

Building for the Future

The University of Akron Board of Trustees Approves Construction of 35,000 sq. ft. Engineering Center

The University of Akron Board of Trustees has approved the construction of a new 35,000 sq. ft. engineering building, and architectural work has been awarded to the design consulting firm of DLZ Ohio Inc. Ground breaking is slated for early next year, with occupancy planned by the end of 2010.

Temporarily being called The Wolf Ledges Engineering Center, the building will house faculty offices and research labs, as well as office space for representatives from companies who collaborate in research. The College's award-winning student alternative energy automotive design teams will have garage

facilities in the lower level. The facility will be located on Wolf Ledges Parkway in close proximity of the existing College of Engineering Turbine Research and Testing facility.

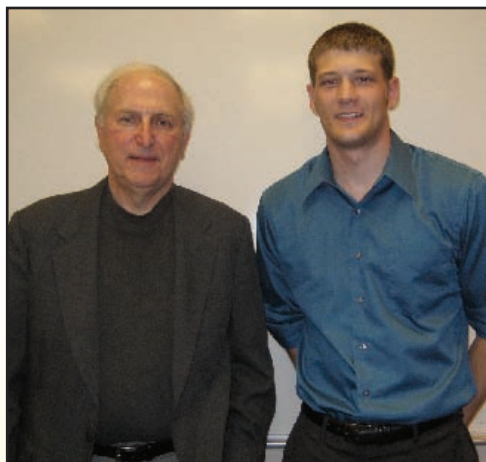
"With our tremendous growth, the College was in need of expanded facilities," says Dr. George Haritos, Dean of the College. "In addition to offering state-of-the-art research labs and conference space, this facility will incorporate environmentally friendly features."

In addition to the University's commitment of \$2 million, funding for the center is made possible through private donations.

Engineering Scholarships: Making a Difference

The College of Engineering is noted for attracting some of the brightest students on campus. In fact, 35 percent of incoming freshmen in UA's Honors College are engineering majors. Still, for many of our students, realizing their educational goals would not be possible were it not for the philanthropic support of generous benefactors, who assist in providing scholarships to qualified students. Academic scholarships are essential to the educational experience at The University of Akron, and today, with the surge in the College's enrollment, these awards are even more vital, as the College strives to continue to attract outstanding students from Northeast Ohio and other areas.

The College of Engineering offers scholarships to engineering students that are established by alumni and friends to the College. Behind each scholarship is a story as to why these men and women give.



Robert L. Leibensperger Scholarship

Robert L. Leibensperger, Mechanical Engineering '70, a first generation student 40 years ago, knows the financial challenges and concerns faced by students. Today, the retired president of the Bearing Division of The Timken Company, wants to ensure the success of future engineering leaders, especially those within his commu-



Bob Leibensperger (left) with recipient Trevor Kline. Above, Norm and Denise Wells (center) with recipients (left-right) Antonio Samuels, India Kazcmarek, Matt Boston and Tanya Miracle

nity. As such, Bob established the Robert L. Leibensperger Scholarship Fund that is awarded annually to a mechanical engineering student from Stark County.

"Throughout my childhood, my father always encouraged me to get an engineering education," Bob says. "He saw it as a

(continued on page 3)

Did you know?

With 2,142 students enrolled in Fall 2009, The University of Akron College of Engineering is the 78th largest engineering program in the United States. Our enrollment has increased nearly 55 percent since Fall 2004.

According to a study conducted by the College of Engineering using data collected by the American Society for Engineering Education, The University of Akron's Engineering program was the 4th fastest growing program in the United States as of Fall 2008. The study compared the nation's 150 largest engineering colleges. The University of Alabama, the Colorado School of Mines and the Stevens Institute of Technology all noted increases greater than UA. National numbers for the 2009-2010 academic year will not be available until Summer 2010.

contents

Distinguished Alumni	4
Aerospace Engineering	5
Corrosion	6
Driving Research.....	7
College Hires 18 Faculty ...	9
In memoriam	11
Newsmakers	12
Student Design Projects Update	13
2008-09 Honor Roll	16



Dr. George Haritos

Message from the Dean

If I had to describe the past year in one word, I would say 2009 was nothing short of exhilarating for the College of Engineering. Despite a difficult economy, the College continues to shine. Undergraduate enrollment once again was on the rise, and we responded by hiring new faculty. In Fall 2008, we were pleased to report that our undergraduate enrollment increased by 39.3 percent during the past four years, not only making us the fastest growing engineering college in the State of Ohio, but the fourth fastest growing nationwide. This year, our undergraduate enrollment grew to 2,142 students — an increase of 54.9 percent over Fall 2004. This figure also makes the College the 78th largest out of 385 colleges of engineering in the United States. At the same time, all quality indicators for the freshmen — ACT/SAT high school G.P.A scores — remain high.

Recognizing the College's unprecedented growth, The University of Akron Board of Trustees recently approved the construction of a 35,000 sq. ft. Engineering Center to be built on Wolf Ledges Parkway near the existing Turbine Research and Testing facility. The new site will house teaching and research labs and faculty offices. In addition, it will provide space for the College's award-winning alternative energy student automotive design teams. We hope to occupy the building by this time next year.

The Board also authorized several new faculty positions. These positions, when combined with replacing retiring or departing faculty, has led to a significant number of new faculty joining the College. In fact, 18 faculty have been hired since Fall 2008 (see page 9). These exceptionally well-qualified men and women augment our already outstanding faculty and will help keep class sizes at a level that is necessary for providing the highest quality education and instruction for which we are known. (For more on faculty achievements, see page 12.)


In addition to inspiring and challenging a group of talented students, our faculty continues to conduct research that is garnering national attention. Research awards have nearly quadrupled since 2003, from \$3.5 million to \$13.3 million (see page 5).

Scholarships continue to play a vital role in our students' ability to attain a higher education, especially as the cost of education rises. In addition to the tremendous support from many of our alumni and friends (see page 1), the University itself provides financial backing to many Engineering students. In fact, in Fall 2009, Engineering students received 26 percent of the scholarship funds awarded by The University of Akron.

Other highlights featured in this newsletter are:

- ◆ our alumni, who continue to excel in their professional careers. The College is pleased to recognize five graduates by bestowing upon them our 2009 Distinguished Alumni Award (page 4).
- ◆ our programs. The College is introducing two new undergraduate degree programs — Aerospace Systems Engineering and Corrosion Reliability Engineering — both unique in the nation (pages 5, 6).
- ◆ our research. We offer samples of the exciting research in hybrid technology being conducted in the College (page 7).
- ◆ our students. Our student design teams continue to excel in regional and national competitions (page 13).
- ◆ our supporters. We recognize that your continued support is essential in our quest to provide the best possible academic experience to our students (pages 13, 16).

We hope you enjoy this overview of the progress your College of Engineering is achieving.


Dr. George K. Haritos
Dean, College of Engineering

The University of Akron

(Scholarships continued from page 1)

means to a good career. At the same time, he taught me to give back to the community from which I earned my living. I have lived my life with the same philosophy my father had. I see the scholarship as a way of giving back to the University that made a difference in my life. My hope is that this scholarship will help make it affordable for young men and women to get an engineering education that will make a difference in their lives.”

Wells Family Foundation Scholarship

Norm Wells, a graduate of the University of Washington and Gonzaga University, established with his wife, Denise, The Wells Family Foundation Scholarship after reading, “The World is Flat,” by Thomas L. Friedman. Friedman wrote that the United States needs to differentiate itself intellectually, primarily through technical skills because most manufacturing jobs have already gone overseas.

“When he said that there is a shortage of technical skills in our country, it struck a chord,” Norm says. “Denise and I responded by establishing a scholarship in the College of Engineering that is targeted to students who grew up in the area and plan to work in Northeast Ohio following graduation as well. It is our way of investing in the region, by feeding the pipeline of local talent.”

The Wells Family Foundation Scholarship provides four annual undergraduate scholarships.

“We believe the greatest investment we can make in young people is in their education,” Norm says. “In addition, investing in future technical degrees will give our region the highest payback as graduates develop the skill sets that will take them on to quality careers. It is satisfying to support the future of graduates who will carry the torch as we move forward.”



Also lending their support are (left photo) Philip Thompson (center) shown with students from IDEAs, and (right photo) Heather Konjura, pictured with scholarship recipient Tanya Miracle.

The Philip S. Thompson Scholarship for Engineering Students

While Philip Thompson, Electrical Engineering '72, found his success outside Northeast Ohio, the retired IBM executive never forgot his roots. He established The Philip S. Thompson Scholarship for Engineering Students in hopes of not only improving diversity in engineering, but also in bringing to light the social need of greater diversity in the field of engineering.

“We are in a competition globally,” says Phil, who now resides in Collierville, Tenn. with his wife, Paulette. “If you look at the number of engineering and programming graduates from the United States compared with those of China and India, the U.S. figures are dwarfed in comparison. At the same time, the proportion of underrepresented minorities in the United States is growing at a faster rate than our traditional majority population constituents.”

“If we are going to succeed economically as a country, we need to increase the diversity of our population in engineering, and we must improve our ability to innovate in all core disciplines of engineering,” he con-



tinues. “Perhaps our curricula can be enhanced to address the needs of teaching students methods of innovation. Failure to address an increase in diversity and innovation will potentially lead to a continued loss of jobs to India and China, which will ultimately lead to a dramatic loss of national wealth and tax revenues. This scholarship is my attempt to increase the number of minorities in engineering, starting at UA.”

The HMK Scholarship Award for Women in Engineering

It wasn't long after graduation that Heather Konjura, '00 Chemical Engineering, began making a difference in UA students' lives. After earning her bachelor's degree from UA, Heather worked in the industry for four years, during which time, she also earned her MBA from John Carroll University. In 2004, she enlisted into the Peace Corps. It was during this time that Heather established The HMK Scholarship Award for Women in Engineering.

Back in the United States and enrolled at George Washington University in Washington, D.C. in pursuit of a master's degree in Public Administration, Heather is even more committed to helping other women achieve their educational goals.

“I want to help women who have this desire by offering the financial support they may need. My hope is that this scholarship will allow them to focus more on the challenges within the classroom and less on the financial commitment it takes to earn the degree,” she says.

CFCE Scholarship Fund

The Committee for the Future of Civil Engineering (CFCE) is comprised of community leaders who demonstrate their commitment to advances in the engineering and construction industries by investing in the education of civil engineering students. Since 2003, CFCE has awarded 117 scholarships to deserving UA civil engineering students (that's more than \$292,000 in scholarship support).

The CFCE's goal for Spring 2010 is to raise \$65,000 for scholarships. To make a contribution to the CFCE Fund, please contact Kaye Bogue, College of Engineering, at (330) 972-8572 or kbogue@uakron.edu.

You can make a difference in a student's life. To establish a scholarship, please contact Kaye Bogue, Department of Development, at (330) 972-8572 or kbogue@uakron.edu.

Previous Honorees

William S. Adams '77
 Benjamin G. Ammons '58
 Scott Armstrong '82
 Allen R. Barber '74
 Samuel L. Belcher '58
 William J. Bandy Jr. '65 '75
 Lynne M. Brocco '84
 Lynn M. Cavalier '81
 Michael B. Cavanaugh '73 '75
 David J. Celik '76 '82
 Dr. George C. Chase '78 '89
 Chun-Fu "C.F." Chen*
 Dr. James A. Chisman '58
 Louis Ciraldo Jr. '76
 Louis J. Ciraldo, Sr. '50
 Thomas A. Clark '76 '82
 Margaret Donovan*
 James L. Dowey '72
 Thomas J. Frey '69 '74
 Thomas E. Gilbert '77
 David B. Granger '73 '76
 Norman H. Green '53
 R. James Hammontree Jr. '57
 Robert Handelman '70
 C. David Haugh '71
 John David Jones '52
 A. Ronald Kammer '68
 Mary Ellen Kimberlin '82
 William C. King '41
 Dr. Paul C. Lam '78
 Crystal S. Leach '86 '89
 Robert L. Leibensperger '70
 John S. Ligas '80
 Edward M. McCabe '73
 Richard G. Nichols '53
 G. Gary Nixon '65
 Louis B. Perry '64 '67
 James E. Peters '75
 Rick E. Porter '74
 Daniel R. Posilovich '76
 Rengarajan Ramesh '87 '92
 Clark G. Reed '73
 Jack L. Renner '53
 Tari S. Rivera '81 '82 '88
 Bruce W. Rogers Jr. '56
 William R. Ruhlin '48
 John E. Schremp '77
 Harlin G. Sisler '30
 Gary E. Starr '76
 Dr. Margaret R. Taber '67
 J. Michael Talbert '70
 Philip S. Thompson '72
 Kenneth H. Thompson '59
 David P. Tschantz, P.E. '75
 H. Leroy Turja '67
 Hoyt M. Wells
 Jerry Wray '69
 Ming Zhang '89

* Honorary

On April 23, 2009, the College of Engineering honored five outstanding alumni at its 20th Annual Distinguished Engineering Alumni Awards Breakfast, held at the Paul E. Martin University Center. These recipients are recognized for their contributions to the engineering profession, career achievements and community service. Congratulations!



Ken Alber, B.S. Civil Engineering '82, is Senior Vice President for PENTA Building Group in Las Vegas. After earning his bachelor's degree, Alber began working for Perini Building Co. in Phoenix in 1983. At the same time, he continued his education, ultimately earning an MBA from the University of Phoenix. After working on such projects as the Luxor Hotel and Casino and the Paris Resort in Las Vegas, Alber co-founded the PENTA Building Group in 2000. Alber is a member of the Board of Directors of the Associated General Contractors, the Nevada Childhood Cancer Foundation and the UNLV Construction Advisory Committee.

Michael Arnold, B.S. Mechanical Engineering '79, MBA '88, is Executive Vice President and President of Bearings and Power Transmission Group, The Timken Company. Arnold has enjoyed a rewarding career at Timken, holding a variety of positions, such as Sales Engineer, Account Manager of Original Equipment Bearings in Detroit and a Manager of International Market Development for the company. He also served as Vice President and Director of Bearing Business Process Advancement, Director of Manufacturing and Technology in Europe, Africa and West Asia and General Manager of the company's Asheboro plant in Randleman, N.C. In 2000, Arnold was named President of the Industrial Group and in 2007 was promoted to Executive Vice President and President of the Bearings and Power Transmission Group. He is also an Officer of the company. Arnold is a Director of Cincinnati Inc., serves as Chairman of Endorsia.com International AB and is a member of UA's Mechanical Engineering Advisory Council and the College of Business Administration Advancement Council.



Steven Arnold, B.S. Civil Engineering '82, M.S. Civil Engineering '84, Ph.D. Engineering '87, is the Chief of the Mechanics and Life Prediction Branch within the Structures and Materials Division at NASA Glenn Research Center. In concert with his management responsibilities, he conducts research involving theoretical and experimental investigations of high-temperature structural material behavior of aerospace structures. His research activities have resulted in the development and commercialization of computational tools and deformation and damage constitutive models. His award-winning developments have been reported in some of his 250 technical publications, 79 of which are published in refereed journals. He also is the author of two U.S. patents with another one still in review.



James Parish, B.S. Mechanical Engineering '80, is President and Chief Engineer, J.M. Parish Enterprises LLC. Parish has worked for BF Goodrich in the Engineered Rubber Products Group for nine years. From 1989-99, Parish worked for SMR Technologies Inc. in the Advanced Product Group before forming his own engineering consulting and manufacturing company, J.M. Parish Enterprises LLC. Parish holds more than six patents used in the marine lifesaving, industrial, aviation and transportation markets. He is a member of UA's Mechanical Engineering Advisory Board and is a past chairman and active board member of the Akron Section of the American Society of Mechanical Engineers, for which he currently serves as industry relations director. Parish conceived and organizes the annual Industry Expo, which provides a vehicle to unite the students, working engineers, the ASME membership and representatives of local industry.



Randall Theken, B.S. Electronic Technology '90, M.S. Biomedical Engineering '92, is the founder of Theken Orthopedic. He later founded Theken Spine (designer, manufacturer and distributor of spinal fixation devices), Theken Disc (to focus on the development of spinal arthroplasty devices), and Therics LLC (designs and manufactures synthetic bone substitute products). These companies are collectively known as the Theken Family of Companies. Theken has been a member of the UA Biomedical Engineering Advisory Board since 1997 and is a devoted supporter of and donor to the College of Engineering.



Aerospace Systems Engineering Program Offers Unique Blend of Engineering, Business Components

The College of Engineering has introduced a new undergraduate aerospace systems engineering program, designed to train engineers suited to become future project managers and program managers for the aerospace industry with either integrator or supplier companies. The program will be housed in the Department of Mechanical Engineering.

Launched in Fall 2009 with approximately 15 students enrolled, the program is among the first undergraduate program of its kind in the United States. The 139-credit hour curriculum offers a unique blend of courses in mathematics and science, business and systems, and mechanical and aerospace engineering. Fourteen new courses have been added to the engineering curriculum that will be used in the aerospace systems program.

Other distinctive features of the program include an internship following the student's first year of study and four mandatory co-op periods, during which systems topics will be covered. In addition, students will be required to participate on the SAE Aero Design team beginning in their first year.

"This is a rigorous program," says Dr. Jerry Drummond, program director and associate professor of mechanical engineering. "There are restrictive entrance requirements comparable to those of the University Honors College and a challenging co-op. Because of the unique combination of mechanical, aerospace and systems engineering topics, we believe our students can pursue graduate studies in any of these three engineering specialties with little if any additional coursework."

"In addition, the business, leadership, and systems engineering components will only accelerate our graduates' professional paths to project management," he adds. "No one steps into project management, but what we are doing is cutting down their lead time. It shortens their professional path to project management."

According to Drummond, the aerospace systems engineering program has been five years in the making, with the College of Engineering Dean, George Haritos, serving as the impetus. In 2004, Haritos attended a meeting in Washington, D.C., during which participants discussed the declining enrollments in aerospace engineering collegiate programs, the need for aerospace technolo-

gies "integrators and team leaders," and the impending retirements of an aging workforce that threatened the volatile state of the country's aerospace industry. That conversation prompted the dean to seek a grant to create a program to prepare engineers for careers in the aerospace industry.

Behind the rationale of having such a program at The University of Akron was the City of Akron's long history in the aerospace industry (Goodyear and the Guggenheim Airship Institute, for example), along with the University's ties to several aerospace industries and government agencies, including Lockheed Martin, Parker Hannifin, NASA Glenn, and the Air Force Institute of Technology (AFIT).

In addition, the College of Engineering already had four aerospace-related courses on the books, several faculty members actively conducting research in the field as well as several successful student SAE Aero Design teams, with 17 first-place, eight second-place and three third-place wins since 1995.

Drummond says the College hopes the program attracts talented students, who may have otherwise gone out of state for their aerospace education, or who may not have previously considered a career in aerospace engineering.

"While we anticipate our student popula-



Aerospace Systems Engineering professors Drs. Jon Gerhardt, Jack Braun and Jerry Drummond (left to right) are pictured with Mechanical Engineering alumna '86, David Peters, Johnson Controls (center in cap).

tion to increase because of this offering, we are confident that the new program will significantly help the aerospace manufacturing industry of Northeast Ohio," Drummond says. "We will be preparing people, who, more or less, will be ready to hit the ground running when they leave the University. There won't be a need for as much in-house training for systems engineers as they are going to have a solid background, not only in reliability and safety issues, but also in project planning and scheduling. They will be introduced to Six Sigma as well during their studies, working on such issues as quality control."

COE Research Sets New Records

The 2008-2009 Academic Year saw substantial growth in research productivity. A total of \$13.3 million in research funding was awarded to faculty within the College from 77 proposals. This is an increase of more than \$5 million as compared to the 2007-2008 academic year and represents 28.5% of the total research funding to the University, the largest amongst the 12 colleges.

Noteworthy faculty achievements include:

Dr. Steven Chuang, professor of chemical and biomolecular engineering, is working to develop both coal-based fuel cells and carbon sequestration technology to trap greenhouse gases that are released when coal is burned. Dr. Chuang was recognized for this later work as one of 20 innovators selected as semifinalists for the 2009 NorTech Innovation Awards.

Dr. Zhenhai Xia, assistant professor in mechanical engineering, has had two publications appear in the prestigious journal, *Science*. He is part of a research team that has discovered a new class of nanocarbon tube electrodes that can be used in fuel cells to provide an economical alternative to today's costly solutions. In an unrelated project, Dr. Xia and his collaborators have developed new technology that provides a dry-adhesive, based on carbon nanotubes arrays and mimicking the abilities of geckos, that is three times more powerful than any previously developed.

Dr. Yang Yun, assistant professor in biomedical engineering, is collaborating with faculty in Chemistry at UA to develop a new antibiotic treatment plan and delivery system for pulmonary infections.

UA to Offer First Corrosion Reliability Program in Nation

When it comes to deterioration, rust plays no favorites. From playground equipment to heavy machinery, hubcaps to bridges, if it's made of metal, it's bound to rust. The University of Akron College of Engineering is hoping to make an impact on corrosion. Beginning Fall 2010, the College will offer the nation's first baccalaureate program in Corrosion And Reliability Engineering (UA CAREs). Individual courses will be offered as early as the Spring 2010 semester.

According to a 2002 report from the Federal Highway Administration, every year the direct effects of corrosion on our country's machinery, infrastructure and vehicles costs the U.S. economy more than \$279 billion — or 3.2% of the Gross Domestic Product. Seven years later, the U.S. Government Accountability Office estimates that cost at \$400 billion. The Department of Defense alone spends more than \$22 million a year trying to control corrosion.

"It is a well-documented fact that our nation is facing a major crisis in managing our aging infrastructure and its linkage to corrosion is clear," says UA President Dr. Luis M. Proenza. "We are pleased to partner with our elected leaders, the Department of Defense (DoD), NACE International and many of our colleagues from industry to provide a critical component of the nonmaterials-solution to corrosion prevention and control."

Although some level of corrosion will occur in the best of climates, Northeast Ohio's unpredictable winters, with repeated freezing and thawing of water, coupled with the use of salt and other chemicals to clear icy and snowy roads, makes The University of Akron the ideal location for the program.

UA CAREs program

Housed within the Department of Chemical and Biomolecular Engineering, the UA CAREs program will incorporate a multidisciplinary curriculum designed to train engineers to understand the origins and manage the effects of corrosion.

Dr. Ed Evans, associate professor of chemical and biomolecular engineering, and consultant Dr. Aziz Asphahani, an MIT graduate and an internationally recognized member of the corrosion industry, spent a year developing the curriculum, which was approved at the June 2009 UA Board of Trustees meeting. Evans says the program is consistent with the College's other engineering disciplines, in that it is based on the fundamentals — science, math and engineering — and includes a capstone design sequence and voluntary co-op element.

"Much like the other engineering programs, this degree should prepare graduates to go into a vast array of industries," Evans says. "However, because the nature of corrosion engineering and the fact that it cuts across so many disciplines, students will be exposed to a broader based curriculum, with instruction in chemical, mechanical, civil and electrical engineering, as well as physics and modeling. In addition, they will take a project engineering sequence. When they graduate, they will be able to han-



Dan Dunmire (fourth from left), director of the Office of Corrosion Policy and Oversight (US DoD), presents a check to The University of Akron College of Engineering to establish a Corrosion and Reliability Engineering Program. Accepting the check are (l-r) UA President Dr. Luis Proenza; Sue Louscher, UA CAREs project director; Congresswoman Betty Sutton (OH-13); and Dr. George Haritos, dean of the College of Engineering.

dle a diverse group of problems, making them all the more valuable to employers. We will be preparing our students for a field that is gaining importance and already shows a need for prepared employees who can make an impact."

Evans says, according to a recent NACE International survey, 81 percent of corrosion-related employers reported that they would prefer to hire an engineer with an undergraduate degree in corrosion engineering.

"The University's establishment of a corrosion engineering program is driven by a national need," says Dr. George Haritos, dean of the College of Engineering. "The demand for corrosion engineers and related qualified experts is immense, given the fact that corrosion is the primary source of deterioration of our highways, airports, water and energy supply systems, power generation and waste treatment facilities."

Haritos adds that industry studies show that there is a 75% shortage of experts with corrosion-related skills. This deficiency, coupled with recent DoD mandates requiring contractors to include corrosion plans as part of their proposals to DoD, fuels the demand for knowledgeable engineers.

In addition, the University has worked with industry associations to co-develop industry-accredited work force development certification courses for technical training. These courses will be offered in partnership with UA's Medina County University Center (MCUC).

Sue Louscher, project director for UA's Corrosion Engineering and Reliability Engineering Program, says plans for associate and master's degrees are underway, and because the College offers a general Ph.D. in engineering, doctoral candidates can specialize in corrosion and reliability engineering, beginning in 2010. A multidisciplinary research center is also being explored.

Driving Research

Engineering researchers making advances in hybrid technology

Bigger is not always better. Ask anyone who has pumped more than \$75 of gas into his or her vehicle. Such was the case for many American drivers during the summer of 2008, when gasoline prices surpassed the \$4 gallon mark and even inched towards \$5 a gallon. Suddenly, gas hogs were “out,” and green driving was all the rage. As a result, research in hybrid technology came to the forefront in the automotive industry, as consumers began looking for eco-friendly driving alternatives that were easier on the wallet.

The automotive industry was quick to respond, with carmakers each rolling out their versions of a hybrid vehicle. A hybrid car makes use of a combination of an internal combustion engine and electric motor. Gasoline provides energy for the engine, while a battery pack stores and supplies the energy needed to power the hybrid electric motor. Making the two systems work efficiently together remains the focus of hybrid technology research.

Still, it didn't take a spike in gas prices for researchers in the College of Engineering to take note that changes needed to be made in American driving habits — in the world's driving habits, for that matter. Long before that notable summer, researchers began investigating different sources and means of powering motor vehicles.

Among UA researchers earlier projects was an electric 12-year-old Toyota Tercel, developed by Dr. Iqbal Husain, professor of electrical and computer engineering. Nestled among car parts and batteries at the Express Building, it is an indicator of how far our researchers have come throughout the years.

“This vehicle runs on 1500 pounds of lead acid batteries,” says Dr. Tom Hartley, professor of electrical and computer engineering. “It's a monster. You better start braking long before you need to stop.”

This is not to say that lessons cannot still be learned and modern day advances made from the College's initial attempts. Hartley says a graduate student is currently working on a battery management system for the car.

Current endeavors

More recently, the College was in the national hybrid technology spotlight thanks to a student design team.

“We have a great group of hard working students in the College of Engineering,” Hartley says. “When it comes to design work, my philosophy with our students is just give them something cool to do and get out of their way. Give them the opportunity and they'll take advantage of it.”

Challenge X

Such was the case in the 2004 Challenge X Crossover to Sustainable Mobility competition. UA engineering students were among 17 university student design teams selected to participate in the competition.

Sponsored by General Motors and the U.S. Department of Energy (DOE), the contest challenged student design teams to re-engineer a production model compact sport-utility vehicle, the Chevy Equinox, to reduce energy consumption and decrease emissions while maintaining its performance as well as its appeal to consumers.

Throughout the four-year competition, the UA teams tested a number of engine/battery configurations, Hartley says. The first year, the team installed a diesel engine in the front of the vehicle and used a lead acid battery pack for the electrical boost in the back. After finding that the lead acid batteries needed charging every couple of miles, the following year, the team replaced the heavy battery system with nickel metal hydride batteries. The third year, they got rid of the battery pack altogether and installed a NESScap ultra capacitor pack. Microcontrollers monitored the electrical systems, keeping the ultra capacitors from being damaged.

In the end, the UA team fared very well. Team results throughout the competition were: 2004-05, 2nd place (design & modeling); 2005-06, 11th place (performance); 2006-07 12th place (performance) and 2007-08 10th place (performance).

“The other schools' vehicles were more showroom worthy,” Hartley says. “That is where we lost our points. Keep in mind, when the four-year competition was launched in 2004, hybridization was relatively unheard of. Today, some of the technology developed as a result of the contest has been implemented in modern hybrid vehicles.”



Dr. Tom Hartley inside a Myers Motor car.

Beauty wasn't everything, though. Of the 50 Challenge X students GM hired after the competition, 12 were UA grads.

Now, with the Challenge X project behind them, students and faculty researchers are concentrating on a myriad of hybrid technology-related projects. The Express Building is packed with cars and bikes some fully assembled, others merely frames, waiting to be the catalyst of a technological breakthrough.

Myers Motors NmG2

One such vehicle in the engineering spotlight is the Myers Motors NmG2 (no more gas) vehicle. Donated to the University by Myers Motors LLC in Tallmadge, Ohio, the all-electrical vehicle (two wheels are in front and a single drive wheel in the rear), is the design project of eight students — six in electrical engineering, one in computer engineering and one in computer information systems. With 13 such vehicles in Myers' arsenal, locals may have seen the spunky, three-wheel, cars on area roadways.

The University is collaborating with Myers Motors to design a concept car for the Progressive Automotive X PRIZE competition, a cross-country, stage race, slated to begin in Fall 2009 and hosted by the X PRIZE Foundation of Playa Vista, Calif.

Although technically not a hybrid, research being conducted on the vehicle is certain to provide valuable insight to hybrid technology.

"Our team is conducting research to verify the possibility that new developments in the electric drive system on the NmG2 vehicle can be applied in cars of the future," Hartley says, adding that they have already made significant developments in powering the vehicle.

"This is a fun car," Hartley says. "It will go 75+ miles per hour on the highway on a lead acid battery. However, the cars only ran about 30 miles before needing a recharge. This is where we came in. We replaced the lead acid battery with a lithium iron phosphate battery, and using our battery management system, we were getting 60 miles out of a charge."

The downside is lithium is costly. In contrast, Hartley says they have another car in which they have installed a nickel zinc battery. That vehicle ran 48 miles before needing to be recharged.

"There lies the challenge," Hartley says. "Head to head, pound for pound, basically the same car, lead acid batteries give you 30 miles, lithium gives you 60 miles, and nickel zinc gives you 48. It's exactly where we thought it would be in terms of energy storage. So there's your trade-off. Do you pay four times as much for lithi-



Design students and Dr Hartley pose with the Myers Motors car.

um to get more miles, or do you cut back a little on the miles and save yourself some money? We'll find out."

Chevy S-10 Pickup

Another project is a Chevy S-10 pickup, donated to the University by the Cuyahoga Valley National Park (CVNP). Hartley says the vehicle was electrified about 10 years ago, as part of an energy-saving program sponsored by First Energy. The CVNP used the vehicle for several years until the battery charger apparently failed. Not knowing what to do with the truck, they stored it in a barn, and a family of squirrels moved in.

Since arriving to the UA campus, the vehicle has been used primarily in the development and testing of nickel zinc battery technology. Hartley says because nickel and zinc are plentiful in the United States, such battery technology could be the preferred choice among manufacturers. However, historically, nickel zinc batteries have been difficult to charge and often form little icicles that puncture the membrane that separates the electrodes. To combat this problem, engineering researchers have turned to their colleagues in the College of Polymer Science and Polymer Engineering in the development of a new membrane.

Because hybrid technology is relatively new, designing new components is necessary. Husain says this, too, is a big challenge.

"The difficulty comes because you cannot buy parts off a shelf," he says. "You need to develop it first and that takes time. We go through several alterations before a part or system is roadworthy. While the individual component technology is mature, bringing them together at the controller system level and system integration level is not. This is our main challenge."

Throughout the years, virtually every component of the hybrid vehicle has been redesigned. Although the primary research focus has lied within battery development, other elements, namely motor controllers and battery management boards have also undergone a transformation. For example, Hartley says UA researchers have developed a wireless battery management system that utilizes a microchip to "talk" through an antenna to a pack manager. The pack manager, in turn, monitors what each battery cell is doing and notes any problems. This eliminates the problem of running sense wires in the high voltage battery enclosure.

Husain says the technology being developed is and can easily be used in other energy sectors, such as wind energy and solar energy.

"Many different industries are coming to The University of Akron, seeking help on various engineering projects," Husain says. "We are gaining national attention because of the work we are doing."

Siemens' gift benefits students, region

In May, Siemens donated 300 seats of its PLM Software NX® and TeamCenter Engineering®, a dynamic modeling software for student design use. The in-kind donation to the College of Engineering from Europe's largest engineering conglomerate, Siemens AG, headquartered in Munich, is valued at \$218 million.

The software, already installed in the College of Engineering laboratory computers, provides integrated, high-performance product design, simulation, documentation, tooling and manufacturing for UA students. More than \$7 million of the gift will support student participation in hybrid electric vehicle and advanced energy systems projects, which provide real-world vehicle development opportunities.

College Hires 18 New Faculty Members

Dean's Office —



Dr. Ajay Mahajan,

associate dean for research and a professor of mechanical engineering, earned his bachelor's degree with a gold medal ranking from the University of Roorkee (I.I.T. Roorkee), India in 1990, his master's and Ph.D degrees from Tulane University in 1992 and 1994, respectively, all in mechanical engineering. Mahajan taught for 11 years at the Southern Illinois University Carbondale. He is the president and co-founder of Clipius Technologies, Inc., and is the co-founder of a Biomedical Research Initiative at SIUC.

Dr. Joe Payer, professor of corrosion and reliability engineering, received his undergraduate degree (1966) and doctorate (1971) in metallurgical engineering from The Ohio State University. Payer comes to UA from Case Western Reserve University where he was a professor of materials science and engineering and director of the Case School of Engineering Materials Performance and Reliability Program. Payer also served as director of the Department of Energy Corrosion and Materials Performance Cooperative, director of the Yeager Center for Electrochemical Sciences and as professor and chairman of the Department of Materials Science and Engineering at Case. Payer's research interests are in corrosion, electrochemistry, hydrogen effects on materials, integrity/reliability, life prediction, life cycle costs, surface treatments, protective coatings, failure analysis, materials selection, cathodic protection, sensors and monitoring devices, amorphous metals/bulk metallic glasses.



Biomedical Engineering —

Dr. Juay Seng Tan,



assistant professor of biomedical engineering, received his master's degree in mechanical engineering in 1998 from the

National University of Singapore and his Ph.D. in the same in 2006 from the University of British Columbia, Vancouver. He was a postdoctoral fellow in the Cleveland Clinic Spine Institute for two years. Tan's area of research is in Orthopedic engineering, with a specialization in spine biomechanics. His current work includes in-vitro biomechanical evaluation of spinal devices; measurement of adjacent level effect in the spine; implementation of robotics for measurement of soft tissue loads across joints; biomechanical testing of Orthopedic joints; application of finite element modeling in orthopedics; development and evaluation of an injectable polymer for degenerated disc application; and ASTM testing of spinal devices.

Dr. Ge Zhang, assistant

professor of biomedical engineering, holds a bachelor's degree in biomedical engineering and an MD with a specialty in neurosurgery from the Capital University of Medical Sciences, a Ph.D. in biomedical engineering from the University of Minnesota, and a postdoctoral associate degree in cardiovascular tissue engineering from the University of Texas at Austin.



She has conducted extensive research at the University of Texas at Austin, the University of Minnesota, where she also taught, and the Capital University of Medical Sciences, P.R.China. Her research interests lie in stem cells, tissue engineering, regenerative medicine, biomaterials, and controlled growth factor delivery. Zhang holds a bachelor's degree in biomedical engineering and an MD with a specialty in neurosurgery from the Capital University of Medical Sciences, a Ph.D. in biomedical engineering from the University of Minnesota, and a postdoctoral associate degree in cardiovascular tissue engineering from the University of Texas at Austin.

Chemical & Biomolecular Engineering —

Dr. Gang Cheng, assistant professor of chemical and biomolecular engineering,



earned his bachelor's degree in biochemical engineering in 1999 from the Beijing University of Chemical Technology, China, his master's in microbial engineering in 2005 from the University of Minnesota, and his doctorate in chemical engineering from the University of Washington. Cheng has taught and has worked as a graduate research assistant at the University of Minnesota and the University of Washington. Widely published, he holds two patents.

Dr. Nic Leipzig, Robert

Iredell Chair and assistant professor of chemical and biomolecular engineering, earned his bachelor's degree in chemical engineering in 2001 from McGill University, Montreal, Quebec, Canada, and his doctorate in bioengineering in 2006 from Rice University. He has taught at Rice University and has conducted postdoctoral work at the University of Toronto. His research interests lie within discovering innovative approaches for tissue engineering the central nervous system (CNS) with the goal of generating new treatments for neurodegenerative diseases, stroke, and traumatic brain/spinal cord injuries, specifically spinal cord functional tissue engineering incorporating mechanical stimulation; single cell mechanics and mechanotransduction; and 3D engineered microenvironments for regeneration of CNS tissues.



Chelsea Monty, assistant



professor of chemical and biomolecular engineering, earned her bachelor's degree in chemical engineering from Carnegie

Mellon University and her master's degree from University of Illinois at Urbana-Champaign, where she is currently a Ph.D. candidate. Monty has worked as a teaching assistant while at UIUC. Her research centers on developing micro-scale sensors using biological mimics for the detection of toxic compounds and portable devices to

screen for toxins for environmental, medical, pharmaceutical, and military applications, as well as the use of biological mimics in the detection of several toxicological modes and the use bio-mimicry for non-biological inhibition based sensors in order to chemically amplify the response from various toxic compounds.

Civil Engineering —



Dr. Stephen Duirk, assistant professor of civil engineering, earned his bachelor's degree from Ohio University in 1996, his master's degree from UA in

1999, both in civil engineering, and his doctorate in the philosophy of environmental engineering from the University of Iowa in 2003. Duirk has worked as an environmental engineering for the U.S. Environmental Protection Agency, Office of Research and Development in Athens, Ga. and has served as a research assistant at the University of Iowa, as well as UA. He has also worked as a contract engineer for British Petroleum in Warrensville Heights, Ohio.

Dr. Kallol Sett, assistant professor of civil engineering, earned his bachelor's degree with honors from Jadavpur University, Calcutta, India in 1997, his master's degree from the University of Houston in 2003, and his doctorate from the University of California, Davis in 2007, all in civil engineering. He has taught at the University of California, Davis and has worked for the California Department of Transportation as well as Afcons Infrastructure Limited in Bombay, India. Sett's primary research interests are in assessment and mitigation of risks – stochastic simulation, performance evaluation, performance monitoring – in civil engineering constructed facilities, and he is currently working on general purpose framework for probabilistic simulation in geotechnical engineering and in uncertainty characterization and quantification in geotechnical engineering.



Dr. Lan Zhang, assistant professor of civil engineering, earned her bachelor's degree in mechanical engineering from Dalian Polytechnic University in Dalian,

P. R. China in 1995, her master's degree in environmental sciences from Beijing Normal University in 2000 and her doctorate in civil engineering from Louisiana State University in 2005. Zhang has worked as a water resources engineer at HNTB in Chicago. Zhang's research interests lie within surface water hydrology, groundwater hydrology, stochastic hydrology, hydraulics, water quality modeling, and reliability and risk analysis.



Electrical & Computer Engineering —

Dr. Hamid Bahrami, assistant professor of electrical & computer engineering, earned his bachelor's degree in 2001 from the Sharif University of Technology, his master's degree in 2003 from the University of



Tehran, and his doctorate in 2008 from McGill University, all in electrical engineering. Bahrami has worked as a scientist for Wavesat Inc., in Montreal, Canada. His research currently focuses on reception techniques including synchronization, channel estimation and tracking, MIMO detection and closed-loop communications (for 802.16 (WiMAX) and LTE systems. He is also involved in performance evaluation (including user and system throughput, PERs, robustness, delay, etc.) of WiMAX and LTE networks and systems.

Dr. Yilmaz Sozer, assistant professor of electrical and computer engineering, earned his bachelor's degree in electrical and electronics engineering in 1993 from the Middle East Technical University in Ankara, Turkey, and his master's degree in electric power engineering in 1995 and his Ph.D. in electric power engineering in 2000, both from the Rensselaer Polytechnic Institute. Sozer was an adjunct professor at the Graduate College of Union University in Schenectady, New York, and a senior research engineer for Advanced Energy Conversion LLC in Malta, New York. His current research lies within advanced energy conversion. Sozer holds five patents.



Mechanical Engineering —

Dr. Abilash Chandy, assistant professor of mechanical engineering, earned his bachelor's degree in mechanical engineering from the National Institute of Technology in



Trichy, India, his master's degree in aerospace engineering from the University of Florida, and his doctorate in mechanical engineering from Purdue University. Chandy has worked as a postdoctoral researcher. His research interests are centered on modeling magnetohydrodynamic turbulence; direct numerical simulations of isotropic turbulence; large eddy simulations of turbulent reacting flows; and high-performance computing.

Dr. Erik Engeberg,

assistant professor of mechanical engineering, earned his bachelor's degree in 2003 from Walla Walla University and his Ph.D. in 2008 from the University of Utah, both in mechanical engineering. He has worked as an electro-mechanical engineer for Alta as well as the University of Utah, Department of Meteorology. While at the University of Utah, he also worked as a teaching assistant and supervisor, and a research assistant in the Department of Mechanical Engineering Mechatronics Laboratory. His research interests include control of autonomous mobile robots, biological signal processing, bio-inspired control algorithms and sensors, hybrid forms of robotic locomotion, and intelligent grasp force control of robotic manipulators.



Dr. Gaurav Mittal, assistant professor of mechanical engineering, earned his bachelor's of technology degree in mechanical engineering and his master's degree in computer applications, both from the Indian Institute of Technology (IIT), Kharagpur, India in 1998 and 2001, respectively. In 2006, he received his Ph.D. in mechanical engineering with specialization in combustion at Case Western Reserve University. Mittal's research focuses on understanding



the combustion characteristics and combustion strategy of practical hydrocarbon fuels, namely the design of novel and well-characterized experimental facilities for combustion studies, combustion at elevated pressures relevant to practical combustors and engines, chemical kinetics of hydrocarbon fuels, flame phenomena, laser diagnostics, understanding photophysical features of tracers for developing techniques for quantitative laser diagnostics, development of reduced mechanisms, and alternative fuels.

Dr. Muammer Koc,

associate professor of mechanical engineering, earned his bachelor's degree in 1991 from the Middle East Technical University, his master's degree in mechanical engineering in 1995, and his doctorate in industrial and systems engineering in 1999, both from The Ohio State University. Koc's research interest lies within advanced manufacturing processes and systems; lightweight materials and manufacturing; material charac-



terization, deformation mechanics, tribology, controls and metrology; micro/nano-scale functional surface structures; fuel cell manufacturing and design (pemfc, sofc bipolar, interconnect, gdl, sealing, etc.); design and manufacturing of alternative energy devices- fuel cells, wind power, energy-harvesting devices; product design and development; medical device design and manufacturing; and reconfigurable product design.

Dr. Gregory Morscher,

associate professor of mechanical engineering, received his bachelor's degree in ceramic engineering at The Ohio State University in 1986, his master's degree in 1989 and his Ph.D in 1999, both in materials science and engineering from Case Western Reserve University. Morscher has worked at NASA Glenn (formerly Lewis) as a research engineer and then senior research scientist. His main research focus has been the understanding and improvement of the SiC/SiC composite system.



He has studied the high temperature creep properties of ceramic fibers and developed a simple bend stress relaxation test to evaluate relative creep properties of ceramic fibers.

Dr. Shengyong

Wang, assistant professor in mechanical engineering, received his Ph.D. in industrial engineering from Purdue University in 2006,



his master's degree in manufacturing systems and technology from Singapore-MIT Alliance in 2001, and his bachelor's degree in mechanical engineering from Beijing University of Aeronautics and Astronautics in 2000. Shengyong has worked as a research assistant professor in the Department of Systems Science & Industrial Engineering at the State University of New York at Binghamton for three years. His research focuses on the application of systems engineering in a variety of domains, including aerospace systems, manufacturing systems, and health systems.

In Memory



Dr. Paul Chi-King Lam, associate dean of Undergraduate Studies and Diversity Programs and professor of mechanical engineering, died May 24, 2009 after fighting a courageous battle with kidney disease. He was 62.

Lam joined the College of Engineering faculty in 1980 as an assistant professor of mechanical engineering. He earned his bachelor's degree in engineering science in 1969 from Purdue University, his master's degree in theoretical and applied mechanics in 1970 from the University of Illinois, and his doctorate in 1978 from The University of Akron.



Dr. Andrew Simon, professor emeritus and department chair of civil engineering, died on Aug. 27, 2009. He was 78.

Simon was the youngest civil engineering department head in the country when he joined the UA faculty in 1964. He spent the next 23 years on campus. Prior

to UA, Simon worked as a structural engineer for Babcox & Wilcox Company before going to West Virginia Institute of Technology to develop its Civil Engineering Department.

Simon earned his Ph.D. in 1961 from Purdue University.



Dr. Stephanie Lopina,

associate professor of chemical engineering, passed away on Sept. 14, 2008. She was 44. Lopina earned a

bachelor's degree from the University of Notre Dame, a master's from Lehigh University, and a Ph.D. from Massachusetts Institute of Technology, all in chemical engineering. Lopina joined the Engineering faculty in 1997 and was an accomplished researcher in biomaterials and controlled drug release, and a strong promoter for undergraduate research.

Dr. Glen O. Njus, a research associate professor of biomedical engineering, died June 29, 2009. He was 56. A native of



Montgomery, Ala., Njus joined the University in 1986 after serving as an assistant professor at the University of Iowa, his alma mater. At Iowa, he earned a B.S. in engineering in 1975, an M.S. in mechanical engineering in 1976 and a Ph.D. in mechanical engineering in 1985.

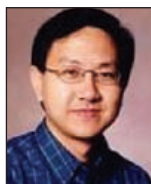
In respect of their dedication and belief in the value of education and passion to help students succeed, scholarships have been named in honor of these professors. To contribute, please contact Kaye Bogue, Department of Development, at (330) 972-8572 or kbogue@uakron.edu.

Faculty —



Dr. Gregory Morscher, associate professor of mechanical engineering, won the *2009 Best Paper of the Materials and Structures Division* from

NASA Glenn Research Center for his work “In-Plane Cracking Behavior and Ultimate Strength for 2D Woven and Braided Melt-Infiltrated SiC/SiC Composites Tensile Loaded in Off-Axis Fiber Directions.”



Dr. Josh Wong, associate professor of mechanical engineering, has been awarded the title Honorary Associate Professor in the School of Aerospace, Mechanical, and Mechatronic Engineering at the

University of Sydney from his alma mater.



Dr. Zhenhai Xia, professor of mechanical engineering, and a team of three other researchers from the University of Dayton and Wright-Patterson Air Force Base have discovered that nitrogen-doped carbon nanotube arrays can act as metal-

free electrochemical converters that produce electricity from fuel efficiently and economically.



Dr. Yang Yun, UA assistant professor of biomedical engineering, in collaboration with Dr. Wiley Youngs, UA distinguished professor of chemistry, and Dr. Carolyn Cannon, co-director of the Cystic Fibrosis Center,

Washington University School of Medicine in St. Louis, has developed a new antibiotic treatment option for pulmonary infections, including pneumonia and cystic fibrosis, which has potential for significantly increasing survival among patients with lung infections.



Dr. Jie Zheng's research, exploring opportunities in computational structural biology, biomaterial design, and protein aggregation by integrating molecular simulations, material synthesis/characterization, biological studies, and

product development was highlighted on the cover page of “J. Phys. Chem” (2008). Zheng is an associate professor of chemical and biomolecular engineering.

Dr. Robert Liang earns prestigious recognition — ASCE Fellow

Dr. Robert Liang, professor and department chair of civil engineering, has been inducted as a fellow into the American Society of Civil Engineers (ASCE). Liang joins colleague Professor Wieslaw

K. Binienda, who was named a fellow in 2007, in receiving this prestigious honor.

According to the ASCE, fellows occupy the society's second highest membership grade, exceeded only by honorary mem-



Liang



Binienda

bers. Fewer than six percent of ASCE members hold this distinctive position.

Elected by the Membership Application Review Committee (MARC), fellows are recognized by distinguished

careers that have contributed significantly to the civil engineering profession as well as their communities, society, and future engineering professionals.

Alumni —



Dr. Robert Stevens, Civil Engineering '63, executive vice president of ARCADIS, has been elected Technical Regional Director of the American Society of Civil Engineering. His term runs October

2009-October 2012. Stevens earned his bachelors degree in civil engineering and in math from UA in 1963, his MCP from Yale University in 1965, and his Ph.D. in civil engineering from the University of Michigan in 1972. He and his wife, Bonita, B.S. Education '64, live in Long Tree, Colo.

Cara Adams, Mechanical Engineering '82, senior engineer for Bridgestone Americas Tire Operations, was awarded the “30 for the Future” a recognition established by the Greater Akron Chamber of Commerce. Introduced in 1984, the program recognizes young professionals, ages 20-39, who are considered trendsetters both in their industries and their communities.

Stanley O. (Neal) Gresham, Civil Engineering '83 was selected for the 2009-2010 Leadership Akron class. The class consists of participants appointed from greater Akron area businesses, government and non-profit sectors. Gresham is vice president of Construction Services for URS Corp. in Akron.

Clark Reed, Mechanical Engineering '73 received the 2009 Distinguished Award of Council from ACESS, the Akron Council of Engineering and Scientific Societies. The award is presented to an outstanding citizen for his or her technical and managerial achievements and involvement in civic activities. Clark is Chief Engineer for Lockheed Martin, Defense and Surveillance Systems in Akron.

Dr. George Chase receives AFS Fellow Member Award



Dr. George Chase, professor of chemical engineering, is the recipient of a 2009 American

Filtration and Separations Society (AFS) Fellow Member Award. This award recognizes individuals who have made superior contributions of organization and leadership to the society for many years.

Currently a member of the AFS Board of Directors, Education Committee and Publications Committee, Chase served as chair of the in 1995 and 2002. In addition, he has been a session chair of innumerable AFS conferences.

His focus and dedication to continually advancing the science of filtration and separation has made him eminently qualified for the Fellow Member Award.

Chase was presented the lifetime membership during the AFS Annual Conference, held in Bloomington in May 2009.

Bob Orr's love of racing lives on in SAE Team

Robert Orr was destined to love cars. The son of Owen O. Orr, owner of Orr Shaw Oil and founder of Motor Cargo, Inc., one of Akron's prominent trucking businesses in the 1950s, Robert grew up surrounded by a myriad of motor vehicles. His vehicles of choice were racecars, especially midget autos.

"He loved to race his midgets, and he was quite good," says longtime friend and Orr Family Foundation Board member Bruce Buchholzer. "He loved racing in general. Every year he would go to Indy. It was his passion."

When Orr passed away in 2004, members of the Orr Family Foundation, a philanthropic organization established in 1998 in memory of Orr's late wife, Annamae, wanted to keep Orr's love of racing alive. Karen Murray, secretary of the organization and wife of the late Philip Murray, who, along with Orr and Buchholzer, were the group's original members, says the College of Engineering's SAE Student Design team was a perfect fit.

"We wanted to do something that reflected Bob's love of racing," Murray says. "What better way than to help young students in supporting them in the very field of study that Bob loved."

To date, the Orr Family Foundation has donated \$302,110 to the students to cover competition expenses, parts for their vehicles, and extracurricular courses. Last year, the foundation purchased the team a new tow vehicle. Murray says members of the



Above, Bob Orr in one of his prized midget race cars. Right, Bob and Annamae Orr at a social event in the 1990s. The Orr Family Foundation, established in memory of Annamae, is a chief supporter of the SAE Student Design Team.



foundation meet about twice a year with the students to discuss their racing endeavors.

"Bob would be thrilled," she says, "especially in supporting young people today, in allowing them to grow and achieve their dreams."

SAE Teams demonstrate great showings at competitions



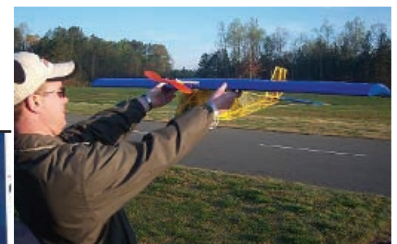
UA's SAE Formula Team

The University of Akron Formula Team took 10th place at the Formula East Competition, held at the Michigan International Speedway in May. Looking to claim another top 10 finish at the West Competition, held at the Auto Club Speedway in Fontana, Ca., a part failure in endurance hindered their efforts and resulted in a 21st place finish out of 84 teams.

The SAE Baja team tied for the 3rd place during 2009 Baja Fall Invitational on Saturday, Oct. 3. The competition is sponsored by Honda, The Transportation Research Center of East Liberty, OH and the Dayton, OH Section of SAE.

UA's SAE Supermileage Team placed 11th overall at the 30th Annual SAE Supermileage Competition, held in June at Eaton Corporation Marshall Proving Grounds in Marshall, Michigan.

Competing against 43 other teams, the SAE Aero Design Team took 22nd overall and 6th in the Micro Class Division at the SAE Aero Design East competition, held April 3-5, 2009 in Kennesaw, Georgia. The team completed more than 300 individual flights and eight rounds of flight competitions. In June, using their plane, Unladen Swallow, the team placed 23rd overall and first in the Micro Class Division at the SAE Aero Design West Competition, held in Encino, Calif.



Left, UA's SAE Supermileage Team. Right, a student does a balance check at an Aero Design Team competition.

ASCE Steel Bridge team goes to nationals; Concrete Canoe team finishes high at regionals

The UA Steel Bridge and Concrete Canoe teams each claimed notable rankings at the American Society of Civil Engineers/American Institute of Steel Construction Ohio Valley Conference, held April 4 at Western Kentucky University.

The Steel Bridge team took top honors, defeating students from 12 other colleges and universities in Ohio, Pennsylvania and Kentucky. Competitors put their skills, talents and ingenuity to work to design and build a steel bridge. The regional win qualified the team to compete in the 2009 ASCE/AISC Nationals, held May 22-23 on the University of Nevada campus in Las Vegas. Forty-seven teams from across the country competed in six categories — construction speed, lightness, stiffness, construction economy, structural efficiency, and display. UA's team the team placed ninth overall at the event, ranking 6th –24th in the various categories.

The Concrete Canoe team placed fourth overall, second in oral presentation, Men's Slalom, Men's Sprint and Women's Sprint, and third in the Women's Sprint Race at the Ohio Valley Conference. The team also received the Spirit of Competition Award.



Members of the UA Steel Bridge Team.

Chem-E-Car Team take top spots in regionals, nationals

The University of Akron College of Engineering Chem-E-Car design teams claimed top spots in recent regional and national competitions with its Chem-E-Car, nicknamed "The Roo Express." Competing against 34 student design teams nationwide, UA took fourth place in the performance competition at the 2008 AIChE National Chem-E-Car competition, held Nov. 14-16, 2008 in Philadelphia. In the poster competition, the team took first place and also won the Most Creative Drive System Award. At the 2009 AIChE North-Central Regional event, held Feb. 28 in Chicago, UA team members placed third in the performance competition, qualifying them for nationals; first place in the poster competition; and second in most creative design.



Members of the Chem-E-Car Team at regionals.

UA brings home four medals from International RoboGames

In its inaugural year of participation, The University of Akron College of Engineering Robotics Team earned four medals at the International RoboGames in San Francisco held in June. Noted as a hub of brilliant minds from around the globe, these games featured about 80 competitions and attracted more than 500 contestants from 21 different countries. The UA team brought home a first-place gold medal with its maze-bot, which met the challenge to autonomously and quickly maneuver through a maze. Taking silver medals in their respective categories were the team's 340-pound combat robot "Juggernaut" and its tether-bot space elevator, "Z-Tank." A 3-kg, autonomous sumo bot claimed a bronze medal.

"These students exemplify the level of proficiency and ingenuity for which our College of Engineering students are recognized," says Dr. Jose Alexis De Abreu-Garcia, professor and chair of the UA Department of Electrical and Computer Engineering.



UA engineering students (left-right) Michael Prechel, James Kirkwood, Corey Wunderlich holding the Zippy1, Kyle Hamblin and Tom Vo at the RoboGames.

Engineering Team takes second at NASA Moon Tasks Competition

A team of University of Akron engineering students placed second at the national NASA Moon Tasks Competition for college students held recently in Arizona. The five-member team, comprised primarily of junior electrical engineering students, fell two points short behind the University of Maryland's team of 28 seniors design students.

Charged with the mission to design a battery management system for the next manned lunar rover, the UA team's proposed system addressed issues of battery performance and safety. Specifically, the UA team presented its findings for a battery management system that monitors cell voltage and balances the battery charging process. The system also is capable of reporting data from the individual cells back to a master controller wirelessly.



Courtney Gras and Ben Magistro

Miracle is NASA MUST scholar

Spending time behind the scenes at the Kennedy Space Center in Orlando, Fla., Tanya Miracle was in her element. Miracle, a junior chemical engineering major, has always been intrigued by space technology, and this past summer, she obtained firsthand experience as one of 100 scholars, participating in NASA's Motivating Undergraduates in Science and Technology (MUST) internship program.

Funded by NASA, MUST is a joint partnership between the Hispanic College Fund, the United Negro College Fund Special Programs and the Society for Hispanic Professional Engineers. Scholarships and internships are awarded to undergraduates pursuing degrees in science, technology, engineering and mathematics, or STEM, fields. The MUST Project is open to all students and is particularly focused on engaging students from underserved and underrepresented groups to enter STEM fields. More than 750 students applied for this year's coveted summer internship spots.



Tanya Miracle at the Kennedy Space Center.

Engineering students get prestigious internship

Undergraduate engineering students Tina Sulkowski and Brian George were among 18 students chosen from more than 200 applicants to work alongside space life scientists and space medicine researchers as part of the National Space Biomedical Research Institute's Summer Internship Program. The program provided the opportunity for undergraduate, graduate and medical students to join ongoing research activities at NASA Johnson Space Center in Houston or NASA Glenn Research Center (GRC) in Cleveland, where they worked on research activities under the supervision of NASA scientists and physicians.

Sulkowski, a third-year chemical and biomolecular engineering undergraduate student, was assigned to the GRC Bone Laboratory, where she assisted in a project seeking to determine the hip-fracture risk for astronauts who fall on lunar and Martian surfaces. George, a master's degree candidate in biomedical engineering, worked with scientists in the GRC Ultrasound Laboratory to develop a noninvasive (needle-free) method to measure red blood cell count with ultrasound technology.



**The College of Engineering
Department of Development**
<http://www.uakron.edu/development>

For more information on how you can support the College of Engineering with a scholarship, monetary or in-kind gifts, or bequest, please contact:

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Keep in touch...

The College of Engineering will soon celebrate its 100th anniversary. Founded in 1914, we continue to value the hundreds of Engineering alumni who helped shape the College's success story. Please share with us, your memories as a one-time UA Engineering students and your career path. Having your most current contact information in our files will also help us to keep you updated on your College of Engineering. Please send your stories and contact information to kbogue@uakron.edu.

2008-2009 Honor Roll

The University of Akron College of Engineering is grateful for the financial support of many individuals, corporations, and foundations. Listed below are those who supported the College of Engineering at the \$1,000 or more level, from July 1, 2008-June 30, 2009. Private support provides the margin of excellence that continues to strengthen the College. Thank you!

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Lockheed Martin
Dr. William and Ann Loughry
David J. and Diana Martin
McCabe Engineering Corp.
Millennium Inorganic Chemicals, Inc.
Miller's Rental & Sales, Inc.
Ohio Rubber & Plastics Group
OMNOVA Solutions Foundation

National Instruments
PCC Airfoils, Inc.
Perram Electric, Inc.
Peters, Tschantz & Associates, Inc.
James and Beverly Peters
Dr. Helen K. Qammar
Robert and Lisa Reffner
Gabriel and Barbara Rhoads
Bruce and Suzanne Rogers, Jr.
The Ruhlin Co.
Lydia L. Salib
Science Application International
Corp.
John and Mary Jane Schremp
Dr. Daniel and Therese Sheffer
Harry and Linda Skeen
Stadelman Associates, Inc.
Summit Construction Co.
Summit Racing Equipment
Summit Testing and Inspection Co.
Michael P. Tabellion
Timmerman Geotechnical Group, Inc.
Triggs Technologies, Inc.
David and Mary Myers Tschantz
Turner Construction Company
United States Navy
URS Corp.
U.S. Industrial & Building Systems
Dr. Mary C. Verstraete
Angela Wells
Meridith L. Wells
Jerry H. Welty
Edward D. Yannayon

Every effort was made to present a list without omissions or incorrect information.

If an error has occurred, please email kbogue@uakron.edu so that our records can be corrected.