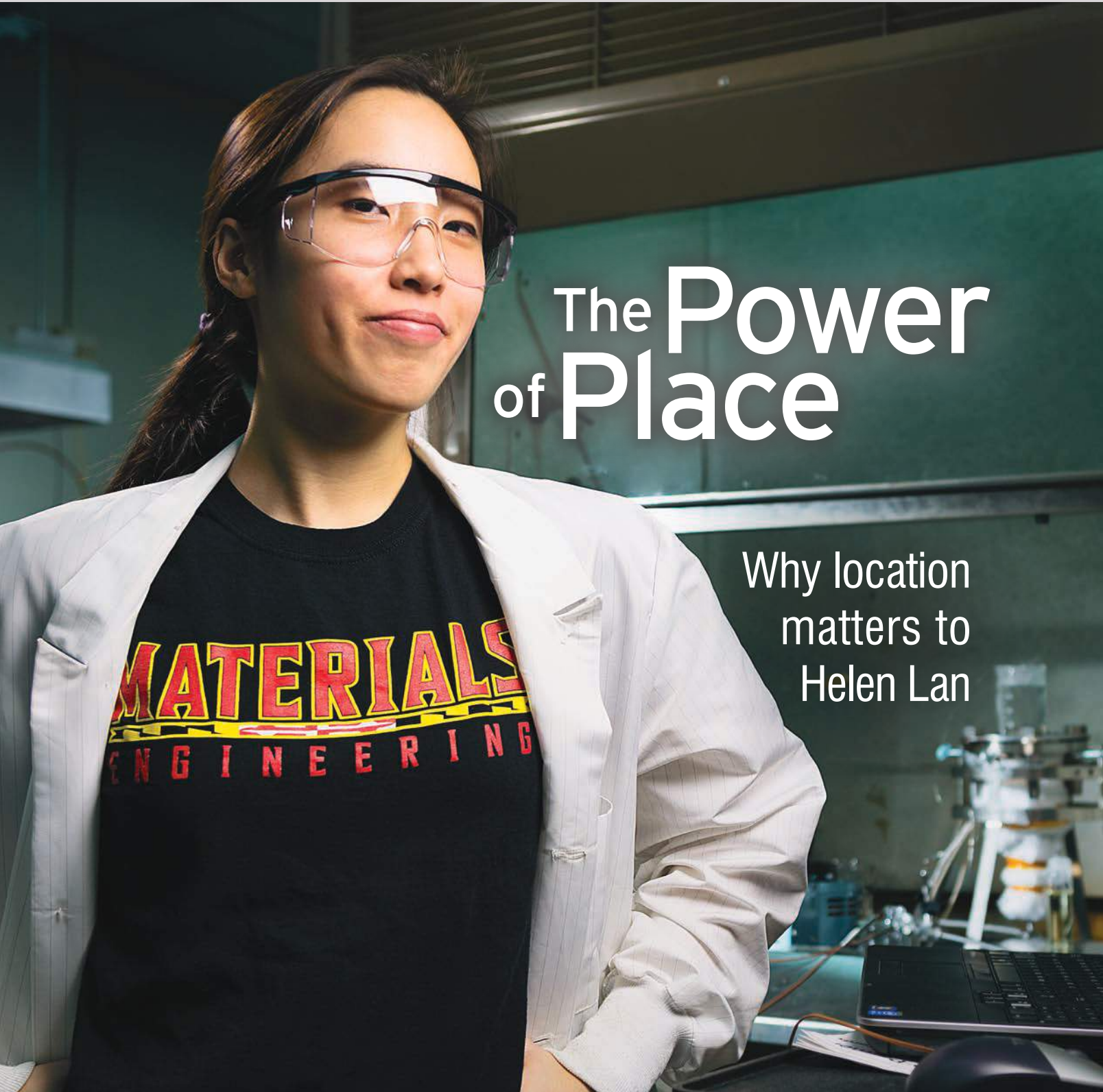




THE MAGAZINE OF THE A. JAMES CLARK SCHOOL *of* ENGINEERING



The Power of Place

Why location
matters to
Helen Lan



The Future Looks Bright for Allison Thompson

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PHOTO: ALAN SANTOS

“It’s impossible to bypass the wealth of opportunities right in the University of Maryland’s backyard.”

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Dear Friends of the Clark School,

On my morning drive to College Park, it’s impossible to bypass the wealth of opportunities right in the University of Maryland’s backyard. Our location is a force multiplier, building on the excellent research and expertise of the Clark School community.

By the time I’ve parked my car outside the Jeong H. Kim Engineering Building in the morning, thousands of riders have poured into the College Park Metro Station, which quickly connects all of us to one of the most powerful cities in the world. The Clark School’s proximity to government agencies, major companies, and tech organizations is unmatched and our students, alumni, and faculty are taking full advantage.

Less than four miles north of campus at the U.S. Army Research Laboratory, sophomore Helen Lan (pictured on the cover) developed a newly designed, jet fuel-powered burner that’s safer and more efficient than the burner currently in use by the Army.

To the east is NASA Goddard, where over 20 students intern each year, and approximately 100 alumni are currently employed.

A twenty-minute drive will land you in Bethesda at the National Institutes of Health and if you continue north, you’ll

reach the I-270 tech corridor where big players in the biotech industry have planted roots.

In this edition, you’ll read about the work of alumni like M. Jason Brooke who are making an impact on society with biomedical devices. Meanwhile, our bioengineering faculty and students are translating their lab work into practice at world-class hospitals like Children’s National Medical Center and the University of Maryland School of Medicine, the forging of these relationships made possible by a fusion of tailored expertise and a short commute.

We are proud of the Clark School’s faculty, staff, students and graduates, proud of our place, and most importantly, proud of the Clark School’s continued success right here in the heart of it all.

Darryll Pines
DEAN AND FARVARDIN PROFESSOR OF ENGINEERING

Engineering @ Maryland is published twice a year for alumni and friends of the A. James Clark School of Engineering and the Glenn L. Martin Institute of Technology at the University of Maryland.

Letters to the editor and alumni notes are welcome. Please send them to *Engineering @ Maryland* Editor, 3228 Kim Engineering Building, University of Maryland, College Park, MD 20742-2831. Information can be sent by fax to 301.314.6868 or by e-mail to ecarbo@umd.edu.

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.



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The Power of Place



Located between Washington, D.C., and Baltimore, the Clark School positions students and alumni for success.



Galloway, pictured above at the D.C. flood wall, said the levee and the wall on the National Mall are essential to protecting southwest D.C. from a major river flood, but they do not provide sufficient protection to prevent downtown flooding from a significant combined hurricane and river event, especially as sea levels continue to rise.



CAPITAL GAINS

On scholarship at a boarding school in West Bengal, India, Naba Barkakati rarely made the arduous two-day train trip back to his humble home in Assam, a rural region in the country's northeast corner. Now Barkakati navigates the D.C. subway, gliding through honeycombed tunnels underneath America's capital city. He's chief technologist for the United States Government Accountability Office—the Indian schoolboy would've never dreamt of this reality.



Barkakati examines federal systems, collaborating with heads of government agencies and members of Congress to sniff out waste, challenge and assess technical innovations, and ultimately help improve America's financial efficiency. He received his doctorate in electrical engineering at the University of Maryland's A. James Clark School of Engineering over 20 years ago and soon after became a U.S. citizen.

Situated eight miles from Washington, D.C., and 30 miles from Baltimore, the University of Maryland is nestled in a busy hive of high-tech companies, federal laboratories, and agencies. Lockheed Martin, Siemens Corporation, Northrop Grumman, Clark Construction, Canon Life Sciences, and many more call the D.C. area their home and call on Clark School faculty and students frequently. Pockets of expertise in aerospace, bioengineering, robotics, nanotechnology, disaster resilience, energy and sustainability, and cybersecurity make the area a veritable buffet of opportunities for faculty and students alike.

"The university's relationships to nearby labs provided the support I needed as a student," said Barkakati, who worked through his doctorate at the Naval Research Observatory in Washington, D.C., simulating electronic warfare and determining the effects on ships from various impacts.

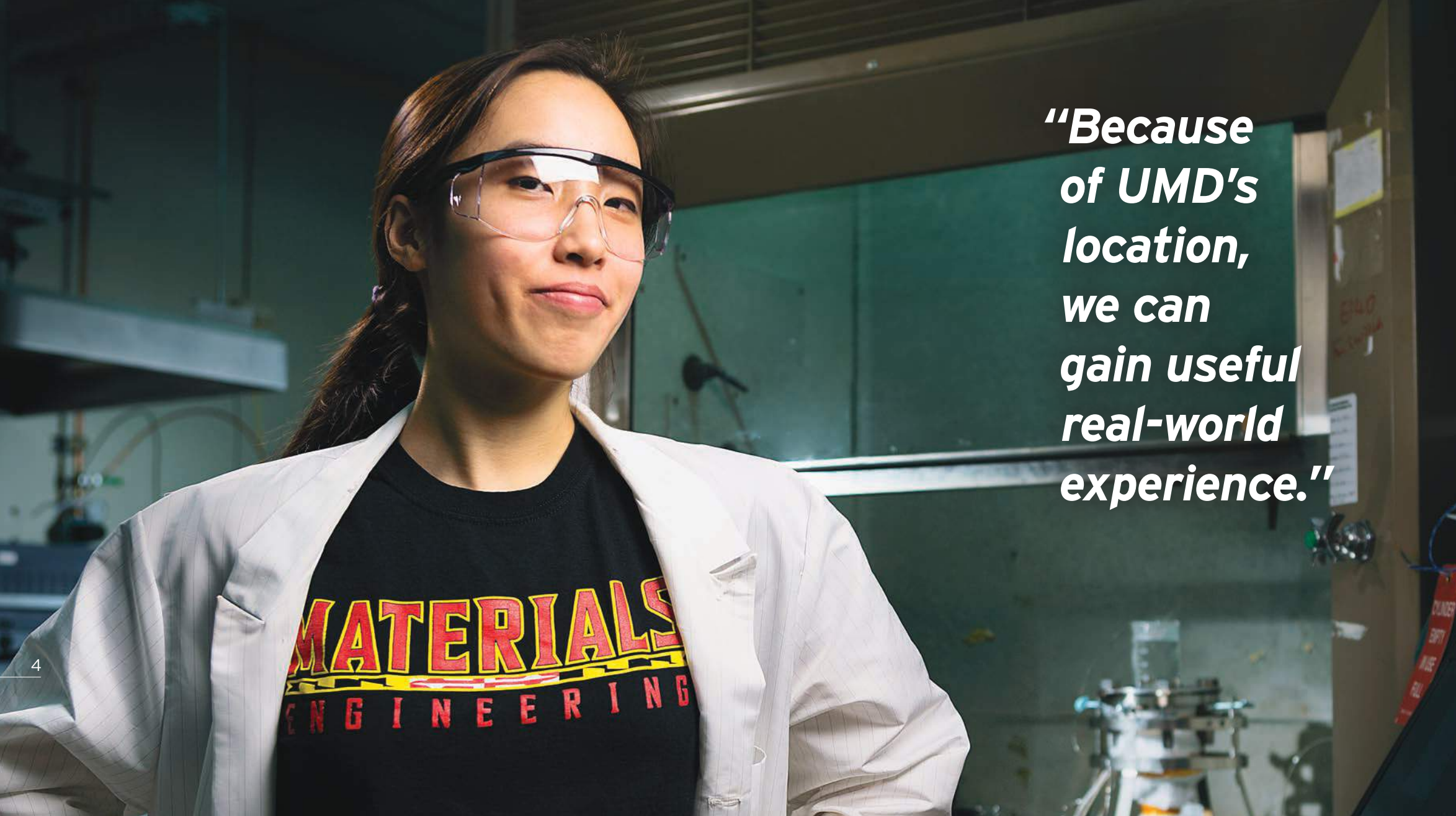
CIVIL ENGINEERING RESEARCHERS CONTRIBUTE TO REPORT ON D.C. FLOOD WALL

In the wake of Hurricanes Katrina and Sandy, city planners across the country are considering engineering solutions to prevent flood or storm damage in the event a catastrophic storm impacts those regions once thought of as protected from big-time storms.

As such, author Michael W. Fincham recently published a Chesapeake Quarterly report, "A Flood Wall against the Future: If Katrina Came to Washington," in which he interviewed area experts on flood preparation and disaster resilience measures being taken to protect downtown Washington, D.C. UMD researchers Gerry Galloway and Ed Link contributed to the report.

"It is much better for us as a nation to prepare for the totally giant event than it is to try and recover in our country from a flood," Galloway told Fincham. "In the iconic capital of the most powerful nation in the world, do we want to have a picture of downtown Washington under water?"

LEARN MORE: [HTTP://TER.PS/DCFLOODWALL](http://ter.ps/DCFLOODWALL)



“Because of UMD’s location, we can gain useful real-world experience.”

GIRL ON FIRE Like Barkakati, each year more than 1,100 Clark School students pursue internships across the D.C. area. Just one semester after joining the Clark School of Engineering’s Department of Materials Science and Engineering, student Helen Lan found herself building a jet fuel burner as an intern at the U.S. Army Research Laboratory in Adelphi, Md.



The Army’s current burner runs on a jet fuel known as JP-8. Lan lists the issues with its design: “The burner is only 10 to 25 percent efficient, and it releases carbon monoxide—which is especially toxic in a closed environment.”

The freshman set to work building a burner with a catalyst layer on the backside of an aluminum cooking surface. The result burns more efficiently—with some 50 percent savings in fuel consumption. It’s also quieter and doesn’t release carbon monoxide.

Once she determined the burner could sustain the requisite cooking temperature, engineering innovation became culinary sensation. Lan demonstrated her prototype at the Army Research Laboratory’s end-of-summer student symposium by successfully cooking a burger on her prototype burner. The audience was delighted, and the judges awarded her project the silver prize.

PHOTO: DOUGLAS GRITZMACHER



OPEN CAMPUS OPPORTUNITIES

The U.S. Army Research Laboratory (ARL) is just 10 minutes from the Clark School and its new Open Campus initiative is providing exciting new opportunities for research collaborations. Through the Open Campus framework, Clark School and ARL engineers are working collaboratively and side-by-side on important research topics at ARL’s facilities.

EMPLOYMENT HUB

“The Clark School’s location gives students a leg up, especially for engineering positions that are government-based,” says Barkakati.



Indeed, the Washington, D.C., area is an employment hub for educated workers, with D.C.’s unemployment rate under 4 percent for those with a bachelor’s degree. Workers with training in science, technology, engineering, and mathematics fare particularly well: STEM jobs make up a larger share of the field in this area than in nearly every other metropolitan center of the United States, with some 27.1 percent of Washington area jobs requiring those skills, according to a recent study by the Brookings Institution.

Barkakati’s doctoral research grant turned into a full-time position as an electronics engineer at the Naval Research Observatory. That was followed by a position at the National Weather Service, part of the National Oceanic and Atmospheric Administration. Since 1997 he has shared his technical knowledge with the GAO, eventually leading the technology unit as its co-director.

The research grant that got Barkakati’s foot in the door to a promising career in government service started with a technology company founded by his Clark School advisor, Professor of Electrical and Computer Engineering Gil Blankenship. Now known as Techno-Sciences, Inc., the company continues to be a leader in technology security and operational intelligence—and it’s still launching careers from its base in Lanham, Md., just a 15 minute drive from the University of Maryland.



“Being in the D.C. area was key for me.”

SOFT LANDING As a Ph.D. student in Aerospace Engineering, Greg Hiemenz worked at Techno-Sciences, Inc. while simultaneously completing his doctoral research with Minta Martin Professor of Aerospace Engineering Norman Wereley, who is now chair of the department.

Hiemenz explored the use of magnetorheological (MR) fluids for various applications—a direct result of Wereley’s world-class expertise in this technology. Hiemenz’s doctorate research led to a product line that he spun off into a new company, InnoVital Systems, Inc.

Hiemenz found that shock absorbers utilizing MR fluids in helicopter crew seats could protect passengers in the event of a crash. “This life-saving technology has led to a significant amount of work with various customers, primarily the U.S. Army and Navy,” Hiemenz said.

As electrical signals are applied, the smart fluid changes its properties. This means the seat’s enhanced shock absorber can adjust in real time to optimally protect its occupant, creating a stiffer or softer stroking seat depending upon the occupant’s weight or shock level. The technology has also been expanded for use in protecting against improvised explosive device (IED) blasts in ground vehicles and for high-speed watercraft slamming on waves.

Dr. Hiemenz and his team at InnoVital Systems (and formerly as Techno-Sciences, Inc.) have collaborated with the Clark School’s Department of Aerospace Engineering on myriad past and ongoing government-sponsored programs to apply and commercialize many such technologies stemming from university laboratories into novel products. Through these programs, his team has sponsored approximately \$6 million in research to the Clark School, which led to research assistance for over 15 graduate students, over 25 journal papers, over 16 joint patents, and several awards.

“It’s been fantastic working with the University of Maryland,” Hiemenz said. “It’s really helped build my career to what it is today—working on life-saving technologies.” Hiemenz has helped build other careers, too, hiring more than ten Clark School graduates over the past eight years.

In recent years, Forbes magazine has named the Washington metro area the second-best city for tech jobs. The area offers a broadness to its tech economy that sets it apart from places such as Silicon Valley, and it’s among the top three cities with the highest-paying jobs in technology, with an average salary of nearly \$100,000 and wages in the private sector much higher. Likewise, Baltimore grew 50 percent in tech industry employment from 2001 to 2013. The mean starting salary for Clark School bachelor’s degree holders is \$65,500, with 70 percent of employed grads accepting job offers in the Washington area.

In many ways, it’s a dream come true for Hiemenz, who grew up in rural Pennsylvania. Working in the nation’s nerve center was a chief draw. After coming to Washington, D.C., for his undergraduate degree at Catholic University of America, Hiemenz earned his M.S. at the University of Maryland. Following a few years of working for a defense contractor, he came back to the Clark School for his Ph.D.

“Being in the D.C. area was key for me, because it’s a hub for so many technologies and customers,” he said. “We’re a stone’s throw from some of the major defense and aerospace customers, with the Pentagon and the Naval Air Systems Command nearby, as well as major research institutes like the National Institutes for Health.” Virginia and the District of Columbia top the nation in mean wages for aerospace engineers, with Washington among the top metro areas for employment.

UMD PARTNERS WITH MITRE ON CYBERSECURITY RESEARCH AND DEVELOPMENT CENTER



The University System of Maryland, including the University of Maryland, College Park (UMD) and University of Maryland, Baltimore County (UMBC), is partnering with The MITRE Corporation to operate the first federally funded research and development center (FFRDC) solely dedicated to enhancing cybersecurity and protecting national information systems. In October, MITRE was selected to operate the center by The U.S. Commerce Department’s National Institute of Standards and Technology (NIST). The new FFRDC will support the National Cybersecurity Center of Excellence (NCCoE), which NIST, the state of Maryland, and Montgomery County, Md., established in 2012 to help businesses secure their data and digital infrastructure by bringing together information security experts from industry, government and academia. The partners will support NCCoE in their efforts to develop practice guides that aid industry in more readily adopting standards-based approaches to tackling cybersecurity challenges.

LEARN MORE: [HTTP://TER.PS/FFRDCCYBER](http://ter.ps/ffrdccyber)

PICTURING SUCCESS

Clark School alumnus M. Jason Brooke left briefly, but the D.C. area keeps drawing him back. Now he is an entrepreneur with a mission. “Diabetic retinopathy is the leading cause of blindness of adults in the United States,” Brooke states. “It’s a complication of diabetes that can be prevented, but unfortunately patients don’t often know they have problems until it’s too late.”



Brooke’s new medical device company, Vasoptic Medical in nearby Columbia, Md., is creating a low-cost, portable XyCAM retinal imager that will allow primary care doctors to non-invasively capture blood flow information for early detection of diabetic retinopathy.

Growing up in Ellicott City, just 30 miles from College Park, Brooke dreamed of using engineering in service to others: “Technology that could help deaf people hear, blind people see, things like that—I’ve always had a passion to help people through technology.” He enrolled in the Clark School’s biological resource engineering department, now known as the Fischell Department of Bioengineering, in order to explore the intersection between science, math, and technology, graduating in 2001 with a bachelor’s degree.

After graduate school at nearby Johns Hopkins University, Brooke moved to Minnesota to help develop pacemakers and defibrillators at Boston Scientific. With this experience in technology development, his ultimate goal to lead his own medical device company seemed within reach. He already had the engineering background he needed and, thanks to growing up in a small family business, the entrepreneurial savvy. But something was missing. Brooke decided that it was a law degree.

He returned to the the University of Maryland Francis King Carey School of Law in Baltimore to study health law, specifically medical device law, and gained critical experience through a part-time job at

the U.S. Food and Drug Administration (FDA) and as a practicing FDA regulatory attorney in D.C.

“Being close to the FDA is fantastic,” Brooke said. “Working there gave me the opportunity to appreciate that it’s not just an agency...it’s a bunch of people who are engineers and doctors who care about patient safety, and who are trying to do a good thing for the American people by ensuring technologies that are being purported to provide good care are doing so and are safe.”

Understanding federal systems from the inside out is a boon to developing technology, according to Brooke, who also points to health technology-related agencies such as the United States Patent and Trademark Office, the National Institutes of Health, and the Centers for Medicare and Medicaid Services, which are all in the Baltimore-Washington corridor. “The infrastructure and resources here are unlike few others nationally and internationally,” he said. “It’s a great opportunity to build a business here.”

Vasoptic participated in the Clark School’s Maryland Technology Enterprise Institute (Mtech) early on to fine-tune its product for their customers. “Building a business close to the University of Maryland has certainly been a benefit,” Brooke said. “It’s those intangible relationships, such as interactions at networking events, that result in ‘aha’ moments.”

PHOTO: DOUGLAS GRITZMACHER



“It’s a great opportunity to build a business here.”

LEIDOS INVESTS IN INNOVATION PARTNERSHIP WITH UMD

The University of Maryland received a \$200,000 donation from Leidos, a national security, health, and engineering solutions company, to support research, education programs, student activities, and fellowships.

The commitment of support reflects an ongoing relationship between Leidos and UMD to provide high-quality education and research opportunities for students and faculty.

“We’re excited to support one of the nation’s finest research and educational institutions and the next generation of technical leaders,” said Jim Cantor, senior vice president and chief engineer for Leidos National Security Sector and UMD executive sponsor. “Such support not only provides critical resources and opportunities for students and faculty at institutions like UMD, it strengthens the nation as we work to maintain a strong high-tech research and manufacturing capability that is fundamental to national security.”

The donation supports UMD’s leading engineering, public health, and cybersecurity research and education programs.

The gift includes the launch of the UMD-Leidos Seed Grant Program, a new initiative to facilitate and incentivize collaborations between UMD researchers and Leidos subject matter experts in the areas of health and national security.

LEARN MORE: [HTTP://TER.PS/UMMLEIDOS](http://TER.PS/UMMLEIDOS)

CLINICAL TRIALS TO BEGIN

Vasoptic received an award from the Maryland Industrial Partnerships (MIPS) program, enabling clinical trials of their retinal imager, which are set to begin soon in collaboration with the Department of Ophthalmology and Visual Sciences at the University of Maryland, Baltimore (UMB). With more than 400 Maryland companies participating in project awards worth over \$180 million, MIPS projects create results. MIPS-supported products have generated more than \$25.2 billion in sales, added jobs to the region, and infused state-of-the-art technology into the global marketplace.





“Mechanical engineers from the University of Maryland are our secret sauce...”

PHOTO: DOUGLAS GRITZMACHER



SAVING ENERGY WITH ‘PERSONAL HVAC SYSTEMS’

Two research teams from the University of Maryland will receive combined funding of more than \$5 million from the Advanced Research Projects Agency-Energy (ARPA-E) to create personal technologies for keeping individuals comfortably cool or warm, while shrinking the energy needs of the buildings they occupy.

The Meta-Cooling Textile project, led by Department of Chemistry Associate Professor YuHuang Wang with co-principal investigators (Co-PI) Associate Professor Bao Yang (Mechanical Engineering/UMERC), Associate Professor Min Ouyang (Physics) and Assistant Professor Liangbing Hu (Materials Science and Engineering/UMERC), will develop a thermally-responsive fabric that extends the skin’s thermoregulation ability to maintain comfort in hotter or cooler office settings.

The Robotic Personal Conditioning Device team, led by Center for Environmental Energy Engineering Director and Minta Martin Professor of Engineering Reinhard Radermacher (Mechanical Engineering/UMERC) with co-PIs Professor Jelena Srebric (Mechanical Engineering) and Assistant Research Scientist Dr. Vikrant Aute, is aimed at developing a mobile platform to provide personalized cooling to individuals.

The UMD projects are two of 11 projects supported through a new \$30-million ARPA-E program entitled DELTA, or Delivering Efficient Local Thermal Amenities, which supports research to develop technologies that can regulate temperatures of building occupants, rather than of the overall building, dramatically reducing the building’s energy consumption and associated emissions.

LEARN MORE: [HTTP://TER.PS/PERSONALHVAC](http://ter.ps/personalhvac)

GAME CHANGERS One of those sorts of epiphanies helped Drew Greenblatt drive his business through some tough times.

Before Helen Lan had first tackled Newton’s laws of motion, Greenblatt became CEO of Marlin Steel. The Baltimore-based manufacturer produced commodity bagel baskets and became known as the “king of the bagel baskets.” Early on, the company had no designers or engineers on staff and the company’s clients, Greenblatt said, had no use for a tape measure—the only unit of measurement was bagel load: if the bagel didn’t fall out of the basket, the basket was a success.

When business began moving overseas, Marlin Steel invested in automated manufacturing robots to increase capacity and precision, aiming to expand their business into a variety of custom-engineered stainless steel wire forms and products, but expensive machinery wasn’t enough to save the company. “We realized that the people we were selling to were mechanical and processing engineers and plant managers, and our employees didn’t have the training or skills to have productive discourse with this high-level clientele,” Greenblatt said.

Tapping into the talent pool at the Clark School proved a game changer for Marlin Steel, and 20 percent of the company’s workforce now consists of degreed mechanical engineers—with all of its active mechanical engineers alumni of the University of Maryland’s Clark School of Engineering. Today Marlin Steel’s clients include industry leaders across the spectrum, from Boeing and Pfizer to the Central Intelligence Agency and global brands, such as Toyota.

“We’ve gone from plus or minus a bagel to plus or minus 0.1 micron,” Greenblatt said. “When you’re jumping massively in terms of quality you also have to jump massively in the ability to understand the engineering challenge—quickly and accurately. Our mechanical engineers from the University of Maryland are our secret sauce—their innovations are powering our growth. They make sure we are not a commodity player, because they come up with such elegant, clever ideas that separate us from the pack.”

“Every day our engineers are grappling with multiple projects, which they own from the first interaction with clients to the day the product ships. They are able to pivot quickly and move from job to job creatively,” Greenblatt said. “I think a lot of engineering schools train people to sit in cubicles and crunch numbers, but we are in a time where we need more—we need an engineer who can not only know the math and the science, but also explain it effectively to our clients and demonstrate it.”

Marlin Steel Lead Engineer Tony Witt (’09, mechanical engineering) credits the Clark School’s curriculum for a smooth transition to a manufacturing career. “Each of my courses went above and beyond the typical textbook exercises to focus on practical applications for the fundamentals we were learning,” said Witt.

“The culture of the Clark School definitely pushes its students to be creative,” said Marlin Steel Mechanical Engineer Jonathan O’Connor (’11, mechanical engineering). “This emphasis has stayed with me and helps me come up with solutions to the unique problems I encounter here at Marlin Steel. Hands-on learning is really an integral component of teaching engineering.”

“We’ve had unbelievably low turnover from our University of Maryland team,” Greenblatt said. “Our engineers come with us to help at the most high-tech precision factories in the world—and they’re giving engineers at these factories advice on how to improve their flow. It’s a neat thing to be just a couple of years out of college and to be giving advice to somebody who’s been doing this for 20 years.”

UAS TEST SITE MARKS INAUGURAL FLIGHT

In December, the University of Maryland (UMD) Unmanned Aircraft Systems (UAS) Test Site conducted flight operations with the UAV Solutions Talon 240, a 140-pound UAS with a twenty-foot wingspan, at Crisfield Airport in Somerset County, Md., successfully proving the operational processes and procedures required to fly larger UAS.

“What our team of scientists and engineers accomplished today is no small feat,” said University System of Maryland Chancellor William “Brit” Kirwan. “The University System of Maryland and our flagship campus, the University of Maryland at College Park, are focused on advancing our state as a leader in UAS research and this flight is an important milestone in establishing our capabilities as a world-class research base for UAS testing.”

The UMD UAS Test Site partners with industry, academia, and government agencies to offer demonstrated expertise to support UAS-related research, testing, and education through safe, efficient, effective operations. Other Test Site supported research flights in progress include natural resource surveys, high school and university student UAS research, utilities inspections, agricultural research, and support to emergency services.

LEARN MORE: [HTTP://TER.PS/FIRSTFLIGHT](http://ter.ps/firstflight)



HOME ADVANTAGE

Just as Greenblatt sees no reason to look beyond the region for his talent, University of Maryland students and alumni benefit from the dynamic lifestyle afforded by the Washington-Baltimore corridor.

“D.C. is a very nice place, and you can live close enough to everything to easily reach anything you want,” Barkakati said. In fact, such is his family’s affinity to the area—all three of his daughters also attended the University of Maryland. Unlike engineers in other parts of the country, according to Barkakati, “you can move from one agency to another with ease, and you don’t have to move your home, because they are all within 20 or 30 miles of where you live.”

That access begins from the moment students arrive at the Clark School. Now a college sophomore, Lan is navigating the ins and outs of patent applications and revisions for her burner catalyst and considering the possibility of a career with the



federal government. Her outlook is bright, as she looks ahead to exploring new avenues in materials science and engineering at the many other research laboratories, government agencies, and company headquarters in the area.

“I had always thought I wanted to explore new places. This area has such great opportunities,” she adds, “and that could keep me here.”



CLARK SCHOOL ROBOT VISITS WHITE HOUSE

Mechanical Engineering graduate student Bryan Hays and NAO (pronounced ‘now’), one of the department’s Control Systems Lab robots, took a trip to the White House in December to teach young students the art of programming.

Hays, a Ph.D. student with Professor Nikhil Chopra, has been actively involved in the D.C. chapter of CoderDojo—a volunteer organization aimed at teaching 7 to 17 year-olds how to code and develop websites, apps, programs, and games, while exploring technology in a creative environment.



Vice President Joe Biden visited with students, as well as NAO, during the “Hour of Code” event.

Hays has volunteered with the group since last fall, and he uses the NAO robot to teach kids how to code.

“The kids put together programs on their laptops, and then run the programs on the robot to control his actions and interactions,” said Hays. “[They] get to have fun learning. They are encouraged by their ability to build programs in the digital realm and see the robot bring their work to life in the physical world.”

Hays and fellow CoderDojo volunteers were one of several groups who visited the White House along with approximately 30 school children from New York and New Jersey to participate in “Hour of Code,” an online event promoting Computer Science Education Week. The White House participated in the event in “an effort to help support and expand access to computer science education in K-12 schools.”

LEARN MORE: [HTTP://TER.PS/NAO](http://ter.ps/nao)

PHILANTHROPY

2014

The Inder and Mira Chopra Faculty Fellow Endowment is established.

1998

Inder Chopra was appointed as Alfred Gessow Professor in the Department of Aerospace Engineering.

1997

A major gift was given by the Gessow family to provide endowment funds in support of the Alfred Gessow chair in Rotorcraft Engineering and Elaine Gessow Fellowships. The Center for Rotorcraft Education and Research was renamed the Alfred Gessow Rotorcraft Center (AGRC).

1992

Alfred Gessow retired from the University of Maryland and became Professor Emeritus in the Department of Aerospace Engineering.

1982

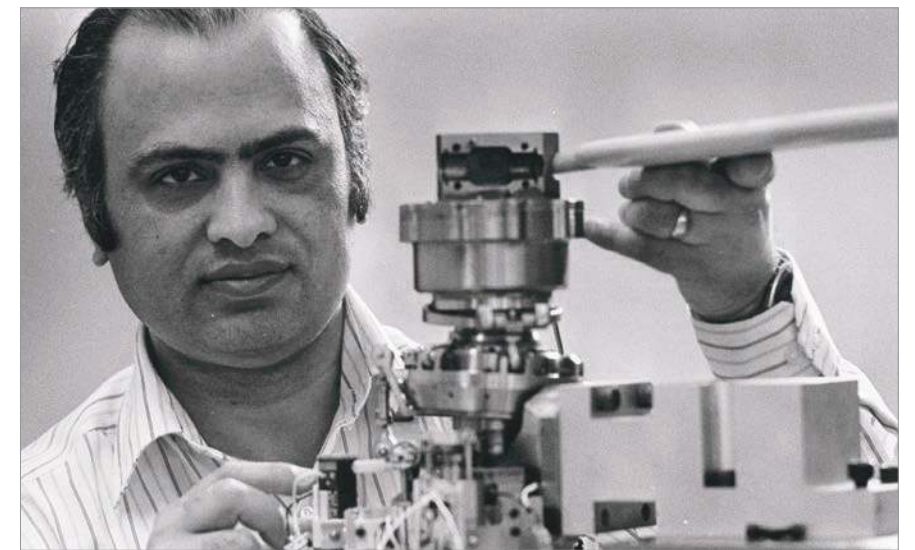
University of Maryland named Army Rotorcraft Center of Excellence; the Center for Rotorcraft Education and Research (CRER) was established.

1981

Inder Chopra joined the Department of Aerospace Engineering as an associate professor.

1980

Alfred Gessow joined UMD as Professor and Chair of the Department of Aerospace Engineering.



A NEW CYCLE OF GIVING: Rotorcraft Expert Gives Back



Inder Chopra, right, and his wife Mira endowed a faculty fellowship to support a faculty member in the AGRC.

Thirty-four years ago, Inder Chopra landed a job at the University of Maryland in line with his passion: helicopters. One year earlier, Chopra’s idol, helicopter pioneer Alfred Gessow, had taken the helm as chair of the aerospace engineering department and Chopra was eager to learn from him.

“I came to the university to work with Gessow,” said Chopra, who helped his mentor launch the Center for Rotorcraft Education and Research (CRER) during his first year as an associate professor. In honor of the Gessow family’s generosity and commitment to rotorcraft education, the CRER was renamed as the Alfred Gessow Rotorcraft Center (AGRC) in 1997. Today, the AGRC is one of three Rotorcraft Centers of Excellence in the country.

Now as director of the center, Chopra’s chief goal is to ensure the love he and the late Gessow share for rotorcraft research and education has a permanent spot in the Clark School.

In 2014, Chopra and his wife, Mira, created the Inder and Mira Chopra Faculty Fellow Endowment to support the research and education activities of a full-time faculty member in the AGRC.

“This fellowship will help attract an outstanding, young faculty member who is also passionate about helicopters,” said Chopra. “It’s exciting to envisage that rotorcraft research and education continue to grow, even when I’m gone.”

But Chopra isn’t ready to retire.

“I’m really happy and very satisfied here,” said Chopra, crediting the positive growth in quality of Clark School faculty and students over his three-decade career for his workplace satisfaction. “Why would I think of any other endeavor if the growth is headed in the right direction? I enjoy every day of my life on this campus.”

When it comes to philanthropy, Chopra offers up his personal motto: “Where there’s a will there’s a way, and there’s no better place to give than education.”

» LEARN MORE: [HTTP://TER.PS/CHOPRAGIVING](http://ter.ps/chopragiving)



PHOTO: DOUGLAS GRITZMACHER

How Boeing Gave Allison Thompson the Promise of a Future

When Allison Thompson graduated from high school, she set off to the University of Maryland to study aerospace engineering and discover her future. A native of Georgia, Thompson was uncertain of what her adult life would bring.

But all of that changed during her sophomore year.

At the encouragement of the Clark School's Co-op and Career Services Director Heidi Sauber, Thompson applied for an internship at Boeing via the company's Engineering Accelerated Hiring Initiative (EAHI). Established in 2010, the program is designed to find and hire full-time engineers and interns straight out of college. Boeing and the University of Maryland share a long history of mutual support, and just this semester, Boeing was recognized as a Clark School Corporate Partner.

The University of Maryland became an EAHI partner in 2013, and is one of 23 participating schools.

Students are selected for on-campus interviews and within just a few days, letters of intent for job and internship opportunities are bestowed upon the company's top choices.

"The moment I found out I had a position with Boeing as a sophomore, I realized that I was going to have a future," said Thompson. "It was unbelievably thrilling. I still have that voicemail saved on my phone."

Thompson, whose education is also supported by a Boeing

scholarship, was flown to the company's headquarters in Seattle, Wash., for a matching event, where she met hiring managers and was offered her first internship on a systems engineering team in Oklahoma City.

During the summer of 2014, Thompson helped to spearhead the development of a requirement database for the Boeing B-52, a database that serves as a template for making sure upgrades and retrofits to the aircraft will fit the system and the government's requirements.

Thompson's experience in Oklahoma spurred growth beyond her on-the-job skills.

"Within a month and a half, I realized that I really do love airplanes, and that this is the right field for me," said Thompson. "It just fits."

Currently, Thompson is technically on educational leave from Boeing until she begins her second summer internship with the company's structural division in Seattle, specifically supporting the Boeing 777X.

"I've gained a new sense of self-confidence and passion for engineering since working at Boeing," said Thompson, who admits that at times, the difficulty of engineering seemed like an immovable obstacle. "Some day when I'm traveling on a plane, I'll be able to say that I've worked on it. That's so cool." ■



Chip Used to Separate Bacteria from Food Samples Wins Professor Venture Fair

Fischell Department of Bioengineering Research Assistant Professor Javier Atencia-Fernandez won the Best Inventor Pitch at the 2014

Professor Venture Fair, held as part of Bioscience Research & Technology Review Day. Atencia-Fernandez's microfluidic chip used to separate bacteria from food samples was one of five innovations presented by faculty members and research scientists at the event.

The annual Professor Venture Fair gives UMD inventors the opportunity to present new biotechnologies to a team of regional venture capitalists and entrepreneurs.

In his presentation, Atencia-Fernandez described the disposable chip, which allows for the separation of bacteria from an unenriched sample in less than an hour. By separating the bacteria from the sample, specific strains can be identified by polymerase chain reaction (PCR) testing. This is made possible by the fact that the chip is designed to load and extract samples using simple pipetting. This simplicity makes the chip easy for any lab technician to use, and it allows onsite testers to carry out quick extraction in the field.

"Foodborne illness in the United States costs billions of dollars each year in health care and other losses," Atencia-Fernandez

explained. "While many of the pathogenic bacteria responsible for foodborne illnesses are known—and testing them is routine—contaminated food still reaches the consumer."

Part of the problem may be due to the length of time required to test food samples for contamination using current sample preprocessing methods, Atencia-Fernandez noted.

"The bottleneck of pathogen testing is sample preprocessing," he said. "Test samples are often a complex mixture of small numbers of pathogens combined with large numbers of other cells, foreign DNA, and other solid particles."

The presence of these other constituents often interferes with the detection of such pathogens; because of this, a bacterial enrichment step, where the sample is incubated with abundant nutrient media, is often required. But this enrichment can take from 10 to 36 hours depending on the bacterial species, and it is by far the longest step in the testing process.

That's why Atencia-Fernandez's microfluidic chip could make all the difference. "Ideally, testing that can produce results within a single eight-hour work shift would allow results to be obtained prior to food being shipped to customers," he said. "This could dramatically decrease the number of incidences in which consumers are exposed to hazardous pathogens in foods."

>> LEARN MORE: [HTTP://TER.PS/ATENCIA](http://ter.ps/atencia)

ENGINEERS AND TIGHT END TEAM UP ON 'CATCHY' NEW FOOTBALL PRODUCT

Grip Boost LLC, a startup whose co-founders include UMD students and alumni from the Department of Chemical and Biomolecular Engineering (ChBE), has invented the first NCAA-compliant gel that restores the tacky coating on worn football gloves.

Football gloves, which are coated with a sticky polymer that helps players catch and hold onto the ball, retail from \$20 to over \$80 a pair. Unfortunately, they wear out in anywhere from a few plays to a few weeks. While this isn't a problem for a well-funded Division I or NFL team, it's

a major expense for high school and youth league players, who are responsible for their own non-essential equipment.

Instead of buying new gloves or going without, players can apply Grip Boost's clear, quick-drying gel to their gloves between plays to restore them to like-new condition.

Grip Boost was founded by former UMD Terrapins and Baltimore Ravens tight end Matt Furstenburg (B.S. '12), Dingman Center entrepreneur-in-residence Harry Geller, ChBE alumni Chanda Arya (Ph.D. '14) and Kevin Diehn



PHOTO: FAYE LEVINE

(M.S. '14), and ChBE undergraduate Zachary Rom (B.S. '15). Professor Srinivasa Raghavan (ChBE) serves as the company's chief scientific advisor.

>> LEARN MORE: [HTTP://TER.PS/GRIPBOOST](http://ter.ps/gripboost)

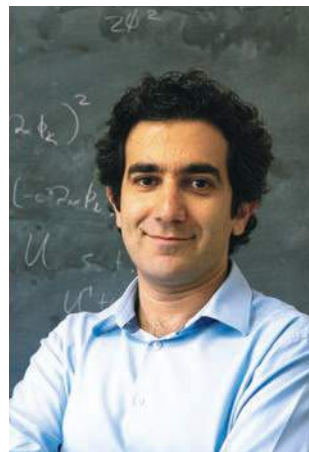
Hafezi Awarded Prestigious Sloan Fellowship

Assistant Professor Mohammad Hafezi, a Joint Quantum Institute Fellow jointly appointed in the Department of Electrical and Computer Engineering and the Institute for Research in Electronics and Applied Physics, has been awarded a prestigious Sloan Research Fellowship. Granted by the Alfred P. Sloan Foundation, this award distinguishes 126 early-career scientists based on their potential to contribute fundamentally significant research to a wider academic community.

“Looking at the list of luminaries who have been given this award in the past, I am very humbled,” said Hafezi.

Since the beginning of the program, 43 fellows have received a Nobel Prize in their respective field, 16 have won the Fields Medal in mathematics, 65 have received the National Medal of Science, and 14 have won the John Bates Clark Medal in economics, including every winner since 2007.

Hafezi’s research interests include the theoretical and experimental investigation of strongly correlated systems and topological physics, nanophotonics and optomechanics, and



hybrid quantum systems.

Prior to joining the UMD faculty in 2014, Hafezi was a senior research associate in the Joint Quantum Institute. He earned his B.S. in physics from École Polytechnique in Paris and his Ph.D. in physics from Harvard University.

Each 2015 Sloan Research Fellow is awarded a two-year \$50,000 grant to support their research interests. The fellowships are awarded in eight scientific and technical fields—chemistry, computer science, economics, mathematics, computational and evolutionary molecular biology, neuroscience, ocean sciences and physics. Candidates must be nominated by their fellow scientists and winning fellows are selected by an independent panel of senior scholars on the basis of a candidate’s independent research accomplishments, creativity and potential to become a leader in his or her field.

Hafezi is one of four University of Maryland faculty to be awarded a 2015 Sloan Research Fellowship.

>> LEARN MORE: [HTTP://TER.PS/HAFEZISLOAN](http://ter.ps/HafeziSloan)

PINES RECOGNIZED WITH MARYLAND SPEAKER’S MEDALLION



Darryll Pines, pictured at left with wife Sylvia, UMD President Wallace Loh, and Maryland House of Delegates Speaker Michael Busch.

Clark School Dean Darryll Pines was awarded the Speaker’s Medallion for outstanding service to the state of Maryland. Maryland House of Delegates Speaker Michael Busch presented the medallion at a ceremony held in March.

The award is given each year to an individual with a record of service to the state of Maryland. Past recipients include former Baltimore Mayor and Maryland Governor William Donald Schaefer, Under Armour Founder and CEO Kevin Plank,

and former University of Maryland President and Chancellor of the University System of Maryland William “Brit” Kirwan.

The Speaker’s Medallion is given each year in “memory of Thomas Kennedy.” Kennedy was elected in 1817 to the Maryland House of Delegates and fought for tolerance in the state. He had a “courageous stand on principle.”

>> LEARN MORE: [HTTP://TER.PS/MDAWARDS](http://ter.ps/MDAWARDS)

Hartzell Receives Astronomical Honor

Next time you look to the sky, see if you can spot “9319 Hartzell,” the main belt asteroid named after the Department of Aerospace Engineering’s Assistant Professor Christine Hartzell. The International Astronomical Union (IAU) announced the asteroid naming, and IAU selects new names only every few years.

Having one’s name attached to an asteroid is no easy feat. The process can take years and nominees are judged by the 15-person Committee for Small-Body Nomenclature of the International Astronomical Union, comprised of professional astronomers (with research interests connected with minor planets and/or comets) from around the world.

“I think it’s every scientist’s dream to have something named after them,” said



PHOTO: DOUGLAS GRITZMACHER

Hartzell. “Having an asteroid named after me is really exciting because it means that my research is valued by the planetary science community.”

>> LEARN MORE: [HTTP://TER.PS/9319HARTZELL](http://ter.ps/9319HARTZELL)

Larsson, Dachman-Soled Win NSF CAREER Awards

Two Clark School faculty members have been awarded National Science Foundation (NSF) Faculty Early Career Development (CAREER) Awards for their innovative research projects.



Mechanical Engineering Assistant Professor Johan Larsson received the award for his project “Non-equilibrium wall-bounded turbulent flows at high Reynolds Numbers.” The goal of the project is to develop theory and models for the simulation of compressible, non-equilibrium turbulent flows with Large Eddy Simulations (LES).

Electrical and Computer Engineering Assistant Professor Dana Dachman-Soled’s project is titled, “Non-Black-Box Cryptography: Defending Against and Benefiting from Access to Code.” Dachman-Soled’s research focuses on developing cryptosystems that remain secure even when implemented on devices that are susceptible to side-channel attacks—attacks that depend on the particular algorithm and/or the specific implementation employed such as timing or fault-injection attacks.



The NSF CAREER program supports the career development of outstanding junior faculty who most effectively integrate research and education within the goals and missions of their programs, departments, and schools.

>> LEARN MORE: [HTTP://TER.PS/LARSSON](http://ter.ps/LARSSON) AND [HTTP://TER.PS/DACHMANSOLEED](http://ter.ps/DACHMANSOLEED)

HU, LEITE NAMED OUTSTANDING ENGINEER AND SCIENTIST OF THE YEAR

UMD assistant professors Liangbing Hu and Marina Leite, both of the Department of Materials Science and Engineering, were named



Maryland Outstanding Young Engineer and Maryland Outstanding Young Scientist in the academic sector, respectively, by the Maryland Science Center. Both awards are sponsored by the Maryland Academy of Sciences. Hu and Leite, who were chosen for their development of technology for solar energy, batteries and electronics, were honored at an award ceremony at the Maryland Science Center on November 19.

>> LEARN MORE: [HTTP://TER.PS/MDSCIAWARDS](http://ter.ps/MDSCIAWARDS)

WIFIRE WINS HPCWIRE AWARDS AT HIGH PERFORMANCE COMPUTING CONFERENCE

WIFIRE, the wildfire modeling system whose design team includes UMD Fire Protection Engineering (FPE) professors Michael Gollner and Arnaud Trouvé, received three of HPCwire’s annual Readers’ and Editors’ Choice Awards at the 2014 International Conference for High Performance Computing, Networking, Storage and Analysis.



Each year, HPCwire, which reports on the international high performance computing community, recognizes the most significant developments in the field in a variety of categories. WIFIRE received HPCwire’s Readers’ and Editors’ Choice Awards for the Best Application of Big Data, and its Editors’ Choice Award for Best Data-Intensive System.

>> LEARN MORE: [HTTP://TER.PS/WIFIREHPC](http://ter.ps/WIFIREHPC)

FELLOWSHIPS, SOCIETIES, HONORS, AWARDS



Electrical and Computer Engineering Department Chair and Minta Martin Professor of Engineering **RAMA CHELLAPPA** (ECE/CS/UMIACS/CFar) has been elected in the 2015 class of Fellows of The Association for the Advancement of Artificial Intelligence (AAAI) for his “significant contributions to Markov random fields, 3D recovery from single and multiple images, and image/video-based recognition.”



The American Physical Society (APS) selected Mechanical Engineering Visiting Professor **JERRY W. FORBES** for the 2015 George E. Duvall Shock Compression Science Award. Forbes, a member of the department’s Center for Energetic Concepts Development, has been actively involved in teaching Shockwave Physics courses for the Professional Master of Engineering program.



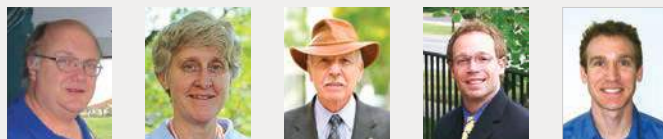
Professor **JOHN BARAS** (ECE/ISR) has been named a Fellow of the American Association for the Advancement of Science (AAAS) in its Section on Engineering for his “distinguished contributions to the fields of systems and control, communication networks, network security, and leadership in establishing outstanding cross-disciplinary research and education programs.”



Professor **REZA GHODSSI** (ECE/ISR) has been elected a Fellow of the Institute for Electrical and Electronics Engineers, for “contributions to materials and processes for microsystems technologies.”



The American Institute of Aeronautics and Astronautics promoted Department of Aerospace Engineering Professor **ALISON FLATAU** to AIAA Fellow, a title reserved for the top 1% of AIAA members each year.



Five University of Maryland Aerospace Engineering professors and faculty members have been named to the rank of Associate Fellow with The American Institute of Aeronautics and Astronautics.

The University of Maryland Fellows are:

- **DAVID AKIN**, Associate Professor
- **MARY BOWDEN**, Visiting Associate Professor
- **WILLIAM FOURNEY**, Keystone Professor and Associate Dean of Engineering
- **J. SEAN HUMBERT**, Techno-Sciences Associate Professor of Aerospace Innovation
- **CURT KOTHERA**, Visiting Assistant Research Scientist



Three Department of Mechanical Engineering faculty have been named American Society of Mechanical Engineers Fellows: Jeong H. Kim Professor **ABHIJIT DASGUPTA**, Associate Dean and Keystone Professor **WILLIAM FOURNEY**, and Research Professor **YUNHO HWANG**.



Christine Yurie Kim Eminent Professor of Information Technology **K. J. RAY LIU** has been awarded the highest honor that the Institute of Electrical and Electronics Engineers Signal Processing Society bestows, known as the Society Award, for his “influential technical contributions and profound leadership impact.”



The Institute of Refrigeration (IOR) awarded Minta Martin Professor of Mechanical Engineering **REINHARD RADERMACHER** the 2015 J&E Hall Gold Medal for his contributions in the field of refrigeration and “pushing research frontiers through his exploration of new technologies and developing them for real-life applications.”

ANISIMOV, DASGUPTA RECEIVE USM REGENTS' AWARDS

Department of Chemical and Biomolecular Engineering Professor Mikhail Anisimov (joint, Institute for Physical Science and Technology) and Department of Mechanical Engineering Jeong H. Kim Professor Abhijit Dasgupta both received University System of Maryland’s (USM) 2015 Board of Regents’ Faculty Awards for Scholarship, Research, or Creative Activity. Regents’ Faculty Awards publicly recognize distinguished performance on the part of USM faculty members.

Anisimov’s research interests include critical phenomena and phase transitions in supercooled water, fluids, fluid mixtures, liquid crystals, and surfactant and polymer solutions. He also studies the applications of photon-correlation spectroscopy and high-resolution adiabatic calorimetry to

soft condensed-matter materials.

Dasgupta conducts research on the mechanics of engineered, heterogeneous, active materials, with special emphasis on the micromechanics of constitutive and damage behavior, and he applies this work to multifunctional material systems such as electronic packaging material systems and “smart” composite material systems.

USM Regents’ Faculty Awards are the highest honor presented by the Board of Regents to exemplary faculty members. The Council of University System Faculty selects awardees and submits them to the Board of Regents for approval. The Regents recognized this year’s award recipients at a special breakfast ceremony at the University of Maryland, Baltimore (UMB) in April.



>> LEARN MORE: [HTTP://TER.PS/ANISIMOV](http://ter.ps/anisimov) & [HTTP://TER.PS/DASGUPTA](http://ter.ps/dasgupta)



Munday Wins IEEE Photonics Society and Optical Society of America Awards

Jeremy N. Munday, Assistant Professor in the Department of Electrical and Computer Engineering, has recently been recognized for his contributions to his field at an early age.

The IEEE Photonics Society has honored Munday with its Young Investigator Award in honor of his outstanding technical contributions to photonics before the age of 35.

Munday also received the Optical Society of America’s Adolph Lomb Medal, which was established in 1940 in honor of Adolph Lomb, the society’s treasurer from 1916 until his death in 1932, to recognize someone who has made noteworthy contributions to optics before their 35th birthday.

The citations for each award read: “for pioneering contributions to plasmonic and photonic light-trapping in solar cells.”

>> LEARN MORE: [HTTP://TER.PS/MUNDAYIEEE](http://ter.ps/mundayieee) & [HTTP://TER.PS/OSAMUNDAY](http://ter.ps/osamunday)

Jewell Named 2015 Damon Runyon-Rachleff Innovator

Fischell Department of Bioengineering Assistant Professor Chris Jewell was named one of six recipients of the Damon Runyon-Rachleff Innovation Award, which recognizes early career scientists whose projects have the potential to significantly impact the prevention, diagnosis, and treatment of cancer.

The prestigious award given by the Damon Runyon Cancer Research Foundation carries a two-year grant of \$300,000 and an opportunity for up to two additional years of funding, for a total of \$600,000.



>> LEARN MORE: [HTTP://TER.PS/JEWELLRUNYON](http://ter.ps/jewellrunyon)

Poovendran named IEEE Fellow, Electrical Engineering Department Chair

Electrical engineering alumnus Radha Poovendran (Ph.D. '99) has been elected a Fellow of the Institute for Electrical and Electronics Engineers (IEEE) "for contributions to security in cyber-physical systems."

He also has been appointed chair of the Electrical Engineering Department at the University of Washington, where he has served as a faculty member since 2001 and a full professor since 2010. Five of Poovendran's former students are now professors themselves.

At Maryland, Poovendran was advised by Professor John Baras (ECE/ISR) and received the ECE Department's inaugural Graduate Student Service Award (1999). He also won NSA's LUCITE Rising Star award in 1999. Poovendran is also the recipient of an NSF CAREER award (2001), an ARO Young Investigator award (2002), an ONR Young Investigator award (2004), a PECASE award (2005), and was named a Kavli Frontiers Fellow of the National Academy of Sciences (2007).

Poovendran is the founding director of the Network Security Lab (NSL). His research interests focus on communications, network security, and cryptography.



>> LEARN MORE: [HTTP://TER.PS/POOVENDRAN](http://ter.ps/poovendran)

TWO ECE ALUMNI ELEVATED TO IEEE FELLOW

Electrical and computer engineering alumni An-Yeu (Andy) Wu and Haitao (Heather) Zheng were elevated to Fellow of the Institute of Electrical and Electronics Engineers. Wu was recognized for contributions to DSP algorithms and VLSI designs for communications IC/SoC. Zheng received this honor for contributions to dynamic spectrum access and cognitive radio networks. Wu and Zheng were both advised by Christine Yurie Kim Eminent Professor of Information Technology K.J. Ray Liu at the University of Maryland.

Wu is Professor of Electrical Engineering at National Taiwan University. His research interests include low-power/high-performance VLSI architectures for DSP and communication applications, adaptive/multi-rate signal processing, reconfigurable broadband access systems and architectures, bio-medical signal processing, and System-on-Chip



(SoC)/Network-on-Chip (NoC) platform for software/hardware co-design. Wu earned his M.S. and Ph.D. from the department, completing his studies in 1995.

Zheng is a professor at the University of California, Santa Barbara; she joined UCSB after spending six years in two industry labs, Bell Labs in New Jersey and Microsoft Research Asia. Her research interests include wireless networking and systems, mobile and social computing. Currently, she is researching mmWave networking, wireless data centers, cognitive radios and dynamic spectrum access, and social networking. Zheng graduated from the Department of Electrical and Computer Engineering at the University of Maryland with her Ph.D. in 1999.



>> LEARN MORE: [HTTP://TER.PS/IEEEFELLOW](http://ter.ps/ieeefellow)

TASHGY CELEBRATES 50 YEARS AS PROFESSIONAL ENGINEER

Martin Tashgy has spent the last 50 years as a student of engineering. Since earning a mechanical engineering degree from the University of Maryland in 1959, he's kept his professional engineer (PE) license current and has no plans to stop.

"I'm delighted that I've been able to maintain my skills," said Tashgy. Every two years, he takes a minimum of four courses that equal 24 professional development hours in order to keep his license valid.

After graduation, Tashgy spent three decades at the Western Electric Co. in Baltimore, Md., where he worked on projects such as global, underwater communications cables. He retired in 1989, and in 1991, Tashgy moved to Hagerstown, Md., where he is "growing old gracefully." He will turn 80 this year.

After such a long career, Tashgy is full of advice for budding engineering students: "You'll always be a student. Be prepared for a career of lifelong learning." 📖

Join the Engineering Alumni Network

As one of the academic networks within the University of Maryland Alumni Association, the Engineering Alumni Network strives to be your lifelong connection to the A. James Clark School of Engineering.

OUR PROGRAMS

The Engineering Alumni Network helps organize and fund activities that:

- Provide meaningful engagement opportunities for alumni
- Connect alumni with current students and faculty
- Recognize and promote the academic and professional achievements of students, faculty, and alumni
- Build and maintain support for the School through industry partnerships
- Advocate for the School and University

WHY JOIN?

Joining the Engineering Alumni Network is very rewarding:

- Network with other alumni and friends of the School
- Connect with events in the School and University
- Discover meaningful ways to give back to your School and help the next generation of Clark Terps
- Enjoy the many personal benefits offered through the Alumni Association
- Membership fees are 100% tax-deductible and help fund scholarships for current Clark School students

>> LEARN MORE: CONTACT DIRECTOR OF ALUMNI RELATIONS JEFF WILLIAMS (JEFFSW@UMD.EDU) OR VISIT [HTTP://TER.PS/CLARKALUMNI](http://ter.ps/clarkalumni)

MSE Alumnus Appointed Chair at Temple



Department of Materials Science and Engineering (MSE) alumnus and MSE Board of Visitors member Harsh Deep Chopra (Ph.D. '93) has been appointed Chair of Temple University's Mechanical Engineering Department. Chopra came to Temple from SUNY-Buffalo, where he had been a professor in the Department of Mechanical & Aerospace Engineering since 2005.

During his time at the Clark School, Chopra was advised by Professor Manfred Wuttig (MSE). Together, the pair studied functional and smart materials for sensors and actuators for automotive, aerospace and robotics applications. Chopra has remained in the field, pioneering his own approach to materials genomics in order to understand how a variety of material properties—such as electric and magnetic—evolve from the single atom to the bulk. He continues to collaborate and publish with Wuttig.

>> LEARN MORE: [HTTP://TER.PS/CHOPRAMSE](http://ter.ps/chopramse)

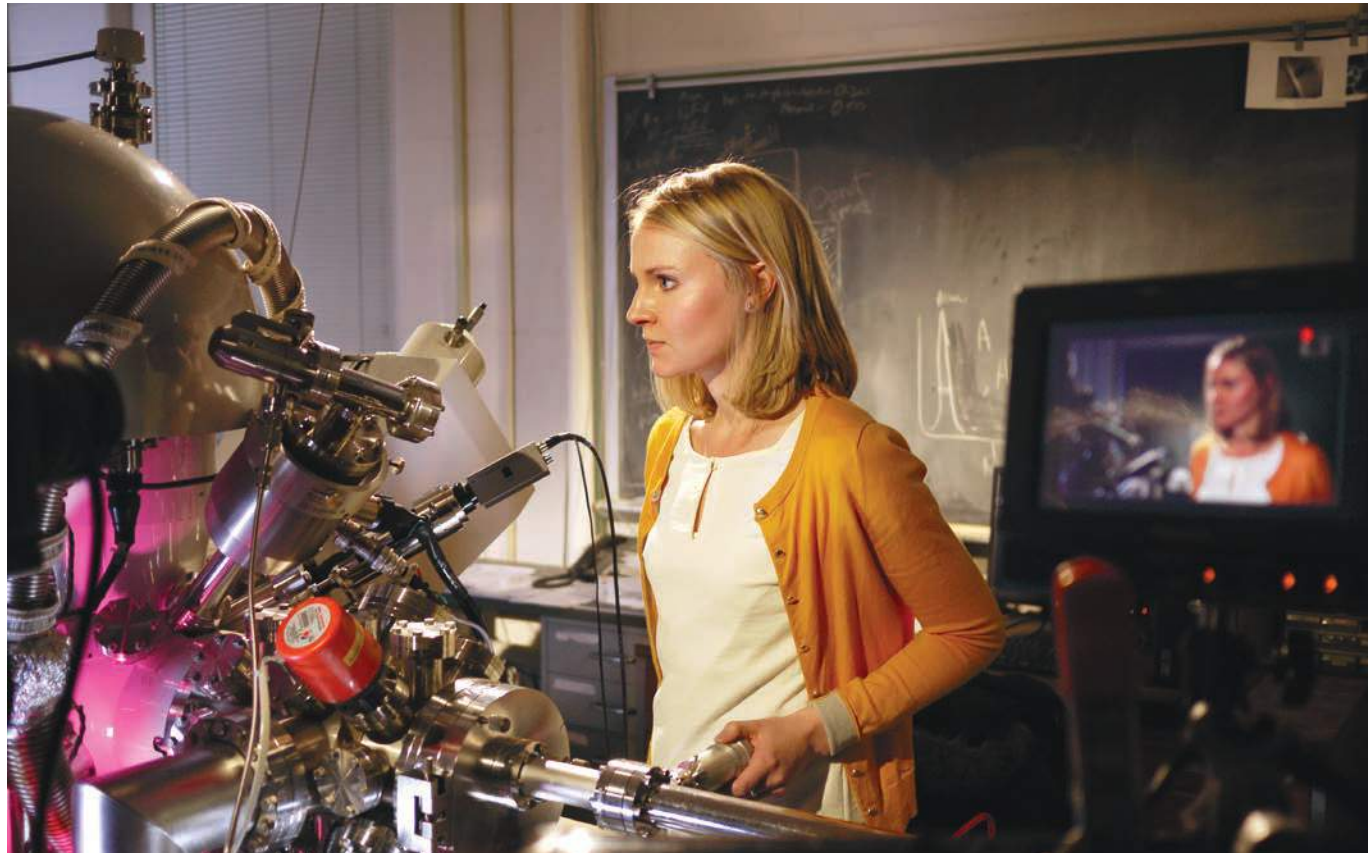


PHOTO: FAYE LEVINE

Marquardt using X-ray photoelectron spectroscopy to analyze the surface chemistry of silver and bronze before and after a protective coating is applied.

Marquardt Wins Top Prizes in International 3-Minute Thesis Competition

Think fast: could you describe the five years of Ph.D.-level research behind your passion to anyone you meet in three minutes? Materials science and engineering graduate student Amy Marquardt can. Her video explaining how she uses nanotechnology to protect silver art and artifacts won both the Judges' Choice and People's Choice Awards in the international Three Minute Thesis Competition (3MT).

Marquardt was one of over 800 entrants in the competition, which challenges students to explain the importance of their work to a non-technical or non-specialist audience in only three minutes.

Marquardt, advised by Professor Ray Phaneuf (MSE), is using her expertise in materials science to help museums analyze, clean, and preserve their art and artifacts. For the past several years, she has been part of a team working with conservators

from the Walters Art Museum to develop nanometers-thick coatings that protect silver from tarnish. The material, applied using atomic layer deposition (ALD), is currently being tested on an artifact from the museum's collection. Marquardt is currently serving a research-in-residence fellowship at the Smithsonian's Museum Conservation Institute (MCI). At the Smithsonian, she is exploring the use of her coating technique to preserve bronze art and artifacts, with a particular focus on patinas.

The 3MT prizes include a cash award, a funded trip to a U21 member university of Marquardt's choice, and the opportunity to have her presentation transformed into an animated video by 99Scholars.

>> LEARN MORE: [HTTP://TER.PS/3MTMARQUARDT](http://ter.ps/3MTMARQUARDT)

Clark School Students Named ARCS Scholars

The Achievement Rewards for College Scientists (ARCS) Foundation has awarded five Clark School of Engineering students with scholarships for the 2014-2015 school year. Each scholar is a merit award winner currently pursuing significant research in science, technology, or medical topics.

This year's scholars include:

- **COLIN M. GORE**
Lockheed Martin Scholar
Ph.D. Candidate, Department of Materials Science and Engineering
- **CHRISTOPHER E. HENDRICKS**
Aerospace Scholar
Ph.D. Candidate, Department of Mechanical Engineering
- **OMID D. RAHMANIAN**
The Gerald and Paula McNichols Foundation Scholar
Graduate Research Assistant, Fischell Department of Bioengineering
- **BERNADETTE CANNON**
Wanda M. Austin Undergraduate Scholar
Undergraduate Honors Student, Department of Aerospace Engineering
- **ANNA WHITTAKER**
Clark Construction Undergraduate Scholar
Undergraduate Student, Department of Civil and Environmental Engineering

Since 1998, 65 University of Maryland students have been designated ARCS Scholars, receiving nearly \$1 million in support from the Metro Washington chapter of ARCS for their outstanding work. Visit the ARCS website to learn more about the ARCS scholar program, including requirements for application.

>> LEARN MORE: [HTTP://TER.PS/CLARKARCS](http://ter.ps/clarkarcs)



PHOTO: DOUGLAS GRITZMACHER

KUSIMO RECOGNIZED FOR MARYLAND SPIRIT, STUDENT LEADERSHIP

Abisola Kusimo, a senior mechanical engineering major, has earned special recognition this year for her campus involvement and outstanding academic achievements.

In October, Kusimo received the Spirit of Maryland Award at the homecoming football game. The award is presented to two senior students—one male and one female—who most exemplify the "spirit" of the University of Maryland.

That same month, Kusimo was honored with a 2014 Women of Color Student Leadership Award for her inspirational success among her peers at the Clark School, but also for her dedication to advocacy of women's rights and contemporary issues by way of poetry.

Kusimo, who is minoring in rhetoric communication, engineering leadership development, and technology entrepreneurship, serves as president of the TEDx University of Maryland organization and has participated in Habitat for Humanity and Alternative Break service initiatives.

Her passions have propelled her to visit over six countries, lead students on South Campus as a resident assistant, participate in the Hinman CEOs program, work with Women in Engineering Research fellows for four years, and become a Top Ambassador for the Clark School.

In March, Kusimo was selected to be part of the university's prestigious Medallion Society. Consisting of the top 10 female and top 10 male students of the graduating class, the honor society recognizes exceptional students and their achievements throughout their college careers. Membership in the Medallion Society also deems her a finalist for the H. C. Byrd, Sally Sterling Byrd, and Wilson Elkins awards.

Kusimo plans to attend graduate school next fall.

>> LEARN MORE: [HTTP://TER.PS/ABISOLA](http://ter.ps/abisola)

A TRIBUTE TO John L. Bryan



Dr. John L. Bryan (1926-2014) was the founding Professor and Chair of the Department of Fire Protection Engineering (FPE) at the University of Maryland, from the department's initiation in 1956 until his retirement in 1993. He was granted the rank of Professor Emeritus, with 37 years of service in the department and 39 years of service with the University.

Under Dr. Bryan's leadership, the Department of Fire Protection Engineering evolved from a modest, one-person operation to a mature and vital program serving the fire protection needs of the nation.

Dr. Bryan was not just a professor and chair, but was also a mentor to the FPE students. Known as "Prof" to the students and alumni, he knew each one by name. In fact, at an alumni gathering on campus in 1989, where usually guests provide self-introductions, he introduced virtually every one of the 200 alumni in attendance.

Students knew him for his dry wit, which served to liven up class discussions. Also, anyone who was late for class or dozed off would be identified, usually resulting in the individual (and the rest of class) being on time and awake for several subsequent class meetings. Each year, FPE alumni meet for dinner at the annual National Fire Protection



John Bryan and his wife Sarah at his retirement reception in 1993.

Association, a tradition inspired by their cherished relationship with Dr. Bryan.

"John Bryan was a strong leader with a vision," said Department of Fire Protection Engineering Professor and Chair Jim Milke, who was one of Dr. Bryan's students in the mid-1970s and later a mentee when he joined the faculty in 1977. "He devoted his life to the creation and livelihood of the Department of Fire Protection Engineering. But he also devoted his life to the important people around him."

His legacy is recognized through the endowed John L. Bryan Chair of Fire Protection Engineering, a named fire protection engineering laboratory

and the student dormitory at the College Park fire station, which is also named in his honor. In 1997, Dr. Bryan established a scholarship in memory of his wife, Sarah, for women in fire protection engineering.

Dr. Bryan received B.S. and M.S. degrees from Oklahoma State University and a D.Ed. degree from American University. He was best known for his research on human behavior in fires, starting with his first study of the 1956 Arundel Park fire. Dr. Bryan received many honors and awards for his research and accomplishments, served on numerous boards and committees, and was active in professional societies. He was also a member of the fire service and the author of two books.

>> LEARN MORE: [HTTP://TER.PS/JOHNBRYAN](http://ter.ps/johnbryan)



Breaking Ground for A. James Clark Hall



(L-R) Former MD Delegate John Bohanan, Robert E. Fischell Distinguished Professor and Chair William E. Bentley, Dr. Robert E. Fischell, Susan Fischell, UMD President Wallace Loh, Courtney Clark Pastrick, Dean Darryll Pines, USM Chancellor William "Brit" Kirwan, and Congressman Steny Hoyer

IN NOVEMBER, OVER 200 PEOPLE GATHERED AT THE UNIVERSITY OF MARYLAND TO CELEBRATE THE CEREMONIAL GROUNDBREAKING OF A. JAMES CLARK HALL.

SCHEDULED TO OPEN IN 2017, THE NEW BUILDING WILL FACILITATE WORLD-CLASS RESEARCH AND EDUCATIONAL PROGRAMS, OFFERING STATE-OF-THE-ART LABORATORIES, STUDENT PROJECT SPACE, AND A NEW HOME FOR THE FISHELL DEPARTMENT OF BIOENGINEERING AND THE ROBERT E. FISHELL INSTITUTE FOR BIOMEDICAL DEVICES.

LEARN MORE ABOUT A. JAMES CLARK HALL: [HTTP://TER.PS/CLARKHALL](http://ter.ps/clarkhall)



UMD's mascot Testudo joined the platform party to kick off the occasion.



Congressman Steny Hoyer



(L-R) Dr. Robert E. Fischell, Courtney Clark Pastrick, Dean Darryll Pines, UMD President Wallace Loh



Benefactor Dr. Robert E. Fischell



USM Chancellor William "Brit" Kirwan



Benefactor A. James Clark's daughter, Courtney Clark Pastrick, meets students in the Fischell Department of Bioengineering.



The University of Maryland has teamed up with Ballinger and Clark Construction for the design and building of A. James Clark Hall. Pictured from left: Ballinger Principal Craig Spangler, UMD Senior Project Manager Daniel Pierce, Dean Darryll Pines, Ballinger Principal William Gustafson, and Clark Construction Vice President David Tacchetti



A. JAMES CLARK
SCHOOL OF ENGINEERING

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College Park, Maryland 20742-2831

All Your News That's Fit to Print

The Class Notes Section of *E@M*

You can put your news in print in the 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 section lists selected submissions from alumni by year of graduation and provides 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 Jeffrey S. Williams, director of alumni relations at jeffsw@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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