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Vibrations is the annual newsletter of the University of Kansas Department of Mechanical Engineering, sent to over 3000 alumni and over 500 friends of the Department.

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I hope you enjoy this issue of Vibrations, KUME’s annual newsletter.

The 2014 calendar year was exciting and productive for KUME students and faculty members. Some of our student achievements include, but are certainly not limited to: vying successfully in (and dominating) national competitions; engaging with industry in real-world capstone design projects; taking bold risks with faculty advisors to pursue their entrepreneurial dreams, and generating as well as disseminating important and lasting discoveries with their faculty advisors.

Some of the noteworthy achievements of 2014 include: Jayhawk Motorsports’ capturing their second Formula SAE national championship in the past three years; eastward expansion of our KUME capstone design projects to involve industrial sponsors in Indiana and Ohio, joining current sponsors in Kansas, Nebraska, and Missouri; and earning a 22-place increase in the U.S. News & World Reports ranking of the KUME graduate program in 2014.

Nearly 500 students are currently pursuing their BSME degrees at KU, taught by dedicated and creative KUME faculty members. Likewise, the research of approximately 90 graduate students in both mechanical engineering and bioengineering is being directed by my faculty colleagues. A substantial number of undergraduate researchers are also involved in various laboratories. Since January of 2014, KUME students and faculty members have published two books, and 94 journal articles. Also during this time, our scholarly work was cited over 6800 times according to Google Scholar.

In the Fall of 2015, KUME will be home to 19 faculty members, 6 of whom will have joined the department in just the past three years. More faculty members will be needed as we prepare for the future, due to the growth in our enrollments, and to the inevitable faculty retirements. Competing with other aggressive universities in the recruitment of top ME faculty talent is not unlike recruiting top basketball talent to play in Allen Fieldhouse. In either case, compelling reasons to come to KU must exist to successfully recruit the stellar candidates. In fact, providing outstanding faculty candidates with the financial resources they require to equip their laboratories, and to support the students who work with them early on, is the greatest challenge KUME faces. We will continue to rely on the support of our alumni and friends, so that we can vie successfully in the national and international competition to sign outstanding faculty recruits.

I hope you enjoy your copy of Vibrations, and I invite you to drop in during your next visit to Lawrence to meet some of the students, faculty members, and others who are changing the face of engineering education.

Regards,

Theodore L. Bergman
Charles E. & Mary Jane Spahr Professor
Chairman, Department of Mechanical Engineering
Meet our New Faculty Members

Dr. Huazhen Fang, Assistant Professor, joined KU in the Fall of 2014. He received his Ph.D. in Mechanical Engineering from the University of California, San Diego where he developed new principles, methods, and tools to design, monitor, and control engineering systems. He has applied his principles and theories to problems involving power generation and environmental monitoring. While at UCSD, he was a Gordon Engineering Leadership Scholar. Dr. Fang is currently interested in high-performance control-theory-oriented management of rechargeable batteries for electric vehicles and grids.

Dr. Fang has co-authored 14 refereed journal articles, as well as numerous conference papers and reports and one U.S. Patent. He has industrial experience at NEC Laboratories America and Mitsubishi Electric Research Laboratories.

According to Dr. Fang, “I can’t imagine a more inspirational place than the KU Mechanical Engineering Department to build energy, pursue passion, and grow with a wonderful community.”

Dr. Xianglin Li, Assistant Professor, joined KU in the Fall of 2014. He was most recently a Senior Scientific Engineering Associate at the Lawrence Berkeley National Laboratory. In this capacity he was involved with full fuel cycle analysis of non-conventional natural gas production and usage, as well as technical analyses to support the development of energy efficiency standards for appliances and other commercial equipment.

Dr. Li received his Ph.D. in Mechanical Engineering from the University of Connecticut in 2012, where he investigated the electrochemical, as well as heat and mass transfer aspects of advanced fuel cell and battery concepts. He has co-authored 26 refereed journal articles, multiple conference papers, and three U.S. Department of Energy and National Laboratory reports.

According to Dr. Li, “KU’s unique history of working collaboratively with industry provides a great opportunity to advance my research in novel energy conversion and storage technologies.”

Mr. Thomas DeAgostino will join KU in the Summer of 2015 as Associate Professor-of-the-Practice. In this role, Tom’s primary responsibilities will be teaching undergraduate courses, including various capstone courses.

Tom comes to KU from the Lawrence Technological University in Southfield, MI, where he is the Director of the Entrepreneurial Engineering Design Studio. Before LTU, he was at Trine University, and held the title of Executive Director of Innovation One, Trine’s technology and business incubator. Mr. DeAgostino received his BSME from Michigan Technological University, and his Master’s degree in Engineering Science from Rensselaer Polytechnic Institute. He has 25 years of engineering experience at Ford and General Motors.

Mr. DeAgostino reports that “The KU Mechanical Engineering Department has an excellent reputation for graduating engineers with outstanding technical skills. I’m excited about the opportunity to work with the faculty to expand upon that tradition of excellence. Providing all of our M.E. students with experiential learning opportunities where they can engage with industry and the community will allow them to have a greater, immediate impact upon their graduation.”
Jayhawk Motorsports . . . National Champs!

Hand-crafted, super-lightweight, pre-impregnated composite fiber rims; engine intake and exhaust manifolds designed using race-specific software; test-then-build body shapes and airfoils identified with state-of-the-art computational fluid dynamics packages. Such are the exotic technologies and methods used by the world’s top racing teams in Formula 1 and NASCAR, and by KUME Jayhawk Motorsports (JMS) students in Formula SAE competitions.

The recent successes of JMS are well known. According to Robb Sorem, JMS faculty advisor, the first significant buzz from the collegiate racing community came with Motorsports’ 2011 first place finish in the autocross event at the Michigan International Speedway. Winning autocross came at the expense of approximately 140 competing teams from around the world. That first place event finish was quickly followed by first place overall trophies at the Lincoln Nationals in 2012 and 2014, each time against about 80 teams, mainly from universities in North and South America.

But, how did Jayhawk Motorsports make the journey from being a relatively unknown, mid-tier competitor, to, using Dr. Sorem’s analogy “starting every basketball season expecting to be a top seed in the NCAA tournament?” Professor Sorem identifies several milestones.

“Around 2005, JMS began attracting student drivers with competitive racing experience. It made all the difference in the world for our drivers to know instinctively how far they could push the cars in competition, where maximum speeds exceed 70 mph on very tight courses. With the new, experienced drivers behind the wheel, JMS students began to believe they could be contenders. In 2006, JMS finished 12th overall at Michigan, which is the holy grail of collegiate racing with teams competing from the Americas, Europe, and Australia. JMS confidence was building.”

The second stage came about when Motorsports alumni, who had experienced the burgeoning notoriety of the program firsthand as KUME students, began advising the student team on specific topics to hone their designs. For example, “I’m not an engines guy,” says Sorem, “but many of the former students who had gone through JMS went on to acquire relevant skills in industry. In turn, they began helping younger KUME students learn specific skills, such as how to tune an engine for maximum performance.”
JMS Champs (cont.)

The third stage was when JMS “placed robustness and reliability on equal footing with pure (but often finicky) performance.” This led to biennial modifications to key components instead of yearly changes, providing JMS students more time to carefully analyze and optimize more matured sub-systems. Overall, the key to success has been, according to Professor Sorem, “skill and talent, dedication and ingenuity, and JMS alumni loyalty and interest in helping current students in the program.”

According to Dr. Sorem, JMS has placed about 50 KU engineering alumni in the automotive industry since its inception. About 90 percent of the JMS students have majored in mechanical engineering, with most of the remaining students coming from electrical, chemical, and civil engineering. A handful of JMS students have majored in disciplines other than engineering. As for his prognosis for the future of JMS and Formula SAE competitions? Sorem shares that “although we have competed in several electric car events recently, electric cars will have a more prominent profile in the competitions of the future.” With the continued technical and financial assistance of JMS alumni and others, we predict much success for KUME and JMS in the years to come.

Meet our New Staff

Kate Maisch joined the department as an Administrative Associate in June of 2014. She was previously a graduate student at the University of Missouri-Kansas City where she studied ancient Greek and Roman culture and received her Master’s degree in Ancient History. Kate is new to Kansas and KU, but has quickly become a Jayhawk fan. Rock Chalk!

Dr. Geng Ku joined the Mechanical Engineering Department in March of 2015 as Laboratory Coordinator. Previously, Dr. Ku served as an Assistant Professor in the Department of Cancer Systems Imaging at the University of Texas MD Anderson Cancer Center in Houston. He has been a Research Lab Manager at Washington University, St. Louis, as well as at Texas A&M. He has held the position of Chief Technology Officer at a startup laser company. Dr. Ku received his Ph.D. from Texas A&M, and is co-inventor of 4 patents as well as co-author of 36 refereed journal articles.
Like many others in rural America following the Depression, Mike Noland spent his earliest years on a tiny, dry-land farm without electricity or indoor plumbing. He was raised by an aunt and uncle, and graduated from a small high school in Orleans, Nebraska, that provided no courses in chemistry, physics, or even algebra. But in 1957 Sputnik was put into orbit, the U.S. needed engineers, and Mike enrolled in engineering at KU.

After receiving his BSME degree in 1962, Mike took his first engineering job at the Linde Division of Union Carbide in Tonawanda, New York, where he worked on advanced cryogenic systems. After three years, he and his wife, Karen (BS, Nursing, 1966), returned to Kansas where he worked at the Midwest Research Institute in Kansas City. With several MRI colleagues, he developed the first protocols to manage the thermal loads for Apollo spacecraft, for high-performance aircraft, and for the airport control towers designed by I. M. Pei. As a part-time student, he received his MSME degree from KU in 1966 under the guidance of Louis Burmeister. Mike subsequently enrolled in the doctoral heat transfer program at the Illinois Institute of Technology founded by the legendary Max Jakob, but followed his advisor, Stothe Kezios, to Georgia Tech where he completed his Ph.D. in 1970.

Returning to MRI from Atlanta, Dr. Noland became its Director of Engineering in 1972. It was during this time (before the Department of Energy existed) that he became engaged in some of the earliest federally sponsored contract research in solar energy. In doing so, he built relationships with key scientists and engineers in photovoltaics, solar-thermal energy systems, and materials for solar energy applications.

In 1974, Congress passed legislation to create the Solar Energy Research Institute (SERI), now the National Renewable Energy Laboratory (NREL). Knowing that competition would be formidable and the likelihood of success slim, Dr. Noland nonetheless spent nineteen, nearly sleepless days writing the proposal that would assign MRI the responsibility to build SERI from scratch. As part of his proposal-writing strategy, he pre-signed hundreds of solar energy researchers to commit to future employment at SERI should the MRI proposal be selected, and he secured an agreement with the State of Colorado to commit land on South Table Mountain in Golden on which SERI would be sited. Dr. Noland then put the SERI proposal out-of-mind and left MRI to work on solar research at the Desert Research Institute in Boulder City, Nevada, with the caveat that he would return to MRI if the proposal was successful.

After a lengthy review process, Dr. Noland's proposal ultimately won the competition for the nation's first large-scale effort in solar energy research. Rejoining MRI and rushing to Golden in 1977, Mike recalls “sitting on a 5-gallon paint can, with a phone on the floor, in an otherwise empty room” from which he began calling the pre-signed researchers to remind them of their commitments from years past. Ultimately, he personally hired the first 700 SERI researchers. Serving as the Deputy Director of SERI, Dr. Noland had primary responsibility for its initial operation and strategic direction.

Mike left MRI and SERI in 1979 and joined Exxon Engineering in New Jersey, initially to coordinate and develop their efforts in solar energy and, soon thereafter, as head of the machinery division. Then

Continued on Page 8
Capstone Expansion

The number of KUME capstone design projects, conducted by our seniors, continues to expand. New projects this past year include those sponsored by American Honda, Children’s Mercy Hospital, DePuy, SPX, WireCo, and others. Most of the projects are conducted in the new Student Success Center located on the West Campus in Lawrence.

In January of 2015, a partnership was established between KUME and KU Innovation & Collaboration (KUIC). As part of its charter, KUIC promotes the commercialization of intellectual property developed at KU; it is this objective that motivated KUIC to tap the expertise of our mechanical engineering students.

Beginning with ideas generated on the Lawrence campus or at the KU Medical Center, KUME students first consider alternative designs, and then refine their concepts. Working with the inventors, the most promising designs are subsequently developed. Ultimately, prototypes are built that demonstrate the feasibility and efficacy of the students’ solutions. Included as part of the projects are detailed cost analyses to ensure that the concepts are economically, as well as technically viable.

Examples of KUIC-sponsored projects are the development of minimally invasive devices to screen for esophageal cancer, the design of new protective barriers to eliminate infections associated with use of venous and arterial catheters, and the synthesis of technologies to develop innovative bandages that will reduce post-operative infection of healing wounds.

Saud Alenezi, student member of one of the design teams says “Our project requires us to solve many different engineering challenges that we’ve not been exposed to in classwork. It’s exciting to know that we can help improve the health of hospital patients worldwide.” Adds senior Phillip Shields, “It’s been a blast. I never thought as a KUME student I could use my skills to design bandages for the medical industry. As the project developed I saw more clearly how mechanical engineering techniques can be used in all industries. It’s an exciting conclusion to my mechanical engineering studies at the University of Kansas.”

According to Dr. Julie Nagel, Interim President of KUIC and Interim Associate Vice Chancellor for Innovation and Entrepreneurship, “KUIC has an ongoing need to further develop KU engineering technologies in order to attract the attention of companies that will ultimately bring them to the market. By partnering with KUME, we are able to leverage student expertise to do this development work, and students gain valuable experience. It’s a win-win scenario for KU.” Adds Ted Bergman, Chairman of KUME, “We are delighted to collaborate with KUIC in our capstone activities. This type of partnership is, to my knowledge, unique in academia. It is also testimony to the value our students can add to the early-stage design of potentially disruptive commercial products.”

Entrepreneur’s Corner

Kevin Good, BSME 1991, is President of Good Energy Solutions, located in Lawrence. Founded by Mr. Good in 2007, Good Energy currently has 18 employees, doubling in size in the past year. Recent projects include installation of the photovoltaic (PV) array at the Birmingham Zoo in Alabama, and a PV system for Westar at their Service Center in Lawrence.
Professor Bedru Yimer has announced his retirement after 36 years of service to KU, effective in the Summer of 2015.

A native of Debre Marcos, Ethiopia, Bedru spent his formative years as a student in a boarding school in Debre Zeit, about 250 miles from his hometown. It so happened that the school was adjacent to an Ethiopian air base, where the young Yimer became enthralled with high-performance aircraft and filled with admiration for the pilots who flew them.

After graduating with his high school degree, Bedru declined an opportunity to attend medical school in France, and joined the Ethiopian Air Force. He first traveled to the United States in 1965, where he trained at Nellis Air Force Base in Nevada. He returned to Ethiopia from Nellis, where he flew Northrup F5 combat aircraft. While he was an officer in the Ethiopian Air Force, Bedru studied mechanical engineering at Addis Ababa University, earning his bachelor’s degree in 1972. He then served as a lecturer and training commander in that nation’s Air Force Academy for two years.

Tragically, 1974 saw the onset of the Ethiopian Civil War when Emperor Haile Selassie was removed in a coup d'état. Recognizing that opportunities in his home country would be severely limited by what would become a nearly two-decade long conflict, Bedru applied to graduate schools in the United States and accepted the first offer of admission he received, from the University of Dayton.

With his advisor at Dayton, Professor John Crisp, Bedru investigated heat transfer processes pertinent to the thermal control of satellites. It was also in Ohio that Bedru met and married his wife, Nada. When Crisp moved to KU to become the chairman of the ME department, he recruited Yimer to Kansas as a visiting professor in the fall of 1979. Shortly thereafter, Bedru was hired into an assistant professor position and progressed through the ranks. He became a naturalized citizen in 1988.

As an inspiring yet rigorous instructor who has always been popular with his students, Bedru has received numerous teaching awards during his career, including the 1989-1990 Honor for an Outstanding Progressive Educator (HOPE) Award, the most prominent recognition for teaching conferred by the University of Kansas. Reflecting his love for teaching, Bedru is said to have remarked at the time, “I had received awards from Haile Selassie, who was a God-like figure in Ethiopia. I had graduated with high honors, but I don’t think any of those matched the feelings I had for the HOPE Award.”

According to Professor Ron Dougherty, “I appreciate Bedru’s thoughtful advice and his enthusiasm for all things KU. Bedru always has a smile and an encouraging word. That attitude toward life and profession clearly shows through as a dedicated, passionate faculty member. He is ever ready to help, striving for everyone to learn and excel.” Adds Professor Ken Fischer, “In addition to being a faithful and highly competent educator, Bedru Yimer is dedicated to daily exercise. His continual encouragement to join him at the KU pool for a refreshing swim will be missed. I hope to continue to see him at the pool for many years to come!”

In retirement, Bedru plans to augment his hobbies of swimming and traveling throughout the United States, with potential religious missions abroad with Nada in conjunction with their involvement with the Graceway church in Raytown, Missouri. As a person of faith, Bedru’s advice for success is to “first find the right relationship with the Creator, after which all things will follow.”

The entire KUME family wishes Bedru an active, enjoyable, and fulfilling retirement.
Alumni Focus (cont.)

it was to London for three years to manage technical support for the firm’s European refineries. The Noland family subsequently returned to New Jersey where Mike managed various aspects of engineering research. But things were to change dramatically.

On March 24, 1989, the Exxon Valdez ran aground in Prince William Sound, Alaska. As part of the response, Exxon asked Mike to take a three-month assignment in Houston where he would lead a team to help determine how to assess environmental and economic impacts. The assignment stretched to three years, a time that Dr. Noland calls “the most important and exciting period of my career; one that arose from the single most unfortunate event.” Mike’s focus became the unexplored and challenging task of quantifying the socioeconomic impacts of environmental events. A team of consultants reported to Mike in Houston, including Ken Arrow, George Stigler, Dan McFadden, Peter Diamond, and Daniel Kahneman (all Nobel laureates in economics). “The core group worked 18-hour days and had every third weekend off,” says Mike, “but we were able to sometimes take a quick break and enjoy the opera or see an Astros game.”

Eventually, Mike returned to New Jersey to take on various assignments, including director of Exxon’s Analytical Sciences Division. He retired from ExxonMobil in 2003.

Mike and Karen currently reside in rural Bucks County, Pennsylvania, where they built a home that reflects their passion for books and learning. A voracious reader, Dr. Noland’s custom-designed home library houses over 7500 hardbacks, mostly works of physics and mathematics, the history of Ireland, and British crime fiction. Mike loves music, especially classical choral music, and has been a member of three concert choruses, two of which he proudly reports required he audition. He is production consultant for the National Public Radio show, Sounds Choral. He just completed a book based on the hand-written recipe collection of Karen’s grandmother, who lived near Courtland, Kansas.

Mike’s granddaughters, who are currently graduate students at Kansas State and the University of West Virginia, remain a high priority in his life and he corresponds with them almost daily. Mike and Karen are proud to provide the Michael and Karen Noland Mechanical Engineering Scholarships at KU through donations that are matched by the Exxon-Mobil Foundation.

Asked for advice he might give to young students today, Dr. Noland suggested that they should “Never neglect the basics. Writing and mathematics are still the most important underlying skills to be good at. Keep them both tuned up and honed. Read a lot. The best writers are the ones who read, even in this day of social media and shorthand culture.” He added: “Continuing your education always pays off. If you have that bachelor’s degree and you are at all interested in a master’s, do it. If you have a master’s degree and see the Ph.D. as an appealing challenge, do it.” Certainly sage advice from an alumnus with such a great breadth of experience and impact.
We congratulate the following individuals for their contributions to, and recognition by the university, national, and international communities.

- Ron Dougherty, Professor, was elected Fellow of the American Society of Mechanical Engineers in April of 2015 for his outstanding and lasting contributions to mechanical engineering education. Specific recognition was given for his leadership in establishing multi-university alliances, international educational partnerships, and for his role in establishing the graduate bioengineering program at KU.

- Karan Surana, Deane E. Ackers Distinguished Professor, is sole author of the 786-page book entitled *Advanced Mechanics of Continua*, published in December of 2014 by CRC Press.

- Paulette Spencer, Ackers Distinguished Professor, spent the Spring, 2015 semester in Brazil as a J. William Fulbright Awardee. Along with her colleagues and students, Dr. Spencer was recognized by the international journal *Macromolecular Chemistry and Physics*, with cover artwork for the April, 2015 issue. The artwork is associated with the article entitled “Visible-light initiated free-radical/cationic ring-opening hybrid photopolymerization of methacrylate/epoxy: polymerization kinetics, crosslinking structure, and dynamic mechanical properties.”

- Former graduate students Chenaniah Langness and Michael Magnus, along with their faculty advisor Chris Depcik, Associate Professor and Docking Family Scholar, published the article entitled “Test cell at Kansas University does double duty,” which was highlighted on the cover of the March, 2015 issue of *SAE Momentum*, the magazine for student members of the Society of Automotive Engineers International.

- Lisa Friis, Associate Professor, and graduate student Nikki Galvis have co-founded Evoke Medical. In April of 2015, they won first place in the Design of Medical Devices Conference, Emerging Medical Innovation Valuation Competition in Minneapolis, as well as first place in the Society for Biomaterials Second Annual Business Plan Competition in Charlotte.

- Candan Tamerler, Wesley G. Cramer Associate Professor, recently presented invited keynote addresses in Thailand and Japan. Her research, performed with colleagues and students, will be featured on the covers of forthcoming issues of two international journals, *Macromolecular Rapid Communications* and *Soft Matter*. The cover artwork is associated with articles entitled “Coupling infusion and gyration for the nanoscale assembly of functional polymer nanofibers integrated with genetically-engineering proteins,” and “Molecular-level understanding of the adsorption mechanism of graphite-binding peptide at the water/graphite interface,” respectively.

- Sara Wilson, Associate Professor, was elected Chair of the Executive Committee of the Bioengineering Division of the American Society of Mechanical Engineers for 2015-2016.

- Sarah Kieweg, Associate Professor, was elected Student Affairs Representative to the Executive Committee of the Bioengineering Division of ASME for 2015-2016.

*KUME Professor Dr. Chris Depcik with BSME graduates Dalen Fink (left) and Richard Wagner (right).*
2014 Graduates
Graduate Students

Chidirala, Ashok Kumar
Ferris, Lauren Alexandra
Fitzwater, Fallon Gray
Fleenor, James Day
Kalidasu, Satya Sai Prasanna
Viswanath
Langness, Chenania Nathaniel
Mangus, Michael D
Mannen, Erin Mychael
Moore, Cody K
Riley, Alice E
Sandip, Anjali
Schmidt, Fabian Philip
Singh, Viraj
Strunk, Gavin P
Sui, Yi
Surface, Nicholas James
Tobaben, Eric John
Vanderhyde, Mariam Mathew
Vincent, Stephen Andrew
Wurtz, Joshua James

Undergraduate Students

Al Gahtani, Mohammed Abdullah H
Apel, Nickolas Robert
Apprill, Robert James
Bedford Jr, David Lee
Bellinger III, Richard Dale
Benton, James Watson Jeffries
Bishop, Reston Shadrack
Bittel, Cole
Bradshaw, John Isaac
Braun, Benjamin Douglas
Bricker, Kuran William
Bryson, Nathan Thomas
Buehler, Jobie Lynn
Buffkin, Tyler Thomas
Burns, Deigan Andrew
Chastain, Clinton Nathanael
Chen, Gongyi
Cheng, Tommy Liang
Chertoff, Will Robert
Choate, Matthew David
Clark, Thomas Patrick
Clever, Henry Mandus
Cole, Matthew David
Colegrove, Dale Allen
Crider, Marika Ariel
Del Monte, Richard Rupp
Dick, Kevin Nathaniel
Dieker, Benjamin David
Dinkel, Matthew Ray
Duckworth III, John David
Faghan, Misagh
Faltermeyer, Jordan Joseph
Ferdig, Judson L.
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Gallagher, Kevin Patrick
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Gessler, Brian Gregory
Golubski, Bennett Eugene
Good, Derek Michael
Goodrich, Brandon Richard
Hahs, Russell A
Haik, Danny
Han, Shengchen
Hartman, Jack Cody
Hugo, Adam Christopher
Ingenthron, Cory Jacob
James, Wyatt Joseph
Jensen, Andrew
Just, Michael Aaron
Kasper III, Robert Eugene
Klein, Nathan Freeman
Krutty, Mark Daniel
Langlas, Jill Elizabeth
Lawhorn, Christopher David
Li, Cheng
Lichter, Andrew Scott
Liu, Heng
Livingston, Nicholas Andrew
Long, Stephen William
Male, Justin Taylor
Maples, Hayden Palmer
Marienau, Ryan Michael
Marnett, Ryan James
Martin, Andrew Howard
McKinney, James Stephen
Miller, Jordan Pedersen
Mills, Samuel Thomas
Moreno Jr, Robert Lee
Morphew, Patrick William
Nelson, Kyle Scott
Nelson, Stephen Patrick
Nguyen, Thy M
Nick, Constantine Christopher
Powell, Christopher Michael
Powell, Jordan Christopher
Prapassorn, Norapat
Procak, Zachary Taylor
Reznicek, Evan Paul Fund
Shmalberg, Dylan Robert
Sis, Hadley Lynne
Soroka, Ryan Michael
Staton, Alex Matthew
Stelljes, Alexander Douglas
Stoner, Grant Matthew
Strickland, Michael Ryan
Strunk, Trent Michael
Toney, Benjamin Houston
Truitt, Elijah
Underwood, Tyler Austin
Van Matre, Payden Simeon
Velez-Aguilera, Martino
Von Fange, Christopher J
Walbridge, Kevin Thomas
Weber, Chase Gebhards
Wickersheim, Michael Dean
Wong, Benjamin Michael
Wu, Keyu
Xu, Zhouzhou
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Zhou, Feng
Mechanical Engineering Donor Recognition - Fiscal Year 2014

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Continued on Page 12
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ExxonMobil Corporation
Langlas and Associates, Inc.
Space Exploration Technologies Corp
Westside 66 & Car Wash
Burns & McDonnell Foundation
ConocoPhillips
FEV, Inc.
Koch Industries, Inc.
SAE International

$100 to $999
P1 Group, Inc.
Sport Dimensions, Inc.
Garmin International, Inc.
Russell Electronic Sales, Inc.
Valley Feed & Supply Co. Inc.
Zarco 66 Inc.

$1 to $99
Blue Line Tacos, LLC
Graco Supply
On the Cover:
KUME computational fluid dynamics simulations of a dry-cooling concept to reduce water usage for electric power generation. PV panels at the National Renewable Energy Laboratory (inset).

Calling All Entrepreneurs!
If you've started your own company, e-mail us at kumevibes@ku.edu and provide a short description of your firm. We can share your information in The Entrepreneur's Corner of the next Vibrations!

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