which I used to characterize the devices,” he said. “Faculty in each department gave freely of their time to help build my understanding.” The interdisciplinary nature of the project, said Walczak, was the most challenging and also the most rewarding aspect of the process.

Walczak completed his PhD in December of 2008, and will continue his research at Michigan Tech in a post-doctoral position. He plans to enter industry within the field of nanotechnology research, with long term plans for an academic career. “I look forward to developing new technology and helping the next generation of engineers,” he said.

Covering New Ground

“My undergraduate research has brought new depths of meaning to my engineering coursework.”

—Karen Jarvey

For senior Mechanical Engineering student Karen Jarvey, engineering education occurs at the intersection of laboratory and classroom work. As a part of an undergraduate research project, Jarvey spent a summer studying the effects of load levels on the meniscus of the human knee with ME-EM professor Tammy Haut Donahue. “My undergraduate research has brought new depths of meaning to my engineering coursework,” said Jarvey. “I have practical experience to associate with new theories that are introduced in class, which allows me to develop a thorough, grounded understanding.”

The knee meniscus research had particular relevance for Jarvey, who is a member of the Michigan Tech Nordic ski team and the cross country team. “As an athlete, I am interested in the application of mechanical engineering principles to the human body,” she said. “I learned first-hand about the effects of different physical therapy practices and technologies.” With her research

complete, Jarvey continues to be involved in the campus community, balancing a rigorous practice and competition schedule with a full course load, an on-campus job, and activities with the Blue Key Honor Society and the engineering honor fraternity Pi Tau Sigma.

Michigan Tech has provided an ideal environment for education, athletics, and service activities, said Jarvey. She attributes her academic success to careful planning, the support of her mother—an advisor in the ME-EM department—and personal attention from faculty. “Classes are tough, but professors are willing to put in extra time to help students understand the material,” she said. Jarvey will graduate in 2009 with a double major in Mechanical Engineering and Biomedical Engineering, and plans to pursue a graduate degree in biomechanics.





2008-2009 External Advisory Board

The External Advisory Board (formerly the Industrial Advisory Committee) is a select group of corporate, education, and government leaders, many Michigan Tech alumni, who advise the ME-EM Department, sharing their expertise and providing assistance with curriculum direction, research topics, education-and-industry partnerships, and resource development. The EAB members offer their professional insight and provide valuable input that shapes the state-of-the-art engineering education taking place in the ME-EM Department.



Tanya Klain
General Motors Corporation

Tanya J. (Wareham) Klain, 41, died unexpectedly on December 7, 2008, following complications from surgery. Tanya received her Bachelor of Science degree in mechanical engineering in 1990 from Michigan Tech and an MA degree from the University

of Michigan in 1994. She was an engineering group manager at General Motors after having advanced through several other leadership positions. She was a member of the Michigan Tech Presidential Council of Alumnae, a dedicated long-time supporter of the ME-EM Department as a member of the External Advisory Board and the Phase II Campaign Committee, and an active member of the Michigan Tech Alumni Association. One of her passions was the Senior Capstone Design program to which she provided project support for many years. Her impact on the department and university was significant and she will be dearly missed. She is survived by her husband, Robert J. Reuter, and children Samantha and Alexandra.

EAB MEMBERS

Kirby J. Baumgard
John Deere Power Systems

Steven W. Cook
American Axle & Mfg Inc.

John P. Davenport
General Electric Health Care

Alan Frank
Whirlpool Corporation

Michael Hofman
Roush Industries

Brian Johnson
Chrysler LLC

Shashi Karna
US Army Research Lab

Roger Keranen
Visteon Corporation

John Leinonen
Ford Motor Co/Exponent Inc.

Kevin Manor
Toyota

Brenda Moyer
Dana Holding Corporation

Seth Newlin
Oshkosh Corporation

Christopher Oberski
Ford Motor Co.

Leigh Otterlei
3M Corporation

Paul Rogers
US Army

Peter Sandretto
Chrysler

Kevin Schlueter
Skilled Manufacturing, Inc.

James D. Sickinger
Caterpillar Inc.

Tom Williamson
KCC

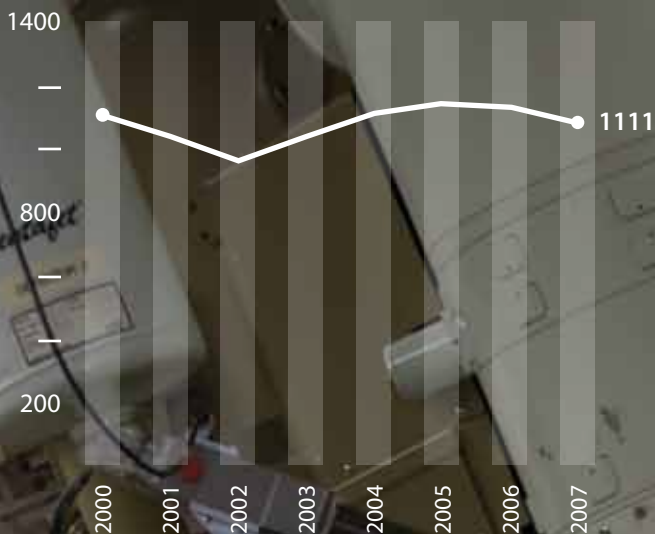
Erin Johnson
Zimmer

Jeff Zawisza
Dow Chemical Co.

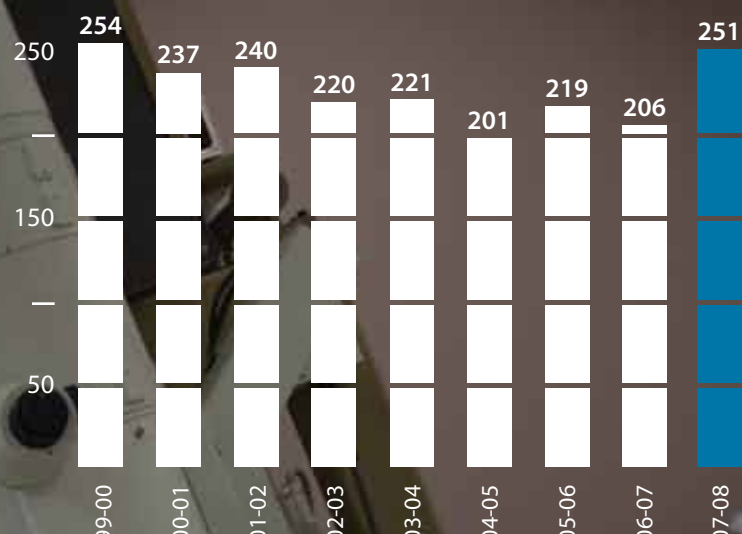
Hussein Zbib
Wash State University

Department Enrollment and Degrees

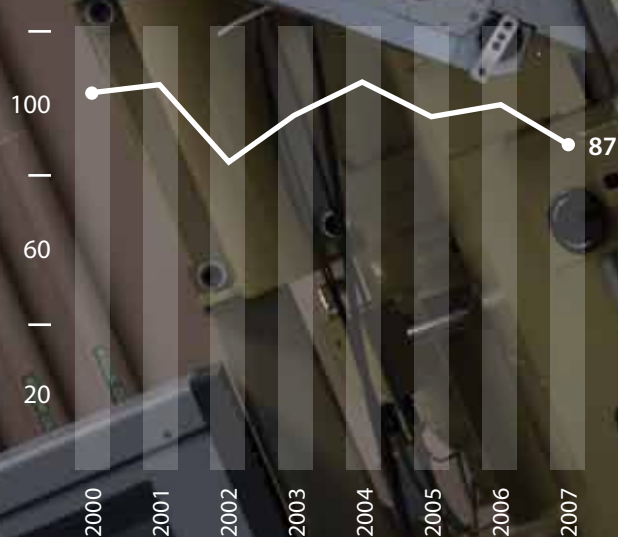
BS Enrollment



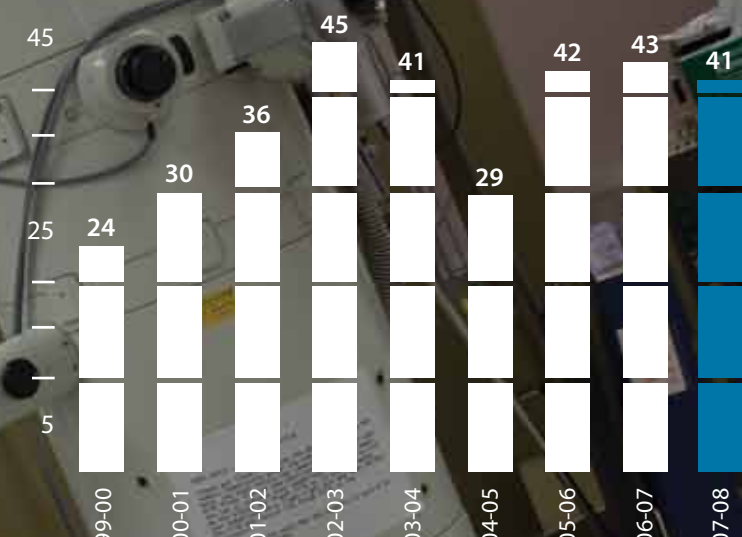
BS Degrees



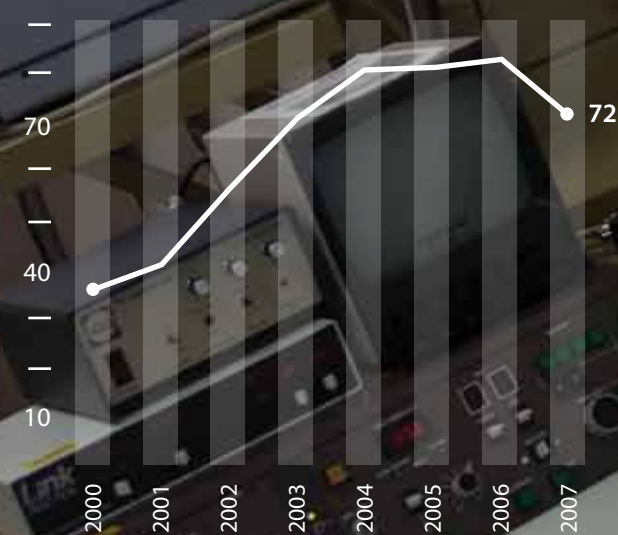
MS Enrollment



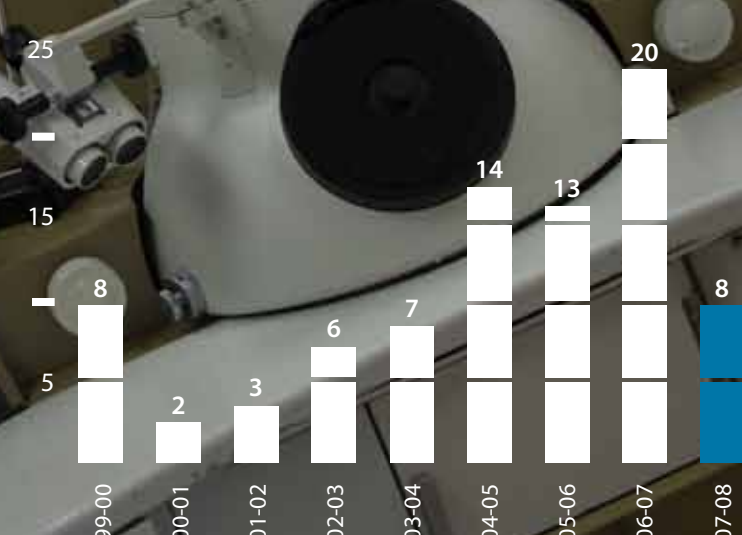
MS Degrees



PhD Enrollment



PhD Degrees



2007 Academy Inductees

The purpose of the Academy of Mechanical Engineering and Engineering Mechanics is to honor outstanding graduates of Michigan's Tech ME-EM Department. The selection for Academy membership recognizes excellence and leadership in engineering and civic affairs. Portraits of each member are prominently displayed in the ME-EM building to serve as an inspiration for current and future students.



John Calder

A native of Highland Park, MI, John Calder earned his BS in Mechanical Engineering in 1967 and his MS in Business Administration in 1977, both from Michigan Tech. After his graduation in 1967, Calder began his career as a design engineer with Digital Integrated Circuit Systems. In the following years, he assumed increasing responsibility in the company, working as the application and field service engineer for the East Coast and the regional sales manager for the Midwest and West Coast regions.

In 1975, Calder joined Dorsey-Alexander, a manufacturer's agent for motion control, sensing, and machine guarding safety products. In 1987, he purchased the company, and became the sole owner in 1992.

Currently, Calder is the CEO and owner of Cincinnati Controls, Inc., which he co-founded in 1980 and

purchased in 1992. Cincinnati Controls, Inc. is a high-tech distributor of microprocessors for motion control products and human-machine systems.

A leader in systems and controls and a born entrepreneur, Calder co-founded Integrated Manufacturing Control Systems in 1985. In 1992, he purchased Zenith Engineering Sales Company, doubled the sales volume in two years and sold the business. In 1993, he purchased K.F. Narez, Inc., doubled sales volume in three years and sold the company. Calder became the owner of Rilco Industrial Controls, Inc. in 2003, and in 2006, he purchased Gorilla Storage Company.

Calder is the Vice Chair of the Tech Fund Board of Directors and the Chair of the ME-EM Phase II Campaign Committee Endowing Excellence. He was a member the ME-EM Phase I Campaign Committee Building for the Future, and is a member of the Dillman Society for his lifetime contributions to Michigan Tech. Calder and his wife, Joan, have also supported Michigan Tech by establishing the ME-EM Calder Systems and Controls Laboratory.

Calder is active in his community, serving the Boy Scouts as a Citizenship merit badge counselor and advisor. He has also worked with the Webelos, serving as a leader, Cub Master, and Committee Chair of both the local Pack and Troop. Calder is an avid hunter and gardener, and enjoys fishing.

Calder and his wife Joan have two children and live in Cincinnati, OH.



Martha N. Sullivan

Martha N. Sullivan earned a BS degree in Mechanical Engineering in 1980 from Michigan Tech and completed studies toward an MS in Business Administration at the University of Michigan. A leader in the sensor and control industry, Sullivan is the chief operating officer and executive vice president of Sensata Technologies, Inc. (formerly Texas Instruments Sensors and Controls Group) and is a member of the Sensata Board of Directors. Throughout her career at Texas Instruments (TI), she has been key in establishing a sensor business that has grown into a worldwide leader. Sullivan began her career at TI in 1984, and in 1986 was named District Manager of Texas Instrument's Control Products Division in Farmington Hills, MI. She assumed the position of Field Sales manager for the Division, and went on to hold a variety of positions in the company,

including vice president of Sensors & Controls Business, president of Sensor Acquisition Corp. (part of Texas Instruments Materials & Controls), and vice president & global business manager for Sensors & Controls Business, Sensor Products.

In addition to her corporate responsibilities, Sullivan has served on several industrial and educational advisory boards. Sullivan serves on the Ford International Supplier Advisory Council (ISAC) and the Key Executive Council at Rensselaer Polytechnic Institute (RPI), and is a past member of the Board of Trustees at Kettering University. As a member of the Society of Automotive Engineers, she has been a featured speaker and panelist on a number of technology, industry, and academic forums, including the iNEMI Innovation Leadership Forum (International Electronics Manufacturing Initiative), Building Our Future Day (RPI) and Executive Women's Conference (Morgan Stanley). She is an active volunteer for Odyssey of the Mind, a national academic program for students.

While at Michigan Tech, Sullivan was active in Society of Women Engineers, the Society of Heating and Refrigeration Engineers, the Society of Automotive Engineers and the Cooperative Education Association. She enjoyed downhill and cross-country skiing, bicycling and racquetball.

Martha and her husband R. Michael Sullivan have two children and live in Wrentham, MA.



Dr. Terry J. Woychowski

Dr. Terry J. Woychowski earned a BS in Mechanical Engineering from Michigan Tech in 1978. His post-graduate studies include coursework in the pre-medical program at Wayne State University and completion of the Global Executive Development Program at the Duke University School of Business.

Woychowski is the executive director, General Motors North America Vehicle Systems Engineering. In this capacity, he is responsible for the engineering, design, and development of components and systems for all cars and trucks developed in North America. He also serves as the chief vehicle engineer, General Motors Full Size Trucks, a position he has held since 1998. His responsibilities include the engineering design, development, and integration for full-size light-duty and heavy-duty pickup trucks marketed under the Chevrolet, GMC, Cadillac, and Hummer brands.

After graduating from Michigan Tech, Woychowski began his career at General Motors as an engineer in the noise and vibration laboratory at GM's Milford Proving Grounds, and in 1982 became a Development Engineer. He left GM in 1985 to become the department head and professor of mechanical engineering at Pensacola Christian College, FL. Returning to GM in 1987, Woychowski worked as a development engineer at the proving grounds in Mesa, AZ, and over the next two decades, held the positions of chassis and suspension design release engineer, engineering group manager, assistant chief engineer, and area manager of the body and paint departments.

Woychowski is a four-time recipient of the General Motor's highest honor, the GM Chairman's Honor, and has also received GM's North America Achievement of Excellence award. In 2003, he received an Honorary Doctorate in Business Management from Indiana Wesleyan University. Woychowski is General Motor's key executive liaison with Michigan Tech and serves as a member of the External Advisory Board of the College of Engineering at Michigan Tech. In addition to his professional activities, Woychowski is active in civic and volunteer work. He helped to lead the efforts of his church's involvement in setting up refugee camps in Albania and Kosovo during the conflict in the Balkans, and has served his community as a paramedic and as a leading elder at his church. Woychowski and his wife Rochelle Ann have three children and reside in Commerce Township, MI.

National Academy of Engineering

The mission of the National Academy of Engineering (NAE) is to promote the technological welfare of the nation by marshaling the knowledge and insights of eminent members of the engineering profession. Election into the NAE is considered one of the highest honors that can be accorded to an engineer in the United States, and the ME-EM Department is proud to recognize two alumni members: Richard Robbins and John Hallquist.



Richard Robbins
BS Mechanical Engineering, 1956

“Hands-on engineering experience and personal attention from faculty were the most valuable aspects of my education at Michigan Tech.”

Richard Robbins began his career with The Robbins Company in 1958, sold the company to the Atlas-Copco Group in 1993, and established The Robbins Group in 1995. Under Robbins’ direction, the Robbins Company set records in tunnel boring technology, and manufactured five of the six boring machines used to create the Chunnel rail tunnels beneath the English Channel.

In 1991, Robbins was elected to the National Academy of Engineering in recognition of his pioneering development of tunnel boring machines and for enhancing the worldwide U.S. technological leadership position in rock tunnel construction. Widely recognized as an international tunneling expert, Robbins has over 67 patents in the field of underground mechanical excavation, and has served as the U.S. delegate to the International Advisory

Conference on Tunneling. He is also a past chairman of the U.S. National Committee on Tunneling Technology and a current member of the Michigan Tech Academy of Mechanical Engineering and Engineering Mechanics.

To further sustainability research in various engineering disciplines, Robbins and his wife Bonnie created the Robbins Chairs of Sustainability in May of 2007. “My wife and I have a strong professional and personal interest in sustainability,” says Robbins, “We have been impressed with the work Michigan Tech is doing in that field, and we are delighted to be able to offer our support.”



John Hallquist
MS Engineering Mechanics, 1972
PhD Mechanical Engineering-Engineering Mechanics, 1974

“A strong engineering education lays the foundation for professional engineering.”

John Hallquist began his engineering career with the Lawrence Livermore National Laboratories (LLNL), where he developed engineering software for the structural design of weapons while working in the Nuclear Explosives Engineering Division.

The software, which is used for both static and transient responses, consisted of four programs in two and three dimensions, NIKE2D/3D and DYNA2D/3D, respectively. These codes, after release into the public domain, became widely distributed to industries within the United States, Europe, and Asia.

In 1987, Hallquist founded Livermore Software Technology Corporation (LSTC) to develop a single commercial version of these public domain codes covering their combined capabilities. Marketed as LS-DYNA, the software dominates the world market for large scale engineering simulations using massively parallel computers. Primary applications are in automotive crashworthiness, occupant safety, sheet metal forming, aerospace, and a range of applications in biomedical, defense, and numerous other fields.

In recognition of his achievements, Hallquist was elected into the National Academy of Engineering in 2007 for the development of explicit nonlinear finite element methods and their worldwide dissemination in the DYNA family of programs. “It is a great honor to be a member, and I look forward to getting involved in Academy activities,” he said.

Hallquist is the president of LSTC, where developers continue to refine LS-DYNA and a set of supporting engineering products. He is a member of ASME International and the Michigan Tech Academy of Mechanical Engineering and Engineering Mechanics, and the recipient of the 2003 Applied Mechanics Division Award.

Building the Future

2008 ME-EM Donations

Our donors are critical to the success of the Mechanical Engineering-Engineering Mechanics Department. Their contributions assist ME-EM in Building for the Future, a campaign that promotes the development and expansion of our education and research. Phase II of the campaign, entitled Endowing Excellence, is well on its way to the goal of raising \$54 million by 2012, having raised \$25 million to date.

The following list encompasses the many people who have generously shared their resources to create an outstanding ME-EM department. We are extremely grateful for their ongoing support. *Those contributing from January 1, 2008 to November 30, 2008 are listed below.*

COMPANIES

\$25,000 - \$50,000

Cummins Inc
Fidelity Investments Charitable Fund
Ford Motor Co
General Motors Foundation
John Deere Foundation
Terex Handlers

\$10,000 - \$24,999

Caterpillar Inc
Galland Henning Nopak Inc
GE Aviation
General Motors Corporation
International Society for
Technology In Education
Northern Star Industries Inc
Rexair LLC
Roberts Sinto Corp

\$5,000 - \$9,999

Grand Rapids
Community Foundation
Polaris Industries Inc

\$1,000 - \$4,999

Advanced Motion Controls
America Inc
Baker Hughes Inc
The Chrysler Foundation
Fox Converting Inc
Grand Haven Area
Community Foundation
KAM Plastics Corp
Mitsubishi Electric Automotive
Portage Health
Schwab Fund for Charitable Giving

\$500 - \$999

Dayton Foundation Depository Inc

INDIVIDUALS

\$50,000 - \$100,000

Herman C. Cuskie
John & F. Cathi Drake
Richard & Elizabeth Henes
Forest C. Randall
Rebecca M. Sandretto

INDIVIDUALS (cont.)

\$10,000 - \$49,000

Jane C. Hardwicke
Rudolph & Judith Shunta
Ronald & Elaine Starr

\$5,000 - \$9,999

Frank & Leslee Agosti
Frederick & Cynthia May

\$1,000 - \$4,999

Carl & Christine Anderson
Dale & Gwen Dunlap
John & Daphne Eggert
Jacob & Nancy Erkkila
Bernard & Marilyn Finn
Mark & Michelle Gauthier
Norman & Norma Glomski
Dean & Mary Goldbeck
Frederick & Susan Hall
Gerald & Ann Haycock
Gerald & Verla Hill
Steven & Elaine Jones
Daniel Kapp & Linda Lavastida-Kapp
Gary & Corliss Lawrey
James & Carolyn Luyckx
Terrence & Rosalie Maki
Dianne A. Malesko
Robert & JoAnn Matheson
James & Evelyn McCauley
Donna J. Michalek
Brenda M. Moyer
Eric & Vicky Nielsen
Michael & Carol Paradis
Lynn E. Peterson
Gerald & Kathleen Philo
William & Mary Ann Predebon
Daniel & Eleanor Rivard
Dale & Sarah Roberto
William P. Robinson
Peter & Anita Sandretto
Jeffrey D. Schut
John & Marsha Schweikert
Earl & Sylvia Seppala
David & Julee Sipes
Stephen & Susan Stackhouse
David & Linda Stone
Rex D. Stone P.E.
Timothy & Lori Thomas
John & Beverly Van Nieuwal
Larry & Deborah Vojtech
Dean & Suzi Waldie
Klaus & Sigrid Weinmann
Glenn Wheelock & Carol Tillis
Jeffrey & Melissa Zawisza
Hussein & Marcia Zbib

INDIVIDUALS (cont.)

\$500 - \$999

John & Elizabeth Allen
Richard & Sharon Amato
Jean & LaVerne Anderson
Michael & Terese Banas
Donald & Lavina Barkel
Donald & Joyce Bouws
Robert & Patricia Carlson
Brett Chouinard & Brenda Kasper
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Juan & Dorothy Dalla Rizza
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Rachel Nixon-Monroe & Bruce Monroe
Darwin & Margarita Moon
Robert D. Nankervis
William & Claire Ojala
Nathalie E. Osborn
Charles & Judy Paterka
Clinton & Mary Phalen
Christopher & Melissa Plude
Jan & Ellen Rankinen
Charles & Terry Roossien
David M. Russler
John & Sharon Saarinen
Trista K. Schieffer
Helena & David Seiver
Jacqueline & James Sima
Chester J. Taylor
Richard & Bernadette Temple
James & Frances Vorhes
Don & Mary Wacker
Robert & Sandra Westphal
Donald & Patricia Wheatley
Wayne & JoAnne Wheelock
LCDR Gary L. Wick
Colin & Laurie Yager

Contracts & Grants (THROUGH JUNE 30, 2008)

Sponsor	Title	Name	Total Award	RG
University of Michigan-Michigan Universities Commercialization Initiative (MUCI)	Autonomous Non-GPS Auto Navigation System	Abdelkhalik, Ossama	\$20,622	
University of Illinois	Novel Experiments and Models for Nanomechanical Analyses of Metallic Nanowires and Polymeric/Collagenic Nanofibers	Aifantis, Elias Co-PI: Odegard, Gregory	\$256,164	
General Motors Corp	Torque Converter Noise Generation and Noise Characteristics at Various Speed Ratios	Blough, Jason Co-PI: Anderson, Carl Co-PI: Johnson, Mark	\$118,483	
International Snowmobile Manufacturing Assoc	Understanding the Ground and Environmental Effects of Snowmobile Noise for SAEJ192	Blough, Jason	\$96,900	
Jorge Scientific Corp	RTK-GPS Evaluation for Crane and Payload Motion Tracking	Blough, Jason Co-PI: Parker, Gordon	\$410,834	
Verso Paper	Vibration Analysis of Chip Cracker	Blough, Jason Co-PI: Van Karsen, Charles	\$3,200	
Michigan Technological University	REF-MG Establish Mentoring Relationship between Dr. Chen (Mentee) and Dr. Tomizuka (Mentor)	Chen, Bo	\$10,000	
International Truck & Engine	System Level Modeling and Control for Diesel engine PM and NOx Aftertreatment	Parker, Gordon Co-PI: Devarakonda, Maruthi Co-PI: Johnson, John	\$180,355	
Caterpillar Inc	Development of a Hybrid Statistical Energy Analysis (SEA) Model of a Truck Cab Interior	Rao, Mohan	\$35,006	
Xerox Corp	Dynamic and Acoustic Model of a Solid Ink Printer Mechanism	Rao, Mohan Co-PI: Van Karsen, Charles	\$16,921	
Robert Bosch Corp	Enterprise: (NVH) Development of an Automated Monitoring and Calibration System for Microphones in a Dynamometer Cell	Rao, Mohan Co-PI: Blough, Jason	\$101,739	
South Florida Water Management District	Test-Bench Assessment of the Uncertainty of Radial Velocities Measured by a Broad-band Acoustic Doppler Current Profiler	Rao, Mohan	\$60,161	
South Florida Water Management District	Erosion Reduction by Air Entrainment Phase 1	Barkdoll, Brian Co-PI: Rao, Mohan	\$49,916	
Delphi Corp	Electric Power Steering Rack Modeling	Beard, John	\$113,124	
National Science Foundation	CAREER: Gas-Liquid Interface Dynamics and Dissipation Mechanisms in Capillary-Scale Two-Phase Flow	Allen, Jeffrey	\$701,921	
National Science Foundation	Collaborative Research: Interfacial Instability, Convective Motion and Heat Transfer in Evaporating Films	Allen, Jeffrey	\$153,544	
Rochester Institute of Technology	Visualization of Fuel Cell Water Transport and Performance Characterization	Allen, Jeffrey	\$991,930	
General Motors Corp	The Effect of Torque Converter Design Parameters on Noise and Cavitation Characteristics	Anderson, Carl Co-PI: Blough, Jason Co-PI: Johnson, Mark	\$297,830	
John Deere Co	Modeling of a Diesel Oxidation Catalyst and a Catalyzed Particulate Filter (DOC-CPF) System with Active Regeneration Using a Hydrocarbon Injection System	Johnson, John Co-PI: Triana, A. Co-PI: Yang, Song-Lin	\$418,043	
National Science Foundation	CAREER: Electron Fluid Dynamics in a Hall-effect Accelerator: Using Fundamental Research to Enhance Education and Technology	King, Lyon	\$602,334	
US Dept of Defense	A Nanosatellite for Space Situational Awareness	King, Lyon	\$145,410	
US Dept of Defense	PECASE: Spacecraft Interaction Studies of a 20-kW Bismuth-Fueled Hall Thruster	King, Lyon	\$602,971	
US Dept of Defense	Self-Regenerating Nanotips: Indestructible Field-Emission Cathodes for Low-Power Electric Propulsion	King, Lyon	\$324,487	
University of Michigan-Michigan Space Grant Consortium	Fabrication and Testing of Regenerable Field Emitter Tips for Electric Propulsion	King, Lyon Co-PI: Zevalkink	\$2,500	
University of Michigan-Michigan Space Grant Consortium	Metal Nanotip Formation in Zero Gravity	King, Lyon Co-PI: Walters, David	\$2,500	
University of Michigan-Michigan Space Grant Consortium	MISNER: Aerospace Enterprise CanSat Development	King, Lyon	\$6,400	
University of Michigan-Michigan Space Grant Consortium	SNOES - Self Navigating Optics Emplacement System CanSat Project - Aerospace Enterprise	King, Lyon Co-PI: Thompson, Joseph	\$2,500	
Argonne National Laboratory	Graduate Student Research in Hydrogen IC Engines	Naber, Jeffrey	\$51,169	
Ford Motor Co Inc	Combustion Feedback, Knock Analysis, and Tools for SI IC Engines	Naber, Jeffrey Co-PI: Worm, Jeremy	\$66,284	
Ford Motor Co Inc	Ionization Signal Analysis for Combustion Feedback	Naber, Jeffrey	\$98,262	
Michigan Technological University	REF-IE Proposal for Facility Funding for a Laboratory Building Focused on Alternative Energy Research at Michigan Tech	Naber, Jeffrey Co-PI: Allen, Jeffrey Co-PI: Beard, John Co-PI: Blough, Jason Co-PI: Worm, Jeremy	\$30,000	

RESEARCH GROUP (RG) ASSOCIATION

- Advanced Power Systems Group
- Engineering Education Innovation Group
- Manufacturing & Sustainable Design Group

- Mechanics of Multiscale Materials Group
- Multidisciplinary Engineered Dynamic Systems Group
- Multiscale Sensors & Systems Group
- Space Systems Group

Sponsor	Title	Name	Total Award	RG
University of Michigan-Michigan Universities Commercialization Initiative (MUCI)	A Novel Method of Stochastic IC Engine Combustion Knock Detection	Naber, Jeffrey	\$122,837	
University of Michigan-Michigan Space Grant Consortium	A Study of Butanol as an Ethanol and Gasoline Blending Agent in a Single Cylinder Engine	Naber, Jeffrey Co-PI: Woon, Michael	\$2,500	
National Aeronautics and Space Administration	Direct Computational Simulations and Experiments for Internal Condensing Flows' System-Instabilities/Dynamics in Micro-Gravity and Terrestrial Environments	Narain, Amitabh Co-PI: Evensen, Harold Co-PI: Van Karsen, Charles	\$750,626	
University of Michigan-Michigan Universities Commercialization Initiative (MUCI)	Elemental Mold and Die Proof of Concept	Camelio, Jaime Co-PI: D'Souza, Roshan	\$83,988	
Mott Community College	IOFIS Phase I - Instrumented Intramedullary Nail and Smart Orthopedic Membrane	Friedrich, Craig Co-PI: Bergstrom, Paul	\$338,928	
National Science Foundation	Utilizing Quantum Dots as an Onboard Light Source for Bacteriorhodopsin Based Nanosensors	Greip, Mark Co-PI: Friedrich, Craig	\$121,500	
University of Michigan	An Engineering Research Center in Wireless Integrated Microsystems	Warrington, Robert Co-PI: Friedrich, Craig	\$5,433,107	
Caterpillar Inc	MTU-CAT Collaborative Project: Defining Product Modules for Assembly Testability	Gershenson, John	\$34,000	
National Science Foundation	IGERT: Achieving Environmental, Industrial, and Societal Sustainability via the Sustainable Futures Model	Sutherland, John Co-PI: Gershenson, John Co-PI: Durfee, Mary Co-PI: Mihelcic, James	\$6,519,800	
Michigan Dept of Transportation	Development of New Test Procedures for Measuring Fine and Coarse Aggregate Specific Gravities	You, Zhanping Co-PI: Dai, Qingli	\$208,207	
National Science Foundation	A Microstructure-Based Modeling Approach to Characterize Asphalt Materials	You, Zhanping Co-PI: Dai, Qingli Co-PI: Van Dam, Thomas	\$216,819	
Texas A & M University	Using Imaging Technology to Improve the Laboratory and Field Compaction of HMA	You, Zhanping Co-PI: Dai, Qingli	\$30,587	
Mayo Clinic	Microsensor for Intramuscular Pressure Measurement	Haut-Donahue, Tammy Co-PI: Odegard, Gregory	\$221,000	
National Collegiate Inventors & Innovators Alliance (NCIIA)	Enhanced Bio-Morphic Helmet	Jayaraman, Gopal	\$24,180	
American Chemical Society	Demulsification of Water-Oil Emulsion by Nanostructured Surfaces	Meng, DeSheng	\$78,000	
Michigan Technological University	REF-MG Collaboration with UIUC on Innovative Micro Fuel Cells Architectures for Biomedical and Military Applications and the Development of Mentoring Relationship with Dr. Mark A. Shannon	Meng, DeSheng	\$10,000	
Mayo Clinic Rochester	Finite Element Modeling of Intraneural Ganglion Cysts	Odegard, Gregory	\$65,144	
National Aeronautics and Space Administration	Multiscale Modeling of the Effects of Physical, Chemical, and Hydrothermal Aging on Failure of Graphite/Epoxy Composites	Odegard, Gregory	\$201,254	
Michigan Technological University	REF-IE Adding Chemical Microwave Reactor Capability to the Department of Chemistry	Green, Sarah Co-PI: Bates, Dallas Co-PI: Heiden, Patricia Co-PI: Liu, Haiying Co-PI: Murthy, Pushpalatha Co-PI: Shahbazian Yassar, Reza	\$12,000	
Michigan Technological University	REF-MG Mentoring Grant: Michigan Tech/UIUC Mentoring Program on Mechanics of Single Cells	Shahbazian Yassar, Reza	\$10,000	

PhD & MS Graduates

PHD GRADUATES FOR SUMMER 2007, FALL 2007, AND SPRING 2008 (8)

An, Libao (2007) Advisor: Craig R. Friedrich
Real-time Electrical Characterization of Carbon
Nanotube Deposition onto Electrode Gaps by
Dielectrophoresis

Bapat, Vikram V (2007) Advisor: Bernhard P. Bettig
and Roshan M. D'Souza
A Computational Framework for Requirements-Driven
Automated Design Synthesis

Devarakonda, Maruthi N (2008) Advisor:
Gordon G. Parker
Dynamic Modeling, Simulation and Development
of Model-Based Control Strategies in a Urea-SCR
Aftertreatment System in Heavy-Duty Diesel Engines

Eggart, Brian J (2007) Advisor: Carl L. Anderson
Boiling Detection in an Internal Combustion Engine
Cooling System

Khadke, Kiran N (2007) Advisor: John K. Gershenson
Engineering Design Methodology for Planned Product
Innovation

Tang, Jiping (2007) Advisor: Gordon G. Parker
Input Shaping Vibration Control for Non-minimum
Phase Systems

Zhang, Zhen (2008) Advisor: William J. Endres
Slip Line Modeling of Machining with Worn Blunt
Cutting Tools

Zhu, Liangtao (2008) Advisor: Gordon G. Parker
Adaptive Control of Sinusoidal Brushless DC
Motor Actuators

MS GRADUATES FOR SUMMER 2007, FALL 2007, AND SPRING 2008 (41)

Aittama, John C (2008) Advisor: Donna J. Michalek
Multilayer Co-Extrusion Fuel Tank Regrind and
Compatibilization Study for Sustainability

Altan, Amanda R (2008) Advisor: Gopal Jayaraman
An Impact Experiment Study on Biomechanical Surrogate
Human Femur to Identify Impact Mechanisms for Clinically
Observed Hip Fractures Due to Falls

Arthur, Cory M (2008) Advisor: Klaus J. Weinmann
Study of Clad Tubing Extrusion using the Finite
Element Method

Cong, Laibin (2007) Advisor: Craig R. Friedrich
Course work only

Dabhoiwala, Rayomand H (2007) Advisor: John H.
Johnson and Jeffrey D. Naber
An Experimental and Modeling Study of Two Diesel
Oxidation Catalyst-Catalyzed Particulate Filter Systems
and the Effects of the Cracked Filter on its Performance

Demo, Troy C (2008) Advisor: Craig R. Friedrich
Course work only

Devola, Eryn R (2007) Advisor: Sudhakar M. Pandit
Analysis of Warranty Claim Trends Using a Data
Dependent Systems Model

Feenstra, Joel R (2007) Advisor: Henry A. Sodano
Piezoelectric Materials with Application to Power
Harvesting and Sensing

Fultz, Derek W (2007) Advisor: Jeffrey Allen
Non-Intrusive Pressure Measurement in Microchannels

Gandhi, Punit B (2007) Advisor: Craig R. Friedrich
Course work only

Granstrom, Jonathan M (2008) Advisor:
Henry A. Sodano
Smart Polymers for Use in Power Harvesting, Noise
Control and Self Healing Applications

Grattan, David J (2007) Advisor: Gopal Jayaraman
The E-N Curve: A Relationship Between Sub-Fractural
Impact Loading and Material Durability

Graziano, Michael T (2007) Advisor: Gordon G. Parker
Reducing Crane Payload Swing Using a Rider Block
Tagline Control System

Gujarathi, Ritesh C (2008) Advisor: Craig R. Friedrich
Course work only

Hadden, Robert G (2008) Advisor: Jason R. Blough
Study of Flow Characterization in Truck Exhaust Systems

Hauch, Karen N (2008) Advisor: Tammy L. Haut
Donahue
Time Dependent, Failure, and Nano-mechanical Properties
of Human Meniscal Attachments

Herrera, Kevin J (2007) Advisor: Gopal Jayaraman
and William W. Predebon
Design of an Automated Motorcycle Laced Wheel Truing
Machine

Hu, Weiwei (2007) Advisor: Roshan M. D'Souza
Three Dimensional Additive Manufacturing Using
Microwave

Hutchins, Margot J (2007) Advisor: John W. Sutherland
Course work only

Jagtap, Abhijeet M (2008) Advisor: Craig R. Friedrich
Course work only

Jenkins, Timothy L (2008) Advisor: John W. Sutherland
Course work only

Korata, Ranganath (2007) Advisor: Craig R. Friedrich
Course work only

Lin, Dixuan (2008) Advisor: Craig R. Friedrich
Course work only

Masterson, John P (2008) Advisor: Craig R. Friedrich
Course work only

Mathur, Saurabh (2007) Advisor: John H. Johnson and
Jeffrey D. Naber
Experimental Studies of an Advanced Ceramic Diesel
Particulate Filter

Mathur, Vivek K (2008) Advisor: Jeffrey D. Naber
Experimental Investigation of Soy Based Biodiesel Fuel
in Comparison to Ultra Low Sulfur Diesel Fuel in a HSDI
Diesel Engine

Miller, Samuel J (2008) Advisor: Gregory M. Odegard
Finite Element Analysis and Optimization of a Plate-Type
Piezoelectric Composite Actuator

Nair, Rajesh N (2007) Advisor: John H. Johnson
Course work only

Patel, Mehulkumar D (2007) Advisor: Craig R. Friedrich
Fixture Design and Evaluation for a Cochlear Implant
Insertion Tool

Peplinski, Andrew J (2007) Advisor: John H. Johnson
Course work only

Rahmani, Keyvan (2007) Advisor: Roshan M. D'Souza
A GPU-Based Framework to Simulate Predator-Prey
Models

Richards, Andrew W (2007) Advisor: Gregory M. Odegard
Constitutive Modeling of Electro-active Materials

Rivera, Julio L (2008) Advisor: John W. Sutherland and
Donna J. Michalek
Course work only

Tewari, Radheshyam (2007) Advisor: Craig R. Friedrich
Force Characterization and Rigidity Analysis of a
Monolithic Cochlear Prosthesis Actuator

VanKarsen, Jeffrey C (2007) Advisor: Jason R. Blough
Sensitivity Analysis and User Interface Development of In-
Situ Method Estimation of Powertrain Inertia Properties

Vartak, Harshal D (2007) Advisor: Craig R. Friedrich
Course work only

Weingartz, Christopher J (2007) Advisor: Carl L.
Anderson
Determination of Heat Transfer Augmentation Due to Fuel
Spray Impingement in a High-Speed Diesel Engine

Wells, Lee J (2008) Advisor: Jaime A. Camelio
Enhanced Dimension-Reduction (EDR) Method for
Quality and Sensitivity-Free Reliability Assessment

Yang, Yung Tai (2007) Advisor: Song-Lin Yang
Implementation of a Third-Order Monotonic Upwind-
Biased Scheme for Engine Flow Simulation Using the
KIVA Code

Yeliana, FNU (2007) Advisor: Jeffrey D. Naber
Course work only

Zhao, Qiangsheng (2008) Advisor: Jaime A. Camelio
Data Dependent Approaches in Fault Diagnosis for
Manufacturing Application



2007-2008 BS Graduates (251)

SUMMER 2007

Michael David Aho
 Derek R. Botero
 Jeffrey Allen Bowman
 Alan W. Campbell
 Joseph F. Cowdery
 David P. Galganski
 Brendan Thomas Grimes
 Michael James Heavener - Magna Cum Laude
 Christopher John Kero
 Dasol Kim
 Adam Ryan King
 Ronald William Knoebel - Summa Cum Laude
 Brandon W. Krieger
 Jeffrey Robert Lachapell
 Nicholas A. Manville
 Christopher John Metelsky
 Kassie Ilene Monick - Magna Cum Laude
 Gregory J. Montie
 Kenny Ng - Summa Cum Laude
 Michael David O'Shaughnessey - Cum Laude
 Gregory David Paine
 Adam W. Pankonin
 Brandon Toby Rouse - Magna Cum Laude
 Owen K. Seltz
 Brandon Jay Smith
 Raymon Anthony Smith
 Jason Michael Tougas

FALL 2007

Anthony Hale Abbott
 Heather Nicole Aho - Cum Laude
 Muammer Din Arif
 John Thomas Bagley
 Bryan John Baxter
 Garren Anton Beauchamp
 Matthew Edward Bengry
 Michael Kenneth Billmeier
 Nathan Lee Bosscher
 Jeffery Alan Bouman - Magna Cum Laude
 Kevin Michael Bourgo
 Erin Ruth Buckner
 Joseph Richard Buono - Magna Cum Laude
 Kristin A. Cauley
 Darald Earl Yung Chao - Summa Cum Laude
 Ryan Brodie Cook
 Christopher Scott Deprest
 Jeremy J. Dion - Summa Cum Laude
 Luke Robinson Donovan
 Andrew Michael Downer - Magna Cum Laude
 Nickolaus Kenneth Dumler

FALL 2007 (cont.)

Gregory John Ehlert - Magna Cum Laude
 Thomas W. Faussett
 Edmund Wester Fitzgerald
 Kyle Richard Gleason
 Kyle Anthony Hauswirth - Cum Laude
 David James Henderson
 Ryan Christopher Hoepf
 Jacob Thomas Horn
 Ben Allyn Johnson
 Carl James Kauppila
 Varun Kaushik
 Scott Richard Kiel
 Haijo Adam Kiel
 Uk Jung Kim
 Thomas Michael Knuth
 Joseph P. Lambie
 Timothy William Lau - Cum Laude
 Casey Michael Luskin
 Kyle David Lyngstad - Magna Cum Laude
 David Joseph Malek
 Kyle Joseph Marsh
 John J. McCabe - Cum Laude
 Scott T. Melin
 Jeffrey Adam Miller - Cum Laude
 Matthew Ronald Miller
 Christopher W. Moore
 Erik Allan Moro - Magna Cum Laude
 Christopher Ryan Myers
 Evan Edward Nelson
 Edward Ng - Cum Laude
 Justin Lee Novak
 Grant Joseph Ovist
 Matthew Thomas Peterson
 Gregory T. Polkus
 Christopher James Prekert
 Jeffrey Edward Pruetz
 Stacey Lynn Pyke
 Howard Phillip Reedy
 Jason James Rusch
 Brian Cha Schmidt
 Abhilash Singh - Magna Cum Laude
 Divyang Singh - Magna Cum Laude
 Aaron James Sklenar
 Carey Wade Slater
 Troy Douglass Smith
 Benjamin Carl Stanaway
 David M. Steslicki
 Joshua David Stevens
 John David Sturza - Magna Cum Laude
 Jared Robert Suster - Magna Cum Laude
 Aik How Tan - Cum Laude
 Jacob Spaar Tretter
 Jack Christopher VanAntwerp
 Michael Paul VanDeHey
 Nicholas Jamison Wood - Magna Cum Laude

FALL 2007 (cont.)

Douglas John Woodruff
 Chad D. Ziesemer - Summa Cum Laude

SPRING 2008

Heather Ashley Ackerman
 Beau Loren Anderson
 Bradley James Bambusch
 Ryan M. Bartholomew
 Kevin J. Berry - Cum Laude
 William Edward Beyer
 Christopher S. Billiu
 Benjamin M. Bittner - Summa Cum Laude
 Eric Christopher Black
 Jack Robert Blundell
 Brenton Everett Bojanowski
 James R. Breternitz
 Ryan Everett Caldwell
 Jacob Allen Caverly - Cum Laude
 Timothy Joseph Cercone - Cum Laude
 Mark Louis Cihlar - Summa Cum Laude
 Christopher James Coughlin
 Michael B. Cunningham
 Stephanie Marie DeForge
 Catherine Ann Dean
 Lucas S. Dehn
 James William Dennison
 Paul R. Donlin - Cum Laude
 Michael Patrick Doran
 Zach J. Edel - Summa Cum Laude
 Joshua Lowell Ehlers
 Adam Joel Emery - Summa Cum Laude
 Carolyn Marie Enck
 Jacob David Fahlsing
 Andrew L. Faulkner
 Andrew Charles Fenton
 Brian N. Flynn - Cum Laude
 Benjamin E. Fogle
 Joel Jeffrey Ford
 Bryan G. Freed
 Lindsay D. Fry-Schallhorn
 Jason Michael-Adams Fuller
 Phillip P. Gable - Summa Cum Laude
 Scott Wayne Garver - Magna Cum Laude
 Tara Susanne Gokey
 Fred Nicholas Golda
 Andre Luis Gomez
 Derrick John Gossen
 Joshua William Hahn
 Levi Joseph Halonen
 Kevin William Heglund - Magna Cum Laude
 Christopher John Isaacson
 Sarrah D. Jackson
 Leonard Louis Jacobs
 Walter Bennett Johnson - Cum Laude

SPRING 2008 (cont.)

Joshua Paul Johnson
Donald Henry Jones
Steven M. Karner
Matthew Ryan Karnes
Tyler Joel Kellenberger
Daniel James Kempke
Clayton John Kessner
Aaron J. Knuth
Sammy Ko
Matthew John Kohlmann - Magna Cum
Laude
Keith Alan Kortenhoven
Hans G. Korth
Alexandra Sergeevna Kush - Magna Cum
Laude
Ian L. Ladwig
Kyle Mitcheal Larson
David Conrad Leach
Cody Mark Leonard
Charisse Michelle Lievens
Dustin Scott Lindstrom
Pou Chuong Liow
Michael J. Loughhead
Roy Harold Loukus
Dustin Kenneth Lowe
Andrew J. Ludy - Magna Cum Laude
Erik Michael Lundberg
Kevin Joseph Maloney - Cum Laude
Michael Lee Mascott
Mitchell Alan McDonald
Amy Lynn Meyers
Joshua John Mickelson
Ryan DeWaine Middleton
Patrick C. Miller
Christopher F. Miller - Cum Laude
Brian Thomas Mleziva - Summa Cum
Laude
Christopher Lee Moore
Dan Chester Morgan
Daniel H. Morris - Cum Laude
Jered Christopher Mott
Jacob R. Noll
Trenton Bruce Noreen
Ryan L. O'Boyle
Christopher M. O'Sullivan
Vanessa Katherine Ortis - Magna Cum
Laude
Ravi Peketi
Clinton Michael Pernack
Robert James Piedmonte - Cum Laude
Carl Patrick Pierce - Cum Laude
Michael J. Plegue
Kyle S. Pullen
Nick Charles Raisanen - Magna Cum
Laude

SPRING 2008 (cont.)

Chad Charles Rau
Chandler C. Reppert
Stephen Douglas Riutta - Magna Cum
Laude
Zachary Alan Romme
Jessica Anne Ruth
Douglas Christopher Sarsen - Cum Laude
Sarah Margaret Schneider
Danielle Marie Schneider
Dustin Michael Schultz
Ryan A. Schultz - Summa Cum Laude
Noah D. Schuster
Bryan J. Sebeck
David Ira Siegfried
Matthew James Silhavy
Steven Daniel Silva
Nate Tyler Simula
Nicholas James Smith - Summa Cum
Laude
Jonathon Paul Spek
Jacob William Steinbrecher - Cum Laude
Gregory James Strzyzkowski
William W. Sturtevant
Sean Corcoran Sullivan
David Charles Sutton
Morgan P. Swanlund
Tara Elizabeth Swanson - Magna Cum
Laude
Evan Matthew Swartz - Magna Cum
Laude
Clayton Scott Tacey - Summa Cum Laude
Andrew P. Timmons - Magna Cum Laude
Nathan Vincent Treague
Katherine J. Turmel
Travis Dea Turner
Adam H. VanEssen - Cum Laude
Craig VanAppledorn - Magna Cum
Laude
Garrett Allen VanGosen
Elizabeth Marie VanHeusden
Ryan James VanZoest
Daniel Edward Vanderhoof
Daniel W. Vanevenhoven
Matthew Jacob Vitale
Raymond Allen White
Matthew Lawrence Wilkins
Andrew Moore Willemsen - Summa Cum
Laude
David Roy Wingard
Michael V. Woon - Magna Cum Laude
Nitin Yadav
Jonathon Joseph Zielinski - Cum Laude

GRADUATE FELLOWSHIPS 2007-2008

Alumni Fellowship

Justin Keske
Christopher Polonowski

Cummins Fellowship

Rohit Arasappa

Daimler Chrysler Fellowship

Ben Moscherosch

Fulbright Fellowship

Yeliana

Henes Fellowship

Margot Hutchins
Tim Jenkins
Julio Rivera

King - Chaves - Parks

Joseph Hernandez
Kari Jordan

Marshall Fellowship

Karl Walczak

National Science Foundation

Mark Griep

Teaching Fellowship

Justin Keske

Winnikow Fellowship

Shantanu Kulkarni

ORDER OF THE ENGINEER

Spring 2008

Mr. Eric A. Nielsen
President and CEO, Volvo
Excavators and Volvo Construction
Equipment Korea Ltd.
Keynote address

Fall 2008

Mr. Douglas H. Hamar
President & CEO, The Hamar
Group, Horner Flooring Company
Keynote address

Journal Articles

MAY 1, 2007 - APRIL 30, 2008

* Please note: **Bold text** indicates ME-EM faculty members and *italicized text* indicates ME-EM students.

BOOKS

Vable, M., 2008, *Intermediate Mechanics of Materials*, Oxford University Press, New York, 604 pages, ISBN: 978-0-19-518855-4.

BOOK CHAPTERS

Gershenson, J.K., and *Clarke, A.* 2007, "Chapter 3: Life-Cycle Design," pp. 67-125 Kutz, M. (ed), *Handbook of Environmentally Conscious Mechanical Design*, John Wiley and Sons, New York. ISBN: 9780471726364.

JOURNAL ARTICLES

Herescu, A., and **Allen, J.S.**, 2007, "A Theoretical Investigation of an Electric-Field-Driven Menisci Micro-Pump", *Journal of Fluids Engineering*, Vol. 129, pp. 404-411.

Hernandez, J., and **Allen, J.S.**, 2007, "Visualization and Tracking of Spontaneous Liquid-Liquid Slug Flow in Microchannels", *Journal of Heat Transfer*, Vol. 129, No. 8, p. 937.

Som, S.M., Kimball, J.T., Hermanson, J.C., and **Allen, J.S.**, 2007, "Stability and Heat Transfer Analysis of Unsteady Condensing and Evaporating Films", *International Journal of Heat and Mass Transfer*, Vol. 50, pp. 1927-1937.

Robinette, D., **Anderson, C.A.**, **Blough J.R.**, and Johnson, M., "Characterizing the Effect of Automotive Torque Converter Design Parameters on the Onset of Cavitation at Stall," *SAE 2007 Transactions – Journal of Passenger Cars – Mechanical Systems*, Section 6, Vol. 16, pp. 1735-1746.

Dilworth, B. and **Blough, J.R.**, "Implementation of the Time Variant Discrete Fourier Transform as a Real-Time Order Tracking Method," *SAE 2007 Transactions – Journal of Passenger Cars – Mechanical Systems*, Section 6, Vol. 16, pp. 1634-1641.

Londhe, N., **Blough, J.R.**, and **Rao, M.**, 2007, "Evaluation of Electro-Acoustic Techniques for In-situ Measurement of Acoustic Absorption Coefficient of Grass and Artificial Turf Surfaces," *SAE 2007 Transactions – Journal of Passenger Cars – Mechanical Systems*, Section 6, Vol. 16, pp. 1706-1714.

VanKarsen, J., **Blough, J.R.**, Ge, T., Johnson, D, and **Rao, M.**, 2007, "Estimation of Powertrain Inertia Properties via an In-situ Method," *SAE 2007 Transactions – Journal of Passenger Cars – Mechanical Systems*, Section 6, Vol. 16, pp. 2017-2028.

Kumar, V., *Shirodkar, P.S.*, **Camelo, J.A.**, and **Sutherland, J.W.**, 2007, "Value Flow Characterization During Product Lifecycle to Assist n Recovery Decisions," *International Journal of Production Research*, Vol 45, No. 18, pp. 4555-4572.

Shirodkar, P., *Kumar, V.*, **Camelio, J.**, and **Sutherland, J.**, 2007, "Characterizing Value Flow during the Product Life Cycle to Promote Reuse, Remanufacturing, and Recycling," *International Journal of Production Research*, Vol. 45, No. 19, pp. 4555-4572.

Xie, K., *Well, L.*, **Camelio, J.**, and Youn, B.D., 2007, "Variation Propagation Analysis On Compliant Assemblies Considering Contact Interaction," *ASME Journal of Manufacturing Science and Engineering*, Vol. 129, No. 1, pp. 934-942.

Yue, J., **Camelio, J.**, Chin, M., and Cai, W., 2007, "Product Oriented Sensitivity Analysis for Multi-station Compliant Assemblies," *Journal of Mechanical Design*, Vol. 129, No. 9, pp. 844-851.

D'Souza, R., 2007, "On Setup Level Tool Sequence Selection for 2.5d Pocket Machining," *Robotics and Computer Integrated Manufacturing*, Vol. 22, pp. 256-266.

An, L. and **Friedrich, C.**, 2008, "Real-Time Gap Impedance Monitoring of Dielectrophoretic Assembly of Multiwalled Carbon Nanotubes," *Applied Physics Letters*, Vol. 92, No. 17, pp. 3103-3105.

Wallner, J., *Nagar, N.*, **Friedrich, C.**, and Bergstrom, P., 2007, "Macro Porous Silicon as Pump Media for Electro-Osmotic Pumps," *Physica Status Solidi A Applications and Materials Science*, Vol. 204, No. 5, pp. 1327-1331.

Wise, K., Bhatti, P., Wang, J., and **Friedrich, C.**, 2008, "High-Density Cochlear Implants With Position Sensing and Control", *Hearing Research – Special Issue on Auditory Prostheses*, Vol. 242, No. 1-2, pp. 22-30.

Alizon, F., *Khadke, K.*, Thevenot, H.J., **Gershenson, J.K.**, Marion T.J., Shooter, S.B., and Simpson, T.W., 2007, " Frameworks for Product Family Design and Development," *Concurrent Engineering*, Vol. 15, pp. 187-199.

Guo, F. and **Gershenson, J.K.**, 2007, "Discovering Relationships Between Modularity and Cost," *Journal of Intelligent Manufacturing*, Vol. 18, No. 1, pp. 143-157.

Jiao, J., **Gershenson, J.K.**, and Michalek, J.J., 2007, "Managing Modularity and Commonality in Product and Process Development", *Concurrent Engineering*, Vol. 15, pp. 81-83.

Khadke, K., and **Gershenson, J.K.**, 2007, "Technological-Driven Product Platform Development." *International Journal of Product Development*, Special Issue on Innovative Concepts in the Perspective of Maximizing the Utilization Rate and Value of Durable Goods, Vol. 6, No. 3-4, pp. 353-374 .

Sun, Y., **Gupta, M.**, Dooley, J., Koppi, K.A., and Spaulding, M.A., 2008, "Numerical and Experimental Investigation of Elongational Viscosity Effects in a Coat-hanger Die," *Journal of Plastics Technology*, Vol. 4, pp. 1-14.

Walczak, K., **Gupta, M.**, Koppi, A., Dooley, J., and Spaulding, M.A., 2008, "Elongation Viscosity of LDPEs and Polystyrenes using Entrance loss Data," *Polymer Engineering and Science*, Vol. 48, pp 223-232.

Villegas, D., Hansen, T.A., Liu, D.F., **Haut Donahue, T.L.**, 2008, "A Quantitative Study of the Microstructure and Biochemistry of the Medical Meniscus Horn Attachments," *Annals of Biomedical Engineering*, Vol. 36, No. 1, pp. 123-131.

Villegas, D., *Maes, J.A.*, *Magee, S.D.*, and **Haut Donahue, T.L.**, 2007, "Failure Properties and Strain Distribution Analysis of Meniscal Attachments," *Journal of Biomechanics*, Vol. 40, No. 12, pp. 2655-2662.

Makela, J.M., *Massey, D.R.*, and **King, L.B.**, 2008, "Bismuth Hollow Cathode for Hall Thrusters," *Journal of Propulsion and Power*, Vol. 24, No. 1, pp. 142-146.

- Dantuluri, V., **Maiti S.**, Geubelle, P.H., Patel, R., and Kili, H., 2007, "Cohesive Modeling of Delamination in Z-pin Reinforced Composite Laminates," Composites Science and Technology, Vol. 67(3-4), pp. 616-631.
- Jing, X., Subhash, G. and **Maiti, S.**, 2007, "A New Analytical Model for Estimation of Scratch Induced Damage in Brittle Solids," Journal of the American Ceramic Society, Vol. 90, No. 3, pp. 885-892.
- Nittur, P.G., **Maiti, S.**, and Geubelle, P.H., 2008, "Grain-level Analysis of Dynamic Fragmentation of Ceramics under Multiaxial Compression," Journal of the Mechanics and Physics of Solids, Vol. 56, No. 3, pp. 993-1017.
- Zhang, H., Subhash, G., and **Maiti, S.**, "Local Heating and Viscosity Drop during Shear Band Evolution in Bulk Metallic Glasses under Quasistatic Loading," Journal of Applied Physics, Vol. 102, No. 4, 043519.
- Meng, D.D.**, and Kim, C.-J., 2008, "Micropumping of Liquid by Directional Growth and Selective Venting of Gas Bubbles," Lab on a Chip, Vol. 8, pp. 958-968.
- Meng, D.D.**, Cubaud, T., Ho, C.-M., and Kim, C.-J., 2007, "A Methanol-Tolerant Gas-Venting Microchannel for a Micro Direct Methanol Fuel Cell," Journal of Microelectromechanical Systems, Vol. 16, pp. 1403-1410.
- Miers, S.A.**, Barna, G., **Anderson, C.A.**, **Blough J.R.**, *Inal, K., Ciatti S.A.*, 2007, "A Wireless Microwave Telemetry Data Transfer Technique for Reciprocating and Rotating Components," ASME Journal of Engineering for Gas Turbines and Power, Vol. 130, No. 2, GTP-06-1228, .
- Keith, J.M., King, J. A., Grant, P.W., Cole, A.J., Klett, B.M., **Miskioglu, I.**, 2008, "Tensile Properties of Carbon Filled Liquid Crystal Polymer Composites," Polymer Composites, Vol. 29, No. 1, pp. 15-21.
- King, J.A., Keith, J.M., Glenn Jr., O.L., **Miskioglu, I.**, Cole, A.J., McLaughlin, S.R., and Pagel, R.M., 2008, "Synergistic Effects of Carbon Fillers on Tensile and Flexural Properties in Liquid-Crystal Polymer Based Resins," Journal Applied Polymer Science, Vol. 108, pp. 1657-1666.
- Purcek, G., Bacaksiz, E., and **Miskioglu, I.**, 2008, "Structure and Nanomechanical Properties of CdTe Thin Films," Journal of Material Processing Technology, Vol. 198, No. 1-3, pp. 202-206.
- Polonowski, C.*, **Naber, J.**, and **Blough, J.R.**, 2007, "Accelerometer Based Sensing of Combustion in a High Speed HPCR Diesel Engine," SAE 2007 Transactions – Journal of Passenger Cars – Mechanical Systems, Section 6, Vol. 16, pp. 592-607.
- Szwaja, S., *Bhandary, K.*, and **Naber, J.D.**, 2007, "Comparisons of Hydrogen and Gasoline Combustion Knock in a Spark Ignition Engine," International Journal of Hydrogen Energy, Vol. 32, No. 18, pp. 5076-5087.
- Szwaja, S., and **Naber, J.D.**, 2007, "Exhaust Gas Recirculation Strategy in the Hydrogen SI Engine," Journal of KONES Powertrain and Transport 2007, Vol. 14.
- Narain, A.**, *Kurita, J.H., Kivisalu, M., Kulkarni, S.D., Siemionko, A., Ng, T.W., Kim, N., and Phan, L.*, 2007, "Internal Condensing Flows Inside a Vertical Pipe- Experimental/Computational Investigations of the Effects of Specified and Unspecified (Free) Conditions at Exit," ASME Journal of Heat Transfer, Vol 129, No. 10, pp. 1352-1372.
- Phan, L.*, and **Narian, A.**, 2007, "Non-linear Stability of the Classical Nusselt Problem of Film Condensation and Wave-Effects," ASME Journal of Applied Mechanics, Vol. 74, No. 2, pp. 279-290.
- Elangovan, S.*, Altan, B.S. and **Odegard, G.M.**, 2008, "An Elastic Micropolar Mixture Theory for Predicting Elastic Properties of Cellular Materials," Mechanics of Materials, Vol. 40, No. 7, pp. 602-615.
- Valavala, P.K.*, Clancy, T.C., **Odegard, G.M.**, and Gates, T.S., 2007, "Nonlinear Multiscale Modeling of Polymer Materials," International Journal of Solids and Structures, Vol. 44, No. 3-4, pp. 1161-1179.
- Parker, G.**, Schaub, H. Natarajan, A., and **King, L.**, 2007, "Coulomb Force Virtual Space Structures," Acta Futura, Vol. 2, pp. 39-44.
- Ponta, F.L.**, and *Lago, L.I.*, 2008, "Analysing the Suspension System of VGOT-Darrieus Wind Turbines," Energy for Sustainable Development. International Energy Initiative, Vol. 12, No. 2, pp. 5-16.
- Ponta, F.L.**, and Jacovkis, P., 2008, "Marine-current Power Generation by Diffuser-augmented Floating Hydro-turbines," Renewable Energy, Elsevier, Vol. 33, No. 4, pp. 665-673.
- Dreyer, J.*, **Rao, M.D.**, and **Pandit, S.M.**, 2007, "Estimation of Sound Absorption of Three-dimensional Treatments Based on Impedance Tube Measurements," Noise Control Engineering Journal, Vol. 55, No. 5, pp. 466-475.
- Holt, J.R.*, **Rao, M.D.**, **Blough, J.R.**, and Gruenberg, S., 2007, "Time History Based Excitation in the Dynamic Characterization of Automotive Elastomers," Journal of Automobile Engineering, Vol. 221, No. 3, Part D., pp. 271-284.
- Filipovic, A.J.*, and **Sutherland, J.W.**, 2008, "Assessing the Performance of a Magnetostrictive-Actuated Tool Holder to Achieve Axial Modulations with Application to Dry Deep Hole Drilling," Journal of Manufacturing Processes, Vol. 9, No. 2, pp. 76-86.
- Haapala, K.R.*, *Rivera J.L.*, and **Sutherland, J.W.**, 2008, "Application of Life Cycle Assessment Methods to Sustainable Product Design and Manufacturing," International Journal of Innovative Computing, Information and Control, Special Issue on Recent Advances in Flexible Automation, Vol. 4, No. 3, pp. 575-589.
- Haapala, K.R.*, *Jordan, K.L.*, and **Sutherland J.W.**, 2008, "A Life Cycle Environmental and Economic Comparison of Product-Service Systems," Transactions of NAMRI/SME, Vol. 36, pp. 333-340.
- Kumar, V.*, and **Sutherland, J.W.**, 2007, "Infrastructure Changes Required to Achieve Higher Material Recovery Targets from End-of-Use Vehicles," Transactions of NAMRI/SME, Vol. 35, pp. 201-208.
- Sutherland, J.W.**, and *Haapala, K.R.*, 2007, "Optimization of Steel Production to Improve Lifecycle Environmental Performance," CIRP Annals, Vol. 56, No. 1, pp. 5-8.
- Vable, M.** and *Reddy, J.*, 2007, "Boundary Element Analysis of Inclusions with Corners," Engineering Analysis with Boundary Elements, Vol. 31, pp. 762-770.
- Urip, E.*, *Liew, K.H.*, and **Yang, S. L.**, 2007, "Modeling IC Engine Conjugate Heat Transfer Using the KIVA Code," Numerical Heat Transfer, Part A, Vol. 52, pp. 1-23.

MichiganTech

Student Societies



SAE Aero Design

SAE Aero is a group of dedicated and motivated student engineers. As a team, we've learned about budgeting, teamwork, getting maximum efficiency for minimum cost, and how to apply classroom concepts to real-world situations. Each member has learned, on their own time, a form of engineering analysis; we have members that are proficient in CFD, FEA, Aerodynamic Analysis, Composite Materials, Structures, and Manufacturing. Our hard work has paid off—we've achieved 1st, 3rd, and two 8th place finishes in design competitions over the past two years.

Nathan Wier, Vice President



American Society of Mechanical Engineers

As a member of ASME, I have developed my skills in leadership, time management, efficiency, and team-based engineering. One of my main projects with the group was the Rube Goldberg Machine Contest, which involved the construction of a highly complex machine to complete a simple task. The project helped me identify my strengths as an engineer, and allowed me the opportunity to interact with contest sponsor representatives in a professional context.

Emily Harrison, President

Society of Women Engineers

SWE has supported and contributed in great part to my professional development and networking, and I am grateful for the many opportunities it has provided during my three years of membership. I have the honor of being a part of a group of women (and the men who support us) that hosts

the annual Evening with Industry, takes part in Winter Carnival and Spring Fling, participate in conferences and speaker series, and reaches out to the local community through teaching and volunteer work.

Megan Cook, President



SWE members at a breast cancer awareness event



Pi Tau Sigma ME Honor Society

As the President of Pi Tau Sigma, I have learned about running effective meetings, using human resources effectively, organizational planning, and personal time management. The skills I have gained have served me well in interviews as examples of my ability to lead and organize people towards a common goal. I have been humbled to be part of an organization comprised of the best ME students on campus who are taking action to improve the campus community.

Robert Hambrock, President

ME Student Advisory Committee

The Mechanical Engineering Student Advisory Committee serves a very important purpose: to communicate students' concerns directly to department leadership. Working on the committee has allowed me to serve other ME students by assessing the current curriculum and discussing options for improvement with decision makers. During this process, I have had the opportunity to network with department and student leaders while gaining insight into the educational system at Michigan Tech.

Jeff Katalenich, Committee Chair



Alumni Events

Michigan Tech HOCKEY 2007/08
 Friday 08FEB08 7:07PM
 MacInnes Student
 MichiganTech Huskies.com
 SDC Ticket Office
 MacInnes Drive
 Houghton, MI 49931

08FEB08
 Gen. Admission
 Standing
 MTSU
 05402000



U.S. Senator Debbie Stabenow (D-Mich.), center, prepares to drop the puck at a Michigan Tech hockey game during Winter Carnival 2008. At left are State Representative Mike Lahti (D-Hancock) and State Senator Mike Prusi (D-Marquette).

Politicians in Town



Above: ME-EM alumni and family watch the game from the skybox at the John MacInnes Student Ice Arena.

Left: Dr. Jeff Naber, fourth from left in rear, and several of his graduate students gave Senator Stabenow, center, a tour of the engine labs in the ME-EM.



ME-EM Cruise



Left: Dennis LeSage (BSME '72, MSME '73) and his wife Carrie enjoy a cruise down the Portage Lake Shipping Canal on the Keweenaw Star in August.



Above: Dr. Carl Anderson, Associate Dean for the College of Engineering and ME-EM faculty member, and his wife Chris Anderson, Special Assistant to the President, enjoy the company of Board of Control member Lenora Ashford and a couple of her friends.

Joseph Peterson (BSME '87, MSME '93), his wife Michelle, son Alex and their new addition bask in the sun on board the Keweenaw Star.



Pasty Picnic

Above: ME-EM Department Chair Dr. William Predebon, center, talks with Camiel E. Thorrez (BSME '70) and Daniel Webb (BSME '56) at the University's Pasty Picnic as part of the 2008 reunion festivities.



Elmer Dupuis (BSME '42) shares some memories with other MTU alums at the Pasty Picnic.

MichiganTech

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ME-EM

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