

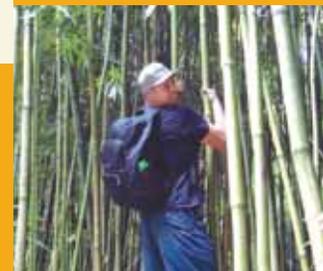


THE MAGAZINE OF THE A. JAMES CLARK SCHOOL *of* ENGINEERING

# Changing the World and Beyond

CLARK SCHOOL ALUMNI  
FEARLESSLY PURSUE VARIED  
CAREER PATHS TO ADVANCE AND  
SERVE SOCIETY, MAKE AN IMPACT





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Please note that *Engineering @ Maryland* refers to the A. James Clark School of Engineering by that name in all cases, including stories that describe alumni who graduated before the name was established, in 1994, to honor Mr. Clark's outstanding philanthropy.

**COVER PHOTO**

Jay Nemeth/Red Bull Content Pool



## Dear Friends of the Clark School,

In this issue, you will hear much about the success and impact of our Clark School alumni: on space technology, new product innovations, cutting-edge research, start-up ventures, and other efforts that fuel growth and help humankind. Our graduates are the greatest product we produce, and we are proud to showcase a number of them in this edition of *E@M*.

Building upon the legacy and outstanding achievements of our alumni, we are working hard to create a supportive educational ecosystem at the University of Maryland that fosters student entrepreneurship and creativity and leads them to great success outside the classroom.

One thing I hear frequently as dean of the Clark School is that the graduates we produce are uniquely equipped to succeed and to contribute as soon as they enter the workforce. We have heard this from corporate recruiters and government agencies, and we have seen this truth supported in survey data, including a recent one conducted by *The Wall Street Journal* that ranked the Clark School third in the nation among best engineering programs from which to recruit graduates for entry-level positions. Employers appreciate our graduates because they are uniquely enterprising and able to contribute as young leaders. A reason why our students emerge from our programs ready to transform their ideas into plans for growth and success is the unique opportunities they have here at Maryland.

I believe that the best recipe for producing successful students and future business leaders involves hands-on educational experiences, like our ENES 100 hovercraft challenge; participation in special competitions outside the classroom, like our Solar Decathlon, Gamera, and Rotorcraft teams; and opportunities to learn and practice entrepreneurship through our courses, our living learning programs and business plan competitions. In February, we were awarded a \$3.75M I-Corps grant from the National Science Foundation, which will further strengthen our entrepreneurial ecosystem on campus. We also paid tribute last month to two pioneers in entrepreneurship education—Professors Herbert Rabin and David Barbe—who did so much to instill innovation and creativity in our students during their careers here at UMD.

The enterprising spirit of our students is a stamp of identity that sets us apart in the Clark School and is increasingly recognized and respected by those who view us from the outside. Entrepreneurship requires fearlessness, a certain brand of courage that requires us to be unafraid of failure, and an absolute commitment to making our ideas work and to competing successfully. This is who we are.

We are enormously proud of our alumni and the graduates we produce, and we are pleased to highlight just a small portion of them in this issue—but the truth is, there are so many more who have made a great impact, and we thank and recognize all of you for serving as shining examples of the high standards of excellence we hold here at the University of Maryland.

### Entrepreneurship requires fearlessness.

Darryll Pines  
Dean and Farvardin Professor of Engineering

# Changing the World and Beyond

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## CLARK SCHOOL ALUMNI FEARLESSLY PURSUE VARIED CAREER PATHS TO ADVANCE AND SERVE SOCIETY, MAKE AN IMPACT

The greatest testament to the achievements of the A. James Clark School of Engineering is the success of its alumni across a variety of professions that reflect both traditional and non-traditional engineering career paths. Today, the nearly 32,000 members of the Clark School's alumni network are the best evidence of the dramatic progress the school has made in recent years in achieving unparalleled research and academic excellence and ascending into the top tier of engineering schools worldwide. In fact, the Clark School placed 14<sup>th</sup> worldwide in the most recent Academic Ranking of World Universities.

This issue of *E@M* focuses on alumni and the contributions they are making as innovators, researchers, leaders and entrepreneurs, and how their efforts are making a difference in the world. Clark School graduates across disciplines may have chosen a wide range of career paths, but all attest to the solid foundation the school provided for their future success. Today, as members of the strong and ever-expanding Engineering Alumni Chapter of the University of Maryland Alumni Association, graduates stay involved with the institution and current students through their service on advisory boards, as mentors, and as event organizers and participants.

"It is amazing to see how our graduates are contributing to society and making a difference in so many ways to improve human lives," says Clark School Dean Darryll Pines. "We recognize that our graduates are critical to the high standards of the Clark School, and our future success is directly tied to their continued connection with us."



# Out of This World

SHANE JACOBS, PH.D. '09, AEROSPACE ENGINEERING (AE), IS THE SOFTGOODS DESIGN MANAGER AT THE DAVID CLARK COMPANY, WHERE HE SUPPORTED THE DEVELOPMENT OF THE PRESSURIZED SUIT WORN BY FELIX BAUMGARTNER, THE FIRST SKYDIVER TO BREAK THE SOUND BARRIER.

“When I entered graduate school, I knew I wanted to work in the space industry. The doctoral program gave me the opportunity to design, build and operate the MX-2, a space suit analogue used in the Space Systems Laboratory’s Neutral Buoyancy Research Facility. I developed a passion for space suit design; it is multidisciplinary and requires the application of biomechanics and systems engineering. Whether it was scuba diving for hours to support a demonstration of robotic servicing of the Hubble Space Telescope or working late at night on a new elbow joint for the suit, the faculty and fellow students made my Clark School education exciting and worthwhile. My doctoral advisor, AE Professor David Akin, provided the ultimate inspiration, and his passion for space is second to none.

“At the David Clark Company, I have worked on a variety of projects, including suit designs for future NASA and commercial vehicles, prototype suits for future lunar exploration, protective equipment for pilots of high-altitude aircraft, and the suits for the Red Bull Stratos mission. As softgoods design manager, I lead a team of engineers and pattern designers in the design and development of novel space and pressure suits.

“The development and testing process for the Red Bull Stratos mission was intensive. The suits were subjected to a series of evaluations, including thermal vacuum chamber tests, vertical wind tunnel testing, unpressurized and pressurized skydiving, bungee jumping tests to practice step-off, and cold chamber testing. The tests were followed by a progressive series of manned flights—the first from just over 71,500 feet in March, the second from around 97,000 feet in July, and culminating in the final

manned balloon flight on October 14, 2012, during which Felix Baumgartner jumped from an altitude of 127,852 feet and achieved a top speed of Mach 1.25 during his free fall.

“This project demonstrated that a team of dedicated and talented people in a variety of disciplines can push the envelope and expand humanity’s capabilities. It has been a true honor to be a part of this experience.”

PHOTO LEFT, COURTESY SHANE JACOBS. PHOTO TOP BALAZS GARDI/REDBULL

Jacobs' passion is shared by many Clark School alumni, who acquired their first taste for space exploration and aerospace engineering at the Clark School. From the pioneering work conducted at the renowned Alfred Gessow Rotorcraft Center, which recently celebrated its 25th anniversary, to the success of the student-designed-and-built human-powered helicopters, *Gamera I* and *Gamera II*, the Clark School has long been recognized for its leadership and innovation in the field.



A Clark School education provided **JEANETTE EPPS**, M.S. '94, Ph.D. '00, with the "right stuff" to join the elite group of U.S. astronauts. "I learned to adapt quickly to new project areas at the Clark School, a skill which was invaluable in the astronaut corps," says Epps, who completed her astronaut training in 2011. The two-year program included work in robotics T-38 backseat flying, and spacewalk simulations wearing a 300-pound space suit in NASA's Neutral Buoyancy Laboratory pool. Epps is awaiting her assignment for a six-month mission to the International Space Station, where she will conduct research that will expand knowledge about living in space.



PHOTO: NASA/GODDARD

When NASA's Curiosity Rover touched down on Mars last summer, Terps could take pride that Clark School alumni contributed to that mission. Alumni led the design of the centerpiece of this roving laboratory, the

Sample Analysis at Mars (SAM), which is looking for evidence of water, carbon and other important building blocks of life on Mars. **OREN SHEINMAN**, B.S. '83, AE, served as SAM's mechanical systems lead, heading up the design and fabrication of the primary structure and the integration of the mechanical components. About the size of a microwave oven, SAM houses three complex instruments for analyzing solid and atmospheric samples. "The biggest challenge was packaging the proverbial 10 pounds of potatoes into a five-pound bag," says Sheinman, who has supported the project over the past seven years. "It is incredible knowing that our work is millions of miles away, functioning on another planet."

As electrical engineering lead, **FLORENCE TAN**, B.S. '86, electrical engineering, oversaw the integration of SAM's electrical components, including 2,000 interconnections and more than 600 meters of wiring. The technical challenges were daunting—her team had to design a system that would survive the launch and landing, operate in Mars' low-pressure conditions and work autonomously to gather unimpeachable scientific data. "We had to build an extremely complex instrument with a geographically dispersed team," says Tan. "Good communication skills were essential." At NASA's Goddard Space Flight Center, Sheinman and Tan are now developing instrumentation for the Mars Atmosphere and Volatile Evolution (MAVEN), which is set to launch for Mars in November.



PHOTO: NASA/GODDARD

Thanks to the work of **RUSSELL L. WERNETH**, B.S. '64, M.S. '68, mechanical engineering, countless people worldwide have glimpsed the wonders of space. As extravehicular activity (EVA) or spacewalk manager for NASA's Hubble Space Telescope (HST) from 1992 to 2007, Werneth oversaw the development of unique astronaut tools and procedures used during five servicing missions to improve or repair the telescope while in orbit. He also trained astronauts on the use of the enhancements, including underwater training. "The basic problem-solving and hands-on design skills that I learned at the Clark School helped me tackle the challenge of designing tools for tasks that had never been undertaken in space," says Werneth, who is based at NASA's Goddard Space Flight Center in Greenbelt, Md., located just a few miles from the College Park campus. Today, Werneth works on outreach for NASA, taking his message about Hubble and space exploration to schools and technical conferences around the country.



PHOTO: NASA/GODDARD/REBECCA ROTH



PHOTO: NASA/GSFC/CHRIS GUNN

NASA technologist **VIVEK DWIVEDI**, B.S. '99 and M.E. '05, chemical engineering, Ph.D. '10, chemical and biomolecular engineering (ChBE), (right in photo) is developing a state-of-the-art coating material for space-based X-ray telescopes. Dwivedi and ChBE Professor Raymond Adomaitis (left in photo) are researching the use of atomic layer deposition (ALD) techniques to create a super-strong, ultrathin coating that is sensitive to a wide range of X-ray spectra. The team also is using ALD to develop a coating material to protect satellite components from corrosion due to atomic oxygen and solar storm events. "Space is a dangerous place with plenty of ultraviolet radiation that results in an abundance of atomic oxygen in low Earth orbit atmosphere," Dwivedi explains. Their collaboration grew out of research the two conducted when Dwivedi was a doctoral student and Adomaitis was his advisor.



For **MARK PEDEN**, B.S. '87, AE, a NASA career has been the fulfillment of a childhood dream. A contractor for GSFC since 1989, Peden's work supported several shuttle missions. "I will never forget the breathtaking feeling of walking to the launch pad for the first time and seeing the Shuttle Discovery preparing for liftoff," he recalls. "For someone like me, who stayed up late at age five to watch the first moon landing, it was the culmination of a lifelong desire to contribute to the talented team that makes up this country's space program." Peden also worked on HST servicing missions, heading the development of the Multi-Use Lightweight Equipment (MULE) carrier, a structure that provided the crew of a 2009 Shuttle Atlantis mission with servicing tools and replacement hardware. He currently works on the Magnetospheric Multiscale Mission, scheduled to launch in 2014, which will use four identically instrumented spacecraft to investigate the relationship between the magnetic fields of the sun and the Earth.

# MAKING THEIR MARK

The following Clark School graduates join their colleagues and classmates who have made an impact and, in many cases, pioneered innovations in their respective fields.

Visit [www.eng.umd.edu](http://www.eng.umd.edu) to learn about more alumni who are making a difference, or visit the Clark School Innovation Hall of Fame at [www.eng.umd.edu/html/ihof/](http://www.eng.umd.edu/html/ihof/).

**ASHISH BAGAI**, B.S. '90, M.S. '92, Ph.D. '95, aerospace engineering (AE), is a program manager in the Tactical Technology Office at the Defense Advanced Research Projects Agency. Bagai, who was inducted into the Clark School Innovation Hall of Fame in 2012, was a member of a Sikorsky Aircraft team that earned the National Aeronautics Association's Robert J. Collier Trophy, one of aviation's highest honors, for work on Sikorsky's X2 Technology demonstrator aircraft.

**KENNETH BELL**, B.S. '74, M.S. '77, Ph.D. '83, civil engineering (CE), is one of 22 Bechtel Technical Fellows recognized as experts in Bechtel Corporation's global engineering workforce. Bell's area of expertise is geotechnical and hydraulic engineering.

**ADISAI BODHARAMIK**, Ph.D. '71, electrical engineering (EE), is founder and former CEO of Jasmine International PLC, one of the largest fixed broadband operators in Thailand.

**ROBERT BRISKMAN**, M.S. '61, EE, co-founded Sirius Radio to implement his digital satellite communications system, the first significant development in the radio industry in decades.

**SUDHITHAM CHIRATHIVAT**, B.S. '71, EE, is executive chairman of Central Group of Companies, Ltd., one of the largest conglomerates in Southeast Asia.

**A. JAMES CLARK**, B.S. '50, CE, formed Clark Enterprises, Inc., a leading company in commercial and residential construction and real estate, and is one of the school's greatest benefactors.

**ANH DUONG**, B.S. '82, chemical engineering, designed the thermobaric bomb credited with helping to win the war in Afghanistan and developed antiterrorism technologies for the Pentagon.

**GORDON ENGLAND**, B.S. '61, EE, is a member of the National Academy of Engineering and is a former deputy secretary of the U.S. Department of Defense.

**MICHAEL GRIFFIN**, Ph.D. '77, AE, is the former director of the National Aeronautics and Space Administration (NASA).

**CHARLES "CHUCK" A. IRISH**, Sr., B.S. '52, CE, is senior executive vice president of Whiting-Turner Contracting Company.

**CHRISTOPHER JONES**, Ph.D. '97, AE, is corporate vice president and president of the technical services sector for Northrop Grumman.

**BRIAN HINMAN**, B.S. '82, EE, benefactor, entrepreneur and educational innovator, co-founded Polycom, Inc., the world's leading manufacturer of audio, video and data conferencing solutions, and also helped create UMD's Hinman CEOs, a student entrepreneurship program.

**JEONG KIM**, Ph.D. '91, reliability engineering, founded Yurie Systems and pioneered the development of a revolutionary ATM switch for wireless applications crucial to the modernization of telecommunications systems for digital applications. He is former president of Bell Labs and chief strategist for Alcatel-Lucent.

**ARIS MARDIROSSIAN**, B.S. '74 and M.S. '75, mechanical engineering (ME), is a prolific inventor and president of Technology Patents, LLC. He holds some 60 patents.

**JUDITH RESNIK**, Ph.D. '77, AE, became the second female astronaut in space in 1984. She perished aboard the Space Shuttle Challenger in 1986.

**JOSEPH REYES**, B.S. '57, EE, is founder and chairman emeritus of Reyes Holdings LLC, the 14<sup>th</sup> largest privately held company in America, and president of Orion Corporation.

**EDWARD ST. JOHN**, B.S. '61, EE, is founder of St. John Properties, Inc., which owns and manages more than 17 million square feet of real estate and services more than 1,700 tenants. His recent gift is helping create the Edward St. John Teaching and Learning Center on the College Park campus.

**PATRICK (TAK K.) SUNG**, M.S. '69 and Ph.D. '72, chemical engineering, is one of the most successful purveyors of NuSkin and serves as a board member and distributor of NuSkin Enterprises.

**STACY (NIEDHART) WELCH**, B.S. '97, fire protection engineering, is senior director for fire protection and life safety for Marriott International, Inc.

**HARRY K. WELLS**, B.S. '43, ME, is former CEO and chairman of McCormick & Company, Inc.

**PHIL WISER**, B.S. '90, EE, is chief technology officer (CTO) of Hearst Corporation. He is the former CTO and senior vice president of Sony Music Entertainment.

**KERRY WISNOSKY**, B.S. '86, AE, is co-founder, former president and CEO of Millennium Engineering and Integration Company. He continues to serve on its board of directors.

**JACKSON YANG**, B.S. '58, ME, M.A. '62 and Ph.D. '64, mathematics, is founder and CEO of Advanced Technology and Research (ATR) Corporation and ATR Solartech based in Columbia, Md.

**MANUEL ZÚNIGA-PFLÜCKER**, B.S. '83, ME, is CEO and president of BPZ Resources, Inc.



# Excelling in the Academy

PHOTO LEFT AND TOP: FRANK WOJCIECHOWSKI

As one of the world's top engineering programs, the Clark School is dedicated to producing great engineering teachers and researchers. At leading institutions around the globe, Clark School alumni are achieving success in the academic world by applying their engineering skills to the development of technological innovations and sharing their expertise with future generations of engineers.

PHOTO: ROB FELT



**DAVID BADER**, Ph.D. '96, EE, was recruited to the Georgia Institute of Technology as one of the first faculty members in the Division of Computational Science and Engineering and helped move the program to its current status as a full-fledged school. Bader, also executive director for high performance computing for the school and a lead scientist in the DARPA (Defense Advanced Research Projects Agency) Power Efficiency

Revolution for Embedded Computing Technologies (PERFECT) program, develops high-performance computing methods for real-world applications, including computational biology and massive-scale data analytics. "We're developing new algorithms and applications for emerging problems," from transportation challenges to cancer genomics, says Bader, who has co-authored over 100 articles in peer-reviewed journals and for professional conferences. In 2012, Bader was recognized as a "rock star" of high performance computing by *Inside HPC* and cited in *HPCWire's* "People to Watch."

As an assistant professor at the U.S. Naval Academy, **JAYE FALLS**, Ph.D. '10, AE, is arming future naval officers with an understanding of ocean structures engineering. "My doctoral advisor, Inderjit Chopra, director of the Alfred Gessow Rotorcraft Center, taught me everything I know about formulating and pursuing a research problem," says Falls. Her research focuses on vehicle dynamics, including helicopter-towed sonar arrays, innovative designs for multi-hulled vessels and applications for autonomous vehicles. "We now are exploring innovative hull shapes for Navy applications like small, high-speed combatants and patrol craft," adds Falls.



NAOMI LEONARD, M.S. '91, PH.D. '94, ELECTRICAL ENGINEERING (EE), IS THE EDWIN S. WILEY PROFESSOR OF MECHANICAL AND AEROSPACE ENGINEERING AT PRINCETON UNIVERSITY. IN 2004, SHE WAS AWARDED A PRESTIGIOUS JOHN D. AND CATHERINE T. MCARTHUR FOUNDATION FELLOWSHIP AND IS A PREVIOUS RECIPIENT OF THE OFFICE OF NAVAL RESEARCH YOUNG INVESTIGATORS AWARD AND THE NATIONAL SCIENCE FOUNDATION CAREER AWARD.

“After I received my undergraduate degree from Princeton, I worked for four years at an engineering consulting firm in Washington, D.C. I enjoyed working in the electric power industry and developing solutions to real problems, but I wanted to learn more. The Clark School was ideally located and had a great program in control theory through its Systems Research Center, now the Institute for Systems Research.

“My Ph.D. advisor, P.S. Krishnaprasad, professor of electrical and computer engineering, loves his work, and his passion is infectious. He taught me how to think about research, extract abstract concepts from concrete problems, apply them broadly and connect the seemingly unrelated.

“Much of my current work focuses on control theory and multi-agent dynamical systems. I have led efforts in the theory

and design of robotic mobile sensor networks. Our two collaborative field deployments off the coast of California were highly rewarding: We successfully demonstrated our methodologies for autonomously coordinating fleets of robotic submersibles in sustainable adaptive ocean sampling. In parallel, I have been collaborating with scientists looking at schooling fish and flocking birds to develop the mathematical tools to understand mechanisms of collective behavior in nature.

“For example, we have analyzed how starling flocks efficiently manage uncertainty in synchronizing their motion; this leads to basic engineering questions about how limited agents can leverage interactions to achieve group robustness, speed and adaptability. I am also collaborating with faculty in the cognitive sciences to examine human decision-making and human-robotic interaction.

“I continue to teach and to work on research with students at all levels. I enjoy being around young minds and contributing to excitement about the field. I was fortunate to work with Clark School Assistant Professor Derek Paley, aerospace engineering (AE), when he was a doctoral student in my group at Princeton. He is doing highly original work at the Clark School in control and dynamics.

“The academic way of life with its freedom and flexibility has suited me well. Whether it is fundamental or applied engineering, I continue to enjoy exploring new areas and seeking new ways to make a difference.”



At the Lawrence Livermore National Laboratory, a federally funded research and development center in California that focuses on the nation's most challenging security problems, post-doctoral researcher **YU-HSIN CHEN**, Ph.D. '11, EE, is developing a high-peak power laser system expected to be 100 times more intense than today's most powerful lasers. “This should allow researchers to explore exotic physics phenomena in which matter is exposed to high-intensity electromagnetic radiation,” says Chen. He is also working on laser acceleration of charged particles, which could lead to biomedical advances, including high-brightness, X-ray bio-imaging and tumor treatments.

**SAMEER HEMMADY**, M.S. '04, telecommunications engineering, Ph.D. '06, EE, balances a career in the private sector with a faculty research position. Hemmady is a senior technical lead scientist at defense contractor TechFlow Scientific in Albuquerque, and holds a part-time position as a University of New Mexico research professor. His research concentrates on innovative new technologies in electromagnetics, including advanced radar systems and wireless communications. Juggling the two jobs is challenging, but rewarding. “I love advising students on their research, sharing what I have learned to their benefit,” he explains.



**MINGYAN LIU**, M.S. '97, systems engineering, Ph.D. '00, EE, is designing energy-efficient wireless, mobile ad hoc and sensor networks at the University of Michigan. A professor in the Department of Electrical Engineering and Computer Science, Liu developed and deployed a large scale wireless network of underground sensors to monitor soil moisture, using a technique that reduces costs by allowing for minimal sampling. “Soil moisture data is critical for a variety of scientific applications,” explains Liu, “including weather forecasting, drought and flood monitoring, and global climate monitoring.”

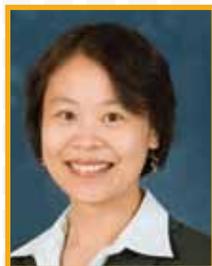


PHOTO: SCOTT R. GALVIN

**PATRICIA CASTELLANOS**, Ph.D. '09, chemical engineering, headed to the Netherlands for her post-doctoral research. At Amsterdam's Vrije University, her research uses space-borne observations of trace gases to analyze surface emissions. She is currently investigating the chemical composition of emissions from deforestation fires in Brazil. “The Clark School's focus on real-world applications and problem solving helped prepare me for a career in science. I learned that with just a few fundamental engineering concepts, you can tackle almost any problem,” says Castellanos.





PHOTO LEFT AND TOP: COURTESY NTSB

# Heading the Civic Call

JEFF MARCUS, B.S. '75, MECHANICAL ENGINEERING (ME), HAS WORKED WITH THE NATIONAL TRANSPORTATION SAFETY BOARD (NTSB) SINCE 1999. HE HAS ALSO WORKED IN AEROMEDICAL RESEARCH FOR THE FEDERAL AVIATION ADMINISTRATION AND FOR THE NATIONAL HIGHWAY TRAFFIC SAFETY COMMISSION'S HEAD INJURIES PROGRAM.

“Since my early teenage years, I was interested in engineering. When I graduated from high school, the Clark School was a stand-out for the excellent engineering education it offered at an affordable price for Maryland residents. During my four years at the Clark School, I gained a great deal of engineering knowledge, but even more important, the school instilled in me a rigorous approach to problem solving, which has proved invaluable throughout my career.

“After I left the Clark School, I ran the head injury research program for part of the U.S. Department of Transportation (DOT). I remember a dynamics course with Professor Charles Hayleck, who had attended a scientific conference where the head injury measure used by the DOT was first presented to the scientific community. He spent a few minutes in class discussing this measure, and I was fascinated. Little did I know that this would become a major area of focus in my career. At DOT, my group developed a finite element model of a human brain that we could subject to high onset rate impacts.

“Today, I investigate airplane accidents for the NTSB. In particular, I evaluate how organizations respond to NTSB recommendations that are designed to prevent similar accidents, and I advocate for the implementation of our recommendations. I have been involved in efforts that include reducing fuel tank flammability in airliners and improving test and design standards related to the effect of icing on the stall and handling characteristics of airplanes. This job puts me in a great position to understand the trends and challenges in aviation safety.”



At the Clark School, students have numerous opportunities to participate in hands-on service learning and outreach programs, such as Engineers Without Borders and *WaterShed*, the university's prize-winning entry in the 2011 U.S. Department of Energy Solar Decathlon. In volunteering their time and energy, they learn to apply engineering concepts to solve problems and contribute to advancements that help improve the quality of human life. Many graduates embrace the service orientation and choose to pursue careers or ventures for the public good.

PHOTO: BILL DENISON



**MICK SCOTT**, B.S. '03, ME, always wanted to make a difference in the world and has found that

teaching allows him to shape young lives while sharing his passion for engineering, science and design. "Every lesson or project that I develop for my students and every skill and concept that I teach them allows me to put my engineering skills to work," says Scott, who entered teaching through the Baltimore City Teaching Residency Program and now directs STEM (science, technology, engineering, and mathematics) Initiatives at St. Paul's School, a private, pre-kindergarten through 12<sup>th</sup> grade school in north Baltimore. "My students would love to design the next phone, computer, sustainable energy system, or other technology tool to improve the lives of others," says Scott, who constantly emphasizes the growing demand for engineers to his students.

PHOTO: BB/CHRISTOPHER MYERS



Serial entrepreneur **BRIAN LEGETTE**, B.S. '89, electrical engineering (EE), has launched successful ventures, including 180s, a performance apparel company, and ZeroChroma, a company that makes accessories for mobile electronics.

Recently he turned his entrepreneurial savvy to a new venture with deep roots: urban farming. Legette's experiences traveling abroad opened his eyes to worldwide health, food and nutrition concerns. "With all of the health problems our society faces, such as diabetes and obesity, we have to look at what is happening to our food system," says Legette, who cites concerns about food processing techniques, preservatives and genetically modified food. He sees a return to the basics as a solution. Last year, his latest enterprise, Big City Farms, opened its first urban farm near the Hanover Street Bridge in downtown Baltimore on a half-acre of land owned by the National Aquarium.

"Farming has slim, brutal margins, so we are looking for partners with an interest in impact investing who want to make a difference," says Legette, whose company employs ex-offenders and works with inner city youth to help them reconnect with the land. Big City Farms is currently looking at several other sites in Baltimore for farms as well as a distribution facility and a production area where seeds can be sprouted and prepared for replanting.

As a U.S. Army captain stationed in the Washington, D.C. area, **STEVE ACENBRAK**, M.S. '88, civil engineering (left in photo), earned the opportunity to pursue a graduate degree full time through the Army. "It was a rigorous course of study," recalls Acenbrak. "I worked around the clock to keep pace."



He attributes one of the greatest moments of his life—passing the exams to become a Professional Engineer—to his Clark School degree. Now, as director of the Roswell, Georgia Department of Transportation, he handles transportation as well as many public works responsibilities. "This position takes more than engineering skills: it requires an understanding of economics and its effect on decision making. Our challenge is meeting the needs of a growing metropolitan community and respecting older, historic parts of downtown." Acenbrak was recently selected as a Leadership Fellow of the American Public Works Association and is a board member of Bike Roswell, an organization promoting cycling in Roswell, the first city in Georgia designated as a bicycle-friendly community by the League of American Bicyclists.

**SIMÓN ZIMMER**, B.S. '99, EE (left in photo), is tackling the world's water crisis. Zimmer heads up the international programs for Aguayuda, a nonprofit dedicated to addressing the need for clean water in Colombia. A two-year stint in the Peace Corps in Latin America raised Zimmer's awareness about the region's water crisis, inspiring him to launch Aguayuda in 2006. "We've helped 7,800 people in 21 communities gain access to clean water," says Zimmer. This year Zimmer will spend eight months in Colombia implementing water, sanitation and education projects. "Working with the local communities, Aguayuda installs the needed infrastructure, including filtration systems, windmills, solar pumps and composting latrines," Zimmer explains. His team also educates the community on water, sanitation and hygiene practices and monitors completed projects to ensure their continued success.



JIM BEGLEY, B.S. '96, FIRE PROTECTION ENGINEERING (FPE), IS A PRINCIPAL IN TERPCONSULTING, AN FPE CONSULTING FIRM BASED IN LAS VEGAS. HE HAS MET MANY OF THE NATION'S MOST FAMOUS CHEFS IN HIS WORK AS A FOOD WRITER.

“Less than three years ago, I stumbled upon a second career: food writing. What began as a small gig for a niche monthly magazine has blossomed into a whirlwind of writing opportunities. While I am certainly not forsaking my fire protection engineering career, food writing undoubtedly brings a bit more variety to my life.

“Dinner at a table with both Robin Leach of ‘Lifestyles of the Rich and Famous’ and celebrity chef Wolfgang Puck? Casual food talk while hanging with Gordon Ramsay? Yes, food writing has provided those opportunities. I even have interviewed the ‘Chef of the Century’ Joël Robuchon.

“Food writing provides a great balance to my engineering work—right brain versus left brain. I have always joked that I am an engineer in the body of a liberal arts major. My foray into food writing has only solidified that belief.

“The food writing experience has undoubtedly helped my engineering practice. Indirectly, it is a great way to break the ice with prospective clients. A more obvious direct benefit is the amount of writing I do on a weekly basis. In the engineering field, communication is key. Rotating deadlines for up to four different publications along with my day-to-day engineering reports means I am constantly writing something either technical or fun. I am glad I have the opportunity to pursue both types of writing in two exciting careers.”

## Off the Beaten Path

10



PHOTO: BILL HUGHS



Solutions to the world's most complex problems will likely come from a variety of disciplines, with engineering playing a critical role. The Clark School provides students with a multidisciplinary engineering perspective, and its graduates successfully combine engineering skills with broad-based knowledge to expand their career options. Many graduates are changing the world in unexpected ways, guided by an entrepreneurial spirit forged at the Clark School.



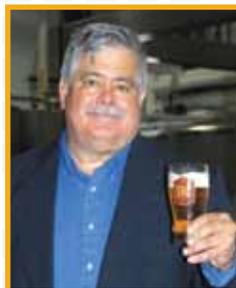
**BRENDA (FREEMAN) PIPER**, B.S. '87, chemical engineering, M.B.A. '92, heads up marketing for Turner Broadcasting's Cartoon Network, Adult Swim and Boomerang cable television networks. After earning her M.B.A., Piper combined her engineering and finance

skills as a business planner for Mobil Oil. "Originally, my emphasis was very technical, but I shifted toward marketing and operations," says Piper. She went on to marketing positions at PepsiCo, MTV and Nickelodeon before joining Turner Broadcasting. "I still think like an engineer," says Piper, who uses her analytic skills to decipher an endless stream of data on viewer interests. "It's about connecting the dots to get insights into our viewers and developing the appropriate strategies."

**MORRIS ZWICK**, B.S. '85, EE, M.B.A. '89, applies his rigorous science and engineering education to the art of winemaking. In 2003, Zwick and his wife Janet, B.S. '88, education, founded Terrapin Station Winery, planting a vineyard on part of their 44-acre farm in Elkton, Md., and naming the operation in honor of their shared alma mater. "Grape growing and fermentation require a good understanding of chemistry," says Zwick, who uses his technology prowess to better automate the winemaking process. The winery, which donates a portion of its sales to the Terrapin Institute to help the endangered diamondback terrapin, produces about 2,500 cases of wine annually. In 2010, the Zwicks opened a tasting room where visitors can sample their lineup, including Terrapin Classics and Diamondback Reserve wines.



Computer game programmer and mechanical engineering major **TIM SWEENEY**, founder and CEO of Epic Games, got his gaming start at the Clark School. In 1991, at age 21, Sweeney created a text-based video game called ZTT. Its popularity with classmates and friends led Sweeney to sell ZTT as shareware and launch Epic Games, which has created the popular video game franchises *Unreal*, *Gears of War* and *Infinity Blade*. In addition, Epic's award-winning Unreal Engine technology powers hundreds of PC, console and mobile games. A one-man operation in his parents' basement in Potomac, Md., has grown into an international company, with headquarters in Cary, N.C., and offices in Seattle, Salt Lake City, Warsaw, Seoul and Tokyo. In 2012, Sweeney was inducted into the Academy of Interactive Arts & Sciences Hall of Fame.



A veteran brewmaster, **JAIME JURADO**, B.S. '83, chemical and biomolecular engineering, has worked in brewing operations all over the world, including Germany, England, India and Australia. Last year, he joined the newly launched Susquehanna Brewing Company (SBC) as its first master brewer and one of four partners. Based in Pittston, Penn., the company specializes in craft beers. The \$8.5 million brewery

was developed with sustainability and environmental concerns integrated into its equipment and process decisions. Jurado planned and equipped SBC's brewery, including integrating a revolutionary energy-efficient wort boiler and using a bottle that is lighter than the industry standard with a lower carbon footprint. "Susquehanna is a unique brewery, featuring a suite of old world and novel technologies that are not found in any other craft brewery...or large brewery for that matter," says Jurado. "It's mission is to produce interesting and very refreshing beers."

**DANTE GAVIDIA**, who earned his Professional Master of Engineering in 2010 through the school's Office of Advanced Engineering Education, serves as a mine superintendent for Buenaventura Mining Company in Peru. Born and raised in Peru, Gavidia worked at Buenaventura for eight years before enrolling in the Clark School graduate program to further his career. "A master's degree from a prestigious U.S. school gives you a competitive advantage," says Gavidia, who used his savings to travel to Maryland for graduate studies. In his current role at Buenaventura, Gavidia is responsible for the safety, production and planning of the Mally Mine, which produces 500 tons of silver, lead and zinc per day.



Many Clark School graduates have successfully risen through the ranks of local, regional and national organizations. From their current senior-level posts, these alumni look to the Clark School as a vital source of highly qualified engineering talent. Greater access to exceptional graduate and undergraduate students, world-renowned researchers and innovative programs gives firms a competitive advantage in the marketplace.



**RICHARD VOGEL**, B.S. '72, civil engineering, has pursued a highly successful career at the Whiting-Turner Contracting Company, the third largest domestic building contractor in the United States, where he now serves as a senior vice president. In addition to successfully managing hundreds of major construction projects, Vogel has recruited many Clark School students to the company and currently oversees the Whiting-Turner Business and Entrepreneurial Lecture Series, which brings leading innovators to the Clark School each semester.

"Engineers are problem solvers, clear thinkers and can be excellent communicators," explains Vogel, whose son Andrew, B.S. '10, mechanical engineering (ME), is a graduate student in robotics now working at the National Institute of Standards and Technology. "Maryland's engineering school does a great job in teaching students to think. I've seen it as a student, as an employer and as a parent." Vogel's only concern is that not enough students choose to pursue careers in construction. To that end, he funded scholarships for undergraduates in civil engineering and for graduate students in mechanical engineering.



**ERIC ROSENBAUM**, B.S. '85, M.S. '97, fire protection engineering (FPE), who now teaches through the school's Professional Master of Engineering program, has been a consultant at Hughes Associates, a leading technology consulting

firm in the fire protection engineering field, for more than 20 years. "During that time, I have probably hired from 50 to 100 students," says Rosenbaum, who notes the range of the firm's projects span from fire safety consulting for air traffic control towers to fire protection systems for the Statue of Liberty, National Gallery of Art and Library of Congress. "We look for students who know how business works, how to manage projects and processes, and how to interact with clients—all skills taught by the Clark School."

For nearly three decades, **LEE LUSHBAUGH**, B.S. '74, ME, stayed connected with the University of Maryland primarily as a football and basketball fan, but nearly a decade ago he began thinking that it was time to give something back to the school. "I am very proud of the way that we, as a company, have helped support the university," affirms Lushbaugh, who has spent his 38-year career at Bechtel Corporation, most recently as senior vice president and manager of Bechtel Power's Execution Unit in Frederick, Md. The University of Maryland, College Park is one of a small number of higher education institutions that Bechtel has designated as "Partnership Schools," each of which is sponsored by a senior vice president in the company.

The Clark School has been prime recruiting territory for Bechtel. In 2012, Bechtel Power hired 10 Maryland graduates, and the company employs nearly 20 student interns in the summer. Worldwide, Bechtel Corporation employs over 300 Maryland graduates. "Our close proximity allows us to participate in many campus events, and the size of Bechtel and its global reach are big selling points for students," says Lushbaugh, who with his wife has funded the Lee and Lou Ann Lushbaugh Mechanical Engineering Scholarship.





**VIKRAM MANIKONDA**, Ph.D. '97, electrical engineering (EE), is the president of Intelligent Automation, Inc. (IAI), a research and development firm founded by fellow Clark School graduates Leonard Haynes, Ph.D. '74, EE, and Jacqueline Haynes, who earned her B.A., M.Ed. and Ph.D. at UMD, specializing in secondary education, reading, cognitive psychology, curriculum and instruction. After graduation, Manikonda spent two years working for a small research and development company in Boston before joining IAI in Rockville, Md. "There were just over 20 employees when I joined IAI, and my focus was unmanned systems and robots. I used the skills I gained at the Clark School to convince NASA and the Department of Defense that the company's ideas had promise for air traffic management and defense systems," recalls Manikonda. Its close proximity to the Clark School and to federal agencies in the Washington, D.C. area served the company well. Today, IAI boasts more than 140 employees, about 20 of whom are former Clark School students, including the majority of the senior management team. "The Clark School offers a large base of promising, talented students, and interactions with faculty members provide opportunities for exchange that keep us at the forefront of research," says Manikonda. The firm, an associate partner company with the Clark School's Institute for Systems Research, sponsors the IAI Colloquia Series, often attended by company staff members, and also supports an internship program for undergraduates.

PHOTO: ALAN P. SANTOS



"If you look at all of the senior-level managers at Sikorsky, a significant number of them are Clark School graduates," says Torok, whose son Alex, an ME major, will graduate from the Clark School in 2015. "The Clark School has always been at the top for rotorcraft education, and its reputation and standing keep climbing." Sikorsky is currently a Clark School Corporate Partner and sponsors a number of student scholarships.



**BILL KOFFEL**, B.S. '79, FPE, currently employs more than 20 Clark School graduates at Koffel Associates, an FPE and life safety design and consulting firm he has led for 27 years. Every engineer on his staff is a Clark School graduate. "We look to the Clark School as a resource for employees, a resource for testing and technical assistance, and a way to connect with future graduates," says Koffel, who serves on the Clark School Board of Visitors and the FPE Board of Visitors and participates regularly in class presentations and Career Day activities. He also has funded a lab facility and an endowed scholarship in the FPE department.

**MIKE TOROK**, M.S. '86, Ph.D. '89, aerospace engineering, was an undergraduate at Cornell University when he learned of the Alfred Gessow Rotocraft Center, which was just getting off the ground at the Clark School. At the same time, the U.S. Army was offering fellowships to build the ranks of qualified engineers in the rotorcraft industry, and Torok was on board. He attributes the wide exposure to different disciplines he received during his Clark School education as key to his successful career at Sikorsky Aircraft. "My multidisciplinary experience was fortuitous as my responsibilities expanded at Sikorsky," says Torok, who was initially hired as an aerodynamicist in 1990 to integrate computer simulations developed at the Clark School into Sikorsky analysis tools. Today, Torok works at Sikorsky Aircraft as vice president for 53K programs, focusing on the U.S. Marine Corps' (USMC) new, advanced heavy-lift helicopter. Currently in program management, Torok spent the previous 20-plus years in engineering positions, including leading the company's technology programs as chief engineer for maritime and USMC programs.

## TOP 20 CLARK SCHOOL EMPLOYERS

The following companies have employed the largest number of Clark School alumni over the past five years, according to the school's Co-op and Career Services Program. (Members of the Clark School's Corporate Partners program are denoted in bold.)

Accenture

Alliant Techsystems (ATK)

**Bechtel Corporation**

**Booz Allen Hamilton**

**Cisco Systems**

**Constellation Energy  
(Baltimore Gas & Electric)**

General Electric

**Hughes Network Systems**

Intel Corporation

JHU Applied Physics Lab (APL)

**Lockheed Martin**

NASA Goddard

Naval Air Systems Command (NAVAIR)

Naval Sea Systems Command (NAVSEA)

**Northrop Grumman**

Qualcomm

U.S. Army Research Lab

U.S. Food and Drug Administration

U.S. Patent & Trademark Office

**Whiting-Turner Contracting Company**

## CORPORATE PARTNERS GAIN ACCESS TO CLARK SCHOOL RESOURCES

The Clark School Corporate Partners program helps organizations establish the closest possible relationship with the Clark School, offering special access to students, faculty and alumni and the opportunity to provide direct input and support for the Clark School's educational and research programs. The following companies, in addition to those noted as top employers (left) are members of the Corporate Partners Program.

**Bethesda AFCEA  
Chapter**

**ATK**

**BAE Systems**

**Clark Construction  
Group**

**L-3 Communications**

**LGS Bell Labs  
Innovation**

**SAIC**

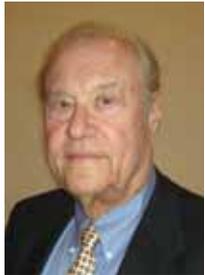
**Sikorsky**

**Texas Instruments**

# Stanley Zupnik Gift Pushes *Great Expectations* Over Its Goal

## ALUMNUS DONATES \$500,000 TO NAME KIM BUILDING LECTURE HALL

Stanley R. Zupnik, B.S. '59, civil engineering, has always considered himself a tinkerer and a multi-tasker. "I like fixing things," he explains, "and I have always been a juggler. I get bored doing one thing at a time, so I like to have my hands in several projects." That mindset may help explain Zupnik's successful history of pursuing highly diverse ventures.



Stanley R. Zupnik

One of his latest projects is a \$500,000 gift to the A. James Clark School of Engineering to name the Kim Building Lecture Hall.

"The Clark School provided the foundation for all of my success," says Zupnik. "Education is so important to gain a leg up in this world. This gift is my way to give back to the school for all it has given me." The timing of the gift could not have been better: Zupnik's contribution helped the university reach the \$1 billion goal for its *Great Expectations* fundraising campaign.

A recipient of the Engineering Distinguished Alumnus Award and the Engineering Centennial Medal, and a member of the University of Maryland Alumni Association Hall of Fame, Zupnik had previously established the Stanley R. Zupnik Fellowship Fund to assist graduate students in the construction and engineering

management program in the Department of Civil Engineering.

### An Early Entrepreneur

Zupnik began developing his business savvy as an 11-year-old managing his own newspaper route and later as a teenager fixing high-fi stereos and black and white televisions. "I was a television repairman long before remote controls," says Zupnik, who also had a photography business in high school taking photos at weddings, bar mitzvahs and high school proms.

It was in junior high that Zupnik decided to become a builder. Although his family invested in real estate, Zupnik chose to work in construction during the summers of his high school and college years to learn the nuts and bolts of the industry. He remembers spending hours talking with his grandparents, who shared the wisdom they gained from their wholesale candy business, real estate investments and men's clothing store. "One of my grandfathers explained how he liked buying buildings on corners because if you wanted to sell the property, a bank or gas station would always be interested. He was always looking ahead—I was raised on that kind of thinking," recalls Zupnik.

At Maryland, he participated in the Reserve Officers' Training Corps (ROTC), "which gave me structure and greater self-discipline," says Zupnik. "Many fellow students in engineering attended

college on the G.I. Bill. I looked up to them and learned from their experiences and their maturity."

The first in his family to attend college, Zupnik says his parents and grandparents lived vicariously through his Clark School experience. "Every engineering course taught me to think critically. All of the decisions I have made throughout my career have been



PHOTO: ALAN P. SANTOS

The Kim Building Lecture Hall will be renamed in honor of Stanley R. Zupnik later this spring.

based on solid analyses and numbers," says Zupnik. Outside the classroom, he worked on charitable events with his Sigma Alpha Mu fraternity brothers.

Following graduation, Zupnik spent the next decade working for a number of construction companies and served as a staff sergeant in the Air National Guard in radio maintenance. He learned the financial side of the construction business from a master: Washington, D.C. area

## GREAT EXPECTATIONS REACHES \$1 BILLION GOAL Clark School Raises Nearly 25 Percent of Total

The University of Maryland's *Great Expectations* fundraising campaign reached its \$1 billion goal at the close of 2012, including \$250 million for scholarships. The Clark School was a significant contributor to the campaign total, raising \$240 million and far exceeding its initial campaign goal of \$185 million.

"Despite the economic uncertainty of the last few years, Clark School graduates and friends continued to demonstrate their extraordinary generosity by supporting a variety of initiatives designed to strengthen the academic and research experience for both students and faculty," says Clark School Dean Darryll Pines. "These gifts inspire us and allow

us to reach new levels of achievement in the Clark School, and we fully expect to keep the momentum going in the years ahead."

Among the funds raised from 14,945 Clark School donors are gifts designated to the following priorities:

- \$47 million for scholarships and financial support of undergraduate and graduate students
- \$48 million to help recruit and retain faculty
- \$27 million in support of innovation
- \$89 million for building and classroom upgrades

To learn more about the campaign results or to make a gift to the Clark School, contact Leslie Borak at 301-405-0317 or [lbora@umd.edu](mailto:lbora@umd.edu). ■

developer and former Washington Wizards owner Abe Pollin. In 1964, Zupnik started his own construction firm, Majestic Builders Corp., which quickly became one of the nation's top four construction management and general contracting firms, according to the *Engineering News Record*. His firm served as contractor for many large building projects in the Washington, D.C. area at the time, including the Watergate at Landmark, the Rotunda and Leisure World, among others. Zupnik owned and developed the Highland House and Highland House West apartment buildings and the Chevy Chase Building in Friendship Heights, Md., as well as the Rosslyn Center in Virginia.

## The Golden Touch

Always the multi-tasker, Zupnik looked for other opportunities as his construction business flourished. "All of my projects have been like my children, and my job has been to make them successful," he explains. A love of flying inspired him to get his instrument and multi-engine jet pilot's license and to start a charter plane business, Majestic Air Service. "My experience with spread sheets and computers aided me in learning aircraft instrumentation," recounts Zupnik.

With a colleague, he made an initial investment in race horses. Soon after, a trainer with a good eye for winners purchased a horse for Zupnik that eventually became a world record breaker. "Direct Scooter is considered to be one of the top free-for-all pacers of all time," says Zupnik, who adds the horse broke world records racing as a three- and four-year-old.

When Zupnik was approached by an acquaintance to fund a project in Hollywood, his interest was piqued, and he became an investor in a series of low-budget films and eventually began producing his own films. He produced "Glengarry Glen Ross," the story of real estate salesmen and their desperation to become top producers in their office, which has become a classic about the sales profession. "It received positive reviews by most major critics," explains Zupnik, noting that Al Pacino was nominated for an Academy Award and a Golden Globe for Best Supporting Actor for his work in the film.

"Producing a movie is similar to the construction business. You have to assemble a talented group of professionals: directors, screenwriters, set designers and the production crew," says Zupnik, who worked from his Los Angeles and Maryland offices, and promoted his films for several years at the Cannes International Film Festival. He also was executive producer for "Dreamscape," "Fear City," and "Wildfire."

Throughout it all, Zupnik never lost sight of his roots. "I have lots of friends who have given back to the university and appreciate the education they received. This country needs more engineers, and if I can help support engineering education by making this gift, I am happy to do it."

**For information on how you can make a gift to the Clark School, please contact Leslie Borak at 301-405-0317 or [lborak@umd.edu](mailto:lborak@umd.edu). ■**

## Alumni Rally to Support Fire Protection Engineering Legacy Campaign for a Professor of the Practice

Fire protection engineering graduates are rallying around their department to support the Legacy Campaign for a professor of the practice to help ensure students stay current on the latest technologies used in the field.

"Our graduates must be prepared to become practicing fire protection engineers," explains Fire Protection Engineering Department Chair James Milke. "The main purpose of the professorship is to preserve the connection of the department to the profession and to the applied side of the field."

Milke notes, "This department has been recognized for many years for producing outstanding young engineers and more recently for the high quality of research we conduct." According to Milke, the professor of the practice will bring hands-on field experience to the undergraduate curriculum and will strengthen the school's ties with industry.

Discussions about the professorship began a few years ago, and the idea gained momentum with a number of alumni who created a list of well-connected graduates to engage in the discussion. "The department has provided the highest quality academic experience for more than 50 years and we all benefited," says Bob Andrews, B.S. '80, campaign co-chair and president and CEO of the Bob Andrews Group, LLC, who has made a \$100,000 gift to the campaign. "Now it is time for our generation to create our legacy and make sure the department continues its work for the next 50 years."



Bob Andrews



Art Cote

Campaign Co-Chair Art Cote, B.S. '65, one of the early graduates of the program and former executive vice president and chief engineer of the National Fire Protection Association, notes the need to strike the right balance between research and practical application in the study of fire protection engineering. "A good fire protection engineer always needs to be aware of what is happening in the environment—the latest changes in building materials or architectural designs—that potentially affect fire safety systems, which is why professors must be connected to the real world."

"This is a wonderful chance to support a profession that has served all of us well. This campaign can help keep the profession vibrant and on the leading edge," adds Cote, whose son Eric, B.S. '87, has followed in his career footsteps.

Jack Poole, B.S. '86, principal of Poole Fire Protection in Kansas City, who has donated \$100,000 to the campaign, has a number of reasons for supporting the professorship. "The Clark School program is the only Accreditation Board for Engineering and Technology (ABET)-accredited bachelor of science fire protection engineering program in the world, and it is vital that we keep this quality program up and running to produce future generations of fire protection engineers," says Poole, whose son Andrew, B.S. '11, M.S. '12, is now pursuing a second master's in engineering management and whose daughter Stephanie is preparing to enter the program in fall 2013. "It is gratifying to see alumni coming together as a team to support the professorship and the profession."



Jack Poole

The department began to promote the fundraising effort last June with a public announcement in November. Already, it has raised close to \$500,000 of its \$2.5 million goal. A naming opportunity for the professorship is still available.

**For more information on how you can contribute to the Legacy Campaign for a professor of the practice, contact Allison Corbett at 301-405-5841 or [acc@umd.edu](mailto:acc@umd.edu). ■**

# Alumni-created Companies Market Environmentally Sound Products and Life-saving Technologies

## MIPS PROVIDES EARLY FUNDING TO NEW VENTURES

Located in a hot seat of entrepreneurial activity—the number one state in the country for innovation and entrepreneurship, according to a U.S. Chamber of Commerce 2012 report—the University of Maryland’s Clark School of Engineering instills a spirit of innovation in students from their freshman experience designing Hovercraft vehicles to opportunities to compete in university-wide business plan competitions. Many graduates are leaving the Clark School with ideas for new inventions, well-developed business plans and, in some cases, established start-up companies. Many of these young entrepreneurs are finding success in the marketplace. Here’s an update on three of those companies with deep roots in the Clark School and the Maryland Industrial Partnerships program (MIPS), an award-winning technology product development program for University System of Maryland institutions and Maryland companies.

### REMEDIUM TECHNOLOGIES PIONEERS BLOOD-CLOTTING DEVICES

An innovative technology developed by former Fischell Fellow in Biomedical Engineering Matthew Dowling, Ph.D. '10, could save lives on the battlefield, at accident scenes and in other emergency situations. Remedium Technologies, a start-up company pioneering advancements in treating injuries that cause severe blood loss, was a member of the Maryland Technology Enterprise Institute (Mtech)



Matthew Dowling with the Hemogrip™ bandage

Venture Accelerator Program, which assists inventors in translating lab research to the market. The company, which received MIPS funding in its early stages, won second place in the faculty and graduate student category in the university’s \$50K Business Plan Competition in 2007.

Dowling led Remedium’s development of chitosan, a biopolymer that can be scavenged from waste shells of shrimp or crabs and modified to optimize blood coagulation and tissue adhesion for a wide range of injuries. Remedium currently has an exclusive license for chitosan technology from the university and has five patents pending. The company’s Hemogrip™ suite of products includes a user-friendly hemostat, which is able to orchestrate a clot-like seal on contact through a bandage or blood-clotting foam and can easily be administered by a soldier, surgeon or individual at the scene of an accident.

Dowling, who has been running the company full time since obtaining his doctorate, reports that Remedium recently received a National Science Foundation Phase Two Small Business Innovation Research (SBIR) grant for \$650,000 over the next two years to further develop its foam application. The grant follows receipt of an NSF Phase One award in early 2012. “Only about 35 percent of companies that receive a Phase One grant go on to receive Phase Two funding,” says Dowling. “This year we hope to submit a Food and Drug Administration (FDA) application for the bandage technology. The next key milestone for us is getting our product to the marketplace.”

### FLEXEL OFFERS NEW ENERGY SOURCES

Two Clark School graduate students helped create and now oversee research and development for FlexEI, a green technology company that creates innovative, high-performance, flexible batteries that are non-toxic and environmentally friendly. A winner of the university’s Invention of the Year Award in 2008 in the technology transfer category and the high-tech category winner of the university’s \$75K Business Plan Competition in 2009, FlexEI is developing a novel thin-film battery technology for a variety of applications, including high performance, wearable electronics, remote sensing and transmission, military applications and novel consumer products. One variant of FlexEI’s technology is a custom battery cloth (one square meter is equivalent to 100 AA batteries). FlexEI currently manufactures its thin-film battery using various printing processes that enable high-volume, low-cost, roll-to-roll manufacturing, which reduces the cost of FlexEI’s batteries by approximately ten times compared to thin-film, lithium-ion batteries.



FlexEI battery cloth

“We are working to extend our current contract with the Department of Homeland Security,” explains Zeynep Dilli, Ph.D. '07, electrical and computer engineering (ECE), and FlexEI senior research and development engineer, who developed the company’s technologies with ECE Professors Martin Peckerar and Neil Goldsman. In addition, the company has completed a multi-million dollar strategic investment agreement with a Fortune 500 company to develop a specialized power source tailored for a novel consumer electronics device. Dilli explains that the company is now entering lab scale pilot production for certain batteries and has acquired the equipment for an automated assembly line.

## New Academy for Innovation and Entrepreneurship Promotes Venture Creation

To further promote a culture of innovation through classes, workshops and extra-curricular experiences, the university has created an Academy for Innovation and Entrepreneurship, which will be led by Dean Chang, former director of the university’s Mtech Venture programs and Technology Advancement Program.

In his new position as associate vice president for innovation and entrepreneurship, Chang will coordinate and expand entrepreneurial

activities on campus. Each of the university’s 15 deans will recommend a faculty liaison to work with the academy, while student liaisons from various schools and undergraduate and graduate programs will be selected, and a board of visitors will be named. In addition to Clark School students, the academy will give students across campus the encouragement and resources required to explore innovative ideas. ■

"When we started in 2009, we were located in a single office in the university's Technology Advancement Program (TAP) building. We will soon expand into our third office as we continue to grow," says Mahsa Dornajafi, Ph.D. '10, ECE, FlexEI's research and development manager.

### ALERTUS PROVIDES EMERGENCY WARNING SYSTEMS WORLDWIDE

A major weather event is looming. A traffic accident exposes nearby residents to hazardous materials. A suspected terrorist plot is circumvented, but it is not clear whether the area is secure. How do you alert individuals and organizations involved or potentially affected by such urgent situations? Increasingly, organizations are turning to Alertus Technologies, a company launched by Jason Volk, B.S. '03, accounting, and M.B.A. '05, business management, and Hinman CEOs graduate Blake Robertson, B.S. '05, com-

puter engineering, following a campus tornado that killed two students in College Park in 2001.

Alertus has served hundreds of school campuses and other large, high-occupancy facilities with breakthrough technologies for emergency notification. The Alert Beacon® allows safety leaders to disseminate localized, custom text alerts to wall-mounted beacons or specific areas, buildings or rooms in the event of a crisis, using a reliable radio frequency communication platform developed at the university. The firm's unique products are patented and have been featured in the official National Fire Protection Association Code Handbook.

While students, Volk and Robertson took first place in the university's Business Plan Competition in 2003 and launched the company with that \$15,000 prize and additional funding from MIPS and the National Collegiate

Inventors and Innovators Alliance. They also won both a C-E-O Technology Entrepreneurship Award and a Senior Summer Scholars Research Grant.

"The Hinman CEOs program provided me with the resources to take this invention to the next level," recalls Robertson. "One of the most notable experiences was working in the research lab of ECE Professor Neil Goldsman, where I learned the tools for prototyping and fabricating electronic circuit boards." Today, Alertus products are now represented and sold by industry-leading firms such as Honeywell Fire Systems and Weatherbug. ■



The Alert Beacon®

## Surfing Sabbatical Leads to Successful Business Venture

### CALI BAMBOO TAPS RENEWABLE, RECYCLABLE RESOURCE FOR BUILDING MATERIAL

Jeff Goldberg, B.S. '99, entered the Clark School undecided about his field of study, but his passion for nature and the environment led him to pursue a major in biological resources engineering. "I was immediately engaged," says Goldberg, who recalls his Clark School senior project: a home *E. coli* detection device designed to detect a high content of the harmful bacteria in food.

Following graduation, Goldberg headed West to find work in the biotechnology industry. "It was an extremely active job market at the time, and my experience and background were unique." He began his career with Diversa Corporation, where staff traveled to extreme environments to collect bacterial samples that ultimately could be engineered to rapidly speed certain commercial and industrial processes. "The life cycle from discovery to product in this type of company is extremely long," says Goldberg. "I wanted to see the impact of my work more quickly."

After another stint with a biotech firm specializing in x-ray crystallography, Goldberg began a year-long surfing sabbatical. His travels led him to Kauai, Hawaii in 2003, where he worked on a bamboo farm. "After one week of cutting bamboo, I started thinking about its potential," recalls Goldberg. "Bamboo is the fastest growing plant on earth and is as strong as steel in many applications. It was an underutilized resource."

In his free time, Goldberg conducted research and began formulating a business plan. "I discovered that bamboo could be used for many building product applications, yet no one in the U.S. was actively marketing bamboo as a viable building product," he explains.

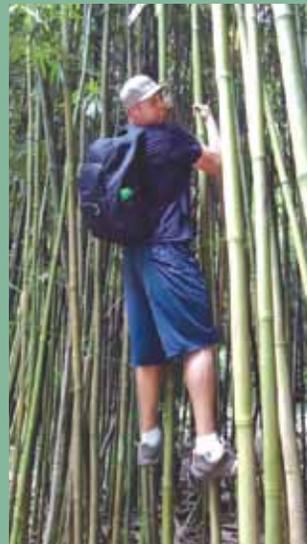
In late 2003, Goldberg introduced his first product, bamboo fencing, to the mainstream Southern California market. A few months later, Cali Bamboo was born with a single delivery van, a garage full of bamboo fencing and the help of university friend and business partner Tanner Haigwood, B.S. '99, kinesiology. "Together, we lined up manufacturing and did prototyping and marketing. Our first shipment was in August 2004 from a natural bamboo forest in China."

The business received a big boost in 2005 with its inclusion in "Extreme Makeover Home Edition," a television show that featured the

renovation and reconstruction of homes for needy families. "From 2004 to 2008, we were one of the top 250 growth companies in the U.S.," says Goldberg. In 2009, the partners were awarded a prestigious Ernst and Young Entrepreneurs of the Year award, and Goldberg was named the Most Admired CEO in San Diego by the *San Diego Business Journal*. In 2012, Cali Bamboo was named to *Inc. Magazine's* list of America's 5,000 fastest growing private businesses for the fourth year in a row, reflecting 80 percent growth over the previous three years. Today, Cali Bamboo provides residential and commercial building projects across North America with bamboo floors, fencing, composite, decking, plywood, poles, paneling and more.

One of the most important things Goldberg learned from the Clark School experience was how to be a problem-solver. "The Clark School showed me how to define a problem, examine important variables that are part of the problem, then determine an efficient way to solve the problem," attests Goldberg. "That kind of thinking separates you from the competition in the workplace."

Goldberg looks forward to continued innovation and product development at Cali Bamboo. He adds, "We want to keep bringing new products to market and to make it easier and less expensive for consumers to obtain an environmentally sound product," he adds, "We want to set the standard for sustainable businesses everywhere and promote bamboo and recycled materials as viable alternatives in the construction industry." ■



Jeff Goldberg at a bamboo farm in Nicaragua.

# UMD To Launch Mid-Atlantic Innovation Corps with NSF Award

## NSF FUNDS UMD, GWU AND VT TO CREATE MID-ATLANTIC NODE OF NATIONAL INNOVATION NETWORK

The University of Maryland is teaming with two top universities in the Mid-Atlantic to launch a regional Innovation Corps (I-Corps) node to help entrepreneurial students and faculty members bring their discoveries to market.

The new Mid-Atlantic I-Corps, supported by \$3.75M in funding from the National Science Foundation (NSF), is part of NSF's plan to establish a National Innovation Network designed to propel research to market. The Mid-Atlantic I-Corps joins new nodes in California and New

York and existing I-Corps nodes at Stanford University, Georgia Tech and University of Michigan.

"I-Corps is aggressive, methodical and just what our region needs," says Dean Chang, the university's associate vice president for innovation and entrepreneurship. "We live in one of the most fertile areas in the country for technology-based research, and our goal is nothing short of finding 300 of the most talented research teams and guiding them through the best technology commercialization program available."

I-Corps takes researchers through a seven-week program based upon Stanford University's *LeanLaunchPad* course that draws upon decades of experience in Silicon Valley in new venture creation. Successful outcomes for I-Corps include a new startup, patent or technology license to a company. The program will also foster a culture of entrepreneurship among researchers and students.

**Learn more about the NSF I-Corps program at [www.nsf.gov/i-corps](http://www.nsf.gov/i-corps).** ■

## Clark School Welcomes Aspiring Women Engineers

More than 600 female high school students and their families participated in the Fifth Annual Dream (Developing Revolutionary Engineers and Mentors) Conference sponsored by the Clark School's Women in Engineering (WIE) program in late February.

"Diversity and the inclusion of women are critical to the field of engineering," says WIE Director Paige Smith, noting that an unprecedented 33 percent of undergraduate students admitted to the Clark School in fall

2013 are women. "There is a strong connection between innovation and diversity. Diversity brings creativity, and creativity drives innovation."

Conference participants rotated through a series of highly interactive discussions, demonstrations, and an information fair that showcased engineering innovations and applications. The event featured a keynote address by Denise Russell Fleming, vice president of business technology and transformation at BAE Systems. ■



**DREAM conference attendees share their enthusiasm for engineering.**

## It's Official: Gamera Breaks World Record for Human-Powered Flight



PHOTO: EARL ZUBKOFF, ESSENTIAL EYE PHOTOGRAPHICS

**Gamera II successfully flew for more than a minute to set a world record for human-powered helicopter flight time in 2012.**

The Fédération Aéronautique Internationale, also known as the World Air Sports Federation, has certified the 65.1-second flight of *Gamera II*, the human-powered helicopter designed and built by Clark School students, as a world record. In addition, the National Aeronautic Association (NAA) has named the achievement as one of the most memorable aviation records of 2012.

With its August 28, 2012, flight, the *Gamera II* team unofficially satisfied two of the three American Helicopter Society Sikorsky Prize competition requirements, including their minute-plus flight time and staying within a 10 square meter area. To win the Sikorsky Prize, the team also must achieve a height of three meters, or 10 feet, during a flight of at least 60 seconds that stays within the prescribed 10 square meter area. So far, the Gamera team has achieved a maximum altitude of 9.4 feet.

The *Gamera II XR* (extreme range) team is continuing its work toward meeting the competition requirements by testing a more sophisticated control system for the helicopter at various locations, including the Baltimore Convention Center. "Our ultimate goal is to win the Sikorsky prize," says Project Manager Will Staruk, Ph.D. '15, aerospace engineering. "We will be flying again in the spring in an attempt to achieve all three requirements in a single flight."

**To follow Gamera's progress to the Sikorsky Prize, visit [www.agrc.umd.edu/gamera/](http://www.agrc.umd.edu/gamera/).** ■

# UMD, LOCKHEED MARTIN SIGN MASTER RESEARCH AGREEMENT

A new Master Research Agreement between the University of Maryland and Lockheed Martin will foster broader and closer research partnerships between the two institutions. The agreement builds on a 2012 Strategic Relationship Memo of Understanding that leverages the resources, talents and ideas of both institutions to produce innovative solutions for global and national security challenges.

The Master Agreement, signed by UMD Vice President and Chief Research Officer Patrick O'Shea and Lockheed Martin Senior Vice President and Chief Technology Officer Ray O. Johnson, facilitates

individual research and development activities and promotes a streamlined process for initiating collaborative projects. Lockheed Martin currently supports cutting-edge research at the university in a number of areas, including energy storage, cultural modeling, computer vision, advanced materials and sensors, bioinformatics, healthcare, supply chain management and logistics.

For more than 60 years, the university has collaborated with the company. Martin Aircraft Company founder and aviation pioneer Glenn L. Martin played a key role in developing the Clark School's aerospace engineering program, which consistently ranks in the top 10 in the nation, and the Martin name is associated with a number of university buildings, awards, scholarships and faculty positions. ■



**Ray O. Johnson, left, and Patrick O'Shea formalize the Master Research Agreement between Lockheed Martin and UMD.**

## Cooling Technologies Could Cut Costs, Protect Environment, Improve Efficiencies

Clark School faculty members have received two U.S. Department of Energy (DOE) grants that could help homeowners save money, conserve energy and protect the environment.

Professor Ichiro Takeuchi, materials science and engineering (MSE), and Professor Jun Cui, MSE, are collaborating on the development of a residential-grade air conditioning system that could help reduce electric bills and cut carbon dioxide emissions. Their work is supported by a \$2.8M Department of Energy Advanced Research Projects Agency—Energy (ARPA-E) "plus-up" award.

Their system uses no liquid refrigerants but relies on a solid-state cooling technology based on latent heat generated by a change in the crystal structure of shape memory alloys. The technology, known as elastocaloric cooling, can potentially replace vapor-compression based air conditioners and refrigerators, which utilize carbons, such as freon, that are harmful to the environment and can potentially increase global warming.

Thermoelastic cooling won the university's Office of Technology Commercialization-sponsored Physical Sciences Invention of

the Year Award in 2011 and has been licensed by Maryland Energy and Sensor Technologies, LLC, a start-up in the Maryland Technology Enterprise Institute's Technology Advancement Program.

The Center for Environmental Energy Engineering (CEEE) received \$1.5M as part of DOE's efforts to help homeowners save money by saving energy. CEEE will conduct research on miniaturized air-to-refrigerant heat exchangers for the project in collaboration with the Knoxville, Tenn.-based Oak Ridge National Laboratory.

CEEE students along with Assistant Research Scientist Vikrant Aute, M.S. '01, Ph.D. '10, mechanical engineering (ME), and Research Associate Professor Yunho Hwang, M.S. '95 and Ph.D. '97, ME, will design and build prototypes of miniaturized air-to-refrigerant heat exchangers based on previously developed technologies. The new heat exchangers are expected to scale up to 10 kilowatts of capacity with 20 percent less volume and less material compared to traditional designs, making air conditioning and refrigeration systems for home use much more energy efficient and affordable. ■

## UNIVERSITY OF MARYLAND JOINS BIG TEN

University of Maryland President Wallace Loh announced on November 19 that the University of Maryland will join the Big Ten Conference, leaving the Atlantic Coast Conference (ACC) after 60 years of membership. The university will also join the Committee on Institutional Cooperation (CIC), a Big Ten consortium of world-class research institutions dedicated to jointly advancing their academic missions.

In December, Loh announced the formation of the "President's Commission on UMD and Big Ten/CIC Integration," which will provide analysis and advise Loh on the upcoming institution-wide integration with the CIC and the Big Ten Conference. Clark School Dean and Nariman Farvardin Professor Darryll Pines was selected as one of the members of the commission. ■

## Partnership with ManTech Focuses on Cybersecurity

UMD and ManTech Intl. Corp. have finalized a two-year partnership to pursue advanced research in cybersecurity, including systems engineering and full spectrum computer network operations. The research effort will explore ways to apply advanced cybersecurity techniques to evolving technologies associated with cloud computing and other developing trends, as well as emerging threats.

ManTech's participation in the Maryland Cybersecurity Center Corporate Partners Program will provide four undergraduate ManTech Cybersecurity Scholarships each year. The company's participation in the Institute for Systems Research (ISR) Associate Partners Program will provide two scholarships each year for M.S. in systems engineering students and opportunities for mentorship in ISR's capstone systems engineering courses. ■

# Faculty Honors



Aerospace Engineering (AE) Research Scientist **MOBLE BENEDICT** won the Lockheed Martin 2012 “Innovate the Future Challenge” for his concept of a highly efficient, vertical axis wind turbine design for clean energy generation in urban environments. The award included a \$25,000 prize.



Professor **ANTHONY EPHREMIDES**, electrical and computer engineering (ECE) and Institute for Systems Research (ISR), has been elected one of six external members of the new 15-member Institutional Council of the National Technical University of Athens, from which he graduated.



Professor **ALISON FLATAU**, AE, has received the American Society of Mechanical Engineers (ASME) Adaptive Structures and Materials Systems Prize. The award recognizes an individual who best demonstrates the highest standards for scholarship, scientific and engineering excellence and who has contributed significantly to the sciences, technologies and the scientific community associated with adaptive structures and/or material systems. Flatau was recently named associate dean of research for the Clark School.



Professor **GARY RUBLOFF**, materials science and engineering (MSE) and ISR, is the co-author of a major report on mesoscale science commissioned by the U.S. Department of Energy’s Basic Energy Sciences Program. The report, “From Quanta to Continuum: Opportunities for Mesoscale Science,” identifies challenges in the field of mesoscale science, which generally covers structures and devices that fall somewhere between the nano- and microscales.



Professor **ERIC WACHSMAN**, director of the University of Maryland Energy Research Center, received the 2012 Fuel Cell Seminar and Energy Exposition Award, given annually to those who have demonstrated significant leadership in promoting the overall advancement of fuel cell technology. ■

## FELLOWS



Former ISR Senior Research Scientist **CARL LANDWEHR** was named a 2013 fellow of the Institute of Electrical and Electronics Engineers “for contributions to cybersecurity.” Landwehr is a noted expert in trustworthy computing, including high assurance software development, understanding software flaws and vulnerabilities, token-based authentication, system evaluation and certification methods, multilevel security and architectures for intrusion tolerant systems. He served ISR from 2003 to his retirement in 2012.



**HOWARD MILCHBERG**, ECE, was named a fellow of the Optical Society of America for his efforts in advancing the field of optics.



**YANG TAO**, bioengineering (BioE), was elected as a fellow of the American Society of Agricultural and Biological Engineers. Tao was cited for his internationally recognized expertise in cutting-edge research programs in the application of machine vision and bio-imaging; for developing innovative and practical high-tech systems and technologies for food safety and quality; and for cost-effective production of poultry, fruit, vegetables and other products. ■

## Yu Chen Receives NSF CAREER Award for Bio-imaging Research



Assistant Professor **YU CHEN**, BioE, has won a five-year, \$400,000 National Science Foundation Faculty Early Career Development (CAREER) award for his proposal to create a system that combines the power of two biomedical imaging technologies to produce more detailed, near-live images of brain activity. The project, “Multi-Scale Imaging of Neural Interconnects Using MRI-compatible Parallel Photonic Needle Interface,” will enable multi-scale imaging of neural structure and function deep within the living brain for the first time.

Chen specializes in the advancement of optical coherence tomography (OCT), a micron-scale imaging technology that allows doctors to examine tissues in the body in real time without the need for a biopsy to acquire a sample. OCT, similar in concept to ultrasound, creates images by measuring the echo time delay and intensity of back-reflected light rather than sound. ■

## Cukier to Direct Advanced Cybersecurity Experience for Students

Associate Professor Michel Cukier, reliability engineering, has been named the inaugural director of the Advanced Cybersecurity Experience for Students (ACES), the nation's first undergraduate honors program in cybersecurity, representing an innovative new model for cybersecurity education. Cukier is associate director for education in the Cybersecurity Center at Maryland.



Michel Cukier

The ACES program, initiated with a \$1.1M gift from Northrop Grumman, consists of two linked academic programs over the course of four undergraduate years, a freshman-sophomore living-learning program, and a series of upper-level courses and experiences for juniors and seniors. The program, slated to begin this fall, will prepare students to anticipate and respond to current and future cybersecurity challenges.

ACES freshmen and sophomores will reside in the new Prince Frederick Hall beginning in fall 2014. This new residence hall is designed to accommodate the unique needs of ACES students with state-of-the-art technology-rich classrooms, laboratories and study spaces.

For more information, visit [www.aces.umd.edu](http://www.aces.umd.edu). ■

## FACULTY APPOINTMENTS

Professor **PETER KOFINAS**, associate chair and director of graduate studies in the Fischell Department of Bioengineering, has been named the Clark School's associate dean for faculty affairs and graduate programs. In this new post, he will manage faculty activity and workload reports, merit reviews and other requests, serve as an equity officer, and direct the Future



Faculty program, among other tasks. Kofinas recently received the Clark School Senior Faculty Outstanding Research Award for his work on the synthesis, characterization and processing of novel polymer-based nanostructured systems that are used across medicine, energy storage and microelectronics.

Associate Professor **NUNO MARTINS**, ECE, has been named the new director of the Maryland Robotics Center, which seeks to advance robotics systems, underlying component technologies and robot applications through interdisciplinary



research and educational programs based on a systems approach. Martins replaces **PROFESSOR S. K. GUPTA**, mechanical engineering (ME) and ISR, as director. Gupta is serving an inter-governmental personnel act (IPA) assignment as program director in the Robust Intelligence Cluster within the Division of Information and Intelligent Systems at the National Science Foundation.

Professor and Associate Chair of ME **PETER SANDBORN** has been named interim director of the Maryland Technology Enterprise Institute (Mtech). Sandborn is a member of the Center for Advanced Life Cycle Engineering (CALCE), where his research group develops life-cycle cost models and business case support for long-field life systems,

including obsolescence forecasting algorithms, strategic design refresh planning, lifetime buy optimization, and return on investment models for maintenance planning. He replaces Professor **DAVID BARBE**, ECE, who retired at the end of last year after a 29-year career with the Clark School. ■



## CLARK SCHOOL AWARDS



Associate Professor **TENG LI**, ME, received the 2012 E. Robert Kent Outstanding Teaching Award for Junior Faculty. Li was honored for inspiring and motivating his students in the classroom and for developing educational and research collaborations through iMechanic.org, a blog he co-founded that has become the largest online community of mechanics in the world.



Associate Professor **SILVIA MURO**, BioE, received the Clark School Junior Faculty Outstanding Research Award for her work in the field of targeted therapeutic and drug delivery, particularly for treating rare lysosomal diseases, such as Fabry, Pompe and Niemann-Pick. Her team has won previous awards for developing new treatments for genetic diseases that affect the lungs and brain.



Christine Kim Eminent Professor in Information Technology and Associate Chair in ECE **K.J. RAY LIU** received the 2012 Faculty Service Award. Liu was instrumental in revamping the Clark School's Master's in Telecommunications Program as ECE's associate chair of graduate studies and research. He also revised the department's graduate program to



Professor **MIN WU**, ECE, University of Maryland Institute for Advanced Computer Studies and ISR, has been selected as a 2013-2014 Distinguished Scholar-Teacher by the university. The Distinguished Scholar-Teacher program recognizes faculty members who have demonstrated outstanding scholarly achievement along with equally outstanding accomplishments as teachers. ■

increase its size and the number of Ph.D. students to rank it among the largest and highest quality programs in the country. He is a world-renowned speaker and scholar, has been recognized as an ISI Highly Cited Researcher and serves as editor-in-chief of IEEE's *Signal Processing Magazine*.

# Your Connection to the Clark School STARTS HERE

When you enter the Clark School as a freshman, it is hard to imagine that you are beginning a relationship that will last far beyond the years you spend at UMD. In fact, the Clark School is eager to engage its thousands of graduates and hundreds of current students in lifelong relationships with tremendous benefits for all. Whether alumni have pursued careers locally or abroad, have ample time to volunteer or little time to spare, or are just entering their careers or preparing for retirement, they can find Clark School events, activities and volunteer opportunities to match their needs and interests.

"The Clark School offers so many great lectures, symposium events and other activities that are open to alumni, and we welcome every one of our graduates to return to our College Park campus and discover ways to engage with us," says Josey Simpson, B.S. '84, director of alumni relations. "We really want to promote long-term relationships with the school and we are constantly looking for meaningful connections for our graduates."

Some of the most fulfilling ways to work with the Clark School involve volunteering with the Engineering Alumni Chapter of the University of Maryland Alumni Association:

**Serve on an Engineering Alumni Chapter Committee.** The Student Outreach Committee helps recruit students to the chapter and coordinate student-related activities. The Alumni Outreach Committee helps recruit alumni and build the alumni network. The Communications and Fundraising Committee works to build chapter membership, increase event participation, seek funding opportunities and develop new approaches to gain visibility for the chapter. The Past Presidents' Committee assists the board, and the Executive Committee helps expand the chapter's reach.

**Become a Clark School Alumni Advocate.** The advocates are a group of alumni from various engineering majors and organizations who want to share their professional experiences and resources with the next generation of Terp engineers. Serve as an in-class speaker or presenter, and participate in activities that strengthen ties between future students, current students and recent graduates. Offer an on-site tour of your office and work environment to give students a better understanding of the demands of today's workplace.

**Join the Young Alumni Mentoring Program.** The program pairs alumni who are seasoned engineering professionals with Clark School graduates with less than 10 years experience in the workplace to provide mentoring, share personal experiences and serve as sounding boards. Mentors commit a certain amount of time each month to work with their protégés.

*For more information on how you can participate in the Engineering Alumni Chapter, contact Josey Simpson, B.S. '84, at 301-405-2150 or [josey@umd.edu](mailto:josey@umd.edu).* ■

## A Small Investment of Time Yields Big Personal, Professional Returns

### GRADUATES ADVOCATE GETTING INVOLVED

The following alumni have served on various committees or on the board of directors of the Engineering Alumni Chapter of the University of Maryland Alumni Association. They share their thoughts on the school, the opportunities to reconnect and the importance of giving back.



**Bill Leasure, B.S. '66, mechanical engineering, is the retired president of the Truck Manufacturers Association (TMA). Prior to joining TMA, Leasure had a 29-year career in research and development with NASA, the National Bureau of Standards and the U.S. Department of Transportation. He is a life member of the University of Maryland Alumni Association and serves as secretary of the Engineering Alumni Chapter Board.**

#### HOW DID YOU RECONNECT WITH THE CLARK SCHOOL AFTER GRADUATION?

"Following graduation, I became a member of the University of Maryland Alumni Association and eventually a life member. However, with the exception of attending a few university sporting events and making financial contributions, I was not involved with the university or the Clark School for more than 30 years after I graduated. When I became a member of the Colonnade Society I was asked to become more involved, so I became a member of the committee that planned my 40th class reunion for the Clark School and the university. Also, I am a former member of the Colonnade Society Council and current member of the University Alumni Awards Committee and the Engineering Alumni Chapter Board of Directors as secretary and representative to the Innovation Hall of Fame selection committee."

#### WHAT IS THE FAVORITE PROJECT THAT YOU'VE BEEN INVOLVED IN AT THE CLARK SCHOOL?

"Although I am involved in many projects as part of the Engineering Alumni Chapter Board, my passion is supporting the Clark School's Terp Racing Team. Being a part of the enthusiasm, engineering ingenuity and the growth of the outstanding students who participate on the Terps Racing Team each year is extremely rewarding."

#### WHAT WOULD YOU SAY TO OTHER GRADUATES TO GET THEM INVOLVED IN THE SCHOOL?

"Don't wait for an invitation. Once you get established with your career, reconnect with the Clark School and get involved. The time commitment is far outweighed by the rewards you receive from seeing students and young alumni develop professionally and personally and from the ongoing networking opportunities that can advance your own career."



**As an undergraduate, Erin LaBarre, B.S. '05, M.S. '06, materials science and engineering, was a Clark School ambassador, served on the Engineering Student Council and was president and secretary of the Materials Science and Engineering Society. She is now a materials engineer at The Johns Hopkins University Applied Physics Laboratory and is very active with the Engineering Alumni Chapter.**

**HOW HAVE YOU STAYED ACTIVE WITH THE CLARK SCHOOL?**

"I have served as a panelist for Women in Engineering and Department of Materials Science and Engineering events. I participate regularly in alumni networking events and have participated in the Alumni Cup Competition. I also am a member of the Department of Materials Science and Engineering Board of Visitors."

**WHAT IS THE FAVORITE PROJECT THAT YOU'VE BEEN INVOLVED IN AT THE CLARK SCHOOL?**

"Since graduation, I've had the most fun participating in the Alumni Cup Competition. It is a total blast! I love seeing the students so excited and passionate about their projects. Engineers and engineering students always amaze me with their energy."

**WHY IS IT IMPORTANT FOR CLARK SCHOOL GRADUATES TO GIVE BACK?**

"Clark School graduates have so much to offer; they have so many experiences and perspectives they can share with current students. The university and the Clark School are big parts of who I am today. So many people helped me along the way, and I only hope that I can do the same for others at the Clark School."



**Kevin Schoonover, B.S. '06, aerospace engineering, is director of strategy and business development for Alliant Techsystems (ATK). He was cited as one of the "Top 40 Under 40" aerospace and defense executives in 2012 by Aviation Weekly. He joined ATK following graduation as a design engineer of advanced rocket propulsion products. As a student, Schoonover took a leading role in the Clark Ambassadors program, and he is currently chair of the Student Outreach Committee of the Engineering Alumni Chapter and a member of the QUEST (Quality Enhancements and Teams) Honors Program Alumni Board. He also volunteers for the Manitou Experience Foundation and the Reviving Baseball in the Inner Cities (RBI) program.**

**WHAT WAS YOUR MOST MEMORABLE CLARK SCHOOL EXPERIENCE?**

"My most memorable experiences at the Clark School are a combination of moments working with team members on the many team projects assigned throughout the curriculum. I am a competitive person who always enjoyed bringing an element of surprise to each project. The long nights creating solid engineering solutions offered real opportunities for creativity and for adding flare to all of those data presentations."

**HOW DID YOU RECONNECT WITH THE SCHOOL AFTER GRADUATION?**

"After graduation, I took some time away from the university to focus on my career. I found myself yearning to get involved with the school after realizing how much it helped me in my career. I wanted to be a part of an organization that could help the next generation of engineers be better prepared when they enter the workforce."

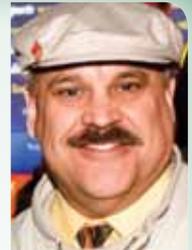
**HOW HAVE YOU STAYED ACTIVE WITH THE SCHOOL?**

"I have been part of the Engineering Alumni Chapter Board of Directors and am the chair of the Student Outreach Committee. When I was a student, I had very little interaction with alumni. My mission is to build an alumni presence into the student experience. We have recently developed the Alumni Cup Competition to further engage students. I also participate in University of Maryland career fairs not only to find the right candidates for my firm's open job positions, but to interact with energetic students to help them take the next step in their careers."

**WHAT WOULD YOU SAY TO OTHER GRADUATES TO GET THEM INVOLVED IN THE SCHOOL?**

"I challenge the graduates of the Clark School to ask the hard question: 'What can I do to help?' Many alumni have the misperception that giving back to the school requires significant time or monetary commitments. There are so many opportunities to shape the future of the school and current students. I challenge alumni to reach out to our alumni board to explore all of the available options."

**Ralph P. Wheeler, Jr., B.S. '79, civil engineering, works with the Baltimore County Department of Public Works in the Highway Design and Construction Section. He has designed and participated in the construction of freeways, interchanges, intersections, highways and roadways in Washington State, California, Virginia, Maryland, Pennsylvania and Delaware. A former president of the Engineering Alumni Chapter and current volunteer with the chapter, Wheeler also is a member of the American Society of Civil Engineers, American Society of Highway Engineers and Maryland Association of Engineers.**



**HOW DID YOU RECONNECT WITH THE CLARK SCHOOL AFTER GRADUATION?**

"When the California economy crashed in the mid-1990s, we moved back to Maryland after 18 years in California. In 1999 I attended an on-campus event, called 'Fall Fest,' sponsored by the Engineering Alumni Chapter Board. One of the participating engineers had worked with me in California. I was recruited to help, and months later I was asked to attend a board meeting. I have been active ever since. I am an Engineering Alumni Chapter board member and past president and am still helping to expand the board's efforts."

**WHAT IS THE FAVORITE PROJECT THAT YOU'VE BEEN INVOLVED IN AT THE CLARK SCHOOL?**

"I particularly like volunteering at the Engineering Alumni Table at Maryland Day and answering questions from young people about studying engineering. I often hear them say they do not want to be engineers because they need to know calculus. I tell them they do not need to know calculus to start studies as engineers. They just need the desire and curiosity to learn to be engineers."

**WHAT WOULD YOU SAY TO OTHER GRADUATES TO GET THEM INVOLVED IN THE SCHOOL?**

"Come to Maryland Day and visit the engineering buildings. Discover how engineering has changed since their days at the Clark School. Visit the Innovation Hall of Fame in the Jeong H. Kim Engineering Building, and learn more about the contributions our alumni have made to the world. Today's engineering students need the perspectives and business knowledge that real-world engineers can offer."



As a graduate student, Doyin Adewodu, M.Eng. '10, electrical and computer engineering, participated in graduate student events, including the Mtech Start-up Boot Camp and the Whiting-Turner Business and Entrepreneurial Lecture Series. He currently chairs the Alumni Outreach Committee of the Engineering Alumni Chapter. He is a senior mobility technical consultant at AT&T in its mobility solutions services division.

#### HOW DID YOU RECONNECT WITH THE CLARK SCHOOL AFTER GRADUATION?

"I met Kimberly Brown, current president of the Engineering Alumni Chapter Board of Directors, at an alumni event. I mentioned my interest in giving back. She introduced me to Josey Simpson, the Clark School director of alumni relations. I was then invited to a few board of director meetings and began volunteering at alumni events."

#### HOW HAVE YOU STAYED ACTIVE WITH THE CLARK SCHOOL?

"I have been part of the Engineering Alumni Chapter Board of Directors and serve as chair of the Alumni Outreach Committee. All my work supports the goal of building the Maryland family of alumni to create a stronger network of allegiance and support for the university and the school.

#### WHAT IS THE FAVORITE PROJECT THAT YOU'VE BEEN INVOLVED IN AT THE CLARK SCHOOL?

"I've been a judge the last two years for the Alumni Cup Competition. In that role, I review design packages for teams, assess operation team designs and listen to team presentations. My input helps determine the winner. It's great to see students from all departments competing and having a great time doing it."

#### WHY IS IT IMPORTANT FOR CLARK SCHOOL GRADS TO GIVE BACK?

"The Clark School has a major impact on all our lives. Giving back is an easy way to have a positive impact on future graduates of the school. I have a lot of fun staying connected with the school and catching up with old friends at various alumni events. It is important to keep the Clark School connection in our lives." ■

## Second Annual Alumni Cup Competition Winners



PHOTO: ALAN P. SANTOS

Department of Civil and Environmental Engineering students celebrate their victory with Clark School Dean Darryll Pines at the 2013 Alumni Cup Competition held in late February.

## Students Shine in Competitions: Global Code Wars and Wood Stove Design Challenge

More than 60 University of Maryland students competed in the 2013 Windward Code Wars, a day-long competition that gathers students from top universities around the world to analyze a programming problem, create a solution and pit their skills against each other. Two of the university's teams, "Terps" and "String Theory," comprised of freshmen computer engineering and computer science students, made it to the quarter-final and semi-final rounds before team "String Theory" took second place in the final competition.

In another competition, a UMD team known as "Team Mulciber" was named a finalist in The Alliance for Green Heat's Next Generation Wood Stove Design Challenge. The Challenge seeks to promote next generation stove designs, build a community of innovators



Team Mulciber

and showcase stove innovation to the public. Competitors design and construct green, efficient and easy-to-use wood stoves in the hope of improving a much neglected technology. The UMD team is made up of students from a variety of disciplines, with most coming from the Department of Fire Protection Engineering. ■

## SAVE THE DATES

### Order of the Engineer Ceremony

*Thursday, April 4, 7:00 p.m., Samuel Riggs IV Alumni Center*

### Maryland in Manhattan: An Evening to Celebrate Alumni and Friends

*Wednesday, April 17, 6:30 p.m., Tribeca Rooftop, New York City*

### Explore Our World: Maryland Day

*Saturday, April 27*

### San Diego Alumni Networking Reception

*Monday, April 22, 6:00-8:00 p.m., Hyatt Regency La Jolla, Calif.*

### San Francisco Bay Area Alumni Networking Reception

*Tuesday, April 23, 6:00-8:00 p.m., Stanford Park Hotel, Menlo Park, Calif.*

### Spring Baltimore Alumni Networking Reception

*Thursday, May 9, 6:00-8:00 p.m., The Engineers Club, Downtown Baltimore*

### Clark School Commencement Ceremony & Reception

*Monday, May 20, 2013*

#### Golden Terps Reunion

*9:30-11:00 a.m., Kim Engineering Building*

#### Commencement Ceremony

*12:00 noon, Comcast Center*

#### Commencement Reception

*2:30-4:30 p.m., Kim Engineering Building Plaza*

For more information on any of these events, contact Josey Simpson, B.S. '84, at 301-405-2150 or [josey@umd.edu](mailto:josey@umd.edu). ■

# MY FEARLESS IDEAS INSPIRES INNOVATION

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**ASSISTANT VICE PRESIDENT FOR  
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# All Your News That's Fit to Print

## Introducing the Class Notes Section of *E@M*

This fall, you can put your news in print in the new Class Notes section of *E@M*. Share the details of your latest promotion, recent family addition, a photo of you with fellow alumni, or other significant news and events through Class Notes. The new section will list selected submissions from alumni by year of graduation and will provide an expanded opportunity for you to update Clark School friends and colleagues on the latest developments in your life.

### **WE HAVE JUST ONE REQUEST: WE NEED YOUR INPUT.**

Start compiling your Class Notes entry now, and forward it to Josey Simpson, B.S. '84, director of alumni relations at [josey@umd.edu](mailto:josey@umd.edu). Remember to include your full name, year of graduation, degree received, major and the news you want to share with the Clark School community. High-quality, high-resolution images are welcome.

### **WE LOOK FORWARD TO HEARING FROM YOU!**

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