

The 2014

exchange

News for Mechanical Engineering, Aerospace Engineering, Engineering Mechanics,
and Nuclear Engineering Alumni of The Ohio State University

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*design
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ergonomics

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**THE OHIO STATE
UNIVERSITY**

Studying the payload of ants connects alumna with undergrad

Undergraduate researcher picks up former grad student's interest in "that little old ant"

When mechanical engineering student Hiromi Tsuda was first searching for a topic for her undergraduate honors research thesis, she didn't anticipate that working with the university insectary and learning how to care for specimens of *Formica exsectoides* (Allegheny Mound Ants) would be requirements of her research study.

But after learning more about the research conducted by a former graduate student in the department, she knew that while the subject of her study might be small in size there could certainly be a sizable payoff in terms of lessons learned and knowledge gained.

To start, her research advisor Assistant Professor Carlos Castro provided an overview of the work that his former student, Vienny Nguyen (BS '10/MS '12), had begun on the tensile strength of the neck joint of the ant. Nguyen was interested in understanding how such a small insect could hoist loads that were several hundred times their own body weight. Prior to Tsuda's involvement, the work of Nguyen, Castro and Associate Professor Blaine Lilly had been submitted for publication to the *Journal of Biomechanics*. That paper, which was published earlier this year (volume 47, issue 2), detailed how the tensile loading behavior of an ant

neck joint (along with its exoskeletal structure) affects its ability to lift and carry heavy loads relative to the ant's body mass.

According to Castro, "One of the critical findings from that work was to identify the transition between the soft material of the neck joint and the hard exoskeleton material of the head as a critical region where failure occurs." He noted that generally transitions between dissimilar materials result in stress concentrations. One of the major questions that he and his team had after their initial study was "how is that soft-to-hard transition designed in the ant neck to optimize mechanical function?" Tsuda focused on trying to answer that question.

After Tsuda obtained the specimens needed for further research, Castro sent her off to Ohio State's Center for Electron Microscopy and Analysis to learn to use the facility's scanning electron microscope (an FEI Quanta 200 SEM). The next steps in her research required that she overcome any squeamishness she might encounter in dissecting the insect in order to obtain a clean cross sectional image of the ant's neck. After some trial and error in learning how to best achieve the cleanest cut, Tsuda was able to obtain some extraordinary images.

Tsuda's results confirmed some of Nguyen's initial work and revealed additional details of a stepped interface that Castro believes plays a very important role in minimizing stress concentrations. When Tsuda returns to campus this fall she will continue her imaging work, hoping to identify the local microstructure of the neck joint material near the interface. Ultimately, Castro wants to learn more about the principles of how nature forms these interfaces in order to mimic its design in new material or robotic systems.

"Ants are impressive mechanical systems. Before beginning our

research, we conservatively estimated that an ant might withstand 1,000 times their weight, and it turned out to be much more," Castro said. In fact, the research published in the journal article stated that the neck joint of the ant could withstand loads up to 5,000 times its weight.

Nguyen commented, "I view biological systems as a balance of form and function. Insects in particular are even more fascinating because of their exoskeletal structure and their scale. At their scale, gravity is not necessarily the main factor driving function (e.g. surface tension, electrostatics, etc.), which makes them suitable for study and analysis for applications in space structures and mechanisms. As a robotics engineer, I am actively searching for non-traditional solutions for designing structures and mechanisms. We are at an exciting time in mechanical design. As additive manufacturing continues to develop, our ability to mimic nature expands and we can further explore that landscape."

For her part, Tsuda admitted, "I was shocked at how something so small and microscopic could be easily displayed and photographed. I had also never really taken particular interest in ants before, but upon starting this research project, I have found them to be more and more fascinating creatures." Having seen the results of her research and having been exposed to the field of biomimetics, she's confident she selected the perfect research thesis. Of course, it may have also helped that she could always amuse herself with the lyrics of "High Hopes" anytime she wondered if the findings would be worth the hours invested in learning more about "that little old ant."



ME alumna Vienny Nguyen is now a robotics engineer at Johnson Space Center.



Top photo: Samples that received a sputter coating of gold before being scanning by electron microscopy. Above: ME student Hiromi Tsuda holds a specimen of the Allegheny Mound Ant used in her research.



Above: Sagittal view of ant neck taken by a scanning electron microscope (SEM).



Assistant Professor (and ME alumnus) Carlos Castro

Future Direction: Robotics and Microgravity?

written by Pam Frost Gorder and Nancy Speicher

Looking forward, it's possible that the "ant neck joint" research could lead to micro-sized robots that combine soft and hard parts just as the ant's body does. Robotics, after all, typically involves assembling small, autonomous devices that can work together.

However, Asst. Professor Carlos Castro believes a difficult problem emerges if researchers try to create large robots based on the same design.

Ants are super-strong on a small scale because their bodies are so light. Inside their hard exoskeletons, their muscles don't have to provide much support, so they are free to apply all their strength to lifting other objects. Humans, in contrast, carry comparatively heavy loads due to our body weight. With our muscles supporting our body weight, we don't have as much strength left over to lift other objects.

On a human-sized scale, though, ants are overcome by basic physics. Their weight increases with their overall volume (dimensions cubed), while the strength of their muscles only increases with surface area (dimensions squared). So a human-sized ant, were it to exist outside of a horror movie, would likely not be so successful in carrying extreme loads at a human scale.

A large robot based on that design might be able to carry and tow cargo in microgravity though, so it's possible that we may one day employ giant robot ants in space, "or, at least, something inspired by ants," Castro said.

Meanwhile, the engineers will continue to study the ant's muscles closely. Further assisting them is Professor Noriko Katsube, an expert in mechanical modeling of biomaterials.

No Stalling Kevin Disotell's Interest in Education and Teamwork

Aerospace Engineering PhD candidate Kevin Disotell researches the unsteady fluid mechanics of dynamic stall for helicopters, fighter jets, and wind turbine applications. He is advised by Assoc. Professor James Gregory.



a different lens. An idea could be completely worthless to the market for a number of reasons, even if the idea is proven to work. In the course, we learned: how to bring a technology to market; how university researchers access capital for technology development; under what frameworks universities work with the private sector; when is it appropriate to launch a startup business, or pursue a licensing agreement; and what legal protection exists for intellectual property. I gained a deeper appreciation for research universities as economic engines. One only needs to look at the research park on west campus where TechColumbus, a technology incubator, is strategically located. Our class visited this incubator, and the enthusiasm for innovation by the startup businesses growing there was simply contagious. By considering the different perspectives

and insights I gained from the course, I found that my research skills were sharpened because effective research programs have much in common with effective business.

Q: In general, why did you choose aerospace engineering as your career path?

A: I chose to pursue aerospace engineering because I had never flown on an airplane until I was 20 years old. I'm the opposite of people who have grown up around aviation; I had never experienced flight, and that's what attracted me to it. The closest things I had growing up were the aircraft drawings I would make and the model airplanes I would build with my dad. It was natural for me to have questions about how something as foreign and mysterious as an airplane works and want to understand more.

Q: Graduate research thesis?

A: My dissertation is focused on understanding the formation of three-

dimensional flow patterns on stalled wings. Wing stall is a condition that occurs when the incidence angle of the wing relative to the flight path exceeds the angle associated with maximum aerodynamic lift production, resulting in a lift decrease and drag increase. Beautiful air patterns called "stall cells" – which have the appearance of a mushroom shape very close to the wing surface – form on certain wing shapes in a relatively narrow range of incidence angles above the stall angle, and these patterns can also appear in other contexts such as cylinders and cavities for which massive separation is a primary feature of the flow. Three-dimensional separation associated with stall cell formation can lead to undesirable aircraft spin dynamics and loss of control – the leading cause of aviation fatalities – so there is motivation to understand this aspect for developing safe upset recovery procedures and improved stall warning systems. At the same time, understanding high-incidence aerodynamics can inform the design of flow control devices to expand the aircraft-operating envelope, such as enabling increased maneuverability.

Q: What's been the most surprising aspect of your study?

A: I've come to better understand the meaning behind the degree title "Doctor of Philosophy." I'm constantly confronted with my own knowledge and mindset in seeking to create new knowledge. It requires a different kind of mindset, one that embraces consistent growth and a tenacious attitude to push through failures. These are the traits of being a life-long learner, and my research activities reinforce that mindset daily.

Q: In 2013, your suggestion for the creation of a web-based gateway that would function as an educational "passport" for graduate students won the top prize in the National Science Foundation's Innovation in Graduate Education Challenge. In what way has your idea for a graduate student portal evolved to help students plan their degree journey?

A: In fact, the Council of Graduate Schools is holding a workshop this fall aimed at addressing some of the themes that were underscored by many students like myself who participated in the NSF challenge last year. The NSF wanted to hear from STEM graduate students about their

ideas to improve graduate education and career training in these fields at a time when many students question the value of an advanced degree, especially with the rising cost of undergraduate education. How do we increase the transparency of graduate education to give students accurate, timely information while they are pursuing an advanced degree program? There are so many stakeholders in graduate education – students working toward their own careers, faculty who need students to perform research that keeps their labs open, employers needing a highly skilled workforce, and even the public taxpayers – bringing all of them together in one ecosystem through a graduate education web portal is what I and other students proposed to improve coordination of this national asset. I'm honored to be invited to the Council of Graduate Schools workshop this fall to further focus on ways to unlock graduate student pathways into careers.

Q: Any internships along the way?

A: I was fortunate to work as a summer intern at Ford Motor Company in Dearborn, MI several years ago in the Thermal and Aero Systems Engineering group within product development. It was a great experience to conduct wind tunnel testing and virtual optimization studies while working with a highly motivated group of engineers. I gained a lot of practical experience working in an environmental wind tunnel – a facility that simulates a variety of weather and road conditions for full-scale automobiles.

Q: Anyone who is your inspiration or role model?

A: I greatly admire the leadership skills of Alan Mulally – a fellow aerospace engineer. While he was CEO at Ford, I had the chance to experience firsthand the positive environment created by his leadership. It's amazing what a compelling, comprehensive vision and supportive culture can achieve. And it's no small task for a large, truly global company. We were expected to model behaviors crucial to working as one team, and these behaviors were listed on a small badge everyone wore. I still keep mine as a reminder.

Q: Any interests/hobbies outside of aerospace engineering?

A: I'm active in fantasy football and fantasy baseball for the strategy and literal team building involved, and I enjoy playing those sports in real life as well. I also enjoy another aerodynamicist's game, Frisbee.®

Ohio State EcoCAR 2 Team Wins Year 3 Competition

The Ohio State University team took first place in Year 3 of *EcoCAR 2: Plugging In to the Future*, the three-year competition sponsored by the U.S. Department of Energy, General Motors (GM) and 30 other government and industry leaders. The award included \$32,000 in cash prizes.

The national competition, managed by Argonne National Laboratory, gives students real-world automotive engineering experience, while striving to improve the environmental impact and energy efficiency of an already highly-efficient vehicle.

The team's exceptionally engineered 2013 Chevrolet Malibu with energy storage, electric drive and ethanol (E85) fueled engine technology, earned them the top honor. "Ohio State met and exceeded the EcoCAR 2 goals at every point in the competition," said Dr. Michael Knotek, Deputy Under Secretary for Science and Energy, U.S. Department of Energy. He also praised the team for its innovative work and contribution to the future of energy efficient technology in the automotive industry.



Fifteen competing universities gathered in Milford, Michigan, June 1-8, for rigorous vehicle testing and evaluation on drive quality and environmental impact at the GM Proving Ground. From there, the competition moved to Washington, D.C., for a second round of judging by automotive industry experts and vehicle displays for elected officials.

The Ohio State EcoCAR 2 team consisted of 15 graduate students and 30 undergraduate students, advised by Ohio State faculty members Shawn Midlam-Mohler, Giorgio Rizzoni and other faculty from the Ohio State's Center for Automotive Research and College of Engineering. Team members represent a wide range of majors, including mechanical engineering, electrical engineering, business and photography. "It takes an integrated team of engineers and business students to make a project like this successful," said Midlam-Mohler. In addition to the final standings, Ohio State's team earned at least 15 first place awards in individual event categories that included lowest petroleum consumption, best controls presentation, best technical report, and best outreach presentation, among others.

"The team put in a lot of time and effort and really focused on trying to make a strong vehicle," said M.J. Yatsko, who received her BS in ME this past May and is now working on her MS in ME. Yatsko, who was a controls team member and is a co-team leader of EcoCAR 3, said "We are really proud of the results of our work this year."

The Ohio State EcoCAR 2 team placed second overall in the 2012 Year 1 competition and third in the 2013 Year 2 competition. The top six overall winners for the EcoCAR 2 Competition were: Ohio State; University of Washington; Penn State; Purdue; Embry Riddle Aeronautical University, and Virginia Tech.

EcoCAR 3 Set to Start!

The Ohio State team will continue on in the next competition series – EcoCAR 3, a four-year automotive program to redesign a Chevrolet Camaro into a high performance hybrid vehicle. Follow them online at ecocar3.osu.edu.

2014 Alumni, Teaching and Student Awards

The accomplishments of mechanical engineering, nuclear engineering, and aerospace engineering alumni, current students and faculty were honored this past April at the annual Spring Honors and Awards Ceremony.

Alumni Awards



Dr. Gregory Elliott

The **Thomas French Achievement Award** was presented to **Dr. Gregory S. Elliott**. The award is presented to alumni who have distinguished themselves as educators.

Elliott earned all of his degrees (BS, MS and PhD) in ME at Ohio State. After receiving his doctorate in 1993, he remained with the Department of Mechanical Engineering at Ohio State as a postdoctoral research associate until 1995. He then joined the faculty at Rutgers, and after five years there

he became an associate professor with the University of Illinois-Urbana-Champaign's Department of Aerospace Engineering. He is now a professor and the associate head for undergraduate programs at UIUC. He continues to be a great collaborator, having authored numerous journal articles and articles for conference proceedings with peers from other Big 10 universities and beyond.

Among other early career honors, he received a Fluid Dynamics Paper Award from AIAA and a NSF CAREER Award in 1998. In 2006, he received AIAA's Teacher of the Year Award. And UIUC's College of Engineering has presented Elliott with two teaching awards. In 2011, he received a NASA Group Achievement Award. Today, he is a member of ASEE, ASME, and is an Associate Fellow of AIAA. In addition to his role in academia, Elliott currently serves as an Associate Editor for the AIAA Journal.



William Rudolph

William D. Rudolph was named the recipient of the **Alan Gregory Loofbourrow Business Achievement Award**. The award is given to alumni who have distinguished themselves in their chosen business or industry.

Since graduating from Ohio State with a degree in mechanical engineering in 1983 and earning a MBA in 1986, Bill Rudolph has built an impressive career with one of Ohio's largest construction services companies, the Rudolph/Libbe Companies. Today, he

is the chairman of the privately held organization. The group of companies operates in the Ohio/Michigan corridor and provides site selection, design/build, and construction management. With headquarters located near Toledo, the company ranked 105th in Solar Power World magazine's list of the 250 top solar contractors in the United States last year. Rudolph also serves as a steering member of the Toledo Regional Chamber of Commerce solar initiative group, and was invited to speak at a White House round-table discussion on clean energy and regional business competitiveness last October. Earlier this year, the Toledo Blade identified the company as one of the "Top Workplaces" in the Toledo metro area and was further recognized for its commitment to work/life flexibility. He has also served Lourdes College as a member of its Board of Trustees and the Toledo Children's Hospital Foundation.

The **E.G. Bailey Entrepreneurship Award** was presented to **John L. Smucker**. The award is presented to alumni who have invented new products, processes, or procedures that have been successfully manufactured, adapted, or utilized. Smucker earned a bachelor of mechanical engineering at Ohio State in 1967. He next attended the "school up North," where he completed the coursework for a MBA in 1968. He followed his days in Ann Arbor with a year's service in the United State Peace Corps. His career in finance took him from the world of commercial lending at



John Smucker

NBD to investment banking at The Ohio Company, to securities sales at Goldman Sachs to President and Founder of Merchant Financial, Inc. In 1994, he formed MCE Technologies, Inc. – a company serving the telecom and defense industries with microwave components and subsystems. He initiated and guided MCE through its sale to Aeroflex Incorporated. He was elected Vice Chairman of the Board of Ann Arbor State Bank in 2010 and is a valued member of the Mechanical Engineering External Advisory Board here at Ohio State.

The **Ralph Boyer Young Achiever Award** was awarded to Major **Gary S. Beisner II**. The Ralph Boyer Young Achiever Award is presented to alumni who have made noteworthy contributions to their chosen professions before the age of 40.



Major Gary Beisner II

After earning a BS in ME in 2003, Beisner attended Officer Training School at Maxwell Air Force Base in Alabama. By 2011 he had also earned a MS in flight test engineering at the USAF Test Pilot School in California. He has led and conducted high-profile field tests for many Air Force Research Laboratory (AFRL) technologies,

ranging from intelligence, surveillance, and reconnaissance systems; infrared capabilities; and applications for enhancing aircraft maintenance, force protection, and base sustainment. For his outstanding performance in this key research, he was presented the AFRL's 2007 "Commander's Cup" award. In 2007, he deployed to Iraq to support Operation IRAQI FREEDOM. He was promoted to the rank of Captain in May 2008 and was subsequently transferred to the Aeronautical Systems Center in Texas. His many career honors include a Meritorious Service Medal award. He has completed the Air Force's rigorous 48-week Flight Test Engineer program at Edwards Air Force Base. This summer, he was promoted to the rank of major and is now assigned to the 46th Test Squadron, Eglin Air Force Base, Florida, where he serves as Flight Commander of the Sensors and Defensive Systems Test Flight.

The second presentation of the **Garvin L. Von Eschen Award** was awarded to **Colin (Philip) Combs**, '71 BS AAE. The Garvin L. Von Eschen Award is presented to alumni who have demonstrated the technical and administrative excellence to lead successful aerospace projects and organizations.



Phil Combs

Combs received his BS in AAE from Ohio State in 1971 and holds a MBA degree from Xavier. He began his career at Rockwell International's North American Aircraft Division, where he was assigned to a number of technical and managerial positions. In 1978, he was selected as Rockwell International's corporate "Engineer of the Year" for his contributions to the design and development of advanced fighter aircraft. Roles at Rockwell included chief engineer for the advanced tactical fighter program and deputy director of its advanced aircraft design department.

He joined GE Aircraft Engines in 1985 and in 1990 was promoted to the position of engineering general manager with responsibility for the design and development of military exhaust systems and low observable technology. During his career at GE, Combs was involved in the design and development of propulsion systems for a number of advanced military aircraft programs. After retiring from GE in 2002, he spent the next nine years as an executive with Belcan Corp. – a full service global provider of engineering services and technical support. Combs resides in Mason, Ohio, and, with his wife Ginny, recently established a scholarship program for students studying aerospace engineering at Ohio State.



Pete Kutschenreuter

The second presentation of the **Rudolph Edse Award** was awarded to **Paul (Pete) Kutschenreuter Jr.** The award is presented to alumni who have demonstrated excellence in the space engineering and sciences. A native of Houston, Texas, Kutschenreuter credits his interest in aerospace engineering to his father's career in weather forecasting. His early familiarity with airplanes and airports provided the impetus to study engineering and to design, build and test jet powered aircraft. He entered Ohio State's Graduate School to earn a Master's of Science in Aerospace Engineering in 1962. Kutschenreuter considers himself among the fortunate aerospace engineering students who were lucky enough to know Dr. Edse.

Dr. Edse was his thesis advisor and the man that Kutschenreuter credits with having given him the "tools" to succeed. Kutschenreuter was a life-long, dedicated GE employee, working many long hours and earning GE's Young Engineer Award and later GE's Professional & Technical Societies Award. The bulk of his engineering career was focused on propulsion and he was awarded seven patents ranging from inventions related to a fuel injection system for scramjet engines to an inlet bleed system for a supersonic aircraft engine. He has been a long-time resident of the Cincinnati area.



David Pan

David Pan was presented the **Marion Smith Service Award**. The service award is presented to alumni who have distinguished themselves by their contributions to their community, the University and/or society.

Pan graduated from Ohio State in 2008 with a BS in ME and minors in business management and Chinese. After graduation, he began working for Procter & Gamble in Cincinnati and later moved to Boston, where he was the assistant brand manager for Global Design and Strategy of Gillette's Mach3 Razors and other shaving products. Earlier this year, he accepted a new role in Seattle, WA with Amazon (see related story p. 19).

In addition to college graduation, 2008 was also the year he became a founding member the Society of Asian Scientists and Engineers (SASE), a non-profit organization that seeks to prepare Asian heritage scientists and engineers for success in the global business world. Across the past six years, he has helped to establish and brand SASE and to grow membership to its present level of 3,000 members in 32 chapters. He has served several key roles in SASE and was instrumental in the establishment of the first SASE professional chapter, the first SASE regional conferences, and the first SASE national marketing initiatives. Through his efforts and the efforts of others in roles like Pan's, stereotypes are falling away with regards to who our ideal leaders may be.



Dr. Gary Kinzel

The **Stillman Robinson Lifetime Achievement Award** was awarded to **Dr. Gary Kinzel**. The Lifetime Award is presented annually to alumni who establish distinguished careers in their chosen profession.

Kinzel earned both his BS and MS in ME at Ohio State (PhD in ME, Purdue, 1973). Upon graduating from Purdue, he returned to Columbus to work for Battelle from 1973 until 1978. He then joined the faculty in the Department of Mechanical Engineering at Ohio State. Across his 33 years of active service, he participated in 53 funded research

projects; authored 65 journal articles; participated in 131 conference proceedings; wrote or edited 4 text books or proceedings; supervised 101 students through completion of their Master's degree; and supervised the dissertations of 21 PhD candidates. He has served on many department, college and university-level committees.

He has been a consultant on a number of engineering projects that require the know-how and judgment of a kinematics expert. He was named a Fellow of ASME in 1998. His service to Ohio State earned him several educator awards at the department, college and university levels, including the Alumni Award for Distinguished Teaching in 2005. His dedication to innovative teaching practices was also recognized by ASEE, which presented him with the Ralph Coates Roe Award in 2005. That same year he also earned ASME's Spira Outstanding Design Educator Award. Now a professor emeritus, he retains an extraordinary enthusiasm for educating young engineers.

Teaching & GTA Awards



Prasad Mokashi



Blaine Lilly



Ryan Kay

Assistant Professor - Clinical **Prasad Mokashi** was presented the Michael Moran Teaching Excellence Award by Dr. Lynn Faulkner, retired Battelle executive and member of the department's Mechanical Engineering External Advisory Board. The purpose of the award is to recognize the importance of teaching and is based on student evaluations and input. This is the first year that the award has been presented since it was named in honor of Emeritus Professor Michael Moran. Pi Tau Sigma President **William Hoover** and Vice President **Joseph Stanley** presented the honor society's annual Above and Beyond Teaching Award to Associate Professor **Blaine Lilly**.

Ryan Kay was this year's recipient of the annual Graduate Teaching Associate Award. Finalists for the honor included **Christopher Wiet** and **Matthew Gerber**.

Undergraduate Awards

Outstanding Research Awards were awarded to: **Cory Stack, Qian Zhang, Chao Xu, Simon Kalouche, Achal Singhal, Valerie Yoder, and Logan Gardner**.

Top Academic Awards were presented to: freshmen **Jacob Barsala, Patrick Beal, Kelley Dugan, David Tobin, Ryan Wilber, Zachary Zezinka, Thomas Krajnak, Bryan Kolpitcke, Aaron Becks, and Nicholas Horn**; sophomore **Christopher McClurg**; juniors **Matthew Brant, Elizabeth Bauer, and Matthew Long**; and senior **Erik Bokar**.

The **Rob Wolf Outstanding Senior Award**, established in memory of Rob Wolf, '97 BS ME, recognizes a senior who excels academically while taking an active role in department, college, university or community organizations. The 2014 award went to **Benjamin Musci**. Finalists for the award were **Kara Kenzora** and **Disha Labhassetwar**.



Benjamin Musci



Product Design Continues to Catch the Interest of Students Who Aspire to Innovate



A new ME capstone course, which has met with a lot of student interest and enthusiasm, debuted this past academic year. The two semester course, taught by Assoc. Professor Blaine Lilly, mixes one semester of the fundamentals of product design engineering with a second (spring) semester of hands-on design that challenges senior ME students to complete the fabrication and testing of the product they prototyped earlier in the course. The first semester of the two-semester course will also be offered as a technical elective to students who wish to enroll in different year-long capstone courses such as student design competitions (think EcoCar or the BuckeyeBullet) or assistive devices for persons with disabilities, to further enrich their understanding of the design process.

Recent feedback from alumni and industry indicated that a stronger design experience would benefit students and enhance the ME curriculum. As in other capstone courses, students worked in groups of three or four to better grasp the principles of teamwork and to accomplish the many tasks and iterations required to create, design, build, and test their designs.

A sampling of product concepts ranged from re-inventing fishing gear for small children to a device that measures the weight of a beehive to retractable wheels for rolling luggage. The "Zütkaas" team's reimanination of rollable luggage combines a magnetic clutch with a rack and pinion that retracts and extends a large wheel (seen on the cover) according to the natural behavior of the individual operator. This allows for easy storage and navigation during travel. The "Fishing Made Safer" team focused on how to prevent the fishing hook from snagging unintended objects. Among other safety alterations, the design of their bobber forces



Left, the "Buckeye Beekeeping" device was created by a team of students who wanted to introduce a better way to track the weight of a beehive, which in turn helps beekeepers track the health of the hive. Above, William Hoover is pictured with the retractable wheel suitcase fabricated by the "Zütkaas" team. Below, Kara Kenzora is pictured with the fishing gear that she and her capstone teammates devised to improve the safety of handling fishing tackle.



the hook to retract into the bobber when it's out of water or during casting. The beauty of the Buckeye Beekeeping's HiveTracker device is that it's portable and allows data to be saved to a SD card so that a single beekeeper could use it to better monitor and handle hives which often weigh as much as 400 lbs. Lilly notes that, with the uptick in "maker movement" momentum, there are plenty of students who are eager to define and solve real-world problems.

SMART Materials & Smart Students

Students in Asst. Professor Sandra Metzler's Assistive Devices Capstone Design course were among the eight semi-finalist teams out of 42 entries chosen to attend the annual Rehabilitation Engineering & Assistive Technology Society of North America (RESNA) conference June 13-15 in Indianapolis. RESNA's student design competition showcases innovative assistive technology designs that help people with disabilities function more independently. The student designs were presented to the assistive technology professionals, rehabilitation engineers, clinicians, developers, and manufacturers who attended the conference. Ohio State's entry, titled "SMART Materials with Pressure Sensor Application" was created by Molly Mollica, Benjamin Siderits, Matthew Lynch, Kaitlin DeRussy, Halle Stolarsky, and Bradley Norval. Their goal was to create an affordable, effective and portable pressure sensing system that could be used to develop healthy pressure relieving habits for individuals with spinal cord injuries. Read more about their project at go.osu.edu/RESNA2014.

Two Students Earn "Firsts" for Ohio State



Greg Freisinger Named Tillman Military Scholar

U.S. Army veteran and mechanical engineering PhD candidate Greg Freisinger has been named a 2014 Tillman Military Scholar. He is one of just 60 selected from over 7,500 applicants for the prestigious award. Freisinger, who earned a Bronze Star for his service in Operation Iraqi Freedom, is the university's first Tillman Military Scholar. Freisinger's graduate research focus has been concentrated on biomechanics. His advisor is Assistant Professor of Orthopaedics Ajit Chaudhari, who has a courtesy appointment in The Department of Mechanical and Aerospace Engineering.

After leaving active duty, Freisinger came to Ohio State in 2010 to pursue a PhD in mechanical engineering. Now entering his fifth year of doctoral studies, Freisinger researches intra-operative knee laxity and outcomes following total knee replacement, through a joint project with the Department of Orthopaedics and the Department of Mechanical and Aerospace Engineering. The knee laxity project is funded by an R01 grant (Award Number R01AR056700) from the National Institute of Arthritis and Musculoskeletal and Skin Diseases, a division of the National Institutes of Health. After graduation, he hopes to work with military amputees in the biomechanics lab at the Brooke Army or Walter Reed Medical Centers.

The Pat Tillman Foundation named Ohio State a University Partner earlier this year. The foundation was created to honor Pat Tillman, a former NFL player who left his playing career to enlist in the U.S. Army after 9/11. Tillman served as an Army Ranger in Afghanistan, before being killed in active service in 2004.



Jillian Yuricich Receives Prestigious Astronaut Scholarship

Jillian Yuricich, an Ohio State junior majoring in aerospace engineering, has been awarded an Astronaut Scholarship for the 2014-15 academic year. Yuricich is the first Ohio State student to be awarded a scholarship by the Astronaut Scholarship Foundation, which was created by the Mercury 7 astronauts. The Foundation annually presents \$10,000 scholarships to outstanding juniors or seniors who are majoring in a science, technology, engineering or mathematics undergraduate program. Candidates for the scholarship must be nominated by their professors and must exhibit leadership, imagination and exceptional performance in their field of study. Aerospace Engineering Professor Mei Zhuang submitted the nomination for Yuricich's scholarship. Last fall, Yuricich completed an internship at NASA Ames Research Center in Mountain View, CA. While there she worked in the Rotorcraft Aeromechanics Branch doing research in the world's largest wind tunnel identifying turbulence levels at the wind tunnel's inlet due to upwind blockages. Supporting her scholarship nomination was Dr. Alan J.

Wadcock, an aerospace engineer at NASA Ames Research Center. This summer, Yuricich will be an intern at the Naval Air Warfare Center in the Advanced Aircraft Design Branch, Fighters/Bombers division located at the Patuxent River Naval Air Station, Maryland.



ME Studentpreneur Earns Inc.'s 2014 Title for "Coolest College Startup"

One current Ohio State mechanical engineering student, **Keith Shields**, and one former student, **Josh Tucker**, know a lot about rising to a challenge. Together they launched Applits, the first company to bring the power of crowdsourcing to mobile application development. Their effort to succeed in the interactive community has been aided by the fact that they were voted "Coolest College Startup" in the final round of Inc.'s 2014 competition for college entrepreneurs. The 4,715 votes cast in their favor in the March Madness-like matchup, placed them at the top of the 16 college startups vying for bragging rights as this year's top young innovators.

They admit that juggling the many tasks needed to run an app development company while being students hasn't been easy. Shields expects to graduate next spring, while Tucker is now taking a break from classes to focus on Applits full-time. Together, the pair has enough time to run their business, but just barely.

Keep Us Posted/Stay Connected

We'd like to hear about where your engineering degree has taken you and what's made your life an amazing adventure. To contribute your alumni updates, please go to:

go.osu.edu/maealumniupdate.

On LinkedIn look for the Ohio State Mechanical Engineering Alumni Society or the College of Engineering's group pages. And don't forget, even though you might not be on campus any longer, you can take Ohio State apps with you wherever you go, learn more at www.osu.edu/downloads/apps.



Congratulations to Men's Tennis Champ!

ME major **Kevin Metka** and teammate Peter Kobalt advanced to the NCAA Division 1, Men's tennis doubles final at the end of May. They were bested by Tennessee in a match that required tiebreakers to decide all three sets. Metka was also part of the Ohio State's Men's Tennis Team that captured the program's first indoor national title at the Intercollegiate Tennis Association championship in February.





VOLUNTEERISM CENTRAL TO REX RITCHIE'S ACTIVE LIFE

Editor's note: Rex Ritchie received the College of Engineering's Distinguished Alumnus Award in 2001. He continues to answer the call to serve his alma mater.

Q: Hail from?

A: One of 3 children born and raised on a farm a few miles outside of Van Wert, Ohio. A lot of hard work, but

a great way to grow up and learn to accept responsibility.

Q: Current home?

A: Winchester, VA since 1993 – retired here in 2001 – beautiful country, only 18 miles from Shenandoah National Park and surrounded by history (1600s thru Civil War).

Q: Career history?

A: 27 years with Aeroquip Corp. in engineering management and general management including Group VP for Global Aerospace, President of Valeo Engine Cooling North American Operations, and last 10 years before retirement as President of Ashworth Bros., Inc.

Q: How did engineering become your chosen area of study?

A: I became exposed to it in a junior position at Aeroquip. I enjoyed the challenge immensely and decided to get an engineering degree to expand future opportunities.

Q: Proudest accomplishment(s)?

A: Hiring and providing growth opportunities for a number of very talented people – mostly engineers – that later became senior managers, vice presidents and/or presidents – including a couple of Buckeyes like Dan Kimmet and Roger Kremer.

Q: As an alumnus, you've been an active volunteer in service to the Department of Mechanical and Aerospace Engineering. Why?

A: I like the thought of supporting organizations – doing things which positively impact the lives/careers of people not only for the short term but for decades, doing non-political things that change the world we live in for the better. I fully expect OSU Engineering to be “in business” a hundred years from now!

Q: What's been the most surprising change in engineering since you entered the profession?

A: Maybe not the most surprising, but certainly the most dramatic is the “digital age.” We still used slide rules when I was a student (wow, that dates me). I had one computer course using boxes full of cards. The capabilities of today's students and the technologies they use is mind-boggling.

Q: Your favorite way to display your Buckeye pride?

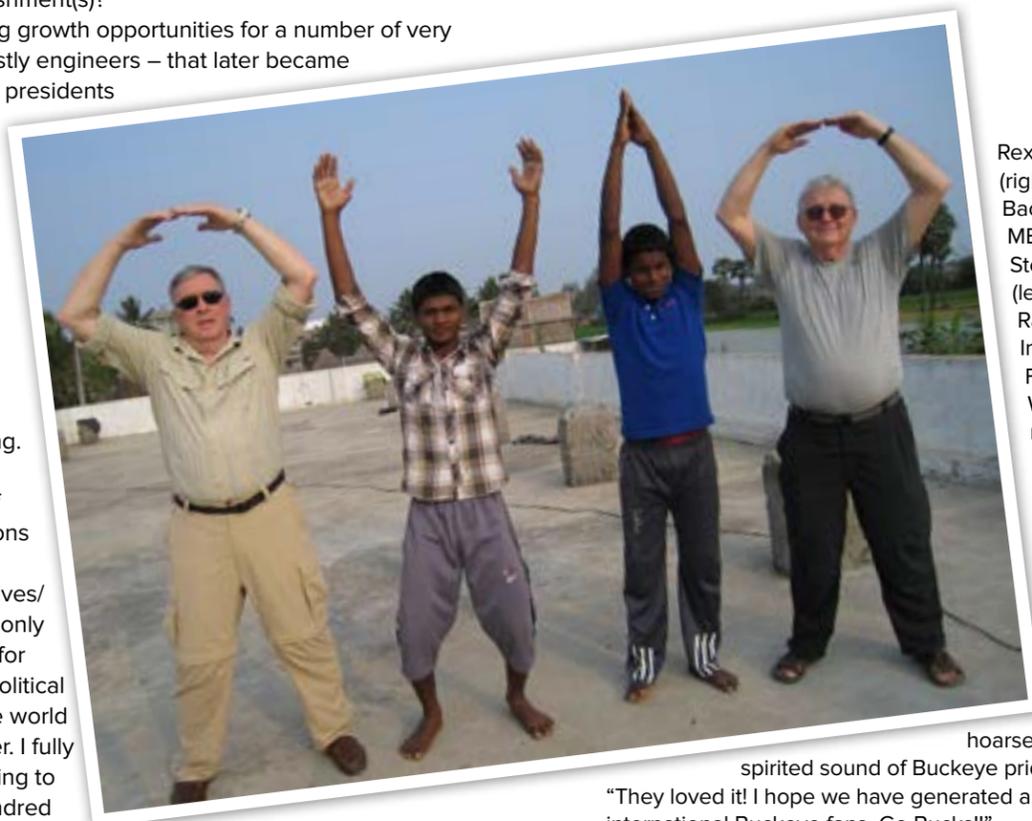
A: Staying in touch with the College of Engineering and participating in activities and programs that, hopefully, will have an impact on its growth and success in the future. (Ritchie was part of the Alumni Fundraising Committee for Scott Lab and is a current member of the MAE Alumni Fundraising subcommittee.) I can get as excited about competing with the University of Michigan's Engineering College as their football team – well, almost as excited.

Q: Any other Buckeye grads in the family?

A: My wife, Helen (Moore) Ritchie, has a degree in Medical Technology from OSU and, in fact, taught in the Hematology Lab for a while. Our second son, Brian, received his bachelor's degree in aerospace engineering at OSU followed by MS and PhD degrees at Georgia Tech.

Q: Any important mentors or role models along the way?

A: Many folks helped me along the way but the Aeroquip general manager that hired me directly from OSU as his chief engineer was special. Harry Bancroft, a mechanical engineer from Michigan State, provided me many opportunities and sound guidance to grow in my career. We still stay in touch.



Rex Ritchie (right), with fellow Bachelor's of ME '68 alumnus Steve Wander (left), traveled to Rajahmundry, India in late February 2014. While on a mission trip to a boys' orphanage they arranged 45 boys into two groups and roared the OH-IO cheer until all were practically

hoarse from the spirited sound of Buckeye pride. Ritchie said, “They loved it! I hope we have generated a new group of international Buckeye fans. Go Bucks!!”

Q: Why become an engineer?

A: I was exposed to Engineering functions as a junior applications engineer at Aeroquip shortly out of high school and before attending college. I very much enjoyed the technologies and disciplines so I decided to get an ME degree to expand my career opportunities. For better or worse, I've always had a reputation for seeking out problems to solve and find that I still do in my volunteer activities. Engineering has always provided good challenges.

Q: Best life lessons?

A: Hard work and perseverance compensate for other personal shortcomings. Loyalty and honesty prevent a lot of problems and are generally reciprocated at work, with friends, and with family. Sharing with others seems to be returned “in spades.”

Q: Hobbies?

A: Yeah, a bunch . . . hiking, biking, gardening and landscaping, history (easy to do around here), volunteering (Salvation Army, Big Brothers, Boys and Girls Club, church global missions, OSU), watching sports.

Q: What aspects of your training as an engineering have you found especially useful?

A: The technical training is important but the most important lesson is how to analyze and deal with any problem or challenge you may face. I've found this discipline to be invaluable in dealing not only with engineering issues but those in management, personnel, sales, volunteer activities and even in personal relationships.

Q: Any advice for current students?

A: Two things: study hard but also participate in some extracurricular activities to broaden your perspectives. Second, learn to read, write and speak effectively. Often, you will find communication skills to be as – or even more – important than technical capabilities in your career.

Q: Any other activities you're especially proud of?

A: Over 15 + years, I played a very significant mentoring role in turning our local Salvation Army Thrift Store from a money-losing operation to the number one performing store in our region of Virginia. It now provides profits of more than \$300,000 annually that support the local Emergency Shelter and Social Service programs.

Several years ago, I was selected as the #1 Big Brother for the State of Virginia. At the time, I actually was a Big Brother for two boys both from troubled home situations. It exposed me to home environments totally different than I grew up in.

Over the last 10+ years, I've been very active in visiting and fundraising for four significant church missions in Ethiopia, Tanzania, India and Philippines. Most of our poor citizens would be considered wealthy in areas of these countries. It constantly reminds me of how truly blessed we are in America. Last, but not least, it's been rewarding to see Scott Lab become a reality and being a tiny part of the process.

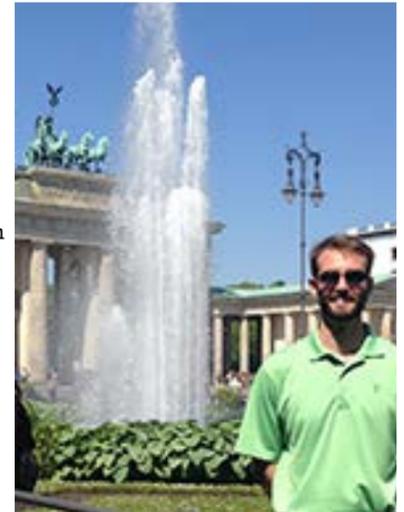
Exchange 2014

Exchange is published annually by the Department of Mechanical and Aerospace Engineering. Questions or comments about the publication may be directed to speicher.24@osu.edu.

Professor K. (Cheena) Srinivasan, Editor-in-Chief
Robert Siston, Contributing Editor
Nancy Speicher, Editor & Designer

Exchange Program Expands ME Alum's Knowledge of German Life

As a member of the Congress-Bundestag Youth Exchange (CBYX) for Young Professionals, Nial Tilson, BS ME '12 and MS ME '13, lived in Germany for the past year. The CBYX is a year-long exchange program funded by the U.S. Congress and the German Bundestag (Parliament) that sends 70 participants from the U.S. to Germany, and vice versa. Tilson started his journey late last July. As part of the program, he completed an intensive two-month language phase in Cologne, a four-month study phase at the Otto-von-Guericke-Universität Magdeburg in Magdeburg, and a five-month internship in Hamburg for 8.2 Consulting AG, a renewable energy consulting firm



Nial Tilson near the Brandenburg Gate.

specializing in offshore wind energy. Tilson reports that each phase of the program helped him learn and experience more than he imagined.

Outside of the program structure, he has played in the German National Championships for Ultimate Frisbee, met Patenabgeordneter Burkhard Lischka (his 'godparent' in the German Parliament, who are actively involved in participant selection on the German side), learned how to cook Rotkohl (a dish made of red cabbage), learned a great deal about the renewable energy industry and its growth in Germany, and traveled throughout Europe.

While his post-CBYX plans are indefinite, he has returned to Germany in hopes of gaining employment and greater experience in the renewable/wind energy industries in Europe.

In Memoriam: William Fillmore

Distinguished alumnus William Fillmore, a noted plastics engineer whose career spanned seven decades, died March 7 at a retirement community in California. He was 99.

The college had previously recognized Fillmore for his outstanding achievements and contributions to Ohio State and to the engineering profession throughout his lifetime.

Fillmore graduated from The Ohio State University in 1937 with a Bachelor of Science in Mechanical Engineering. He was awarded the College of Engineering's Benjamin G. Lamme Meritorious Achievement

Medal in 2006 for international acclaim as a pioneer of plastic and polymer engineering. The Zanesville, OH native and World War II veteran created several revolutionary products in his long career with Owens-Illinois, Inc.



ALUMNI UPDATES

1940s

(including the dept's fundraising committee). He also serves as a monthly columnist and Contributing Editor for *CompressorTech* magazine, a prominent trade journal for the gas compression industry. In October 2013, he was awarded the Edward N. Henderson Award for outstanding contribution to the Gas Machinery Research Council and the gas compression industry. In addition, Zane State College also awarded him an Honorary Associate of Public Service degree in May 2014.

1950s

Jack A. Collins, B ME '52, MS ME '54, and PhD '63, is living in Cave Creek, AZ.

Max Odle, B ME '56 and L/COL USAF-Retired, is living in the Pecan Plantation near Granbury, TX.

Gary Griner, BS AAE '58, is enjoying retirement by restoring his 113-yr old house and also coaching high school pole vault, a life-long avocation since high school days in Ashland, OH. He earned a JV letter in that sport in 1954 from Ohio State.

Louis W. Powers, MS ME '58, had a busy career in the petroleum industry with Humble Exxon affiliates for some 22 years serving in various research, operations and management capacities. His final assignment was Chief Petroleum Engineer for Aramco (on loan from Exxon in 1977-79). Assignments included work in Saudi Arabia, Venezuela and Canada. He next became an independent consultant and remained active in the engineering profession for another 30 years. In 2012, his book, entitled *The World Energy Dilemma*, was published by PennWell Publishing.

1960s

Randall F. Barron, MS ME '61 and PhD ME '64, is completing the 2nd edition of the textbook *Cryogenic Heat Transfer* with two faculty members from the ME Dept. at the University of Wisconsin/Madison. Publication of the text is scheduled to begin in January 2015. Barron is a Professor Emeritus at Louisiana Tech University.

1970s

Stephen Guilfoos, BS AAE '70, is a member of the Miami Valley Hospital Volunteers Board of Advisors. In 2012, he was presented the Volunteer Excellence Award by the Miami Valley Hospital. He resides in Beavercreek OH.

Willard (Norm) Shade, Jr., B ME '70 and MS ME '70, retired as President of ACI Services in Cambridge, Ohio in March 2013, but continues as Chairman of the Board and Sr. Consultant for the compressor equipment design and manufacturing company. Shade remains active in the development of new products and technologies, serving on industry association committees and boards

achievements include fabrication of iridium cladding for plutonium power pellets (radioisotope thermoelectric generators) for the Cassini Space probe, which is currently exploring and transmitting data back to Earth from the Saturn system.

Richmond served more than 35 years with the Y-12 National Security Complex, earning a DoE Award of Excellence; a Y-12 Award of Excellence; and a President's Award. He resides in Knoxville, TN.

Silas (Todd) Minnick, BS ME '79, was promoted to Senior QMS Manager at the Luminex Corporation in May 2014. He was elected a Fellow with the American Society for Quality (ASQ) in 2010. He resides in Austin, TX.

1980s

James Chirumbole, BS ME '84, has been employed with BASF Corporation (supplier of emissions catalysts for automobiles, on- and off-road commercial vehicles and motorcycles) for 24 years. He is currently Vice President, Americas Region. Chirumbole earned an MBA in 1987 from the University of Detroit. He resides in Freehold, NJ

Robert Fassberg, BS ME '86, earned an MS ME in 1990 at Stanford University. He was recently promoted to Senior Director of Product Management at ZoomSystems, Inc. He resides in San Rafael, CA.

Michael Harsh, BS AAE '86, is an MD-11 Captain at FedEx Express after serving 25 years with the U.S. Air Force. He resides in Malvern, OH.

Jonathan Guthrie, BS AAE '87, is a Software Engineer Firmware III at Hewlett-Packard.

Timothy A. Priser, BS AAE '87, is a spacecraft chief engineer and systems engineering manager at Lockheed Martin. He is proud of his contributions to the successful development and launch campaign of the Mars Orbiter (MAVEN) mission. Later this year he will become a deputy program manager and entry, descent, and landing chief engineer for the Mars InSight Lander (to be launched in March 2016).

Kirk Montgomery, BS AAE '88 and MS AAE '90, works for GE Aviation in Cincinnati, OH and was promoted to engineering manager, Airbus Programs in Nov. 2013. He received the Engineering Division's Champion of the Customer award for his work on the CFM56-2 time-on-wing/CPUP upgrade program for the U.S. Navy and U.S. Air Force. He is also a

member of the GE recruiting team for Ohio State.

Talal (TJ) Shahren, BS ME '89, is associated with Technical Sales in Santa Barbara, CA.

1990s

Patrick Gouhin, BS AAE '90, is serving a one-year term as the elected president of the Council of Engineering and Scientific Society Executives. Gouhin earned an MS Engineering Management in 1996 from The George Washington University and is the CEO of the International Society of Automation in Research Triangle Park, NC.

Michael McKee, BS AAE '92 and PhD AAE '98, was recently named chief engineer for the Boeing Phantom Works Special Pursuits Cell.

Mark Coalmer, BS ME '92, MS ME '93, was recently named chief facilities and construction engineer for Occidental Oil and Gas, the fourth largest U.S. oil and gas company.

Doug Mehl, BS ME '93 and MS ME '94, recently joined Anderton Industries in Troy, MI as a managing director, leading their Family Owned Investment fund.

Regina Brooks, BS AAE '93, is the founder and president of Serendipity Literary Agency LLC, based in New York, NY. She represents clients in adult and young adult fiction, nonfiction, and children's literature. Brooks is a former executive editor at John Wiley and Sons and McGraw-Hill, where she helped develop books for all engineering disciplines. She is the author of several books including, *Never Finished Done* (Scholastic); *Writing Great Books for Young Adults* (Source Books); and *You Should (Really) Write a Book: Writing, Selling and Marketing Your Memoir* (St. Martin's Press). She is also a blogger for the Huffington Post and is on the faculty of the Writer's Digest University, Harvard University publishing course, the Discovery Channel's Media Boot Camp for Doctors, the Whidbey Island Writers MFA program and teaches annually at more than twenty worldwide conferences. She has been highlighted in several national and international magazines and periodicals. Brooks is also the owner of Possibilitas, a tea company of master blended teas and the co-founder of Brooklyn Aviation, a flying club that promotes aviation to youth and encourages them to consider aviation and engineering careers.

Britt Peschke Ide, BS ME '93, was recently invited by the U.S. Dept. of Energy to serve as an Ambassador in the Clean Energy & Empowerment (C3E) initiative to advance the careers of promising women in the field of clean energy. The C3E initiative is established under the auspices of the international Clean Energy Ministerial. The U.S. part of this initiative is supported by the Office of International Affairs of the Dept. of Energy. Britt is the president of Ide Law & Strategy, PLLC, a strategic consulting firm specializing in energy issues with offices in Boise, Idaho and Bozeman, Montana. Britt also serves on the Board of Directors of PCS Edventures, a public company that provides science, technology, engineering and math (STEM) education in all 50 states and 17 countries.

Douglas Sheridan, BS AAE '93, recently re-joined Cessna Aircraft as part of Textron's acquisition of Beechcraft Corp. He is currently an aircraft system safety engineer living in Wichita, KS.

Lynnette Blaney, BS AAE '94, is a manager in the Computer Aided Engineering Group at Battelle. She resides in Westerville, OH.

Douglas Campbell, BS ME '94, is working at General Motors R&D, located in Warren, MI.

Ryan Zinn, BS ME '96, MS ISE '98, M HRM '14, director of development and corporate relations for The Ohio State University Foundation, married Marie Coleman on September 14, 2013.

Scot Snyder, BS ME '97 and MBA '13, began working for Worthington Industries in the cryogenic cylinders group as a cryogenics cylinder product manager and senior cryogenics engineer in September 2013. He resides in Columbus, OH.

Keith Gilbert, BS ME '98, is a senior systems engineer for Transmission Shift Systems at General Motors Advanced Vehicle Development Center in Warren, MI. He recently received the GM Tool Method Invention Award.

Jim Piper, BS ME '99, MS ME '01, is an executive vice president of Matot, Inc. based in Bellwood, IL. Matot is a 125-year-old family-owned business that manufacturers custom designed dumbwaiters and vertical lift equipment. This summer, Matot is hosting an Ohio State mechanical engineering undergrad as a co-op student. He resides in St. Charles, IL.

2000s

Michael Fiore, BS ME '00 and MBA '04, was named a partner in the Mergers & Acquisitions group at PricewaterhouseCoopers in New York, NY.

Hao-Chi Chang, PhD ME '02, has been an observer of Astrodynamic Symposium, International Astronautical Federation, since September of 2013. He resides in Hsin-Chu City, Taiwan.

Michael Grote, BS ME '04, PE, is a senior project manager for River Consulting, LLC in Columbus, OH.

Shankar Kumar, MS ME '06, earned an MBA from University of Chicago, Booth School of Business and now resides in Columbus, IN.

Heather Killmeyer, BS ME '06, was promoted to senior packaging engineer at ConvaTec, a medical device company for wound care, ostomy and critical care. She resides in Greensboro, NC.

Charles Fenton, BS AAE '07, is a graduate of the GE Aviation Operations Management Leadership Program. Accepted a position with Hansa Consult of North America, LLC (Environmental Engineering) in Portsmouth, NH as a program manager and commercial sales manager for pipeline leak detection. He is currently pursuing an MBA from Babson College and resides in Portsmouth, NH.

Elliott Rouse, BS ME '07, completed a PhD in BME at Northwestern University and is now a postdoctoral associate in the Biomechanics Group at the MIT Media Lab in Cambridge, MA. He received honors from the IEEE Robotics and Automation Society, was an NIH Fellow and his work has been featured on TED, NPR, CNN, Discovery and Wired Magazine among other media outlets.

George Crosthwaite, BS AAE '08, MS AAE '10, is a lead structures engineer on F-22 Safety Investigation Board for landing mishap. He resides in Columbus.

Bryon Wilkins, BS AAE '08, was named lead structural engineer for Boeing C-17 Field Operations at Royal Air Force (RAF) Base Brize Norton in the UK. He was awarded the Silver Eagle Award for contributions to the Boeing C-17 Propulsion Integration program. He resides in Oxfordshire, United Kingdom.

Matthew Long, MS ME '09, began a position as a product engineer with

Honeywell Aerospace in Urbana, OH in September 2013. He resides in Grove City, OH.

Jonathan D. Pillai, MS ME '08 and PhD BME, recently joined the Translational Health Science and Technology Institute in India as an assistant professor.

David Pan, BS ME '08, recently moved to Seattle, WA to be a product manager at Amazon.com. Pan previously held numerous roles at P&G in R&D and Marketing.

Michael Snyder, BS AAE '09 and MS AAE '11, is a director of R&D and lead engineer at Made In Space Inc. The company's first payload is currently scheduled for launch on the SpaceX Resupply Mission 4 to the International Space Station. NASA TV recently posted a feature about Snyder and the NASA project manager on YouTube. He is also serving as a principal investigator for work awarded to his company via the Small Business Innovation Research program. Made In Space is working to create an additive manufacturing platform that will enable people from around the world to build parts in space for a variety of applications. In June, he participated in the National Day of Making, which included a Maker Faire at the White House.

2010s

Andrew Samuels, BS ME '10, received a JD from the University of Michigan in 2012. He is now an associate at Baker & Hostetler LLP (law firm) in Columbus, OH.

Nathaniel Grove, BS ME '11, is now a Sales Engineer within The Timken Company.

Zachary Hrabak, BS ME '11, is a business process analyst at Cameron International in Houston, TX.

Brian Biller, BS ME '11, who works for Fujitec America Inc., passed the Fundamentals of Engineering exam.

Megan Goodwin, BS ME '12, is employed as a Design Engineer for Husqvarna Group in the Chainsaw R&D division, located in Charlotte, NC.

Alpha Kamara, BS ME '12, is a field service engineer and has graduated from Rockwell Automation EIT program. He resides in Dallas, TX.

Anthony Royce, BS AAE '12, is a mechanical systems engineer for the Aircraft Operations Division at NASA Glenn Research Center. He resides in Westlake, OH.

Deepak Saluru, MS AAE '12, is an engine transient performance engineer at GE Aviation working on the LEAP-1A/1C engine program. He resides in Cincinnati, OH.

Reem Bastaki, BS ME '12, is working in the Quality Assurance Department of the Engineering & Services Division for the Kuwait National Petroleum Company, Ahmadi Refinery.

Brian Schings, BS ME '12, is a design engineer at Ethicon, a Johnson and Johnson company, in Cincinnati, OH and is pursuing an MS in Engineering at Purdue University.

Kunal Kotian, MS ME '13, is a research engineer at the Center for Reliable Energy Systems, which is an engineering consultancy firm in the energy pipeline sector. He resides in Dublin, OH.

Brach Polen, BS AAE '13 is a jet engine test engineer for GE Aviation Peebles Test Operations in southern Ohio. Over the past year, he ran tests for more than 5 different engine programs and is currently coordinating engine tests for GE Aviation's new LEAP jet engines.

Benjamin Kowalski, BS ME '13, MS ME '14, is completing his final semester at Ohio State and has accepted a job at Owens Corning as an engineer in their Science and Technology Development Program in Granville, OH starting in January 2015.

Allyson Campbell, BS ME '14, is working as an engineer for Alcoa Howmet in Whitehall, MI. She resides in Muskegon, MI.

Bodhayan Dev, PhD ME '14, has joined the Aero-Thermal and Mechanical Systems Division at General Electric, Global Research, Niskayuna as a Post-Doctoral Scientist. He resides in Niskayuna, NY.

Simon Kalouche, BS ME '14, received a National Defense Science and Engineering Graduate Fellowship and an Ohio Space Grant Consortium scholarship for graduate level study earlier this year. In April, he was the recipient of a first place prize at Ohio State's Denman Undergraduate Research Forum. He is now working toward a PhD at Carnegie Mellon's Robotics Institute and resides in Pittsburgh, PA.

Faculty News



Carlos Castro Rob Siston Shaurya Prakash James Gregory Jeffrey Bons Datta Gaitonde Walter Lempert

Castro Receives NSF CAREER Award

Assistant Professor of Mechanical Engineering **Carlos Castro** earned a National Science Foundation Faculty Early CAREER Development Program award for his research proposal, titled "A Molecular Force Sensor for Single Molecule Studies of Cellular Force Application." The NSF Career award, which recognizes outstanding junior faculty, provides Castro with funding across five years in the amount of a \$408,164 grant.

As part of his work, Castro will develop, calibrate, and implement a nanoscale molecular force sensor that is capable of measuring cellular traction forces (CTF) of single membrane proteins and protein complexes. He expects that the results of his research will shed light on cellular function and guide the design of biomedical devices for applications such as cell sorting or biosensing. The nanoscale molecular force sensor will be constructed using nanotechnology and scaffolded DNA origami (DNA assembled into nanostructures with a pre-determined shape). The device is also intended to provide new insights into antigen detection and 3D fibrous environments by recording the cellular processes of migration.

Siston Presented Alumni Award for Distinguished Teaching

Robert (Rob) Siston, associate professor in the Department of Mechanical and Aerospace Engineering, was presented one of the University's 2014 Alumni Awards for Distinguished Teaching. Siston, who joined Ohio State's faculty in 2006, most recently taught the department's machine elements course and a neuromuscular biomechanics course. Siston was also the original developer and teacher of the popular assistive devices capstone design course and was instrumental in "flipping" the ME 3671 machine elements course. Ohio State's College of Engineering and the ME External Advisory Board have previously recognized Siston's excellent reputation as an educator. In 2010, he participated in the Frontiers of Engineering Education Symposium. As a recipient of the Alumni Award for Distinguished Teaching, he will be inducted into Ohio State's Academy of Teaching, which provides leadership for the improvement of teaching. In addition, Siston was named to Columbus Business First's 2014 Class of "Forty Under 40."

Prakash Named Distinguished Undergraduate Research Mentor at Denman Research Forum

Assistant Professor **Shaurya Prakash** was presented a Distinguished Undergraduate Research Mentor award at the 18th annual Denman Undergraduate Research Forum, which took place March 26 on Ohio State's main campus. This year, from a field of eighty nominees, five mentor awards were presented to those individuals who have assisted students in their undergraduate research projects. Prakash, who was a previous nominee for the honor, commented, "the award is a reflection of the wonderful students each one of us has a chance to work with and mentor."

Gregory Receives 2014-2015 Fulbright Scholar Grant

Associate Professor **James Gregory** has been selected as a 2014-2015 Fulbright Scholar. The award will help cover expenses associated with a research endeavor that Gregory is planning for the first part of 2015 while on sabbatical in Israel. "I'll be working in Professor David Greenblatt's lab at the Technion in Haifa, Israel from January 1 to April 30, 2015. Professor Greenblatt and I will be studying the aerodynamics of vertical-axis wind turbines, and methods to control the flow to make the turbines more efficient," Gregory commented.

The abstract associated with Gregory's Fulbright Scholar funding states, "Development of cost-effective wind energy sources is a critical challenge facing the Middle East region and the world. However, the reliability and efficiency of wind turbines are limited by problems induced by unsteady aerodynamics – namely, dynamic stall. The proposed work will study dynamic stall in conditions relevant to wind turbines with higher fidelity than previously possible. The scholar [Gregory] brings expertise with advanced measurement techniques, while the host institution [Technion] has a one-of-a-kind facility for modeling dynamic stall. The combination of these will result in a much deeper understanding of dynamic stall, leading to control schemes for enhanced wind turbine performance." The Technion is ranked among the world's top 100 universities.

Gaitonde and Bons Named ASME Fellows

Professors **Datta Gaitonde** and **Jeffrey Bons** have been elected Fellows of the American Society of Mechanical Engineers. The citation included with the nomination for Bons' ascension to Fellow grade reads: "Jeffrey Bons is an internationally recognized research and engineer in the areas of roughness in gas turbine engines with regard to its characterization, the evolution of particulate deposition, and its influence on heat transfer and aerodynamics. He has also conducted seminal research in low pressure turbine separation control, the influence of high intensity turbulence on film cooling and the acquisition of flow and heat transfer data in rotating turbine passages. Six of his papers have won best paper awards in IGTI's Gas Turbine Heat Transfer Committee and one in ASME's Heat Transfer Committee. Bons has won a number of other awards in teaching and research and he has maintained a high level of professional involvement in ASME."

Datta Gaitonde was noted as "a world leader in the field of advanced computational methods and their application to turbulent flows. Over the course of 25 years, first as a researcher and team leader at the Air Force Research Laboratory, and now as John Glenn professor at The Ohio State University, his pioneering research has provided unique insight into jet noise, shock/turbulent boundary layer interactions and flow control with advanced plasma-based techniques. His methods are being used worldwide by industry and academia for direct and large-eddy simulations. His vision has benefitted numerous national review panels and advisory boards."

Lempert Named APS Fellow

Professor **Walter Lempert** has been elected a Fellow of the American Physical Society (APS) for his innovative and insightful contributions to the development and application of optical diagnostic methods for the study of nonequilibrium molecular plasmas and turbulent flows. Lempert's nomination was put forward by the APS Division of Plasma Physics.



Rajendra Singh



George Staab

Faculty Retirement News

Professor **Rajendra Singh** and Associate Professor **George Staab** have retired after serving the university for 35 years each. Singh is recognized by his peers as an eminent educator in machine dynamics and

noise and vibration control. Staab was a frequent instructor of "Design and Analysis of Machine Elements and Kinematics" course and its predecessor in the quarter system. Both Singh and Staab have been accorded the title "Emeritus" in retirement.

Faculty Hires

Recent additions to the Department of Mechanical and Aerospace Engineering include four new faculty members. Joining the department are: Dr. Marat Khafizov, an expert in thermal materials; Dr. Jonathan Song, noted for his expertise in the development of advanced technologies for the analysis of biological tissues with specific application to cancer; Dr. Kiran D'Souza, a recognized aeromechanics researcher who will also support Ohio State's Aerospace Research Center; and Dr. Levent Guvenc, known for mechatronics and control systems with application to automotive systems. Guvenc will also support the Center for Automotive Research.

Security Enhancements Completed at Ohio State's Nuclear Reactor Lab



Interior of the new reception room at Ohio State's Nuclear Reactor Lab.

The design and construction of numerous voluntary security enhancements for The Ohio State University Nuclear Reactor Laboratory have been completed. The upgrades were funded at more than \$950K as a part of the Global Threat Reduction Initiative (GTRI), which is managed by the Pacific Northwest National Laboratory. These voluntary upgrades have improved the security of the laboratory beyond its previous state, which was already sufficient per regulations. Among the many upgrades was an addition to the Nuclear Reactor Lab (NRL) that includes a foyer, reception area and restrooms. Professor Tom Blue, who is the director of the Nuclear Reactor Lab, stated, "This addition will allow the NRL to admit guests in a more orderly and secure manner."

ALUMNI NEWS

ME Alum Named Dean of College of Engineering and Applied Science at the University of Cincinnati

Following a national search, the University of Cincinnati (UC) named Dr. **Teik C. Lim** (PhD ME '89) Dean of the College of Engineering and Applied Science, effective March 10, 2014. Lim, previously served as the interim dean for UC's College of Engineering.

In an announcement to UC Administrators, Dr. Beverly Davenport, Senior Vice President for Academic Affairs and Provost at UC, noted that Dean Lim's goals for the College include increasing enrollment of undergraduate students to 4,000 and graduate students to 1,000, and increasing the college's global reputation. While serving as interim dean, he launched the Cincinnati/Chongqing Joint Cooperative Institute, an agreement between the two universities that calls for UC to establish a co-op program in Mechanical and Electrical Engineering at Chongqing, China. Davenport also stated that UC plans to hire 50 new tenure-track faculty within the College across the next five years.

Wes Hines Named ASEE Glenn Murphy Award Recipient

Dr. **Wes Hines** (PhD '94 NE and MBA '92) was named the Glenn Murphy Award winner for 2014 by the American Society for Engineering Education. Hines is currently the head of the Department of Nuclear Engineering at the University of Tennessee, Knoxville. The award, named for one of the pioneering leaders in nuclear engineering at the collegiate level, is one of the society's top honors.

"I am very honored and humbled to receive the Glenn Murphy award," said Hines. "It is great to be recognized for dedication to teaching excellence and to be associated with someone like him." The award is given annually to an ASEE faculty member serving in a full-time role in either the U.S. or Canada.

Adam Christian Participates in Department Video

Adam Christian (BS ME '00 and MS ME '03) participated in a video produced by the Department of Mechanical and Aerospace Engineering for the 2014 American Physical Society conference, held earlier this year.

Christian who is now an ICE (intake, combustion, exhaust) Technical Specialist for Ford Motor Company, speaks in the video about how his graduate education was tailor-made for his job at Ford and how he continues to use many of the physics models that were developed as part of his master's thesis. Clearly still a fan of his alma mater, he strongly recommends that students consider continuing on for a graduate degree or coming to Ohio State from another university to obtain a graduate degree in mechanical engineering. While a graduate student at Ohio State, Christian was advised by Professor Ahmet Selamet, an expert in internal combustion engines, wave dynamics and heat transfer. After graduate school, Christian was hired through the Ford College Graduate program.

Other alumni who spoke on video were Asst. Professor **Carlos Castro** (BS and MS ME '05); **Bob Lowe** (MS ME '05); and **Sarah Watzman** (BS ME '13). Lowe will complete his PhD program at the end of autumn semester and Watzman began her PhD track last year.

The video, which also speaks to the department's mission (to educate the future leaders in mechanical, aerospace, and nuclear engineering; to generate and disseminate original knowledge and technology; and to develop innovative solutions to societal challenges) is available to view online at go.osu.edu/MAEvideo.



Department Faculty Earn 2014 College of Engineering Awards

The College of Engineering annually honors faculty members for outstanding teaching and research. The 2014 awardees, recognized on April 24 in the Blackwell ballroom, included seven individuals from the Department of Mechanical and Aerospace Engineering. Those receiving awards were:

Professor **Marcelo Dapino**

Harrison Faculty Award for Excellence in Engineering Education
Dapino was recognized for his creative research and education at the intersection of advanced technology that addresses real world problems, as well as for his outstanding mentorship of students. Dapino is also the Honda R&D Americas Designated Chair in Engineering.

Ohio Eminent Scholar and Professor **Joseph Heremans**

The Clara M. and Peter L. Scott Faculty Award for Excellence in Engineering Education

The award recognizes a senior faculty member who has achieved both national and international status as a leading educator and researcher. Heremans is world-renowned for his thermal engineering research and groundbreaking contributions to the understanding of thermal properties of matter.

Associate Professor **Sandip Mazumder**

David C. McCarthy Engineering Teaching Award

This award recognizes the contributions of College of Engineering junior faculty and staff to create more innovative and effective teaching and learning. Mazumder was selected in recognition of his passion for teaching, as well as his unparalleled dedication to innovation in engineering education and student success.

Associate Professor **Rebecca Dupaix**

Faculty Diversity Excellence Award

This award recognizes an individual or team demonstrating excellence and success in the development and implementation of models, strategies, practices and programs that foster and enhance diversity in the college. Dupaix was awarded for being an exceptional role model for current and future female engineers. Her passion for outreach, mentorship of students and ability to interest students in STEM-related fields inspire us all.

Associate Professors **Jeffrey Sutton**, Assistant Professor **Lei Cao**, and Research Scientist **Jason Dreyer**

Lumley Engineering Research Award

Sutton, Cao and Dreyer were among those who were presented the Lumley Engineering Research Award, which is given to a select group of outstanding researchers in the College of Engineering who have shown exceptional activity and success in pursuing new knowledge of a fundamental or applied nature.



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Fresh Look for Alumni Recognition Program

The Annual Alumni Recognition Program has been part of the Spring Honors and Awards Ceremony since 2006 and a total of 55 alumni have now been recognized by the department for their significant career accomplishments. Nominations for next year's awards will be accepted through the end of February 2015. With growing awareness among our alumni about the program and growing interest, the program is being revised significantly prior to the nomination and selection of alumni for recognition in 2015. Watch mae.osu.edu/alumni/department-alumni-recognition-program for updates!

Reunion-Homecoming Weekend - Oct. 17-19, 2014

Make plans now to join the celebration, rekindle friendships, and visit the campus places that were special to you when you were an engineering student at Ohio State. For a complete list of Homecoming-Reunion activities, visit go.osu.edu/reunions.

THREE ALUMNI TO RECEIVE COLLEGE OF ENGINEERING AWARDS IN OCTOBER

Three alumni of the Department of Mechanical and Aerospace Engineering will be celebrated for their personal achievements at this fall's 17th annual Excellence in Engineering & Architecture Awards, hosted by the College of Engineering. Among the alumni to be recognized during the 2014 Homecoming Weekend will be:



Bob Lee

Bob Lee, BS '78 ME, has been named the 2014 recipient of the **Benjamin G. Lamme Meritorious Achievement Medal**. Lee has steadily produced an impressive record of career accomplishments at Chrysler Group LLC. He began his employment with Chrysler in 1978 as an engineer-in-training in the Chrysler Institute of Engineering program. Today, he holds several key roles at Chrysler, including VP - Engine and Electrified Propulsion, Chrysler Group LLC; and Head of Global Powertrain Coordination, Fiat-Chrysler. His achievements represent the time-tested technical and business leadership standards he has embodied, including leading engineering teams at manufacturing facilities responsible for the acclaimed, award-winning and iconic 5.7L HEMI® V-8 engine in 2003 and the Pentastar V-6 engine in 2010.



Liz Tinkham

Elizabeth (Martin) Tinkham, BS '84 AAE, and **Cody Phipps**, BS '84 ME, will each receive the college's **Distinguished Alumnus Award**. Tinkham is a Senior Managing Director and Client Account Lead for Accenture's Microsoft Account responsible for all aspects of Accenture's work for and with Microsoft. She is a prominent advocate for the promotion and retention of women and minorities. Phipps is President and CEO of United Stationers, a Fortune 500 wholesale distributor



Cody Phipps

of business products to over 25,000 retailers with 2013 net sales of over \$5 billion. He has been an active champion of several charitable causes. Tinkham, Phipps and Lee are members of Ohio State's Alumni Association.

Retrospective

We Remember: Benjamin G. Lamme

January 12, 1864 – July 8, 1924

Benjamin Lamme, born and raised near Springfield, Ohio, was the son of James Given Lamme and Sarah Garver Lamme. He graduated from The Ohio State University in 1888 with the degree of mechanical engineer. He entered the Westinghouse Electric and Manufacturing Company in 1889, and became assistant chief engineer in 1900, and chief engineer in 1903. He served at Westinghouse at a time when it was known as a hothouse of inventors. He led a team of engineers that revolutionized engineering at the beginning of the 20th century. Lamme achieved international acclaim as a pioneering inventor and engineer for the Westinghouse Electric and Manufacturing Company at Pittsburgh. For 21 years he served as chief engineer for Westinghouse. Among his 162 patents were new inventions on railway motors, induction motors, converters, and the developments pertaining to the first Niagara Falls power system. In addition to his work as an engineer at Westinghouse, he served on the Naval Consulting Board of the United States, 1915-1919.



The Thomas A. Edison medal was awarded to Lamme by the American Institute of Electrical Engineering, (presently the Institute of Electric and Electronic Engineering). He received the award on May 16, 1919, in the auditorium of the Engineering Societies Building, New York City. The basis of the award was "for invention and development of electrical machinery."

The Joseph Sullivant gold medal was awarded to Lamme in 1923 by The Ohio State University. The Joseph Sullivant gold medal is awarded at five-year intervals to the alumnus who had made the most notable contribution to the liberal arts, the fine arts, or the mechanic arts. He died July 8, 1924 in Pittsburgh, Pennsylvania.

Previous Medal Recipients

Alumni with degrees in ME, EM, or AAE who have received the Lamme medal include:

Year	Recipient	Degree/Graduation Year(s)
2014	Bob Lee	ME 1978
2011	Monte Ahuja	ME 1970
2006	William Fillmore	ME 1936
2004	Robert Nerem	AAE 1961, 1964
2001	Daniel Kimmel	MET 1971 and ME 1972
1998	Ralph Rockow	ME 1958
1994	Jason Lemon	ME 1962
1989	Gary Kimmel	ME 1966, 1969
1976	Rupert Atkin	ME 1941
1974	John B. White	ME 1952
1969	Robert T. Sawyer	EE 1923 and ME 1930
1965	Hayward A. Gay	ME 1930
1964	William Heimberger	EM 1916
1963	William Chambers	ME 1904
1960	Alan G. Loofbourrow	ME 1934
1958	Harley C. Lee	EM 1927
1955	Ralph M. Hardgrove	ME 1914
1951	Ralph L. Boyer	ME 1924
1948	Earle C. Smith	EM 1913
1947	Estel C. Raney	ME-EE 1912
1943	Thomas E. French	ME 1895
1942	Herbert B. Brooks	ME-EE 1903
1940	Lawrence G. Barringer	EM-CER 1902
1937	Ellis Lovejoy	EM 1885
1936	Ervin Bailey	ME 1903
1934	Lewis W. Chubb	ME-EE 1905
1933	Norman Storer	ME-EE 1891
1932	Ralph D. Mershon	ME 1890
1931	Charles E. Skinner	ME 1890

Ohio State College of Engineering's Annual Presentation of Meritorious Achievement Medal Named for Lamme

In his will, Benjamin Lamme provided that a gold medal be presented annually to a technical graduate of his alma mater for "meritorious achievement in advancing engineering." Each year, the College of Engineering presents the Benjamin G. Lamme Meritorious Achievement Medal to an alumnus who is selected from a pool of nominees for the distinguished honor. The 2014 recipient will be ME alum Bob Lee, who is also a previous recipient of the college's Distinguished Alumnus Award (see related article p. 16).



Emeritus Professor Denny Guenther – Dedicated Educator, Forensics Expert & Buckeye Fan

Emeritus Professor Denny Guenther received a BS ME degree from Purdue in 1968, and graduate degrees from The Ohio State University (1971 MS ME and 1974 PhD ME). Now, technically retired, he may have shifted his work habits from fifth to fourth gear, but not the passion for his work or his love of engineering.

Q: First job?

A: In the fall of 1969, I became Prof. Michael J. Moran's first teaching assistant. Need I say more, I was "hooked." I became an assistant professor at Ohio State in 1974.



Q: Was there an experience in your career that might surprise your colleagues and former students?

A: I enjoyed working on cars in high school and in college – everything from mechanical to body work.

Q: If teaching hadn't been an option, what other career might you have considered?

A: Being an

"expert" witness in mechanical engineering product liability cases.

Q: What was the most common question asked by your students?

A: How do I get a good grade?

Q: Greatest change in engineering education since you started teaching?

A: I started teaching in 1969. The biggest change in collegiate education is the computer! I saw the evolution from slide rule, to calculator, to the mainframe and finally the laptop.

Q: How did accident reconstruction/vehicle analysis become part of your career path?

A: I did a little testing for a professor at Purdue on a mechanical product failure analysis so I knew of the field of product liability. At Ohio State, I worked a little with Dr. Helmuth W. Engleman on some vehicle accident cases. I taught the three engine classes, started the vehicle dynamics classes, and continued working vehicle accidents – many involving product claims of the vehicle. At the same time I received research contracts to support students funded by the National Highway Traffic Safety Administration.

Q: What's the most valuable attribute for an educator to acquire?

A: Compassion and communication with the students.

Q: What current education practice(s) deserve rethinking?

A: Taking classes over the Internet without interaction with the professor. [Offers] no real verbal communication between student and teacher.

Q: After more than four decades in education, you retired in 2010, what's been the best thing about retirement?

A: I enjoy not having a "locked" schedule of classes.

Q: Any other non-engineering pursuits or pastimes?

A: My wife and I enjoy travel and spending time with our sons' families – two out of state.

Q: What distinguishes a degree in engineering from Ohio State?

A: We build a solid foundation in the engineering fundamentals, coupled with a strong higher-level knowledge, and combine both of those with a "real world" and solid work ethic.

Q: Ballpark estimate for the number of students you have taught at Ohio State?

A: In 41 years of teaching and never taking a sabbatical, I would say the number approaches 4,000 students.

Q: Who had a lasting impact on your career?

A: Prof. Michael J. Moran, but for him I would not have chosen to be a professor of mechanical engineering. His command in the classroom, passion for teaching, and personal ethics made me want to be a professor.

Q: What aspect of mechanical design do you find most fascinating?

A: I love failure analysis. I enjoy trying to determine the root cause of a mechanical failure and working to improve the design.

Q: What tactic worked best to motivate students who needed a little extra encouragement to stick with their degree program?

A: Spending time "one-on-one" with the student. Communicating both on the technical level and also on the personal level.

Q: You're a big Buckeye fan. How many sporting events do you typically attend?

A: I really enjoy collegiate sports. I host a tailgate for all home football games, go to most men's basketball, some women's basketball, and some men's hockey. Been to many bowl games and to our final four basketball runs.

Q: Proudest career accomplishment(s)?

A: Three: receiving a University Alumni Award for Distinguished Teaching in 2008; supporting 110 masters students and 15 doctoral students on funded research; and representing Bridgestone Firestone N.A. in the Explorer/Tire problem, which received a great deal of publicity in the early 2000s.

Q: Current project(s)?

A: Still consulting with SEA on liability cases, and doing funded research at Ohio State with graduate students.

Q: You spent many hours advising some of the student motorsports teams. How do those activities improve the student experience?

A: First, I am glad that the college is now giving seniors capstone course credit for their many hours of involvement. This type of teamwork is a great learning experience for students. I advised the SAE Formula One and Baja SAE teams and was the first advisor to the Theme Park Engineering team. These teams help to demonstrate real-world engineering and the industry practiced "team" approach to problem solving.

Alum David Pan Makes Coastal Transition While Continuing His Work With the Society of Asian Scientists and Engineers

David Pan, BS ME '08, is the 2014 recipient of the department's Marion Smith Service Award (see article p. 7). Pan's recent job change required relocating from Boston, MA to Seattle, WA. While his career hasn't followed a straight line on an ME path, he proudly points to his father's career as a mechanical engineer for GE Aviation as the inspiration that launched his own interest in engineering.



technologist (understanding the systems architecture), and program manager (getting it done on time and on budget).

Q: Why become an engineer?

A: Engineering provides you with a great deal of flexibility. I've had technical internships at GE in which I was conducting finite element analysis on airplane engines and experience leading the creative advertising development for a new product launch. The analytical skills you learn in engineering transfer across all fields and functions.

Q: What's the thread connecting your career advancement?

A: The thread connecting my career has always been the need to understand "why." Prior to joining Amazon, I worked for 5+ years at Procter & Gamble (both in Cincinnati and Boston). I joined P&G as an engineer in the R&D Products Research function. My responsibility was to understand my consumer's unmet needs. As Henry Ford stated, "If I had asked people what they wanted, they would have said faster horses." My role was to go beyond what a consumer said, to understand why he/she said it, and develop products to solve that unstated need. After a few years, I then transferred into P&G's prestigious Marketing division as an assistant brand manager (ABM) on the Gillette Mach3 brand. I sought this transition because I wanted to understand why we were making the business decisions that we made. As an ABM, I participated in strategy meetings with our directors and vice presidents where I had a chance to listen to the strategy discussions and even influence the decision making process.

Q: What prompted you to help found the Society of Asian Scientists and Engineers?

A: When I started my career at P&G, I happened to meet a couple of senior P&G leaders who had the idea for the Society of Asian Scientists and Engineers (SASE) and they were looking to develop a team to help kick-start the organization. I jumped in as the first non-board leader and recruited a bunch of friends to join. As a 22-year-old new hire, I was usually the last to speak at a work meeting; but within SASE, I was leading meetings, influencing senior leaders, and making decisions that impacted hundreds of members. Since our inception as a 501c3 non-profit in 2007, we have grown to over 3,000 student and professional members across 60+ chapters throughout the U.S., including The Ohio State University. The OSU SASE chapter was the 2nd SASE chapter to be founded and is one of the strongest chapters in the nation.

Q: Why volunteer?

A: As a freshman, it can be extremely intimidating attending a career fair. You barely know where the cafeteria is, and now you have to fight for an internship with juniors? I was lucky that a few upper classmen were nice enough to take me with them to the career fair. Although I was terrified and didn't speak with any recruiters, it prepared me for what I needed to do for the next year. I am thankful that those upperclassmen brought me with them, and SASE provided me the opportunity to be the "upperclassmen" to others.

Q: In what ways does SASE help young Asian professionals?

A: SASE's mission is to help Asian technical professionals achieve their full career potential. Just as there is a glass ceiling, there is a "bamboo ceiling." Asian Americans typically do well in school and get good entry-level positions but are underrepresented at senior levels across industry, medicine, and academia. For example, Asians make up ≈5% of the U.S. population but only 0.3% of corporate officer positions. SASE addresses the bamboo ceiling by providing students an opportunity to practice leadership in a safe environment. SASE also provides training throughout a member's career via our national and regional conferences, professional workshops through our chapters, and national webinars. Although SASE's main focus is on Asian technical professionals, our membership is open to anyone.

Q: Being a Buckeye outside of Ohio requires . . .

A: . . . finding creative ways to watch football games. This was actually one of the biggest concerns I had when I moved from Ohio to Massachusetts. Only about half of the OSU football games are nationally televised so you have to get good at finding alternative avenues to watch games (finding OSU bars, online streaming).

Q: Hobbies?

My fiancée and I love eco and adventure vacations. We've spent time observing sea turtles laying eggs on remote beaches in Costa Rica, canyoneered waterfalls in the rainforests of Puerto Rico, and hang-glided above the beaches in Rio de Janeiro, Brazil.

Q: Any advice for current students?

A: College is the best time to take chances and practice whatever it is that scares you. Commit to a student organization, set stretch goals, and reset the standard of excellence. Apply, apply, and apply to scholarships, to internships, to awards (Sphinx, Mortar Board, Homecoming Court), to study abroad programs, etc. And don't worry, everyone else is also scared to apply so you're not alone.



David Pan and fiancée Sandy "canyoneered" the El Yunque rainforest of Puerto Rico last year.



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A Message From the Chair: Professor Ahmet Selamet

To excel in their careers, engineers must understand and satisfy the needs of many audiences, including end-users of their products or services, their employers, their industry, and society at large. At its core, engineering demands accuracy, precision, adherence to codes and ethics, and a demonstrated appreciation for professionalism.

To that point, this issue of Exchange is filled with the accomplishments of many of our outstanding alumni, students and faculty. The impact of their collective contributions is indicative of how Ohio State engineers inspire each other and their peers at other organizations to dream, to act, and to achieve. I am delighted and impressed by the number of individuals whose talent and hard work reflect honorably on this university. Day in and day out, we are earning the respect of engineers across the nation and around the globe. Each year, our interdisciplinary collaboration expands as we work with faculty in other colleges here at Ohio State and at other research universities. As the Chair of the Department of Mechanical and Aerospace Engineering, it is a joy to present awards to some of the most dedicated among us – to shine a light on their leadership and ingenuity. And in accord with the distinguished conduct of our alumni, we have great expectations, too, for each new generation passing through the halls of Scott Lab.

Marvelously, each fall term the quality of our freshman engineering student ranks higher than the last. Composite ACT scores have increased from 26.8 to 29.5 during the period 2002-2013, and math ACT scores from 28.1 to 30.5 over the same period. This places the quality of the engineering freshman entering Ohio State third in the Big 10 – behind only Northwestern University and the University of Illinois at Urbana-Champaign. And while we are driven to compete with other top-tier engineering institutions, we recognize, most importantly, that our graduates must leave prepared to compete in industry or academia to further advance (and perhaps one day lead) the organizations they join.

Hence, another marker of our success is measured in terms of our graduates' involvement in new areas of discovery and how they are able to think broadly and productively about practical solutions to societal challenges. The realization of this expectation serves to reinforce our position as a land grant institution and shows our commitment to the various communities to which we belong.

Conjuring a great deal of “Buckeye Pride” are those impressive individuals who earned a prestigious departmental alumni award (pages 6-7) or College of Engineering alumni award (page 16). I'd also like to call your attention to the article about one of our most renowned alumnus, Benjamin Lamme, who received international acclaim during his brilliant career (page 17). Since first presented in 1931, twenty-nine alumni associated with our department have been named recipients of the Lamme Medal, including this year's esteemed recipient Bob Lee, Class of '78. We celebrate the achievements of all of these remarkable engineers.



And while 40 years separate the commencement ceremonies of two other award winners, it does not separate their enthusiasm for volunteerism: I hope you'll spare a few minutes to read how Rex Ritchie, Class of '68, and David Pan, Class of '08, have endeavored to serve the greater good. (Interviews with Rex and David appear on pages 10 and 19, respectively.) Their acts of generosity have contributed much to several wider communities.

Finally, it's a pleasure to acknowledge the students and faculty who also earned significant awards and whom we hold in high regard for their exceptional dedication to excellence.