Message from the Chair


This year’s report is a retrospective celebration of our 85th anniversary, and we highlight several alumni’s contributions to four key industries: automotive, aerospace, energy, and health care. Although this focus leaves many success stories untold and many contributions unrecognized, the process of reviewing eighty-five years of material left a deep impression of gratitude on the annual report committee.

Starting with our first full graduating class in 1931, the entrepreneurial spirit of our alumni has flourished and led to historic developments in engineering. Please take time to read their stories. The success of our alumni is the ultimate measure of our department’s contribution to society, which speaks to the dedication of our past and present faculty and staff: our current success would not be possible without the foundation they have established and maintained throughout the years.

The Mechanical Engineering department first began in 1927 with less than a dozen students and four faculty, granting its first BSME degree in 1929, followed by the first MSME degree in 1930. In 1970 the Mechanical Engineering and Engineering Mechanics departments merged to form the ME-EM department. In 1975, the recently formed ME-EM department granted its first PhD. Our department has grown to 1,059 undergraduate students, 301 graduate students (101 of which are PhD students), forty-four faculty, and twenty-two staff in 2011.

The growth of the department would not have been possible without the great minds of the last eighty-five years, and we look forward to the contributions of our current and future students, faculty, and staff. I am honored to encourage and lead the efforts of the department, shaping innovations in traditional and emerging research and technologies.

William W. Predebon
Professor and Department Chair
wwpredeb@mtu.edu

On the Cover

The industries where our graduates have impacted the nation include aerospace, automotive, energy, and health care. Laura Maciosek is making an impact with her Senior Capstone Design team members, developing a lightweight prosthesis for children in India.
ME-EM Research Continues to Expand Through Economic Downturn

The National Science Foundation lists the ME-EM department 20th in research expenditures among all mechanical engineering departments in the US for fiscal year 2009, the most recent year available. Research in the ME-EM department is carried out by faculty, staff, and students at both the undergraduate and graduate levels.

STEADY GROWTH WITH DISTRIBUTED FUNDING SOURCES

Both federal and industrial research and development budgets have stagnated or decreased during the past few years. Despite this, ME-EM has been able to maintain a modest growth in research expenditures by balancing traditional mechanical engineering activities such as automotive powertrain research with emerging interdisciplinary activities such as experimental and numerical study of nanoscale material behavior. This balanced approach enables Michigan Tech to maintain a strong presence in core areas while pioneering new frontiers.

Research Expenditures

Research expenditures once again rise, with funding sources spread across traditional and emerging technology sectors.
ME-EM FIRSTS

1929

1ST BS GRAD
John M. Gaffney (’29) was an instructor of Mathematics at Michigan College of Mining and Technology (MCMT). He continued teaching after his graduation.

1930

1ST MS GRAD
Donald E. Palmer (’30) came from the University of Vermont. He taught at MCMT until his death in 1933.

1975

1ST PHD GRAD
Sami Ahmed Kamal (’75) completed his dissertation on multi-axial anisotropic creep, roof resin bolts, and bed separation in rock structures.

1ST CLASS: 1931

Edward A. R. Bellenbaum
Frank Cutler Graham
Harold W. Grams
Duncan Diehl McClure
Forest C. Randall
George E. Smedberg
Griffith N. Thresher
Wesley Townsend

THE ME-EM TODAY

The campus-wide use of diverse facilities and distance learning resources constitute the ME-EM “classroom” of today. Because we involve graduate and undergraduate students in our research, their “classroom” extends to the Advanced Technology Development Center, Keweenaw Research Center, Advanced Energy Research Building, and the Advanced Power Systems Research Center at the airport. Shown here is a distance learning classroom that accommodates both on-campus students and engineers in the field earning MS and PhD degrees.
Griffith Thresher (‘31) was one of eight students in the first full graduating class of MEs with a four-year bachelor’s degree. He earned his MSME in 1934. He received a patent, along with MCMT Professors Seeber and Young, for a method of making pipe fittings that concerned Ts and crosses. This was a revolutionary step in plumbing. Thresher worked for a number of years with Cliff’s Dow Chemical in Marquette, Michigan, and the Frank Wheatley Pump & Valve Company in Tulsa, Oklahoma.

Robert Thresher, Griffith’s son, continued his father’s legacy, earning his BSME in 1962 and MSME in 1967. Robert is a 1996 Academy inductee.

Ralph Hayden (‘33) began his engineering career with the Carrier Corporation, which he left in 1937 to join the Foxboro Company, a manufacturer of industrial instruments for processing industries. He was named chairman of the board in 1970, retiring six years later. He received an honorary Doctor of Engineering degree from Tech in 1970 and also received the Michigan Tech Alumni Association’s Distinguished Alumnus Award in 1974. He was a member of the Presidents Club and a life trustee of the Michigan Tech Fund.
Paul Swift ('33) is the quintessential hometown success story, combining engineering and family into a storied career. After graduation, Swift worked for Carnegie Steel for nine years before returning home to Houghton to work with his father and uncle at the family business, IE Swift Hardware, a fixture for area MEs for decades. He became the sole proprietor of the business many years later. In a giveback to the community, he was also a charter member of the Houghton County Historical Society.

Jack Real ('37) lived an adventurous life with aviation at the core. He began with Lockheed Aircraft as a design engineer and later became a test pilot and flight test engineer. Among the aircraft he designed, developed, and tested are the B-14 Hudson Bomber, the C-130 Hercules cargo plane, and numerous helicopters, including the Cheyenne and the Apache attack helicopter. Real also worked on the SR-71 Blackbird spy plane, conducting tests at the infamous Area 51 in Nevada. Real was a friend of billionaire aviator Howard Hughes, an avid supporter of the Boy Scouts and an author.

While the accomplishments of our alumni are impressive, their success can be attributed, in part, to guidance of our faculty. These men and women have made a lasting impression not only in our department, but in the world.

The following list indicates the faculty member and year hired.

George Luther Christensen
1927
Thomas Emanuel Richards
1927
Wilfred C. Polkinghorne
1927
Robert Rex Seeber
First Department Head
1927
Almon P. Young
1930
Donald E. Palmer
1931
Horace William Risteen
1932
Herbert Walker Hawn
1933
F. William Vigelius
1933
Russell Harold Johnson
1933
Glen Elbert Wimmer
1937
G. Randolph Elwell
1938
Thomas Cocking
1939
Edwin J. Swifka
1940
Edward G. Shideman
1941
Robert Reed Hagen
1942
Arnet B. Epple
1942
Edwin William Niemi
1942
George P. Schubert
1947
WILLIAM TURUNEN

William A. Turunen’s contributions to the automotive field include the invention of the gas turbine engine for General Motors, a rotary regenerator, a regenerative heat exchanger, and improvements to the turbine engine, including the turbine blade cooling system and an evaporative cooled turbine. As a gas turbine expert for GM, his engine, the Whirlfire Turbo-Power GT-302, was built for the 1954 XP-21 Firebird concept car. Because these powerful engines are prone to mechanical problems, Turunen furthered improvements on the engine during his career.
CRAIG LAZZARI
Craig Lazzari (’42) is a pioneer in the energy field. He served in the US Navy in World War II, then began his career in industry. He worked on the engineering and design of the Transcontinental Gas Pipeline Project, the Pacific Northwest Pipeline, and various projects for multiple oil companies. He holds a patent on pulsation dampers to facilitate the compression of gases for transmission through a gas pipeline. He has worked both at home and abroad to secure energy for the country.

DICK BAYER
Dick Bayer (’44) graduated from Michigan Tech and served as an officer in the US Army combat engineering battalion in both the European and Pacific theaters. After the war, he returned to join the ME faculty, serving as an active professor for thirty-seven years. Bayer was faculty advisor to the Tech chapter of the Society of Automotive Engineers for more than twenty years. He was integral to the establishment of national competitions for SAE, influencing the structure and mission of that organization even today.
Al Maki (’48) was an all-star athlete in his years at Tech and went on to a career in the stars. He played four seasons of hockey for Tech, three as team captain, earning him a spot in the Michigan Tech Sports Hall of Fame. After Tech, he worked at General Electric and North American Aviation before joining AVCO and becoming Program Manager for the Titan and Atlas reentry vehicle program. He was also instrumental in the development of the Apollo heat shield.
Dick Henes ('48) is a patent holder and entrepreneur. After Tech, he graduated from the University of Michigan with a Bachelor of Law degree. Henes holds numerous patents in connection with gas generators, welding, and even exercise equipment. He began Henes Stamping Inc. in 1976, and has also served as President of both Henes Manufacturing Company and the American Bolt Company. He and his wife, Liz, established the Henes Chair in the Department of Mechanical Engineering-Engineering Mechanics and the Henes Endowed Scholarship for students.

Ted Gaffney ('51) is a biotechnology innovator and entrepreneur. Some of his early inventions centered on improving two-cycle engines, while his later patents for health care products include motorized and lift chairs, bathtub aids for the handicapped, mobility scooters, and planetary gear assemblies. He also has patents on two recent inventions: the stackable stroller and the powered golf caddy vehicle. He founded and remains Chairman of Ortho-Kinetix in Wisconsin. Gaffney's work continues to be vital to the health and well-being of medical patients worldwide.
JIM REUM

Jim Reum (’53) was a leader in the aviation and aerospace industries. After Tech, he served in the military as a pilot in Korea. He later earned an MBA from Xavier University and began his civilian career at General Electric. He later worked for United Airlines, Cooper Airomotive, and Chromalloy Gas Turbine Corp. Reum worked as an independent consultant in the aerospace industry and became Director of Research and Development at Jet Avion, a subsidiary of HEICO, eventually rising to Vice President of HEICO Aerospace.
FRANK AGOSTI
Frank Agosti (‘58) has been plugged into the power industry since even before his graduation from Tech. He actually worked at Detroit Edison as a student engineer before completing his degree at Tech and returning to DE. He was involved in both the engineering and management sides of the start-ups of both coal-fired and nuclear power plants, becoming Senior Vice President of Power Supply in 1990. He has been an active and generous supporter of Michigan Tech for many years.

DICK ROBBINS
Dick Robbins (‘56) created modern excavation engineering. In 1958, he joined his father’s firm, the Robbins Company, and took over after his father’s untimely death soon after. Robbins developed boring equipment that did not rely on explosives. He holds multiple patents for boring machines that created tunnels faster and safer than any before. His company dug the Chunnel between England and France, and Robbins’ machines are being used now on the Ceneri Base Tunnel project for the Gotthard Tunnel under the Swiss Alps. He is a National Academy of Engineering inductee and was awarded the 2009 Benjamin Franklin Medal in Engineering for his imagination and engineering prowess in design and manufacturing. He and his wife, Bonnie, established the Robbins Endowed Chair in Sustainable Design and Manufacturing in Mechanical Engineering.
Dan Rivard (‘59) focused on quality and speed at Ford Motor Company. Starting fresh out of Tech as an engineer, Rivard worked his way up to executive director for quality improvement, coining the phrase, “Quality is Job One.” He retired in 1992 but returned to head Ford’s motorsports and Special Vehicle Operations. His hands-on approach, encouraged by ME Professor Aubrey Gibson, inspired him to create the Dan and Carol Rivard Product Realization Center, where students can design, model, and fabricate new products.
FRED MITCHELL
Fred Mitchell ('61) has worked on many facets of aviation during his long career at Boeing. He has worked in the Renton Division Program Management Office, the Air Freight Systems Group, New Product Development, Payloads Engineering, and Project Engineering and Tooling, as well as the Customer Service Division. Mitchell became Boeing Commercial Airplane Group’s executive vice president of Airplane Production. In recognition of his contributions, Boeing gives out the Fred Mitchell Lean award, an annual company award which recognizes an organization’s achievements in implementing Lean Manufacturing.

CARL AVERS
Carl Avers ('62) spent his career involved in the utility industry right out of Tech, beginning with San Diego Gas & Electric Company, and culminating in the company he co-founded in 1989, Thermal Ventures, Inc. TVI is a developer and manager of district heating and cooling systems, providing service to large-scale customers, including office buildings, hospitals, hotels, arenas, universities, and retail establishments. He still leads TVI as Chairman and CEO. Avers has also published articles and presented technical papers on energy and environmental issues.
CHARLES CRETORS

Charles Cretors ('63) began his career at Commonwealth Edison in Chicago in central engineering, but popped into the family business, C. Cretors & Company, five years later. They have been makers of commercial popcorn machines since 1885. Cretors himself holds multiple patents for corn poppers, a candy corn cooker, a cotton candy handling device, and an oscillating hot dog grill. He is a major player in the snack food industry and the author of the Popcorn Process section of the Corn Tech Manual.
JOHN L. DRAKE

John L. Drake (‘64) graduated with honors and returned to Tech to complete an MS in Business Administration. He began his career at Delphi Packard Electric in Warren, Ohio, before starting Drake Manufacturing Services to meet the machinery needs of industrial producers in the metalworking industry. Drake Manufacturing is now a leading manufacturer of precision CNC machine tools. He recently developed the Drake Internal Return Ball Nut and is recognized worldwide for his expertise in both threads and thread and gear manufacturing machines. John and his wife, Cathi, established the Drake Endowed Professor in Mechanical Engineering.

DAVID HILL

Dave Hill (‘65) gained automotive fans worldwide for his work at General Motors with classics like the Cadillac, Chevrolet Camaro, Pontiac Firebird, and Chevrolet Corvette. After Tech, he joined GM and earned his MS in Engineering from the University of Michigan. He eventually became the third Chief Engineer for the Corvette in 1992. Hill retired in 2006 and was inducted into the Corvette Hall of Fame. In 2009, he taught a course for Michigan Tech that provided free retraining to displaced automotive engineers.
MANAGING SYSTEM COMPLEXITY

1965

PAUL FERNSTRUM
Paul Fernstrum ('65) went to work after graduation at R.W. Fernstrum & Company in Menominee, Michigan, the firm his father founded. The company engineers cooling technologies for the marine industry. Fernstrum himself contributed by inventing marine heat exchangers, designing the first of a series of engineering programs for sizing the company’s Gridcooler, cutting engineering time from forty hours to thirty minutes, and becoming president in 1995. The Fernstrum family supports four scholarships at Tech and has established the Fernstrum Adaptable Classroom of the Future.

1967

JOHN CALDER
John Calder ('67) began his career as an engineer before moving into management. He returned to Tech in 1976 to earn his MS in Business Administration. He joined a motion control company and later purchased it. In 1980, he co-founded Cincinnati Controls and, in 1985, he co-founded Integrated Manufacturing Control Systems. Since that time, he has continued to acquire businesses, bringing each one to new levels of success. Calder and his wife, Joan, have established the ME-EM Calder Systems and Controls Laboratory and the Calder Endowed Associate Professor in Mechanical Engineering.
HAROLD WIENS

Harold Wiens (‘68) spent his career traveling the world with 3M, starting as a process engineer. He has worn many hats at the manufacturer, including Plant Manager at one of their manufacturing facilities in California, Manufacturing Manager at 3M Europe, Division Vice President of their data storage tape technology business in the US, Executive Vice President of Sumitomo 3M in Japan, and Executive Vice President of 3M Industrial Markets. He retired in 2006 as Executive Vice President for Transportation Business.

DR. JOHN HALLQUIST

Dr. John Hallquist (‘72) earned his MSEM in 1972 and PhD in ME-EM in 1974 from Tech before joining the weapons laboratory at Lawrence Livermore National Laboratory. In 1976, he developed DYNA3D, the first 3D software to simulate the impact of nuclear bombs. In 1987, he founded Livermore Software Technology Corporation, which produces computational mechanics software. He holds numerous patents for simulation and modeling of explosions, collisions, crash-worthiness, metalforming, and mechanical failures. He was the 2003 recipient of the Applied Mechanics Award conferred by ASME and is a National Academy of Engineering inductee.
MARTIN G. LAGINA
Martin Laguna (’77) graduated with honors from Tech and earned his Juris Doctorate from the University of Michigan in 1982, while working as an independent petroleum engineer. In 1982, he founded Terra Energy Ltd., an oil and gas exploration and production company. Recently, Lagina co-founded Heritage Sustainable Energy, a Michigan company that installs wind turbines to produce clean, renewable energy. A true Renaissance man, he has also branched out into winemaking with the Villa Mari Vineyard on the Old Mission Peninsula. He and his family established ME-EM’s Laguna Family Student Success Center.

DR. TERRY WOYCHOWSKI
Dr. Terry Woychowski (’78) went to work at General Motors as an engineer right after graduation. He was chief engineer for GM’s award-winning line of full-size pickups and sport-utility vehicles from 1997 to 2009, including the Chevy Silverado, which won 2007 Motor Trend Truck of the Year. He now serves as Vice President of Global Vehicle Program Management. Giving back to Tech in 2011, he brought a Volt to campus, donated by GM so students could experience hands-on learning with the latest in automotive technology. Woychowski serves on the University’s Board of Control.
DR. DIANA BREHOB
Dr. Diana Brehob ('78) holds multiple patents on direct injection alcohol engines, internal combustion engines, compression ratio control mechanisms, and combustion controls based on engine vibration sensors, all through her work with Ford Motor Company. She earned her MS and PhD in Mechanical Engineering from the University of California, Berkeley, and her law degree from Wayne State University. Dr. Brehob has been practicing patent law since 2009. She is currently the Chief Intellectual Property Counsel at EcoMotors International, a company specializing in clean, efficient, and lightweight propulsion systems.

MARTHA SULLIVAN
Martha Sullivan ('80) is presently the President and Chief Operating Officer of Sensata Technologies, a company that provides high precision sensors to transportation, HVAC, and industrial companies. She joined Texas Instruments in 1984, serving in numerous engineering and management positions before becoming a Vice President in 1998, and contributed greatly to the success of Sensata, which was spun off from Texas Instruments in 2006. Due to her business acumen and technical knowledge, Sullivan is a high-demand speaker at technology, industry, and academic forums. She has established an Endowed Scholarship for Women in Mechanical Engineering.
HUSSEIN M. ZBIB

Hussein M. Zbib ('81) began his academic career at Michigan Tech, earning his BSME in 1981, MSME in 1983, and PhD in ME-EM in 1987. Upon graduation, he joined the faculty at Washington State University. Zbib’s work focuses on thermo-mechanical behavior and properties of solids. He is recognized for his work on multiscale modeling, plasticity, materials instabilities, the theory of dislocation dynamics, and defects in metals. In 2011, he earned a joint appointment as a Laboratory Fellow with Pacific Northwest National Laboratory.

MARGARET COBB

Margaret Cobb ('83) is making her mark in the software industry as Director of Microsoft’s OEM Product Marketing, leading a team marketing Microsoft products for PC manufacturers worldwide. Working at Microsoft for more than fifteen years, Cobb appreciates that many technological advancements do not appeal to most women, and she is working to change that. She has spent time at Microsoft working to understand female consumers and to create products that appeal to them. During her tenure at Microsoft, Cobb has been Director of Xbox Live Product Management and also managed the Windows 7 and Internet Explorer Marketing launches. She was inducted into the Presidential Council of Alumnae at Michigan Tech in 2011.
Doug Parks ('84) joined General Motors right after graduation, working as a tooling engineer. He has worked as the Chief Engineer for cars such as Saturn, the Chevrolet Cobalt, and the sporty Pontiac Solstice. Parks is currently the Global Vehicle Line Executive and Chief Engineer for Global Electric Vehicles, which makes him responsible for the new Chevy Volt. The Volt represents a milestone in Parks’s career as he drives his team with the goals of changing fuel consumption and energy use, as well as enhancing safety.
Colonel Merrily Madero ('85) is the Director of Staff, Air Education and Training Command at Randolph AFB in Texas. In this position, she advises base commanders, as well as supervises flying training wings, technical training wings, a medical wing, Air University, and nationwide recruiting operations. She began with ROTC at Michigan Tech. While pursuing her Air Force career, she earned master’s degrees in personnel management and national resource strategies. Madero has been decorated numerous times for her service in the military.
CHRISTINE ROBERTS

Christine Roberts (’91) joined Motorola immediately after graduation and has developed a multifaceted career at the telecommunications leader. She has worked as an engineer and system planner. She served as International Operations Program Manager, the Director of North America Business Operations, and is currently the Senior Director of Global New Product Introduction and Operations at Motorola Mobility. In addition to her leadership in mobile communications, she is a dedicated advocate of science education for girls, supporting Women in Science and Engineering (WISE).

DR. KIMBERLY TURNER

Following in the footsteps of her father, longtime ME-EM professor Dr. Chris Passerello, Kimberly Turner (’94) is a professor of Mechanical Engineering and Chair of the Department of Mechanical Engineering at the University of California Santa Barbara. She earned her PhD from Cornell University. A scientist and academic who believes in great diversity of thought, she is a 2001 NSF CAREER award winner. One of her research groups at UCSB focuses on microelectromechanical systems and understanding the physics of microscale devices from experimental dynamic motion behavior, while her other work explores developing adhesives inspired by geckos.
Dr. Svitlana Winnikow began at Michigan Tech in 1967, the first woman professor in an engineering department. Always supportive of her students, when she died in 1981, she left her estate to the Michigan Tech Fund, continuing her contributions through an endowed fellowship in her name to a graduate student pursuing the study of thermo-fluid mechanics.

Beginning at Michigan Tech as a Steam Engineering class in 1885, mechanical engineering has always been about moving the world forward. Since the 1940s, the department has been a place where smart women work on projects and enterprises that create the future.
**ME-EM BUILDINGS**

**HISTORIC BUILDINGS**

**ENGINEERING BUILDING**
The Engineering Building (1894) was the second building on MCM’s campus after Hubbell Hall. It was later known as the Mechanical Engineering Building and was used to house labs and technical drawing classes after 1931.

**HOTCHKISS HALL**
The Engineering Building (1931), or East Engineering, was renamed Hotchkiss Hall in 1955 to honor Dr. Hotchkiss, the TC President who began the four-year engineering degree programs. ME moved out of this building in 1970, and it was demolished in 1974 to make way for the Electrical and Energy Resources Center.

**TODAY**

**R.L. SMITH ME-EM BUILDING**
The Mechanical Engineering-Engineering Mechanics Building (1971) was renamed the R.L. Smith ME-EM Building (1988) to honor the former Tech President who oversaw its construction. When the building was under construction, students and community members gave it wide berth, erroneously believing that the bricks cantilevered out over the campus were going to fall on them.
Like the influential faculty and staff of the past, today’s ME-EM department deeply impacts our students both now and in the future. We began with a handful of individuals in 1927 and have grown to include sixty-six department personnel in 2011. As our department expands, we can make greater contributions to industry, research, and students.
Faculty & Staff Awards

Drs. Jeffrey Allen (associate professor, ME-EM), Mahesh Gupta (professor, ME-EM) and Jonathan Lee (MS student, ME-EM) had their paper, “Observations of Liquid-Liquid Encapsulation in Coextrusion of Inelastic Newtonian Fluids,” named Paper of the Month by the Society of Plastic Engineers.

Nancy Barr (Technical Communication and Senior Design Program Administrative Associate, ME-EM) has received her Masters of Science in Rhetoric and Technical Communication from Michigan Tech.

Karen Bess, (office assistant ME-EM), received the Michigan Tech Making a Difference Rookie Award. This award is given annually to a staff member who has been at Michigan Tech for two years or less and has made a significant contribution and/or exceeded all expectations in meeting the challenges of their job in this short time. Karen received the award for her ability to step in and keep the process flowing smoothly without a significant learning curve and her support to the Department’s Safety Committee that included helping implement the lockout program and her revision of the entire safety manual.

Dr. Craig Friedrich (professor, associate chair and director of graduate studies, and Robbins Chair in Sustainable Design and Manufacturing, ME-EM) received the US Army’s highest award for research at the Army Science Conference in Orlando, FL in December. Dr. Friedrich coauthored the paper, “Nanoscale Bioelectronics for Real-Time Target Sensing,” which was selected as best paper in the nanotechnology division and received the prestigious Paul A. Siple Award for the overall outstanding technical paper presented at the conference. Dr. Mark Griep (PhD, ME-EM) who now works at the US Army Research Laboratory at the Aberdeen Proving Grounds in Maryland, was the lead author of the paper. Dr. Shashi Karna (ME-EM External Advisory Board member) was also a co-author as was Dr. Eric Winder (PhD, biological Sciences). Dr. Friedrich was the advisor for Dr. Griep and a co-advisor for Dr. Winder during their PhD studies.

Dr. Mahesh Gupta (professor, ME-EM) had his paper, “Three Dimensional Simulation of Coextrusion in a Complex Profile Die,” selected as “Paper of the Month” for February by Extruder Tech and was highlighted on their website.

Dr. John Hill (assistant professor, ME-EM) was interviewed regarding his research on the demographics of seatbelt and cell phone use. Read the article at: http://mininggazette.com/page/content/detail/id/520408/-Click-It-or-Ticket—in-effect.html.

Dr. John Johnson (research professor and professor emeritus, ME-EM) was selected as the recipient of the 2011 Franz F. Pischinger Powertrain Innovation Award, in recognition of his extensive research effort and exceptional work in the diesel emissions area. The award recognizes exceptional innovation and competence in powertrain design and development through the annual recognition of an engineer who has demonstrated outstanding innovation in the field. He received the award at the 2011 SAE World Congress during Awards Ceremony on Tuesday, April 12, at Cobo Hall in Detroit, MI.

Dr. John Johnson (research professor, ME-EM) was highlighted in the Detroit Free Press article “Online commentary: First heavy truck fuel rules environment, business” on September 13, 2011. Dr. Johnson commented on the first-ever regulations on fuel efficient and heavy-duty vehicles. The article was a reprint from a guest editorial in the Daily Mining Gazette on August 23, 2011.

Dr. L. Brad King (associate professor, ME-EM) had his research mentioned in an article in the December 2010 issue of the AIAA publication Aerospace America. The article, “Electric Propulsion,” highlighted use of the Hall thruster system in space missions. While Dr. King was not mentioned by name, a picture from his Hall thruster research was included in the article and the article indicated that the research (Dr. King’s) on the testing of advanced metal propellants for electric propulsion took place at Michigan Technological University.

Dr. L. Brad King (Ronald and Elaine Starr Professor, ME-EM) has been selected to replace Dr. Gordon Parker (John and Cathi Drake Professor, ME-EM) as ME-EM Director of Research. Dr. Parker is stepping aside to lead the development of a multidisciplinary initiative in Sustainable Integrated Transportation and Electric Grid.

Dr. Scott A. Miers (assistant professor, ME-EM) was a finalist for the Michigan Tech 2011 Distinguished Teaching Award (DTA) in the Assistant Professor/Lecturer/Professor of Practice Category. As a finalist for the 2011 DTA, Dr. Miers became a member of the Academy of Teaching Excellence, which was recognized at a banquet on April 25, 2011.

Dr. Jeffrey Naber (associate professor ME-EM) has been named a fellow by the Society of Automotive Engineers (SAE). Fellow is the SAE’s highest grade of membership and recognizes important engineering, scientific and leadership achievements. Members must be nominated by another SAE member to be considered for the honor.

Dr. Greg Odegard (associate professor, ME-EM) has been named winner of a Society of Automotive Engineers (SAE) 2011 Ralph R. Teetor Educational Aerospace Program Award. The national award recognizes outstanding engineering educators and enables them to meet and exchange views with practicing engineers in their fields. As a Teetor Award recipient, Odegard attended the 2011 AeroTech Congress and Exhibition in October 2011 in Toulouse, France, as an invited guest.

Dr. Mohan Rao (professor, ME-EM) has been selected to receive the Institute of Noise Control Engineering 2011 Outstanding Engineering Educator Award at the 2011 Institute of Noise Control Engineering Conference in
Portland, OR, July 25-27, 2011. The award recognizes individuals who have significantly advanced the technology and practice of noise control engineering through unique contributions to the education of future noise control engineers.

Dr. Sheryl Sorby (professor, ME-EM) received the Orthogonal Medal on April 16, 2011. The award is given by the Technology, Education, and Design Education Program at North Carolina State University in Raleigh, North Carolina. It recognizes individuals who have made outstanding contributions to the field of graphical science and technical graphics education.

Dr. Sheryl Sorby (professor, ME-EM) has received the 2011 American Society for Engineering Education (ASEE) Sharon Keillor Award for Women in Engineering Education. The award recognizes and honors a woman engineering educator who has an outstanding record in teaching engineering students, conducts research, and performs service within an engineering school.

Jeremy Worm (research engineer/grant writer, ME-EM), received the Michigan Tech Making a Difference, Creating Community Connections Award. This award is given annually to a staff member who serves the community (inside and outside the University). Jeremy was chosen for his work with the Hybrid Electric Vehicle (HEV) course and its associated laboratories and for his willingness “to assist and go the extra mile for students, staff, and faculty in support of their projects—solving issues for them and clearing roadblocks that have enabled all to be that much more effective and productive.” The HEV course has been delivered to over 300 students, over 230 of which were distance-learning students.

Dr. Song-Lin (Jason) Yang (professor, ME-EM) has been elected to the grade of Fellow of the American Society of Mechanical Engineers (ASME). The ASME Fellow grade of membership recognizes exceptional achievements and contributions to the engineering profession.

Dr. Ezra Bar-Ziv
Professor, PhD, Weizmann Institute of Science, Israel
Dr. Bar-Ziv’s research focuses on clean coal combustion for the power industry. He is currently studying emission reduction (such as CO2, CO, NOx, SOx, PAH, particles, mercury) by co-firing biomass and biocoal in coal-fired facilities. Dr. Bar-Ziv is also developing technologies for biocoal production and studying its application in pyrolysis for the generation of upgraded bio-oil.

Bill Langdon
Senior Design Training Specialist, Certificate, Genesee Area Skill Center
Bill Langdon joined the department in August. He has spent the last twenty years working as a machinist for a variety of companies. He works primarily with undergraduate and graduate students to help them build a basic skill set on standard machine shop equipment.

Dr. Nina Mahmoudian
Assistant Professor, PhD, Virginia Tech
Dr. Mahmoudian’s research focuses on the design, motion planning, and control of autonomous systems, especially ground and marine vehicles. Her current areas of interest include coordinated control of multi-autonomous vehicles in complex environments and developing energy efficient bio-inspired autonomous vehicles to address the challenges of environmental studies and surveillance in hazardous or hard-to-reach places.

Dr. Mohammed Rastgaar
Assistant Professor, PhD, Virginia Tech
Dr. Rastgaar’s general research interests are dynamic systems and controls. His current research is focused on human-interactive robotics. Dr. Rastgaar’s primary target is to explain quantitatively the impedance modulation of the human ankle and use it in the design of robotic prosthetic legs.

Tina Sarazin
Staff, Assistant, A.S., Northern Michigan University
An employee of Michigan Tech since 1990, Tina joined the department in early 2011 as a staff assistant for the Advanced Power Systems Research Center. When not working at Tech, she helps her husband and sister-in-law run the Dreamland Restaurant, which has been in the family since 1910. The mother of three children, she also enjoys reading, knitting, attending her children’s events, and baking/decorating cakes.
NOTE: In a few cases, the BS enrollment data shown below differs from past publications because the official final enrollment data is only available after this publication goes to press.
ME-EM Academy Inductees

The purpose of the Academy of the Department of Mechanical Engineering - Engineering Mechanics is to honor outstanding graduates. Academy selection recognizes excellence and leadership in engineering and civic affairs. The 2011 induction honors some of the most successful individuals from our 11,000 alumni. Academy members serve as role models for future students.

**PAUL W. FERNSTRUM**

Paul W. Fernstrum (BSME ’65) is President of Menominee-based RW Fernstrum & Co, a third generation family-owned company that invented—and continues to manufacture and market—the Gridcooler keel cooler, which was developed during WWII to prevent engine overheating. Paul began his career at RW Fernstrum as a draftsman. In 1975 he designed the first of a series of engineering programs for sizing the Gridcooler, cutting the engineering time from forty hours to thirty minutes. Some of the unique applications of the Gridcoolers include cooling of turbine oil in hydro-electric stations, engines and offshore wind and tidal generators, gear oil on flood control pump stations (such as those that ran throughout Katrina), and electronics on tsunami early warning buoys and ROV submersibles. In 1995, he became president of the company. As a student, Paul was in the Air Force ROTC and a member of the American Society of Mechanical Engineers and Alpha Phi Omega. He has been active in local and civic organizations as a Director of the Stephenson National Bank & Trust, past president of the Rotary Club, past Commander of the US Power Squadron, and past Scoutmaster and District Chairman for the Boy Scouts of America and has received the Boy Scouts of America Silver Beaver Award. Paul is also a Michigan Tech Fund Trustee and an Elder in the Presbyterian Church. Sandy and Paul’s two sons, Sean and Todd, are also Tech alumni and work with their father.

**DR. JAMES C. GERDEEN**

Dr. James C. Gerdeen (BSME ’59) retired as Professor and Department of Mechanical Engineering Chair from the University of Colorado-Denver. After graduation, Jim worked in industry before completing his MS in 1962 from Ohio State University and later his PhD from Stanford in 1965, both in mechanical engineering. He returned to Michigan Tech as a faculty member from 1968 to 1989. He received his Master of Divinity, Theology, from the Free Lutheran Seminary, Medicine Lake, Minnesota, in 1980 and has served various churches as lay pastor. Jim continues to teach online courses in Industrial Management at Missouri State University and technical English classes at the University of Missouri. Internationally recognized for his research and expertise in pressure vessel design, structural analysis, metal working manufacturing, and mechanical design, he is the author or co-author of sixty-five plus papers and 100 plus research reports. His honors and awards include the Michigan Technological University Faculty Research Award (1974), Society of Manufacturing Engineers Educator of the Year-Western Region (1998), University of Colorado Faculty Service Award (2001), and a Decade of Excellence Award from the University of Colorado Denver (2003). Jim served as treasurer of the Michigan Tech Alumni Association Board of Directors from 1970 – 1974. He and his wife, Wanda, have three children: Lori, Sonya, and Timothy. The Gerdeens reside in Columbia, Missouri.

**DOUGLAS J. HAMAR**

Douglas J. Hamar (BSME ’84) is president of Hamar Group, president/CEO/co-owner of Horner Flooring, president of Denver Hardwood Co., president of Cascade Pacific Floor Distributors, president and treasurer of Rio Grande Flooring Distributors, and president/co-founder/principal of CRT & Associates, which specializes in custom computer software and hardware. Horner Flooring, a privately-owned company, is known worldwide for its Pro-King basketball floors. In 2002, Horner Flooring received the Business of the Year Award from the Keweenaw Peninsula Chamber of Commerce and, in 2003, the US Dept of Commerce’s Export Achievement Award. Doug is the inventor/co-inventor on more than ten patents with several patents pending, the creator or co-creator of various trademarks, and holds several software copyrights. He serves on the Board of Directors of Superior National Bank, the Keweenaw Financial Corporation, and Northern Mutual Insurance Company, and was elected to the Chassell Township Schools Board of Education and the Chassell Township Planning Commission. He has also served on many other community boards. A recipient of the Michigan Tech Outstanding Young Alumni Award in 1994, he serves on the ME-EM Building for the Future Phase II Committee, and is a life member of the Michigan Tech Alumni Association. Doug and his wife, Shelby, have a daughter, Leslie, and a son, Reid, and reside in Hancock and Chassell, Michigan.
DANIEL R. KAPP

Daniel R. Kapp (BSME ’76) is Director, Powertrain Research and Advanced Engineering at Ford Motor Company. He is also a graduate of the Ford College Graduate Program (FCG). After graduation from Michigan Tech, Dan went to work at Ford Motor Company as an engineer in the Car Product Development Group and has spent his entire career at Ford in positions of increasing responsibility in the area of engine and powertrain product development. His work at Ford included work on the 3.0L Vulcan Engine Team through its launch in 1986, development and launch of all of the modular engine derivatives including the 4.6L 2V & 4V Rameo, the Duratec V6’s, and the Triton truck engines, the design and development of the Modular V8 and V6 engines as Ford revamped its engine lineup to overhead cam designs. He currently has responsibility for directing Ford Motor Company’s EcoBoost engine strategy. In 2001, Dan assumed the role as the executive champion for Michigan Tech in the Ford Advanced Education Partnership program. He serves on the College of Engineering Advisory Board, is a past member of the ME-EM External Advisory Board, has been a keynote speaker at the ME-EM Senior Banquet & Order of the Engineer Ceremony (2005), and was the guest speaker, Groundbreaking Ceremony, Michigan Tech Advanced Technology and Development Center, June 2003. Dan and his wife, Linda Lavastida-Kapp, have two children: a son, Colin, and a daughter, Sydney. The Kapps reside in Ann Arbor, Michigan, and New Bern, North Carolina.

DALE J. ROBERTO

Dale J. Roberto (BSME ’69) is President/Owner of Smalley Manufacturing Co. Inc. in Knoxville, Tennessee. Prior to working for Smalley, Dale worked for the Post Company in Battle Creek, MI. He was the project manager responsible for installing the Fruity Pebbles line. Smalley Manufacturing Company Inc. was founded by the Smalley family and is a privately owned company that incorporated in 1940. It has progressed from designing and manufacturing a nut shelling machine to become one of the most respected designers/manufacturers of customized product conveying, storage and distribution systems equipment for the dry food industry, e.g. belt conveyors, bucket lifts, vibrating conveyors for Hershey, Ralston, Kraft, and others. The company had eight employees when Dale started with Smalley and currently employs seventy-three, operating in a 50,000 square-foot facility. Smalley is the leading manufacturer and supplier of food conveying systems in the United States and Canada. Dale holds one patent for a storage and discharge apparatus. He is a trustee of the Michigan Tech Fund and, while at Michigan Tech, Dale was president of Blue Key, chair of the Memorial Union Board, member of the President’s Commission for the Expansion of the Memorial Union, a member of the Michigan Tech Flying Club, and a member of the student chapter of ASME. Dale and his wife, Sarah, reside in Knoxville, Tennessee. He has three sons: Scott, Patric, and Brett.
Presidential Council of Alumnae

Margaret Cobb, Colleen L. Jones-Cervantes, and Lee Ann Rouse are the most recent ME alumni to be inducted into the Presidential Council of Alumnae (PCA) at Michigan Tech. The PCA recognizes successful Michigan Tech women graduates for their educational excellence, past student service, professional accomplishments, and community contributions.

Margaret Cobb
Margaret Cobb (BSME ’83) currently serves as Director of OEM Product Marketing, leading a team marketing Microsoft products for PC manufacturers worldwide. She began her career in programming during a summer internship at Scott Paper in Marinette, Wisconsin, where she was given the opportunity to program code used for monitoring paper machines. Upon graduation she joined Wisconsin Electric Power where she worked on Supervisory Control and Data Acquisition (SCADA) systems monitoring power grids. She later worked at Snohomish County Public Utility District monitoring a hydro-electric plant, dam, and the electric grid for the area; was Product Manager at Systems Northwest (SNW); sold flight data recorders to the US Army for Sundstrand Data Control; was a Marketing Representative for Apple Computer before beginning her career at Microsoft. She has worked for Microsoft in multiple positions, including Director of Xbox Live Product Management, managing the Windows 7 and Internet Explorer Marketing launches. She resides in Woodinville, Washington, with her family.

Colleen L. Jones-Cervantes
Colleen L. Jones-Cervantes (BSME ’83) currently serves as Vice President, Product Supply & Trading and has global responsibility for the supply of non-crude oil feed stocks to Chevron’s refining system, refined products supply and trading, marine fuels marketing, and biofuels supply and trading. Colleen has spent her entire career at Chevron, starting as a Project Engineer and progressing through a variety of assignments in Chevron’s Marketing business, product supply operations, asset management, lubricants, and retail functions. Prior to her current role she was Vice President-Global Marketing, Asia Pacific region, where she led retail sales and operations for the Caltex TM brand, commercial and industrial fuel sales, terminal operations, marketing logistics and asphalt operations throughout the region. She has a passion for developing young professionals, mentoring new employees, working with employee networks, and serving on the Advisory Board for the Hispanic employee network, and is a frequent speaker at women’s network events. Colleen resides in the Houston area with her family.

Lee Ann Rouse
Lee Ann Rouse (BSME ’87) is President and CEO of Omni Tech International, Ltd., a technical and business consulting firm headquartered in Midland, Michigan. She began her career working for Dow Chemical as a Technical Service & Development Engineer in Dow Plastics, and then moved into Environmental, Health & Safety, managing Dow’s health promotion and health services functions. After ten years, Lee started her own consulting firm, On Track Training & Consulting which later merged with Cornerstone Consulting. Lee also works as a consultant in the quality and business arena, and has authored/facilitated many training courses. Lee has received several awards for her client and work efforts and several community leadership awards. Under her direction, Omni Tech was named one of the 50 Best Companies to Watch in Michigan. Lee has also served on the Board of Education for Midland Public Schools, the Midland Center for the Arts Board of Directors, and the Hidden Harvest Board of Directors. She resides in Midland with her family.
Graduate Seminar Series

A committee of Michigan Tech faculty members organizes the ME-EM Graduate Seminar Series each year, offering graduate students opportunities to expand their knowledge base to areas of study outside their specific research. Composed of a diverse mix of renowned leaders from academia, industry, and government, the 2010-2011 Academic Year Seminar Series featured the following speakers:

**EXTERNAL SPEAKERS**

- **Sambandamurthy Ganapathy**
  The State University of New York–Buffalo
  *Nanoscale Vanadium Oxide: New Physics and Novel Applications*

- **Seong Hyuk Lee**
  Chung-Ang University
  *Challenging Topics of Micro/Nanoscale Transport Phenomena*

- **Kristin B. Zimme**
  General Motors Research and Development Center
  *Chevy Volt: Defining the Interdependent Roles of Technology & Infrastructure*

- **Kendra Sharp**
  Oregon State University
  *Volumetric 3-component velocimetry measurements near a Rushton turbine in a stirred tank reactor*

- **John A Cafeo**
  General Motors Vehicle Development Research Lab
  *Consumer needs engineering: Incorporating perceptual aspects of human assessment in product decisions*

- **Steven Y. Goldsmith**
  Distinguished Member of the Technical Staff at Sandia National Laboratories
  *Agent-Based Informatics for Autonomous Microgrids*

- **Shalabh Maroo**
  Massachusetts Institute of Technology
  *Nanoscale Thin Film Evaporation and Water Transport for Efficient Energy Systems*

- **Juan Senen Senent**
  Odyssey Space Research
  *Challenges in Developing Software for Space Trajectory Optimization Problems. Closing the Gap between Theory and Practice*

- **Jason Foley**
  Air Force Research Lab
  *Broadband Mechanics of Structures under Shock*

- **Murat Vural**
  Illinois Institute of Technology
  *Yielding of Solid Foams: An Energy Based Approach*

- **Bruce A. Conway**
  University of Illinois at Urbana-Champaign
  *Using Evolutionary Algorithms for Numerical Optimization of Spacecraft Trajectories*

- **Ming Au**
  Savannah River National Laboratory
  *Nanostructured Metals and Metal Oxides for High Capacity Li-Ion Batteries*

- **Xiao-Dong Zhou**
  University of South Carolina
  *Basic Science Research in Solid Oxide Fuel Cells*

- **Michael Uchic**
  Materials & Manufacturing Directorate at the Air Force Research Laboratory at Wright-Patterson Air Force Base
  *Measurement of Mechanical Properties at the Micro-Scale*

- **Michael W. Ellis**
  Virginia Tech
  *Evaluation of Water Transport Characteristics of PEM Fuel Cell Diffusion Media*

- **Harold S. Park**
  Boston University
  *Atomistic and Multiscale Modeling of Surface Effects on the Mechanical Behavior and Properties of Nanomaterials*

- **Brian McDonald**
  US Army
  *On-going Studies of Chemical Aging of Nitrate Ester Solid Propellants and Health Monitoring Sensor Development*

- **Sreenath Gupta**
  Argonne National Laboratory
  *Laser Ignition and Associated Diagnostics for Natural Gas Fueled Engines*

- **Hyoung Il Kim**
  NAND Solutions Group within Intel Corporation
  *In-Situ Measurement of Intrinsic Interface Strength using Laser Spallation Technique*

- **John D Lee**
  University of Wisconsin–Madison
  *Making the Human-Technology Marriage Work*

- **Rajesh K. Ahluwalia**
  Nuclear Engineering Division of Argonne National Laboratory
  *The US Department of Energy Fuel Cell Activities*

**MICHIGAN TECH SPEAKERS**

- **Seung - Hyun Kim**
  Assistant Professor in Mechanical Engineering - Engineering Mechanics
  *Computational Reacting Flows in Energy Applications*

- **Adam Loukus**
  Instructor in Mechanical Engineering - Engineering Mechanics
  *Tailored Material Properties with MMCS*

- **Adrienne R. Minerick**
  Chemical Engineering
  *Erythrocyte Polarizability: Nonlinear Electrokinetics in Medical Microdevices*

- **Mohammad Rastgaar**
  Assistant Professor in Mechanical Engineering
  *A Laboratory for Dynamic Systems and Human-Robot Interface*
External Advisory Board

The ME-EM’s External Advisory Board (EAB) began in the early 1980s as the Industrial Advisory Board. Representatives, most of them alumni, work at the mid-management level and higher, and come from the broad range of industries that hire our students.

In 2004, the name changed to reflect the External Advisory Board’s diverse membership, which now includes people from government labs and other universities, as well as companies of various sizes and expertise. The EAB is charged with making recommendations that leverage partnerships between the organizations represented on the EAB and Michigan Tech in order to improve the department in the following areas: Curriculum and educational opportunities, diversity, facilities, fundraising, national ranking, placement, research, and resources (human and material). Members can serve a maximum of two four-year terms.

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<thead>
<tr>
<th>MEMBER</th>
<th>COMPANY</th>
<th>POSITION</th>
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<tr>
<td>Dr. Kirby Baumgard</td>
<td>John Deere</td>
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<td>Steven W. Cook</td>
<td>American Axle &amp; Mfg.</td>
<td>Member</td>
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<td>John P. Davenport</td>
<td>GE Health Care</td>
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<tr>
<td>Alan Frank</td>
<td>Whirlpool Corporation</td>
<td>Co-Chair</td>
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<tr>
<td>Dr. Richard R. Hofer</td>
<td>NASA Jet Propulsion Lab</td>
<td>Member</td>
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<tr>
<td>Michael Hofman</td>
<td>Roush Industries</td>
<td>Member</td>
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<tr>
<td>Brian Johnson</td>
<td>Chrysler</td>
<td>Member</td>
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<tr>
<td>Erin Johnson</td>
<td>Zimmer</td>
<td>Member</td>
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<tr>
<td>Dr. Shashi Karna</td>
<td>US Army Research Laboratory</td>
<td>Member</td>
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<tr>
<td>Dr. Frank Leban</td>
<td>Naval Surface Warfare Center</td>
<td>Member</td>
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<td>John Leinonen</td>
<td>Exponent</td>
<td>Member</td>
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<td>Kevin Manor</td>
<td>Toyota Motor Company</td>
<td>Member</td>
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<td>Mark Masco</td>
<td>Bayer MaterialScience</td>
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<td>Brenda Moyer</td>
<td>Dana Corporation</td>
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<td>Seth Newlin</td>
<td>Oshkosh Corporation</td>
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<tr>
<td>Christopher Oberski</td>
<td>Ford Motor Co.</td>
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<td>Leigh Otterlei</td>
<td>3M Corporation</td>
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<td>Douglas Parks</td>
<td>General Motors</td>
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<td>Christine Roberts</td>
<td>Motorola</td>
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<td>James Sickinger</td>
<td>Caterpillar Inc.</td>
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<td>Kimberly-Clark</td>
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<td>Jeff Zawisza</td>
<td>Dow Chemical Co.</td>
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<td>Dr. Hussein M. Zbib</td>
<td>Washington State University</td>
<td>Member</td>
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2011 ME-EM Donations

Donors are critical to the success of the Department of Mechanical Engineering-Engineering Mechanics. 2012 marks our 85th anniversary, having started in 1927.

We have established the ME-EM 85th Anniversary Fund to support continued growth in our academic programs for our students and for faculty development. Please consider directing your donation to the ME-EM 85th Anniversary Fund using the enclosed self-addressed envelope. Your gift will make a difference.

The following list encompasses the many people who have generously shared their treasure to create an outstanding ME-EM department. We are extremely grateful for their ongoing support. Those contributing from December 1, 2010, to October 31, 2011, are listed below:

$50,000 – $150,000
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### PhD Graduates for Summer 2010, Fall 2010, and Spring 2011

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<thead>
<tr>
<th>Name</th>
<th>Advisor</th>
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### MS Graduates for Summer 2010, Fall 2010, and Spring 2011

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<tr>
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<td>George, Geomy</td>
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<td>A Study on the Ion Signal and its Applications in Evaluating in Cylinder Parameters</td>
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Kroodsma, Nathaniel D.  
Advisor: Dennis DeSheng Meng  
A Microfluidic Hydrogen Generator:  
Featuring Passive On-Demand Gas  
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Kulkarni, Aditya H.  
Advisor:  Gregory M. Odegard  
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Lonari, Yashodeep D.  
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Stochastic Knock Detection Model for  
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Madni, Munsif A.  
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A Finite Element Study on Fracture  
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Manekar, Abhishek A.  
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Cold Start Combustion and Emission  
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Quantification of Relativistic Perturbation  
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Remote Combustion Sensing of 9L Degree  
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Lee  
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Nagar, Pranay  
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Pereira, Anna L.  
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Pimple, Sanjay V.  
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Pribyl, Steven C.  
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Simulation Model for Heat Conduction  
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Advisor:  Craig R. Friedrich  
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Shah, Virat J.  
Advisor:  Craig R. Friedrich  
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Shinde, Tushar S.  
Advisor:  Craig R. Friedrich  
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Singh, Gagandeep  
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Sunny Pathenpurakkal, Sujith  
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Talwar, Sudhanshu  
Advisor:  Craig R. Friedrich  
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Tonape, Akshay D.  
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Trivedi, Samay  
Advisor:  Jeffrey D. Naber  
Hybrid Electric Vehicle Architecture  
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Development of Strategies to Optimize  
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Varghese, Thomson  
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Johnson  
Micro Combined Heat and Power  
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Waghchaure, Aniket S.  
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Influence of Physical Aging on Crack  
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Walve, Vivitt V.  
Advisor:  Craig R. Friedrich  
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Wamanee, Neenad V.  
Advisor:  Jeffrey D. Naber  
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Wojda, Samantha J.  
Advisor:  Seth Donahue  
The Effects of Hibernation on Bone in  
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Xie, Lin  
Advisor:  Craig R. Friedrich  
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Zuo, Yinan  
Advisor:  Spandan Maiti  
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SUMMER 2010
Jeffrey Michael Bladecki
Justin Tyler Dillon
Zhaomin Dong
Kingsley Chinedum Iduma
Russell P Jungnitsch
James Joshua Martin
Cory Steven Michalec
Michael M Mott - Summa Cum Laude
Nicholas Michael Pattullo
Justin Anthony Schaut
Joshua S Schmidt
John Howard Scott
Richard Henry Sypniewski
Jerin T Varghese
Matthew James Zblewski

FALL 2010
Nathan P Beauchamp
Peter E Bingham
Jennifer Lynn Bladecki - Magna Cum Laude
Brandon J Bolley - Magna Cum Laude
Scott Michael Carpenter
Venkat Vijay Chandar
Isaiah Nathaniel Cunningham
Aaron J Cypher
Jonathan Aaron Ehlers
Andrew John Fojtik
Kyle Bradley Galbraith
Ben H Gerhardt - Summa Cum Laude
Matthew John Heath
Ryan Douglas Heins
Kathryn Ann Hill
Nick Holbrook
Nicholas Edward Holstine
Karissa Marie Julien
Henry E Knoch - Magna Cum Laude
David Alexander Kummerow
Corey Robert LaBelle
Steven J Lichon
Eric John Lipinski
Sean D McKendry
Jonathan David Meeuwsen
Bradley M Mullins
Erin Leigh Olesen
Matthew David Peterson
James Michael Pidgeon
Rochelle S Prescott
James Dean Pynecheon
Bradley Keith Ramsden - Cum Laude
Michael David Rittenour - Cum Laude
Sawyer James Rockowski
Michael P Rukamp - Magna Cum Laude
Luke David Sancho
Lauren Elizabeth Schaffer
Garrett Kai Schultz
Kurtis G Schweiger
Amanda Jo Scott - Cum Laude
Colleen C Sharpe
Patrick S Sill
Dennis E Smith
Benjamin Scott Sromalski - Cum Laude
Brandon Stasa - Magna Cum Laude
James Thomas Steele
Michael Allan Suchomski
Jason Edward Swanson - Cum Laude
Seth Michael Taylor
Austen Gregory Thogersen
Bryan P Tousignant
Nicholas James Tucholka
John Rollyn VanStraaten
Timothy Scott Viola - Cum Laude
Kyle J Waattt
Benjamin J Wedge
Derek Andrew Weiss
Andrew Bernard Wichlacz
Perry Eugene Wilson
Adam Thomas Woodward
Qiao Zhou

SPRING 2011
Casey Scott Anderson - Magna Cum Laude
Sean Anderson
Ryan David Anderson - Cum Laude
Joseph Paul Anhalt - Magna Cum Laude
David J Arnold
Matthew Ray Baumann
Jason M Beck
Ross Stephen Benner
Mario Abel Bonvini - Summa Cum Laude
Kyle David Bordeau - Summa Cum Laude
Jonathan Michael Borlee
Andy James Edward Brabant
Shawn Scott Bretting
Andrew J Breyer
Beatrice M Burgess - Summa Cum Laude
Timothy James Cannon - Summa Cum Laude
Troy Robert Carlson
Matthew Christopher Carney
Scott W Cartwright
Shiran Chen
Brian D Cisar
Roger Allen Crawford
Breanna Lee Cronk
Brian Anthony Czech - Cum Laude
Andrew Lee Darud
Christopher Todd Davis - Magna Cum Laude
Jacob Christopher Denison
Michael James Dettl
Nathan L Eyster
Rebecca R Franke
Adam C Gerth
Brad Joseph Gillen - Cum Laude
Scott Joseph Gittins
Viraj Trevoli Godapola
Holly J Goodhall
Thomas R Graham
Jay Robert Greenberg
Max Guel
Daniel Paul Haefs
Charles S Hansen
Derek M Harden
Benjamin Douglas Heidfeld
Joshua Mark Howell - Magna Cum Laude
Beau James Ihnken
Jacob Erling Janikelsa
Dominic R Jenkins
Theresa A Kewley
Kyle George Kirkish
Christopher Jeffrey Knoblauch - Magna Cum Laude
Steven R Korsch - Cum Laude
Marc C Kubas
Matt R Latham
Eric M Leifermann
Ran Liao - Cum Laude
Alexander James Longe
Tyler Brandon Lung - Summa Cum Laude
Karl Robert Maas
Austin D Merkel
Ryan Dean Messner
Daniel W Mizell - Summa Cum Laude
Jake A Mohan - Magna Cum Laude
Joshua David Mullins - Magna Cum Laude
Michael Stephen Nienhaus
Christopher L Noah
Jacob Michael Palosaari - Summa Cum Laude
Bryan Joseph Plunger - Magna Cum Laude
Kevin Robert Poppe - Cum Laude
Robert Lawrence Potter
William Thomas Prins
Michael John Rademacher
Daniel David Rahman
Andrew Nathan Ramsey
Benjamin Arthur Ranta - Cum Laude
Jacob D Reid
Craig David Reynolds - Cum Laude
Jeffrey Wallace Rice - Cum Laude
Andrew Finlay Rice
Christian T Riedel
Sean Conaway Ritter - Magna Cum Laude
Erik D Riutta
Elizabeth Anne Russart
Daniel Nathan Sallen
Amit Samal
Jon Nicholas Sanders
Andrew J Schorfaar
Troy R Schultz - Cum Laude
Ryan Adam Schumacher
Ryan Roger Scray
Jonathan Seefried
Karl Alexander Selewski - Cum Laude
Ravi V Shah
Keegan Michael Shannon-Lohenry - Cum Laude
Corey Alan Simonetta
Adrian Mark Simula - Cum Laude
Jeremy F Skjold
Benjamin Warren Snogren
Brian Patrick Sollars - Magna Cum Laude
Stewart J Spriensma
Stephen Andrew Stacy
Ross Daniel Stapleton - Cum Laude
Kyle G Steinkamp - Magna Cum Laude
Eric P Sturos - Magna Cum Laude
Nicole R Swegle
Stanislaus L Talaske
Christopher James Taylor
Gregory D Teeters
Skyler Nicholas Teske
Cody James Thompson
David William Thunes
Kayla S Tobias
Anthony Michael Tomasi
Patrick O Towell
Lucas Charles Treder - Cum Laude
Michael E Trynoski
Andrew Michael Tulgestke - Summa Cum Laude
Aaron W Valenti - Cum Laude
Carl William Vonck
Jacob Andrew Warden
Casey John Wendrick
Jeremy Clayton West
Edward H Westrick
Joshua Robert Weyburne - Magna Cum Laude
Travis Myron White - Summa Cum Laude
Andrew Lawrence Wiegand - Summa Cum Laude
Troy C Wiitala
Dallas S Williams
Wilbur P Winkle

GRADUATE STUDENT FELLOWSHIPS
SUMMER 2010-SPRING 2011
Christopher Hutton
Cummins Engine Fellowship
Eric Kalenauskas
Distinguished Doctoral Teaching Fellowship
Jaclyn Nesbitt
Winnikow Fellowship
James Pidgeon
Cummins Engine Fellowship
Michael Pyrkoz
Distinguished Doctoral Teaching Fellowship
Kenneth Shiel
Cummins Engine Fellowship
Andrew Willemsen
NASA Fellowship

ORDER OF THE ENGINEER
KEYNOTE ADDRESS SPEAKERS
Spring 2011
Stephen L. Williams
Vice President, Vehicle Architecture & Advanced Engineering
Chrysler Group LLC
Fall 2011
Paul D. Rogers
Deputy Program Executive Officer
Ground Combat Systems, US Army