2016

AEROCONTACT

AEROSPACE ENGINEERING
A. JAMES CLARK SCHOOL *of* ENGINEERING
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NEWLY DISCOVERED ‘BLUE WHIRL’ FIRE TORNADO

Burns Cleaner for Reduced Emissions

AEROCONTACT
IS A NEWSLETTER PUBLISHED FOR ALUMNI AND FRIENDS OF THE DEPARTMENT OF AEROSPACE ENGINEERING AT THE A. JAMES CLARK SCHOOL OF ENGINEERING, UNIVERSITY OF MARYLAND.

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DEPARTMENT NEWS, RESEARCH UPDATES, ALUMNI INFO, & MORE

DR. WERELEY SERVES UP BLUEBERRY PANCAKES ENGINEERING STYLE FOR STUDENTS AT THE WIAA END OF YEAR PANCAKE BREAKFAST, SPRING 2016.

NORMAN WERELEY

Chairman's Corner

Classes are in full swing here on campus as another academic year is upon us. Despite the rapid pace we set here at the University of Maryland, AeroContact gives us an opportunity to reflect on the accomplishments of the past year, and a chance to look ahead to the future of aerospace engineering.

We are excited to announce U.S. News and World Report has again ranked us as a top ten undergraduate program in aerospace engineering, placing us at number 8 in the nation! This recognition reflects the incredible efforts of our faculty, staff, and students, and their unwavering commitment to education excellence.

In this issue, we have the opportunity to showcase some of those efforts. One of our newest student groups, the Women in Aeronautics and Astronautics (WIAA), has demonstrated how effective and engaged a student group can be when the students, faculty, and staff are dedicated to a common mission. WIAA is building a robust community of opportunity for women within both the department and the Clark School, and their work supports our mission to cultivate diversity and provide an atmosphere of collaboration and support for all students, so we can attract the best students at all levels.

Our research activities continue to break new ground, and collaborations across departments and fields are leading to exciting new discoveries. In this issue, you will learn how a collaboration between Glenn L. Martin Institute Professor of Engineering Elaine Oran and colleagues in the Clark School's Department of Fire Protection Engineering led to the discovery of a new type of fire tornado—dubbed the 'blue whirl'—that could offer a cleaner solution for applications like oil spill remediation. Professor Alison Flatau leveraged her engineering background to shed new insights on problems affecting individuals suffering from glaucoma, and Assistant Professor Christine Hartzell is part of the Strata-1 team, whose research project to determine the effects of microgravity on regolith is currently aboard the International Space Station. These diverse research projects highlight the broad reach aerospace engineering has for improving understanding and fostering new discovery across disciplines.

We continue celebrating our students' academic successes and high level of achievements. This past spring, Penton's Aviation Week Network and the American Institute of Aeronautics and Astronautics (AIAA) recognized three of our graduate students, Sylvie DeLaHunt, Elaine Petro, and Lauren Trollinger, as 20Twenties, individuals who represent tomorrow's engineering leaders.

This year also marked an extraordinary year for faculty recognition. The National Academy of Engineering elected Samuel P. Langley Distinguished Professor James E. Hubbard, Jr. to their membership for his pioneering work in piezo-film sensors and piezo-electric actuation systems for smart structures and materials applications. Assistant Professor Anya Jones received a Presidential Early Career Award for Scientists and Engineers (PECASE), the highest honor bestowed by the U.S. government to science and engineering professionals in the early stages of their research careers. Women in Aerospace recognized Professor Mary Bowden with their 2016 Aerospace Educator Award for her efforts in motivating interest in space systems, being an inspiring role model and promoting the success of students at all levels. Both Jones and Bowden serve as faculty mentors to WIAA. In addition, ASME recognized Distinguished University Professor Inderjit Chopra with the Spirit of St. Louis award for his meritorious contributions.

The department continues to expand on its successful rotorcraft program, and is pleased to welcome Dr. Anubhav Datta as Associate Professor and member of the Alfred Gessow Rotorcraft Center of Excellence. Dr. Datta spent 2007 to 2015 at the U.S. Army Aeroflightdynamics Directorate (AMRDEC) at NASA Ames Research Center, where he worked on full-scale wind-tunnel testing of the UH60A Black Hawk rotor and served as the technical lead for structural dynamics and CFD-CSD coupling for CREATE-AV/Rotorcraft, a Department of Defense HPC Modernization Program Office funded program for high-fidelity computational analysis. Please welcome Dr. Datta to the Maryland Aerospace Engineering family.

We are always looking for improving ways to stay connected with our alumni and friends, so this year we launched a new department eNewsletter. On the back cover of this issue, you can find out how to sign up, and stay engaged with what is happening in the department. Enjoy reading this issue of AeroContact.

Norman M. Wereley, Minta Martin Professor and Chair
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PHOTOS BY: JOHN CONSOLI

GAMERA FLIES AGAIN!
After successfully completing the longest duration flight for a human-powered helicopter in fall of 2013, the UMD Gamera Team, a student competition team originally inspired in 2012 by the American Helicopter Society's Sikorsky Prize, has continued raising the bar. In 2014, a team of undergraduate students took over Team Gamera, reinventing itself as Solar Gamera to test the feasibility of applying solar power in achieving human helicopter flight, and on August 26, 2016, they succeeded!

Learn more and watch the video at *go.umd.edu/solar-gamera*

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on the cover

Glenn L. Martin Institute Professor of Engineering Elaine Oran and colleagues in the Department of Fire Protection Engineering make a new discovery that could lead to improved oil spill remediation. Learn more on page 4.

Photo credit: John Consoli

ON THE WEB AT
AERO.UMD.EDU

GRADUATE ASSISTANT CHYNNA OBANA, DR. PAIGE SMITH, DIR. OF UMD'S WOMEN IN ENGINEERING PROGRAM, WIAA MEMBERS ROSIE WEINSTEIN, GLADYS PALACIO, ELIZABETH WEINER, KARENNA BUCO, SYLVIE DELAHUNT, KATE MELONE, AND KIMBERLY WESTBROOK RECEIVING THE CLARK SCHOOL'S 2016 WOMEN IN ENGINEERING SERVICE AWARD

WOMEN IN AERONAUTICS AND ASTRONAUTICS

Building a Community of Support and Professional Opportunity for Women at Maryland

Since the spring of 2015, a core group of women at the University of Maryland have been building momentum while creating the first ever Women in Aeronautics and Astronautics (WIAA) student organization on campus. According to founding WIAA president Gladys Palacio (B.S. '16) the group's purpose can be found in its four pillars: Outreach, Community, Technical Development, and Professional Development. "There was a need for a community of female aerospace engineers among undergrads, grads, and faculty," Palacio explained. "Creating bonds and informal mentorships throughout different levels improves retention."

In just a short period of time, and with the help of Chynna Obana, a graduate assistant in the department's Undergraduate Office, WIAA became a hub for more than 85 members to support networking activities, training opportunities, and host guest speakers such as American Institute of Aeronautics and Astronautics (AIAA) Executive Director and former astronaut Sandy Magnus.

Their hands-on training opportunities have covered course-work related topics like Matlab, 3D printing, and Intro to Mechatronics as well as hosting a Lean-In workshop with representatives from John Hopkins Applied Physics Lab. "[While] technical and professional development exist in different formats at the Clark School, we saw there was a gap we could fill through hands-on technical workshops that offer a safe place to try something new," added Palacio, who now works as a manufacturing engineer on The Boeing Company's Space Launch System.

In addition to the more than 20 events WIAA hosted in its first year, they also held WIAA Day 2016, an all-day event for female high school students interested in engineering, math, and science who wanted to learn more about aerospace engineering.

"Another key part of WIAA is promoting more recognition [of aerospace engineering] both in and out of UMD by encouraging younger females to pursue this major," said Samantha Howard, aerospace engineering sophomore and current WIAA public relations officer. Beyond WIAA Day, members have visited area middle and high schools, like Severna Park High School, to talk to students about aerospace engineering. She added, "With our group reaching out to high schools and hosting outreach events, we are instilling the idea of aerospace [engineering] as an option, as well as confidence in young women prior to them, hopefully, joining the UMD student body."

While WIAA has prioritized outreach, they have had the opportunity to present about their group to the department's advisory board. "It was great to see how excited these industry leaders were to support WIAA's mission and activities through sponsorship, coordinating industry tours, and connecting us with other successful women in their organizations," explained Sylvie DeLaHunt (B.S. '14, M.S. '16), a founding WIAA member who now works as a Guidance, Navigation, and Control Engineer at Johns Hopkins University's Applied Physics Laboratory.

According to DeLaHunt, another key to the group's success has been the amount of diversity that each member brought with them, both in perspectives and areas of advocacy interest, and overall enthusiasm for improving all aspects of the experience for female students at Maryland.

Master's student and WIAA member Lauren Trollinger echoed this sentiment, "We have established a solid foundation for ourselves and our organization. We have

paved the way for advancing and advocating for women in aerospace at the University of Maryland. Being a part of this organization, and what WIAA has accomplished, has been amazing to see, and I value the leadership, teamwork, and passion each member has contributed to the group since its inception."

WIAA's hard work did not go unnoticed, and in the spring of 2016, their executive board received the Clark School's Women in Engineering Service Award for their efforts and success in building a professional and supportive community for female engineering students at Maryland.

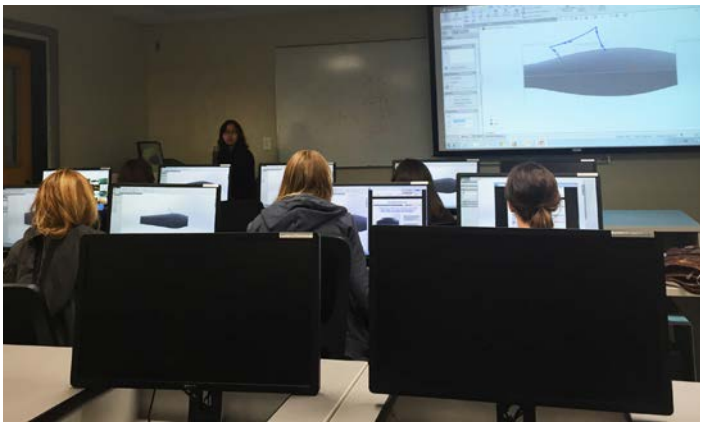
This year, the group is starting to recruit members for a new program to provide college mentors to middle and high school students interested in pursuing aerospace engineering.

This is just one of the reasons WIAA is so important to current WIAA President Kimberly Westbrook. In fourth grade, during a time when she was struggling with math, a woman from NASA Goddard visited her class with a space suit. "I was so inspired by her, that I decided I would conquer division, and I did," she said. "I became involved with WIAA so I could have more opportunities to inspire and encourage younger girls to pursue careers in STEM, just as that Goddard employee inspired me."

Interested in engagement opportunities with WIAA? Visit *go.umd.edu/wiaa-sponsor* or email them at *wiaaterps@gmail.com.*

Learn more about WIAA at *go.umd.edu/wiaa.*

CLOCKWISE: MEMBERS ROSIE WEINSTEIN AND KIM WESTBROOK PRESENT ON AEROSPACE ENGINEERING AT SEVERNA PARK HIGH SCHOOL; WIAA MEMBERS LAUREN TROLLINGER (RIGHT) AND TIFFANY RAMCHARAN (LEFT) WORK WITH STUDENTS DURING WIAA DAY 2015; WIAA MEMBER AND PH.D. STUDENT ELENA SHRESTHA LEADS A TECHNICAL SKILLS WORKSHOP ON CAD; FEMALE ENGINEERS FROM TEXTRON SYSTEMS SHARE THEIR EXPERIENCES DURING A WIAA HOSTED NETWORKING EVENT.



Newly Discovered Blue Whirl Fire Tornado Burns Cleaner for Reduced Emissions; Could Lead to Better Oil Spill Cleanup

Fire tornados, or 'fire whirls,' pose a powerful and essentially uncontrollable threat to life, property, and the surrounding environment in large urban and wildland fires. But now, a collaboration between three researchers in Aerospace Engineering and the Clark School's Department of Fire Protection Engineering say their discovery of a new type of fire tornado—dubbed the 'blue whirl'—could lead to beneficial new approaches to energy production, reduced carbon emissions, and improved oil spill cleanup.

Their paper, "From fire whirls to blue whirls and combustion with reduced pollution," published August 4, 2016 in the peer-reviewed journal *Proceedings of the National Academy of Sciences* (PNAS) describes this previously unobserved flame phenomenon, which burns nearly soot-free.

"Blue whirls evolve from traditional yellow fire whirls. The yellow color is due to radiating soot particles, which form when there is not enough oxygen to burn the fuel completely," said Elaine Oran, Glenn L. Martin Institute Professor of Engineering and principal-investigator on the project. "Blue in the whirl indicates there is enough oxygen for complete combustion, which means less or no soot, and is therefore a cleaner burn."

The team was inspired to explore the potential of fire tornados after seeing video footage of fire tornadoes burning bourbon off a pond during an accident at a distillery in Tennessee. A lightning strike was the likely culprit for both the spill and ignition source of the fire. Intrigued by how the swirling columns of flames appeared to be drawing in the liquor from the pond's surface, they wondered if they could harness the fire's behavior to remediate oil spills.

From there, the team set out to investigate the combustion and burning dynamics of fire whirls on water. What they discovered went far beyond the initial fire whirl concept. They found a novel, swirling blue flame that they say could help meet the growing worldwide demand for high-efficiency, low-emission combustion.

"A fire tornado has long been seen as this incredibly scary, destructive thing. But, like electricity, can you harness it for good? If we can understand it, then maybe we can control and use it," said co-principal investigator Michael Gollner, who is an assistant professor affiliated with both fire protection engineering and aerospace engineering.

Some existing oil spill remediation techniques include corralling up the crude oil, making a thick layer on the water surface that can be burned in place. However, the resulting combustion is smoky, inefficient, and incomplete. The UMD researchers say blue whirls could improve remediation-by-combustion approaches by burning the oil layer with increased efficiency, reducing harmful emissions into the atmosphere around it and the ocean beneath it.

"Fire whirls are more efficient than other forms of combustion because they produce drastically increased heating to the surface of fuels, allowing them to burn faster and more completely. In our experiments over water, we have seen how the circulation fire whirls generate also helps to pull in fuels. If we can achieve a state akin to the blue whirl at larger scale, we can further reduce airborne emissions for a much cleaner means of spill cleanup," explained Gollner.

Beyond improvements to fuel efficiency and oil spill remediation, there are currently few easy methods to generate a stable vortex in the lab, so the team hopes their discovery of the 'blue swirl' can serve as a natural research platform for the future study of vortices and vortex breakdown in fluid mechanics.

"A fire whirl is usually turbulent, but this blue whirl is very quiet and stable without visible or audible signs of turbulence," said Huahua Xiao, assistant research scientist in aerospace engineering and co-author on the PNAS paper. "It's really a very exciting discovery that offers important possibilities both within and outside of the research lab."

This research was supported by Minta Martin Endowment Funds in the Department of Aerospace Engineering, the Glenn L. Martin Institute Chaired Professorship at the A. James Clark School of Engineering, and through a two-year National Science Foundation grant (1507623) awarded in 2015 to explore fire tornados for the purposes of oil spill remediation.

This is the first time fire whirls have been studied for their practical applications, and the discovery has garnered a great deal of media attention.

Read more at: *go.umd.edu/blue-whirl-news*.

Aerospace Engineering Offers New Insights for Glaucoma

For Professor Alison Flatau, glaucoma is a personal issue. Both she and her mother suffer from the disease, which affects more than 2.7 million people in the United States and can result in vision loss and blindness.

In the spring of 2010, Flatau realized there might be a connection between her sleep position and a 15 percent loss of visual field she was experiencing in her right eye. During that time she was taking prescription eye drops for her glaucoma, and began having issues with her corrective contact lenses and blurry vision in one eye. Despite reassurance from her doctor that both corrective lenses fit fine, they could not determine why only her right eye was being affected, until she realized it might have to do with how she slept. Usually on her right side, with her face against the pillow.

According to Flatau, based on her knowledge of pressure vessels from her aerospace engineering background, she thought the cause of both issues—lens misfit and visual field loss—was a result of eye deformation while sleeping, due to sleeping with her eye pressed against her pillow. From there, she thought, if pressure was bad for eyes with glaucoma, it made sense that deformation would be bad too. Regardless of whether it was an internal mechanism (intraocular pressure or IOP) or an external mechanism, such as the pillow, causing the eye deformation, the deformation itself could produce potentially damaging stress and strain of the cells in the retinal wall of the eye.

In the wake of this 'Ah ha!' moment, she decided to fashion a sleep shield for herself, and since then, she has not experienced any additional issues with either her contact lenses or more vision loss. Of course, being an engineer, she was not content to leave it at an anecdotal incident. "Being an engineer, by habit I seek explanations for interesting observations and coincidences," said Flatau, "The eye is just a pressure vessel, the "abc" of aerospace. Something we teach all the time. Granted the eye is a hyperelastic thin-walled pressure vessel with fluid inflow and outflow and living cells, so yes, it is a really complex pressure vessel, but at some level, they're all just pressure vessels."

FLATAU DEMONSTRATES A VERSION OF HER EYE SHIELD

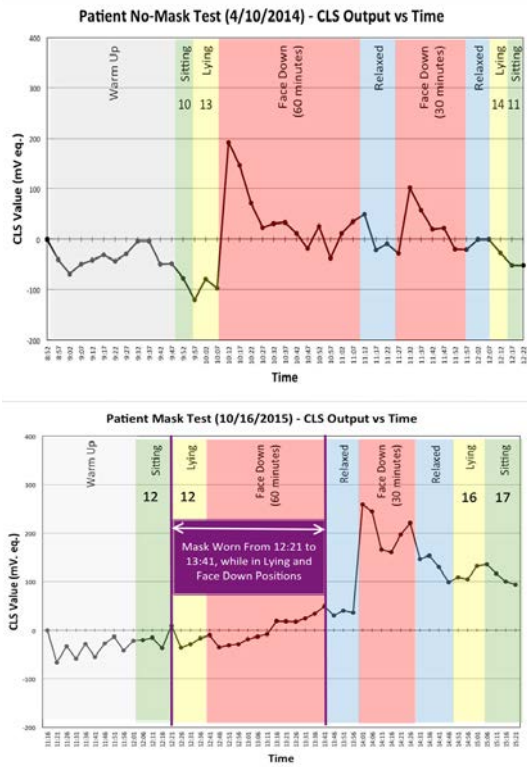
With the help of Dr. Harry A. Quigley, M.D. at the Johns Hopkins Glaucoma Center of Excellence, they were able to develop a study to put some of Flatau's ideas to the test. According to their research, "Measured Changes in Limbal Strain During Simulated Sleep in Face Down Position Using an Instrumented Contact Lens in Healthy Adults and Adults With Glaucoma," published in *The Journal of the American Medical Association Ophthalmology*, they made two critical discoveries in their initial research.

Patients who slept in positions where one side of the face and eye made contact with a pillow, on average, sustained an increase in limbal strain (eye deformation). And for patients who had glaucoma with progressive worsening of their visual field, they experienced greater eye deformation when sleeping in a position where the side of the face and eye made direct contact with a pillow.

Aerospace engineering students Peter Volpe (M.S. '14) and Christopher Damion (B.S. '16), along with bioengineering student Rebecca Zubajlo (B.S. '15) helped Flatau with the research. In addition, she has gotten students in bioengineering's capstone design class involved in the research. One of the student teams, comprised of Rebecca Zubajlo, Margret Prendergast, Abigail Iacangelo, Henry Ko, and Jonathan Kozlowski, studied the comfort and fit of masks, compared custom-fit masks created using 3-D scans of faces and custom 3-D printed masks with "rack size"—small, medium and large—masks that were also 3-D printed.

Since the initial study was published, she has continued working on the development of her eye shield to see how effective the shield really is, and how it needs to be constructed.

According to Flatau, the protective eye shield needs to both transfer loads that otherwise would deform the eye, to the bony regions of the face above the eyes and on the side of the face as well as be comfortable enough that the shield can be worn while sleeping. Their latest research on the effectiveness of the mask is currently under review.



GRAPH (TOP) SHOWS SPIKES IN LIMBAL STRAIN THREE OUT OF THE FOUR TIMES THIS PERSON ROLLED ONTO THEIR PILLOW. THE PURPLE LABEL (BOTTOM) SHOWS THE FOURTH TIME THEY ROLLED ONTO THEIR PILLOW, BUT THIS TIME, WHILE WEARING THE PROTECTIVE EYE SHIELD, SHOWING NO JUMP IN THE LIMBAL STRAIN.

Hartzell Member of Strata-1 Team, Project Offers Insights on Asteroid Surface Material Behavior

Several tubes of colorful beads and fragments currently aboard the International Space Station (ISS) could offer insights on planetary formation and the makeup of asteroid surfaces. Assistant Professor Christine Hartzell is a member of the Strata-1 Team, a group of scientists from across the University of Colorado, Boulder, Southwest Research Institute in Boulder, Colorado, the University of Central Florida, and NASA's Johnson Space Center (JSC), who developed the project to investigate the effects of micro-accelerations on regolith, the impact-shattered "soil" found on asteroids, comets, the Moon, and other airless bodies.

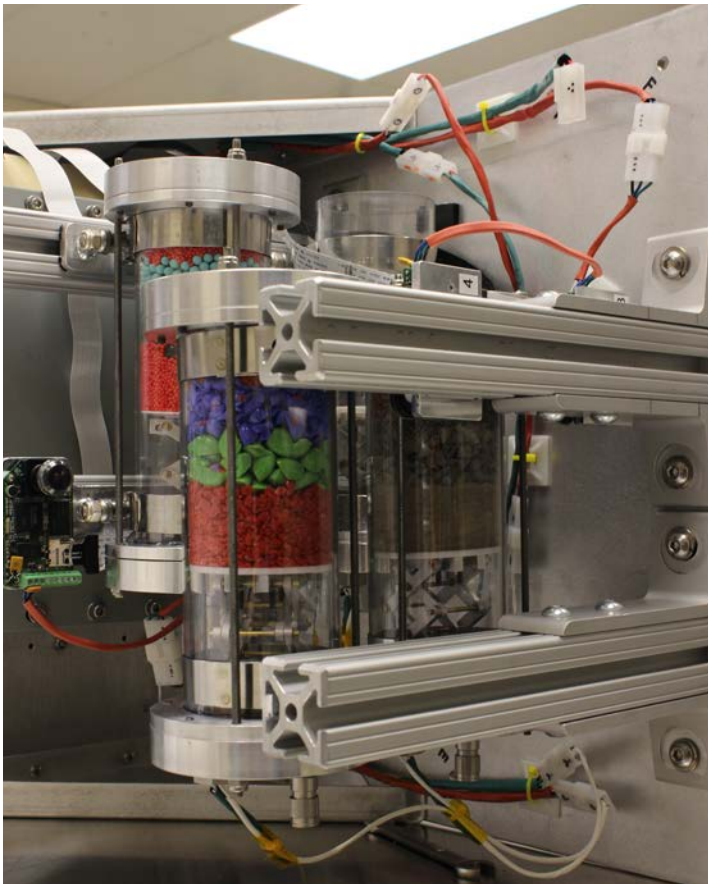
"Basically, we are seeing how grains sort and/or cluster depending on their size in response to the small vibrations on the ISS that are caused by things like docking events, astronaut movements, etc.," explained Hartzell. "This study was motivated by the high number of boulders that we see on the surface of asteroids. Most of these boulders are not dust covered like you would imagine."

She goes on to explain that the current hypothesis is that over the years, micrometeoroids hit the asteroids, causing the small dust particles to migrate to the center of the asteroid while the larger boulders migrate outwards. "The acceleration due to micrometeoroid impact on asteroids is similar to the accelerations that the ISS experiences," added Hartzell. "We want to see if size segregation occurs on the ISS because that would support our hypothesis that size segregation is responsible for the high number of boulders seen on the surface of asteroids."

Strata-1 consists of four transparent tubes filled with a variety of materials—glass beads and shards, ground up meteorite, and an earth-based asteroid surface dust simulant. On the station, the materials are released within their cylinders and cameras take photos as the materials inside collide due to the micro-accelerations. Once the photos are relayed to the ground, the team can analyze and compare the grain motion to their numerical models for validation.

Hartzell's role in the Strata-1 team was to assist in determining the grain characteristics required to achieve the project's scientific objectives; for example, how many grains should be placed in each tube, and what grain sizes and shapes should be used. This makes sense since one of her research specializations is the motion of grains on the surface of airless bodies, like asteroids. As the data is relayed to Earth, Hartzell will help compare the observed grain motion to numerical models.

The team had to choose populations of grains that could be modeled, and then they chose the number of grains to ensure that once in microgravity, the grains collided primarily with each other, rather than the glass walls of the cylinders.



THREE OF THE FOUR CYLINDERS ON STRATA-1. THE MATERIALS WERE COMPRESSED IN PREPARATION FOR LOADING ONTO THE ORBITAL SPACECRAFT THAT LAUNCHED MARCH 22 TO THE ISS. THE MATERIALS ARE GLASS BEADS (LEFT), SHATTERED GLASS BEADS (CENTER) AND METEORITE FRAGMENTS (RIGHT). THE BEADS' BRIGHT COLORS MAKE IT EASIER TO HIGHLIGHT THE MOVEMENT OF INDIVIDUAL GRAINS. IMAGE CREDIT: NASA

"I am specifically interested in comparing models of the grain movement to the experimental results, so I am primarily interested in the two glass-containing tubes," explained Hartzell. "Our goal is to compare the on-orbit results to numerical models, so for one of the tubes we need to as closely match the numerical models as possible."

Better understanding of how the surface materials of asteroids and other airless bodies behave is critical to the future development of space craft and space suits, and contributes to the Asteroid Redirect Mission (ARM), an integral part of NASA's Journey to Mars. This project is part of Astromaterials Research and Exploration Science (ARMS) at NASA JSC.

Three UMD Students Named Twenty20s

This spring, Sylvie DeLaHunt, Elaine Petro, and Lauren Trollinger, were named "Tomorrow's Engineering Leaders: The 20 Twenties" by Penton's Aviation Week Network. The award, granted in partnership with the American Institute of Aeronautics and Astronautics (AIAA), recognizes top students in engineering, math, science, and technology from across the country and globe, and connects the next generation of aerospace and defense talent with established leaders in the fields.

"These three graduate students have all demonstrated that they are outstanding scholars, as well as leaders in the Department of Aerospace Engineering," said Norman Wereley, Department Chair and Minta Martin Professor of Aerospace Engineering. "These women are outstanding examples of how well graduate students can flourish in our graduate program!"

DeLaHunt is a second year master's student working in flight dynamics and control with Wereley as her faculty advisor. In 2014, the National Science Foundation (NSF) selected her as an NSF Graduate Research Fellow, and she has used its support to investigate the application of a variable recruitment control strategy to a bundle of miniature pneumatic artificial muscles (PAMs), as an attempt to mimic the selective recruitment of motor units in human muscles.

"It is really exciting to be one of Aviation Week's Twenty20s! I am especially pleased to be one of three women chosen from the University of Maryland," said DeLaHunt. "I think this is a great opportunity to show younger students that women are participating in exciting research and succeeding in the aerospace field."

During her time at Maryland, DeLaHunt (B.S. '14, M.S. '16) not only demonstrated outstanding academic achievements, but was a passionate advocate for promoting women's representation in the STEM fields. She was a founding member of UMD's Women in Aeronautics and Astronautics (WIAA) and published an op-ed in the Baltimore Sun on "Encouraging Female Engineers," and received an honorable mention in The American Society for Engineering Education's (ASEE) Year of Action on Diversity Student Essay Contest. She now works as a Guidance, Navigation, and Control Engineer at Johns Hopkins University's Applied Physics Lab.

Petro is a third-year Ph.D. student studying the field of electric propulsion under Associate Professor Raymond Sedwick. In particular, she is investigating the use of water vapor propellant for helicon thrusters. Her fascination with aerospace engineering and space travel started at a young age, when her family would take trips to NASA Goddard, and visit Florida to witness rocket launches.

"A lot things that are exciting to you when you're young, lose appeal as you grow up. But that was never the case for me with space and rockets," explained Petro.

Her enthusiasm for the field is obvious and she has been recognized frequently for her academic success. In 2014, she received an NSF Graduate Research Fellowship, and in 2015, a Zonta International Amelia Earhart Fellowship. Most recently, Petro was selected for the Clark School's 2016 Future Faculty Program. Through her research she hopes to extend our space exploration capabilities and as an educator, impact life here on Earth.

"I am truly honored to be grouped with all the other amazing students who were selected in this and previous years," said Petro. "It was really excitung to go with Sylvie and Lauren to meet the other students, Aviation Week staff, and industry professionals at the award event."

Trollinger is a first year master's student specializing in rotorcraft under Distinguished University Professor Inderjit Chopra in the Alfred Gessow Rotorcraft Center. She has been a member of UMD's human-powered helicopter team, Gamera, and was a member of this year's first place American Helicopter Society (AHS) Student Design Competition team. The AHS project aimed at designing a vertical takeoff and landing aircraft capable of delivering emergency supplies to disaster victims.

"It means so much to have been named one of AviationWeek's Twenty20s!" said Trollinger. "I am humbled to be listed among the incredible young men and women who, through their service, leadership, and scholarship, are making such a difference in the aerospace community. I am incredibly excited to see what the future of the aerospace industry holds."

Recipients were honored during Aviation Week's 59th Annual Laureates Awards held March 3, 2016 at the National Building Museum in Washington, D.C.

> "Each of these outstanding students, from across the United States, Europe and Asia, is making significant contributions to their fields of study—ranging from cryptology to autonomous systems to propulsion—as well as working to make the world a better place. Their research is shaping not only the future of aerospace, but the future of humanity, and each nominee is uniquely worthy of our praise and this award."
>
> Sandy Magnus, AIAA executive director

AHS Recognizes Four Students for Contributions to Rotorcraft Research

This spring, the American Helicopter Society International (AHS) recognized four students for their achievements in the area of rotorcraft research.

Three students were selected for 2016 Vertical Flight Foundation (VFF) scholarships: **ANDREW DALLAS**, Alfred and Elaine Gessow Scholarship; **BRANDON DRAPER**, Hal Andrews Scholarship; and **ATIF SALAHUDEEN**, Marat Tishchenko Scholarship

The VFF is the philanthropic arm of AHS, and VFF scholarships recognize some of the world's most talented engineering students interested in vertical flight. Many recipients have gone on to become leaders in the vertical flight technical community. Only 24 VFF Scholarships were given internationally this year.

Ph.D. student **ELIZABETH WARD** was the United States Southeast Regional winner of an AHS 2016 Robert L. Lichten Award for her paper "Investigation of RPM Driven Extension-Torsion Coupled Self-Twisting Blades." Ward is a Ph.D. student working with Distinguished University Professor Inderjit Chopra whose current work focuses on research to improve speed capabilities in rotorcraft as a means to improve flight time for emergency medical and trauma flights. In particular, she is evaluating advances in materials engineering—such as composite tailoring—that could lead to dramatic innovations in highly loaded aerospace structures.

The AHS established the Lichten Award to encourage AHS members who have not previously presented the results of their work at a technical meeting to do so through presentations at local and regional AHS meetings.

Brown and Free Receive NSF Fellowships

The National Science Foundation (NSF) awarded both **ZACHARIAH BROWN** and **BRIAN FREE** NSF Graduate Research Fellowships.

ZACHARIAH BROWN

Brown was awarded while a senior Aerospace Engineering Honors student. He was a member of the RISE Leadership Academy, 2015-16 Vice-President of the American Institute of Aeronautics and Astronautics (AIAA) student chapter and served as a teaching fellow for numerous courses in the Clark School. During his sophomore year, Brown received an Undergraduate Summer Research Grant to research combustion phenomena in a miniature supersonic burner at Texas A&M University under the mentorship of Dr. Adonios Karpetis.

As part of his Aerospace Honors Research, Brown was researching a superconducting magnet system for a helicon plasma thruster in the Space Power and Propulsion Lab under Assistant Professor Raymond Sedwick. Brown is continuing research into electric propulsion technologies in the Aerospace Engineering Ph.D. program at the University of Michigan, Ann Arbor with the long term goal of researching and developing the electric propulsion systems that will allow human space-travel to Mars and beyond.

BRIAN FREE

Free is working on his Ph.D. in the Collective Dynamics and Controls Lab under Professor Derek Paley. He earned his B.S in Aerospace Engineering at UMD in 2015, graduating summa cum laude with departmental honors. His research interests are in the areas of underwater locomotion of robotic vehicles and bioinspired sensing that includes artificial lateral lines (mimicking those found in fish) and vestibular systems. His long-term research goal is to create a fully autonomous robotic fish capable of navigating through underwater flow structures using bioinspired sensors.

Moretto Named 2016 Goldwater Scholar

MARK MORETTO

Undergraduate student **MARK MORETTO** was named a 2016 Goldwater Scholar by the Barry M. Goldwater Scholarship and Excellence in Education Foundation, which encourages students to pursue advanced study and careers in the sciences, engineering, and mathematics.

Moretto, who is pursuing double degrees in aerospace engineering and astronomy and is a member of the University Honors Program, began conducting research with UMD astronomers while in high school and was named an Intel Science Talent Search semi-finalist for his early work.

This summer, Moretto interned at the Jet Propulsion Lab. As part of his honors thesis, Moretto will design and test anchoring mechanisms for small bodies, which include moons, comets, and asteroids. Combining his interests in engineering and astronomy, Moretto hopes to advance robotic exploration of the solar system.

The Goldwater Foundation has honored 55 UMD winners since the program's first award was given in 1989.

Two Students Win NDSEG Fellowships

RICHARD KENNEDY

LAURA PAQUIN

Graduate students **RICHARD KENNEDY** and **LAURA PAQUIN** received 2016 National Defense Science and Engineering Graduate (NDSEG) Fellowships from the Air Force Research Laboratory.

Kennedy is a Ph.D. student working with Assistant Professor Stuart Laurence on experimental hypersonics. His work includes high-speed boundary layer transition experiments performed in conjunction with Arnold Engineering Development Complex's (AEDC) Hypervelocity Tunnel 9. Prior to attending the University of Maryland (UMD), Kennedy received an M.S. in Fluid Mechanics from École Polytechnique in Paris, an M.S. in aeronautics from Caltech and a B.S. in Aerospace Engineering from the University at Buffalo, SUNY.

Paquin is a first year master's student also working with Laurence. Her interest in aerodynamics stemmed from attempting to perfect her jumping technique over eight seasons on her high school track and field team. During her undergraduate years, she spent several summer internships working for GE Aviation and Northrop Grumman, but reading the daily aerospace news prompted her interest in high-speed flight, and she spent a year and a half pursuing undergraduate research in experimental hypersonic aerothermodynamics.

NDSEG Fellowships are awarded to U.S. citizens and nationals pursuing a doctoral degree in areas of DoD interest within one of fifteen disciplines.

Hasan Receives NASA Space Flight Awareness Silver Snoopy Award

ASTRONAUT ANNA LEE FISHER (LEFT) WAS ON HAND TO PRESENT HASAN (RIGHT) THE SILVER SNOOPY DURING AN AWARD CEREMONY HELD AT NASA'S GODDARD SPACE FLIGHT CENTER IN GREENBELT, MD.

Graduate student **SYED HASAN** received NASA's Space Flight Awareness (SFA) Silver Snoopy Award. The SFA Silver Snoopy Award is the "astronauts' personal award" granted to individuals who make outstanding contributions related towards human flight safety or toward enhancing mission success.

Hasan currently works for Honeywell and serves as the Lead Collision Avoidance Engineer for the Earth Observing System missions (Terra, Aqua, and Aura) at NASA Goddard. He was nominated for the Silver Snoopy for his dedication, commitment, and outstanding support to the Space Flight program while working in the Flight Dynamics Facility as the Human Space Flight lead.

Hasan played a major role in the success of the early SpaceX Commercial Orbital Transportation Services (COTS) Demo Flights. He developed a process improvement in tracking the unmanned SpaceX Dragon cargo spacecraft during re-entry which created a more efficient way to process SpaceX-provided trajectory data. In turn, this yielded better tracking and communication with the spacecraft on re-entry. Post mission, SpaceX reported highly improved tracking results and expressed their pleasure with the performance of the new support method.

Hasan is working towards completing his Ph.D. in the field of Space Systems under the advisement of Associate Professor David Akin. He completed both his M.S. ('10) and B.S. ('04) at Maryland.

The NASA Silver Snoopy award consists of a silver "Snoopy" lapel pin flown during a NASA mission, a commendation letter, and a signed certificate. Hasan's pin flew aboard a 2006 Space Shuttle Mission to the International Space Station.

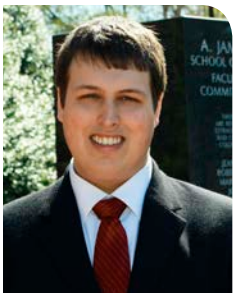
Saripalli Receives NASA Harriett G. Jenkins Pre-Doctoral Fellowship

Graduate student **PRATIK SARIPALLI** was highlighted by the Southern Regional Education Board (SREB) Doctoral Scholars Program (DSP) as one of 11 NASA scholars who attended the SREB-DSP annual Institute on Teaching and Mentoring. This event is one of the largest gathering of minority Ph.D.'s in the country and offers attendees professional development and recruitment opportunities.

Saripalli attended as a recipient of a NASA Harriett G. Jenkins Pre-Doctoral Fellowship. The program provides financial support to full-time, under represented graduate students in science, technology and education, to continue their education in NASA-related disciplines, and includes an annual 10-week, hands-on research experience at a NASA center.

Saripalli performs research at Maryland's Space Power and Propulsion Laboratory. At the NASA Goddard Space Flight Center, he helps establish measures that improve the safety and longevity of the equipment NASA uses for space missions.

Pillsbury Wins SAMPE Student Leadership Award



THOMAS PILLSBURY

The Society for the Advancement of Material and Process Engineering (SAMPE) selected graduate student Thomas Pillsbury as one of 12 recipients of the SAMPE 2016 Student Leader Experience Award.

Pillsbury is a Ph.D. student in the department performing research in the Smart Structures Lab. His work is focused on robotic manipulation employing lightweight, soft pneumatic artificial muscles (PAMs) for actuation.

Pillsbury received his B.S in aerospace engineering from UMD in 2012. His current research interests include robotics, soft actuation and biologically inspired design. Winning a National Science Foundation (NSF) Fellowship in spring 2014 allowed Pillsbury additional freedom to pursue his research interests in soft actuation for robotics.

The SAMPE Student Leader Experience Award sends student leaders to the SAMPE North America Conference and Exhibition to network with peers and industry professionals and increase their understanding of the Materials and Processes community.

Sherman Named 2016 Alex Brown Leadership Award Recipient

Ph.D. student Stephen Sherman was named the 2016 Alex Brown Leadership Award recipient. Sherman received the award on April 20, 2016 during the Alfred Gessow Memorial Lecture and Luncheon held on campus.

Established in 2011, the Alex Brown Leadership Award honors the memory and achievements of the late Alex Brown, who was a Ph.D. candidate in the aerospace engineering program. Well known for his energy and great leadership potential, Brown was optimistic and upbeat, and even under intense pressure, radiated positive feelings that created resonance. He inspired others through courage and hope, and he encouraged others to continue the quest for success and innovation.

Brown's mother, Dr. Pat Brown, along with Samuel P. Langley Distinguished Professor James Hubbard, Brown's faculty adviser and award founder, and Department Chair Norman Wereley, were on hand to present the award.

"I'm deeply honored and humbled to receive the Alex Brown Award, and I hope I can live up to the leadership and academic qualities embodied in the award," said Sherman. "Meeting the family of Alex was tremendously moving, and I greatly appreciate their support of the award and the department."

Sherman earned his B.S. in aerospace engineering from UMD, graduating with departmental honors. He currently works with Wereley in the Smart Structures Lab, where his research focuses on simulations of magnetorheological fluids. He has published seven journal papers, including in the Institute of Electrical and Electronics Engineers (IEEE) *Transactions on Magnetics*, and received a University of Maryland Minta Martin Fellowship and a National Science Foundation Graduate Research Fellowship honorable mention. Post-graduation, he is interested in pursuing employment in the commercial space flight industry or in a research position.

Sherman is the fourth student to receive the Alex Brown Leadership Award. Past winners include alumni Andrew Becnel (Ph.D. '14) and current Ph.D. students Elizabeth Weiner and Elena Shrestha.

To learn how you can support students like Stephen Sherman through the Alex Brown Memorial Graduate Fund, visit: *go.umd.edu/alex-brown-fund*

FROM LEFT TO RIGHT, SAMUEL P. LANGLEY DISTINGUISHED PROFESSOR JAMES HUBBARD, ALEX BROWN'S MOTHER, DR. PAT BROWN, STEPHEN SHERMAN, AND DEPARTMENT CHAIR NORMAN WERELEY.

Anthony DeCicco

BORN TO BE AN AEROSPACE ENGINEER

Anthony DeCicco was born to be an aerospace engineer. Like many highly motivated people, after a few minutes of talking to him, it's easy to realize he is passionate about just about anything he is involved in, especially aerospace engineering. "He came into the program like he knew how to be a grad student," said DeCicco's faculty adviser, Christine Hartzell. "He even wore a three-piece suit during our initial Skype interview."

Since entering the Ph.D. program in 2015, DeCicco has won a NASA Space Technology Research Fellowship (NSTRF) and worked two summers at NASA Marshall. Along with his research, this past summer alone he worked on writing the control program for the Charger-1 pulsed power facility and developed a pulsed plasma thruster for CubeSats that used linear transformer drivers (LTDs) as the power supply and common plastics as the propellant.

Growing up in Leominster, Mass., DeCicco first became interested in aerospace engineering after his family visited the Kennedy Space Center in 1998. Enthralled by the sight of the 1st European Columbus Module and the Vehicle Assembly Building (VAB), DeCicco quickly subscribed to a monthly space science magazine and was hooked. In high school he developed an interest in propulsion, before deciding to specialize in space propulsion. "Space propulsion was an area where I saw a lot of room for expansion," said DeCicco. "We need to improve beyond orbital assist if we are to really explore the solar system."

Originally interested in investigating space environments, dusty plasmas around asteroids, and the exploration of small bodies, DeCicco's research for his NSTRF focuses on asteroid deflection.

"Dr. Hartzell encouraged me to seek out funding from a variety of sources and when I came to her with my NSTRF proposal, she was extremely supportive of my desire to work on asteroid deflection," said DeCicco.

DeCicco's research addresses one of the major problems with the deflection and/or capturing of asteroids: they rotate and often on more than one axis. To control these tumbling asteroids, DeCicco seeks to design, build, and test a device called a Neutral Beam for Asteroid Control (NBAC) that would be able to hover about a spinning asteroid, de-spin it over a period of time, and deflect it from a collision course with Earth. NBAC uses a concept from fusion reactor heating to create an ion beam. A spacecraft equipped with this neutral beam could provide a propulsive force to the longest movement arms of the asteroid in order to slow down its rotational rate and then be re-positioned to deflect the asteroid from an Earth collision.

"My work at Marshall has taught me to be more practical about my research and more aware of when to test my models experimentally."

While DeCicco's career goal is to be an astronaut or continue research on space propulsion, he also plans to continue being an advocate for his field. During his graduate program he has been active in American Institute of Aeronautics and Astronautics (AIAA), won the 2016 SSPI Most Effective Presentation Award, and served as an astronomy ambassador at NASA Goddard as part of their Space Public Outreach Team (SPOT). "I actually get tough questions from these kids!" added DeCicco.

He even plans to give a presentation to his Congressional representatives advocating for more funding for aerospace research, arguing its strong return on public investment. "Aerospace engineers should be out there explaining their importance," says DeCicco. "Everyone should advocate for space technology and its value."

"Working with Anthony was a real treat. He dove in, and over a short summer, took a leadership role both in our development of a NanoSat Pulsed Plasma Thruster (PPT) concept and made major progress in diagnosing and connecting the control system for a $10M facility to produce 1TW electrical bursts (Charger–1). Both of these challenges were very complex and I was quite impressed on how fast Anthony came up to speed and how much he got done. I wish we could have kept him down here at MSFC!"

ROBERT B. ADAMS, Ph.D., ER24/Advanced Propulsion and Technology,
George C. Marshall Space Flight Center, National Aeronautics and Space Administration

Three Students Take Top Honors at SSPI Engineering Student Competition

Three graduate students took top honors at the Society of Satellite Professionals International (SSPI) Engineering Student Competition in Space Systems that took place April 25, 2016 at George Mason University.

MATT MARCUS, advised by Associate Professor Raymond Sedwick, received the SSPI Innovation Award and a $1000 scholarship for his talk "LEO Debris Removal using Genetic Algorithms."

DYLAN CARTER, advised by Assistant Professor Christine Hartzell, received the SSPI Scientific Method Award and a $1000 scholarship for his talk "A model of Granular Tribocharging for Dielectric Mixtures with Continuous Size Distributions."

ANTHONY DECICCO, advised by Assistant Professor Christine Hartzell, received the SSPI Most Effective Presentation Award and a $1000 scholarship for his talk "System Level Design Considerations for Asteroid De-Spin Via Neutral Beam Emitting Spacecraft."

UMD attended the competition at the invitation of the SSPI Mid-Atlantic Chapter. The SSPI Mid-Atlantic chapter, which serves the areas of Delaware, Maryland, Virginia, and West Virginia, and the District of Columbia, has a partnership with the university and regularly supports UMD students through SSPI Mid-Atlantic Chapter Scholarships which provide funding to students pursuing research in relevant fields.

The SSPI Mid-Atlantic Chapter also awards annual scholarships, and this year's recipients were aerospace engineering Ph.D. student **ARBER MASATI** ('16) and undergraduates **KATE MELONE** ('18) and **PATRICK WASHINGTON** ('17).

Shishika and Petro Selected for Clark School 2016 Future Faculty Program

DAIGO SHISHIKA

ELAINE PETRO

Ph.D. students, **DAIGO SHISHIKA** and **ELAINE PETRO** are two of 24 engineering students selected as fellows of the Clark School's 2016 Future Faculty Program. The goal of this program is to increase the number of highly qualified teachers the Clark School produces for the world's engineering schools and to prepare them to achieve career-long success in the academic world.

Petro is a third-year Ph.D. student studying the field of electric propulsion under Associate Professor Raymond Sedwick. In particular, she is investigating the use of water vapor propellant for helicon thrusters. In 2014, she received an NSF Graduate Research Fellowship, and in 2015, a Zonta International Amelia Earhart Fellowship. Through her research, she hopes to extend our space exploration capabilities and as an educator, impact life here on Earth.

"I want to do everything I can to be a strong faculty candidate," she said of her participation in program. "I'm hoping to learn all the things you don't learn through traditional graduate coursework about what it takes to succeed in academia and how to establish a research program."

Shishika is a second year Ph.D. student studying under Professor Derek Paley. His research focuses on the creation of bio-inspired flight control algorithms that enable multiple unmanned aerial vehicles to exhibit swarming and pursuit behavior resembling mosquito flight.

Shishika has a bachelors in aerospace engineering from the University of Tokyo. His goal is to someday become a professor in the field, and he hopes the program will help him to become a more successful researcher, mentor, and teacher as he works towards that goal.

Shrestha Spotlighted by Wogrammer

Ph.D. student **ELENA SHRESTHA** was spotlighted by Wogrammer, an organization that interviews fellow women engineers and showcases the cutting-edge technology they've built.

Check her spotlight out at *go.umd.edu/shrestha-spotlight*

UMD Sweeps AIAA Region I Student Papers Conference Masters Division

Seven UMD Aerospace Engineering students placed in the American Institute of Aeronautics and Astronautics' (AIAA) 2016 Region I Student Conference paper competition held April 22-23 at the Worcester Polytechnic Institute. All three masters' division paper winners were UMD students.

Technical Paper, Masters' Division

First Place: **THOMAS LEPS**
Transmission Spectroscopy of Sputtered Plumes for Surface Composition Analysis of Small Bodies

Second Place: **MAXIM GERMER**
Analysis of a Pick-up Coil for Optimization of a Magnetostrictive Energy Harvester

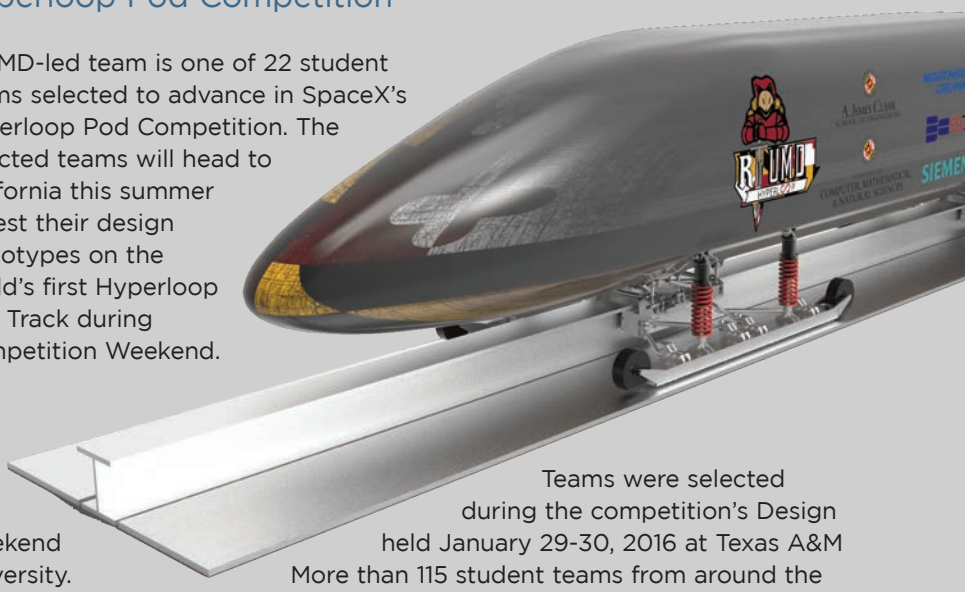
Third Place: **PAIGE PARKER PRUCE**
System Identification of a Meso-scale Cyclocopter

Technical Paper, Team Division

Third Place: **JOSEPH COZZO, ZACHARIAH BROWN, JACK DRAPER III,** and **JOHN JULIANO**
Development of a Liquid Fuel Rocket Test Stand as an Educational Tool for Undergraduate Engineering

The AIAA Student Papers Conference is an annual research competition where students present their research, and have it reviewed and critiqued by practicing professionals serving as judges. Prizes are awarded to the 1st, 2nd, and 3rd place papers in each category: graduate, undergraduate and team. Winners in each category receive a cash prize and are invited to attend and compete at the International Student Conference at the AIAA SciTech Form.

UMD-led Team Advances in SpaceX Hyperloop Pod Competition



A UMD-led team is one of 22 student teams selected to advance in SpaceX's Hyperloop Pod Competition. The selected teams will head to California this summer to test their design prototypes on the world's first Hyperloop Test Track during Competition Weekend.

Teams were selected during the competition's Design Weekend held January 29-30, 2016 at Texas A&M University. More than 115 student teams from around the world presented their pod design plans and were judged on a variety of criteria including innovation and uniqueness of design, full Hyperloop system applicability and economics, level of design detail, strength of supporting analysis and tests, feasibility, and quality of documentation and presentation.

The final competition date is set for January 27-29, 2017 on the SpaceX Hyperloop Test Track in California.

Students Take Top Spot in Battle of the Rockets Video Payload Event

A team of aerospace engineering students took the top spot in the 2016 Battle of the Rockets Competition's Video Payload Event. The competition was held April 23 and 24 in Westover, Md., and included teams from across the country.

The students competed in both the Target Altitude and the Video Payload events. The Target Altitude's challenge was to design a rocket that can fly to an altitude of 1300 feet using a G-motor. According to student Ben Williams, while the team was only able to make one of the three allotted launch attempts, they were able to hit a near perfect 1302 feet on their only attempt.

The Video Payload event was to design a rocket to fly at least 1500 feet and transmit live video and data such as temperature, pressure, GPS coordinates, battery voltage, altitude, velocity and acceleration. Each team receives three attempts and the best flight counts.

Students who attended the event included Ben Williams, Mark Moretto, Nick Bartolotta, Geoffrey Chang, Jason McPeak, and Michael Liu.

The Battle of the Rockets™ is a program of the Federation of Galaxy Explorers and consists of three competitive events with a range of complexity to test all skill levels.

Kate Melone

SHOOTING FOR THE STARS AT NASA

There are a lucky few people in the world who can say that they were able to achieve their lifelong dream. Senior Kate Melone is one of them. Melone found her way to the University of Maryland from her hometown of Wilmington, Delaware where she grew up dreaming of outer space. "I've been saying I wanted to be an astronaut since I was two years old," she recalls. "Once I figured out what NASA was, it's always been a dream of mine to work there."

With a lot of hard work and family support, at the young age of 21 Melone has already begun living her dreams. This fall, she headed to Houston, Texas to complete a co-op with NASA at the Johnson Space Center in the Crew and Thermal Systems Division.

Melone's selection for this opportunity has been years in the making. Her experience with space suit development dates back to 2013, her first year at Maryland. Melone didn't squander a single moment since she arrived on campus, and as a first-year student, she started working right away in the Space Systems Lab where she was involved in designing and developing analog space suits.

"It was pretty cool," she remembers. "We sent suits out to Hawaii for an analog mission called HI-SEAS." With a full year of experience under her belt, Melone landed an internship in the summer of 2014 with NASA at the Johnson Space Center. There she worked on a project looking at extravehicular activity (EVA) glove injuries and co-authored a related report. Melone now had both hands on her dream and she wasn't letting go. She returned to NASA for another internship during the summer of 2015, and after an impressive second summer designing and fabricating a cycle tester from start to finish, she was able to secure a co-op position.

In addition to Melone's list of accolades, she was selected as an AEROS scholar with a John Anderson Scholarship. "It was an unexpected thing that was a really great opportunity for me." For the past year, Melone has been working on glove design, looking at alternate pressure materials. The AEROS program and the Anderson Scholarship allowed her to continue doing research for a spacesuit power glove—work she was able to present to department faculty during AEROS' 2016 Scholars Presentations. "We are looking at how to get a power glove to work inside a glove box using pneumatic artificial muscles (PAMs)."

While she is busy making waves in Texas at NASA, Melone's absence will be felt on campus. Beyond spending time on her research, she has served as a teaching fellow for ENAE283: Intro to Aerospace Systems with Dr. Mary Bowden. She also made time to reach the larger community by serving as a Clark School Ambassador, giving tours and interacting with prospective students and their families. Melone's leadership skills were instrumental in the success of the department's newest student organization, Women in Aeronautics and Astronautics (WIAA). She served on the executive board during WIAA's inaugural year and hopes to resume her level of activity when she returns to campus next fall.

The secret to Melone's success? Persistence. "Just follow your passion," is the advice she gives. "If something doesn't go your way the first time, that doesn't mean it's wrong. Persistence overcomes resistance. Keep pushing and you'll get there."

KATE MELONE WITH PROFESSOR EMERITUS JOHN D. ANDERSON AT THE ACADEMY OF DISTINGUISHED ALUMNI CEREMONY RECEIVING HER ANDERSON SCHOLARSHIP AWARD.

Olusola-Ajayi Delivers Student Speech for Clark School Spring Commencement

Senior Oyinkansola Elizabeth Olusola-Ajayi was the student speaker for the A. James Clark School of Engineering's Spring 2016 Commencement Ceremony held Thursday, May 19th.

Born and raised in Lagos, Nigeria, Olusola-Ajayi has always been interested in the intricate dimensions of technology and how people relate with it or are influenced by it. Being a firm believer in fighting for what you want, and believing anything is possible amidst challenging circumstances, she moved to the United States at 16 to study engineering at the University of Maryland. While here, she availed herself to the wealth of opportunities and pursued a major in aerospace engineering while acquiring a minor in engineering leadership development. She also spent a semester abroad at the University of Sydney, Australia.

She was heavily involved with the Peer Leadership Council and facilitated conversations around the meaning of leadership to enact positive social change. In the pursuit of her degree, she was able to work on design projects ranging from devices that enhance health informatics to airplanes that meet specified objectives.

A budding public speaker, Olusola-Ajayi shared her "Fearless Ideas" on the virtue of resilience at the Terp Talks showcase. She is passionate about women's socio-economic advancement through science and technology, and she has formed a partnership with one of her closest friends to start up a high fashion garment manufacturing industry in efforts to revolutionize the local garment tailoring for women in her home country.

She is an aspiring writer and contributor to a lifestyle blog dedicated to helping people live the most authentic version of their lives. Olusola-Ajayi hopes to obtain some experience in the field before going on to law school to combine both worlds towards a unique outcome. Most importantly, she would like everyone to walk away remembering that each person occupies a unique space on this earth, but achieving and being the most authentic version of that self without apologies is enough.

Congratulations to our 2016 Graduates!

UMD Students Clinch First Place in 33rd Annual AHS Student Design Competition

THE 2016 UMD GRADUATE STUDENT DESIGN TEAM FROM LEFT TO RIGHT: DISTINGUISHED UNIVERSITY PROFESSOR INDERJIT CHOPRA, BROTHER MARIUS STROM, LUKE SMITH, LAUREN TROLLINGER, TIMOTHY KREUTZFELDT, YONG SU JUNG, AND FACULTY ADVISORS DR. V. T. NAGARAJ AND DR. BHARATH GOVINDARAJAN. NOT PICTURED, TEAM MEMBERS OLIVIA GONZALEZ, ELIZA PEREZ-SANCHEZ, AND RICHARD QUIÑONES.

Our team of aerospace engineering graduate students won first place in the 33rd Annual American Helicopter Society (AHS) International Student Design Competition. This first place award marks the 14th win for a UMD team in the past 20 years of AHS competitions.

This year's competition, sponsored by Bell Helicopter, "Air Launched Unmanned Disaster Relief Delivery Vehicle," challenged students to design an unmanned rotorcraft capable of inflight deployment from a C-130J cargo airplane. The rotorcraft needed to arrest its descent and transition into flight mode to deliver supplies to remote areas from a hover and subsequently return to a recovery base.

The UMD design, dubbed Halcyon, leveraged a unique combination of quadrotors, biplane wings, and tailsitter design to create a vertical take-off and landing (VTOL) autonomous delivery vehicle capable of carrying and delivering over 500 pounds of emergency supplies or cargo. According to their report, the biplane wings support high speed, low power cruising while the quadrotor configuration allows for better control and hover capabilities.

The compact structure of their tailsitter design meant that a C-130J could carry up to 6 Halcyon units capable of delivering over 3000 pounds of relief supplies, which was more than six times the challenge requirement. The six units are also capable of communicating with one another to create a collective of delivery vehicles.

In addition, the students' design also required no specially fabricated parts and could be built entirely using readily available, off-the-shelf components, making it both cost effective and faster to build.

Teams from around the world submitted entries for this year's challenge, and other competitors included Georgia Tech, Politecnico di Milano, University of Liverpool, Penn State, and Alliance College of Engineering and Design.

The AHS International annual Student Design Competition challenges students to design a vertical lift aircraft that meets specified requirements, provides a practical exercise for engineering students at colleges and universities around the world, and promotes student interest in vertical flight technology.

All winning teams receive a cash stipend, while each first-place winning team is invited to AHS International's Annual Forum and Technology Display to present the details of their designs.

COMPUTER RENDERING OF HALCYON IN ACTION.

Department Welcomes Associate Professor Anubhav Datta

Earlier this year, the department welcomed back Maryland alum Anubhav Datta as a new faculty member. Datta returns to the department as an Associate Professor in the Alfred Gessow Rotorcraft Center after spending the previous eight years as a researcher at the U.S. Army Aeroflightdynamics Directorate (AMRDEC) at NASA Ames Research Center.

At AMRDEC, he worked on the full-scale wind-tunnel testing of the UH60A Black Hawk rotor taken up to advance ratio 1.0 under high speed extreme flow-reversal conditions; developed X3D—a High Performance Computing (HPC) driven scalable 3D CAD/FEA-multibody software for next-generation aeromechanics analysis; and began preliminary design of all-electric propulsion systems for high-power, high-torque aircraft.

From 2008-2013, he was the technical lead for structural dynamics and CFD-CSD coupling for CREATE-AV/Rotorcraft—a DoD HPC Modernization Program Office funded program for high-fidelity computational analysis. His pioneering work on the resolution of high-speed vibration and lift-phase errors led to the rise of CFD/CSD as a sub-field in rotorcraft and its adoption today as a high-end government/industry standard.

Over the years, his research has been recognized with the Francois Bagnoud, Alfred Gessow, and Grover E. Bell Awards from the American Helicopter Society (AHS), Technical Excellence in Publications Award from NASA Aeronautics, Group Achievement Awards from the U.S. Army and NASA, among others. He is a member of AHS Dynamics TC, Associate Editor of The Journal of AHS, and an Associate Fellow of American Institute of Aeronautics and Astronautics (AIAA).

Recently, Maryland, along with Datta as principal investigator, received federal support worth nearly $1 million (from Office of Naval Research, Army, Navy, and NASA) to design and develop a Mach-scale high speed tilt rotor flutter rig at the University—a one of a kind in any U.S. university—to carry out long term foundational research in a quest to break the whirl flutter barrier in tilt rotors. He was also awarded, as a member of the Vertical Lift Center of Excellence team, projects to develop exascale algorithms for aeromechanics that will allow massive numerical simulation of flight test aeroelastic stresses/strains reducing the costs and risks associated with new rotor development and research on innovative power plants for all-electric manned VTOL aircraft. He will also conduct research on the development of autonomous rotorcraft that could one day explore Mars, collaboratively with a rover, but enabling greater access, speed, resolution, and sample return capability than a rover alone.

He completed his Ph.D. in aerospace engineering at Maryland in 2004 and received his B. Tech. in aerospace engineering from the Indian Institute of Technology, Kharagpur 1998.

go.umd.edu/datta

Leishman Named to Rank of Professor Emeritus of Aerospace Engineering

The University of Maryland has honored Dr. J. Gordon Leishman with the rank of Professor Emeritus of Aerospace Engineering. Leishman joined the Department of Aerospace Engineering at Maryland in 1986. Promoted to the rank of professor in 2000, Leishman then served as the Minta Martin Professor of Aerospace Engineering from 2004 to 2014. Leishman is currently a Distinguished Professor of Aerospace Engineering at Embry-Riddle Aeronautical University in Daytona Beach, Florida.

He holds B.S., Ph.D., and D.S. (Eng.) degrees in aeronautics and fluid mechanics and in aerospace engineering from the University of Glasgow. Before joining the faculty at UMD, Leishman was an aerodynamicist for Westland Helicopters. He is an internationally recognized specialist in low-speed aerodynamics, experimental aerodynamics, and wind tunnel testing, as well as in rotorcraft and wind turbine aerodynamics. Leishman has authored over 100 journal papers on rotorcraft aerodynamics, aeroacoustics, and experimental aerodynamics.

In addition, Leishman has authored two books, including *Principles of Helicopter Aerodynamics*, published by Cambridge University Press. He is a Technical Fellow of the American Helicopter Society and a Fellow of the Royal Aeronautical Society of Great Britain, and is a former editor-in-chief of the *Journal of the American Helicopter Society.*

Hubbard Elected to the National Academy of Engineering

Samuel P. Langley Distinguished Professor James E. Hubbard, Jr. was elected to the National Academy of Engineering (NAE). He is recognized as the key pioneer in developing piezo-film sensors and piezo-electric actuation systems for smart structures and materials applications, as well as his extensive contribution to aerospace engineering in the field of smart structures initially as a faculty member at Boston University, as an industrialist for a number of successful high technology start-ups, and for contributions during his current role at the Maryland over the past decade and a half.

"I am deeply humbled by this honor and excited to be included among the nation's best in engineering," said Hubbard in response to his induction. "I recognize that without the help and support of my colleagues, family and students over many years this would not be possible."

Hubbard is director of the Alexander Brown Center for Adaptive Aerospace Vehicle Technology and Morpheus Laboratory, headquartered in Langley, Va. This center is a dynamic research facility focused on aerospace applications of smart materials and adaptive structures, where his research areas involve the design, analysis, simulation and fabrication of spatially distributed systems, smart materials, smart structures and smart transducers.

"Dr. Hubbard has been, and continues to be, a pioneer and innovator in smart structures technology for the past 30 years," said Dr. Norman Wereley, Department Chair and Minta Martin Professor of Aerospace Engineering. "His induction to the NAE is a testament to his outstanding and extensive contributions to the field of aerospace engineering!"

Over the years, he has received many awards for his work, including the Charles Stark Draper Engineering Vice Presidents Annual Award for Best Technical Patent and the 2002 Black Engineer of the Year President's Award.

In 2009, the American Society of Mechanical Engineers (ASME) recognized Hubbard as one of the early pioneers of the field of Smart Structures. He has received numerous awards for teaching and mentoring excellence including the M.I.T. Goodwin Medal for "Conspicuously Effective Teaching," The M.I.T. Steward Award for "Outstanding Service to the Community," and in 2002, he was awarded "The Key to the City" of his hometown of Danville, Va. for lifetime achievement and mentoring. Most recently, he was recognized with the International Society for Optics and Photonics' (SPIE) 2016 Smart Structures and Materials Lifetime Achievement Award.

He has more published more than 100 technical papers and obtained 24 patents—U.S. and worldwide—in the areas of smart structures and photonics. Hubbard has served on numerous technical boards and committees including the American Helicopter Society (AHS), American Institute of Aeronautics and Astronautics (AIAA) and NAE.

"This honor is a reflection of Dr. Hubbard's unbelievable commitment to our field," said Darryll J. Pines, Nariman Farvardin Professor and Dean of the A. James Clark School of Engineering. "He is an inspiration to all engineers and we are proud to call him a Terp."

Hubbard joins 23 other Clark School-affiliated faculty who have been inducted into NAE. This group includes current NAE President and former UMD President and Regents Professor Dan Mote Jr.

Hubbard obtained his B.Eng., M.S., and Ph.D. in Mechanical Engineering from the M.I.T. after beginning his career in 1971 as an engineering officer in the U.S. Merchant Marine serving in Vietnam. At the age of 19, he was one the youngest to receive an unlimited horsepower, steam, and diesel engine Marine Engineering license from the U.S. Coast Guard.

Election to National Academy of Engineering membership is one of the highest professional honors accorded an engineer. Hubbard was one of 80 new academy members inducted this year during a ceremony held during NAE's Annual Meeting in Washington, D.C. on October 9, 2016.

Hubbard Named SPIE 2016 Smart Structures and Materials Lifetime Achievement Award Recipient

The International Society for Optics and Photonics (SPIE) named Hubbard the 2016 Smart Structures and Materials Lifetime Achievement Award recipient. He is the fifth Clark School faculty member to be recognized with this award.

Jones Receives Presidential Early Career Award

President Barack Obama has named Assistant Professor Anya Jones a recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE), the highest honor bestowed by the U.S. government on science and engineering professionals in the early stages of their independent research careers.

"These early-career scientists are leading the way in our efforts to confront and understand challenges from climate change to our health and wellness," President Obama said in a White House press release. "We congratulate these accomplished individuals and encourage them to continue to serve as an example of the incredible promise and ingenuity of the American people."

Jones, whose PECASE nomination was sponsored by the U.S. Department of Defense, has been a member of the Aerospace Engineering faculty at the University of Maryland (UMD) since 2010. She earned her doctorate in experimental aerodynamics from the University of Cambridge, her Master of Science in aeronautics and astronautics from the Massachusetts Institute of Technology, and a dual bachelor's degree from Rensselaer Polytechnic Institute in aeronautical and mechanical engineering.

"Dr. Jones' unmistakable leadership in our field so early in her career gives me great hope for the future of engineering and our country," said Darryll J. Pines, Clark School Dean and Nariman Farvardin Professor of Engineering.

Jones is chair of a NATO Research Technology Organization task group on gust response and unsteady aerodynamics and an associate fellow of the American Institute of Aeronautics and Astronautics (AIAA). She also serves as a member of the AIAA Applied Aerodynamics Technical Committee, the University of Maryland Energy Research Center, and the Maryland Robotics Center. She is a faculty advisor to the Women in Aeronautics (WIAA) and Astronautics and serves on the Raising Excitement for Science Engineering and Technology (RESET) board of directors.

Jones is also the recipient of a National Science Foundation Faculty Early Career Development (CAREER) program award for her research to improve the safety, reliability, and efficiency of air vehicles by gaining a deeper understanding of the physics of the large flow field disturbances encountered in high winds and gusty flight environments.

Jones has developed unique experimental capabilities at UMD to allow for the exploration of the interaction between a wing and a large, well-characterized gust in a repeatable and controlled environment. By modeling this interaction both experimentally and analytically, her research offers a new approach to validating classical aerodynamic theories and a new framework for physics-based models of separated flow.

Established by President Clinton in 1996, PECASE Awards are coordinated by the Office of Science and Technology Policy within the Executive Office of the President. Awardees are selected for their pursuit of innovative research at the frontiers of science and technology and their commitment to community service as demonstrated through scientific leadership, public education, or community outreach.

Cadou Named ASME Fellow

Associate Professor Christopher Cadou was named an American Society of Mechanical Engineers (ASME) Fellow. Cadou is a Keystone Professor in UMD's A. James Clark School of Engineering. The Keystone Program encourages the school's best faculty members to teach our most fundamental courses.

His research focuses on combustion, including the physics of power system miniaturization, engine-solid oxide fuel cell hybridization, film cooling in rocket nozzle extensions, and pulse jet engine noise reduction. He has co-authored over 85 contributions to journals, books and conference proceedings, and he is the co-editor of Microscale Combustion and Power Generation. He also has an extensive record of leadership and service to both ASME and his profession.

Cadou earned his B.S. from Cornell University and his M.S. and Ph.D. in Mechanical and Aerospace Engineering at the University of California, Los Angeles. In addition to ASME, Cadou is an Associate Fellow of the American Institute of Aeronautics and Astronautics. He has been a member of the UMD faculty since 2000.

WIA Recognizes Bowden with Aerospace Educator Award

Women in Aerospace (WIA) recognized Professor Mary Bowden with their 2016 Aerospace Educator Award.

WIA cited Bowden for her efforts in motivating interest in space systems, being an inspiring role model, and promoting the success of students at all levels. The Aerospace Engineering Educator Award is one of six annual WIA awards that celebrate women's professional excellence in aerospace and recognition for female leaders who have made outstanding contributions to the aerospace community.

Bowden joined the UMD faculty in 1996 as a part-time instructor, and quickly established herself as both a champion of education and an excellent researcher. She is affiliated with the Space Systems Lab and continues her research in space assembly, deployable structures, and high altitude ballooning.

She teaches classes on space systems and space structures, aerospace structures, and Keystone classes. In addition, Bowden serves as one of the faculty mentors for the UMD American Institute of Aeronautics and Astronautics (AIAA) Student Chapter Senior Design Team, which has won first place two years in a row, and had many top three finishes over past years in NASA's RASC-AL (Revolutionary Aerospace Systems Concepts—Academic Linkage) Competition.

Bowden won recognition as Mentor of the Year and Professor of the Year—twice!—from the UMD AIAA Student Chapter for her excellent teaching, and she has been recognized for her outstanding teaching by being named a Keystone Instructor, a program which recognizes educators who are among the best instructors in the Clark School of Engineering.

Bowden has inspired hundreds of college and high school students to undertake high altitude ballooning and is an inspiration to both students and colleagues alike for her selfless devotion to the aerospace engineering profession, and in particular, high altitude ballooning.

Read full story at *go.umd.edu/wia-bowden*.

Chopra Receives 2016 ASME Spirit of St. Louis Medal

The American Society of Mechanical Engineers (ASME) announced Distinguished University Professor Inderjit Chopra as the 2016 Spirit of St. Louis Medal recipient. ASME awards the Spirit of St. Louis Medal for meritorious service in the advancement of aeronautics and astronautics.

In receiving the Spirit of St. Louis Medal, Chopra joins ranks with fellow aviation pioneers such as 1972 medalist Neil Armstrong. Chopra joined UMD in 1981 as an associate professor, promoted to full professor in 1986 and now directs the Alfred Gessow Rotorcraft Center.

Chopra has published prolifically in the areas of helicopter dynamics and smart structures, and he has been recognized frequently for his contributions to the field.

He has been working on various fundamental problems related to aeromechanics of helicopters including aeromechanical stability, vibratory loads, active vibration control, modeling of composite blades, rotor head health monitoring, aeroelastic optimization, high advance ratio rotors, smart structures, swashplateless systems, CFD/CSD couplings, motor-body-engine couplings, micro air vehicles, and comprehensive aeromechanics analyses of bearingless, tilt-rotor, servo-flap, coaxial, compound, teetering, composite coupled rotors, and circulation control rotors.

During his years at Maryland, he has advised 50 Ph.D. and 90 M.S. degrees students who are themselves now playing important roles across rotorcraft industry, academia, and federal labs.

He was also instrumental in leading the university's efforts in pursuing the AHS Sikorsky Prize in human-powered helicopter flight which garnered him the 2012 AHS Igor I. Sikorsky International Trophy.

Philip D. Ball, ASME members, and citizens of St. Louis, Missouri established the Spirit of St. Louis Medal in 1929.

Sergei Sikorsky Shares Experiences from Aviation Legacy

In the spring semester, Sergei Sikorsky, the eldest son of Igor Sikorsky, and an aviation innovator himself, visited the A. James Clark School of Engineering and Department of Aerospace Engineering at Maryland.

He gave a lecture, part of the Sikorsky Aircraft Colloquium Series at Maryland, to students, faculty, Sikorsky and other Lockheed Martin employees, sharing stories about the history of aviation, how Sikorsky helicopters have progressed through the years and his observations about how continued technology evolutions help Sikorsky support military and civilian missions.

During his visit, Sergei received the Glenn L. Martin Medal for his contributions to the mission and ideas of the A. James Clark School of Engineering. Sergei grew up watching his dad be an instrumental pioneer in the aviation industry, and then continued on himself to become a talented aviator that observed the helicopter's growth and versatility over the years.

Sergei explained that in aviation history's beginning, the Wright Brothers were greeted with hostile reception—including people who had signs that said "flyers or liars" back in August 1908. After their first public demonstration in France in August 1908, they became international heroes, and inspiring the Europeans to redouble their efforts in flight. Suddenly, aviation, which had been "proven to be technically impossible," became possible.

During Sergei's presentation, he highlighted images of historical and current Sikorsky helicopters and told stories about the operational impacts of those helicopters saving lives. During each example his genuine pride was obvious as he described Sikorsky helicopters as among the most powerful, versatile, and capable.

His stories included the collaboration between Igor Sikorsky, Charles Lindbergh and Pan Am Chief Pilot Ed Musick to design the next-generation Pan Am Clipper—which would be the S-42 airplane, and how early use of helicopters by the U.S. Coast Guard in 1944 began demonstrating the machine's capability for saving lives.

Sergei discussed Lockheed Martin's recent acquisition of Sikorsky, extolling the potential growth of the organizations by combining forces with one of the "truly great names in aviation today," and ended his discussion explaining that if his father's legacy proved anything, it is the importance of a single word—a word that he said we sometimes take for granted, and that the word in Igor Sikorsky's mind was freedom.

"The freedom to dream, the freedom to create something, to make your dream come true, the freedom to take a risk if it's necessary and you believe the risk justifies the effort, because it is only with this freedom… the freedom to dream, the freedom to act, the freedom to create—that man has been able to climb out of the cave and to reach the stars."

SERGEI SIKORSKY, SON OF ROTORCRAFT PIONEER IGOR SIKORSKY, RECEIVES THE A. JAMES CLARK SCHOOL OF ENGINEERING GLENN L. MARTIN MEDAL DURING HIS VISIT ON APRIL 6, 2016.

SIKORSKY
A LOCKHEED MARTIN COMPANY

SIKORSY SUPPORTS STUDENT SCHOLARSHIPS AT MARYLAND

Through support from Sikorsky, the Department of Aerospace Engineering was able to provide scholarship support to the following students for the 2015-2016 school year.

DANIEL VILLALOBOS
Sikorsky AEROS Scholar

NATHAN LAUER
Sikorsky AEROS Scholar

JOHN HUNTER
Sikorsky Aircraft Scholar

JOSHUA EISDORFER
Sikorsky Corporate Partner Scholar

ANDREW LIND
Sikorsky Aircraft Fellow

Aerospace Engineering Inducts Five New Academy of Distinguished Alumni Members

DR. CHRISTOPHER T. JONES (PH.D. '97)
CORPORATE VICE PRESIDENT
AND PRESIDENT
NORTHROP GRUMMAN
TECHNOLOGY SERVICES

MR. CHRIS VAN BUITEN
(B.S. '89) VICE PRESIDENT
OF TECHNOLOGY
AND INNOVATION
SIKORSKY AIRCRAFT

DR. YVETTE S. WEBER
(M.S. '90, PH.D. '94)
DEPUTY DIRECTOR
ARMAMENT DIRECTORATE
EGLIN AIR FORCE BASE
FLORIDA

MR. DAVID VAN WIE
(B.S. '80, M.S. '82, PH.D. '86)
MISSION AREA EXECUTIVE
PRECISION STRIKE MISSION AREA
JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY

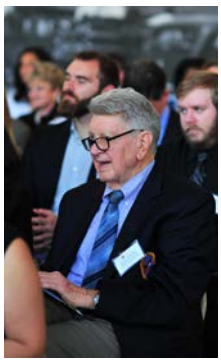
DR. JAMES WANG
(M.S. '87, PH.D. '92)
SENIOR VICE PRESIDENT
LEONARDO, FORMERLY
AGUSTAWESTLAND
(PRESENTED IN ABSENTIA)

On May 7, 2016, the department inducted five new members into its Academy of Distinguished Alumni (ADA) during a ceremony held at the College Park Aviation Museum. This year's inductees were Dr. Christopher Jones, Mr. Chris Van Buiten, Dr. David Van Wie, Dr. James Wang, and Dr. Yvette Weber.

Over 75 alumni, faculty, family, students, and staff, including former ADA inductees Mr. George Orton and Dr. Norris Krone, Jr., along with A. James Clark School of Engineering Dean Darryll Pines, attended the event to celebrate the inductees and their achievements.

Read more at
go.umd.edu/2016ADA

The Academy of Distinguished Alumni was established in 1999 to honor University of Maryland (UMD) alumni who have made significant contributions to the field of aerospace engineering. In the fall of 1999, the Department of Aerospace Engineering inducted its first four members, as well as aviation pioneer and lifelong UMD supporter, Glenn L. Martin. Recipients receive the Glenn L. Martin Medal during a ceremony held for their induction.



Alumnus Named 2016 Black Engineer of the Year

GIVES SPRING 2016 CLARK SCHOOL COMMENCEMENT SPEECH

Aerospace engineering alumnus Christopher T. Jones (Ph.D. '97) selected as the 2016 Black Engineer of the Year Award (BEYA) by Black Engineer magazine.

Jones is corporate vice president and president of Northrop Grumman's Technical Services sector. In this role, he leads businesses at more than 250 locations throughout the United States and 29 countries, supporting a diverse customer base, including the U.S. departments of Defense, Energy, Homeland Security, State, and Interior, as well as NASA.

Beyond his career at Northrop Grumman, Jones currently serves on both the A. James Clark School of Engineering's Board of Visitors and the National Action Council for Minorities Board of Directors.

Previously, Jones was sector vice president and general manager of the Integrated Logistics and Modernization division of Northrop Grumman Technical Services. The division is responsible for the company's business activities in global logistics and modernization, systems logistics and modernization, and operational responsive systems.

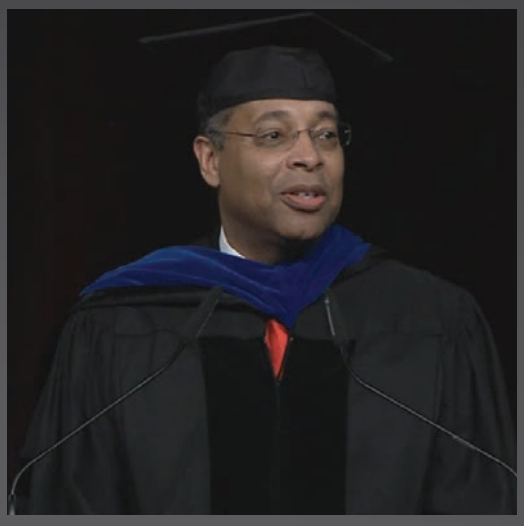
Jones joined Northrop Grumman in 2004 as director of product support for the Airborne Early Warning Program. In addition to program execution, Jones provided technical leadership during aircraft design, development, production, and fielding, and was a key member of the business strategy development and capture teams.

Jones was an active duty Air Force officer and worked as a systems analyst at Wright-Patterson Air Force Base, Ohio, where he performed analysis on foreign ballistic missile and space systems. He was also a member of the Connecticut Air National Guard for 14 years, serving as the chief of maintenance for the 103rd Air Control Squadron. He participated in military deployments including Operation Noble Eagle and Operation Enduring Freedom. Jones retired from the Air Guard in 2011.

Jones earned his bachelor's degree in aerospace engineering from the Georgia Institute of Technology. He then earned two master's degrees in aerospace engineering and engineering management from the University of Dayton before attending Maryland for his doctoral degree.

Jones received the 30th Black Engineer of the Year Award during the BEYA Science, Technology, Engineering, and Math (STEM) Conference held February 2016. In addition to this recognition, Jones was recently named an Associate Fellow of AIAA and inducted into Georgia Tech's College of Engineering Academy of Distinguished Engineering Alumni.

"It's a great time to be an engineer. We are living in an astonishing age of progress."



JONES AT SPRING 2016
CLARK SCHOOL COMMENCEMENT

ALUMNI NEWS & NOTES

Alumnus **MOBLE BENEDICT** (Ph.D. '10) received the American Helicopter Society International's (AHS) 2016 François-Xavier Bagnoud Award. This award recognizes an individual AHS member under the age of 35 for their career-to-date outstanding contributions to vertical flight technology.

Benedict's career spans vertical flight research, first as a graduate student studying under Distinguished Professor Inderjit Chopra, and as research scientist at UMD, to now being an Assistant Professor at Texas A&M University. He is one of the pioneers in micro air vehicle technology, aeromechanics design, autonomous controls, and micro-sensors/actuators. His research has produced over 40 papers presented at leading conferences and 24 articles in key archival journals.

Alumnus **ASHISH BAGAI** (B.S. '90, M.S. '92, Ph.D. '95) is the program manager of DARPA's Tactical Technology Office, and heads up their Vertical Takeoff and Landing Experimental Plane (VTOL X-Plane) project. This year, he was quoted by CNN on the project in conjunction with Aurora Flight Sciences Corporation's 'Lighting Strike' VTOL X-plane design.

Alumnus **ANDREW MILLS** (B.S. '15) received a National Science Foundation Graduate Research Fellowship. Mills is currently a master's student at the University of Colorado Boulder studying aerospace engineering with an emphasis on flight dynamics and controls. During his time at Maryland, he was an Aerospace Engineering Honors student, a member of Tau Beta Pi (the Engineering Honors Society), Theta Tau, and an AIAA senior liaison.

YOUR ALUMNI NEWS AND COMMENTS ARE WELCOME! PLEASE SEND THEM TO UMDAERO@UMD.EDU.

ALUMNI FACULTY APPOINTMENTS

W. ETHAN EAGLE (M.S. '07)
Assistant Professor
Mechanical Engineering
Wayne State University.

SHYAM MENON (Ph.D. '10)
Assistant Professor
Department of Mechanical & Industrial Engineering
Louisiana State University

CAMERON PETERSON (Ph.D. '12)
Assistant Professor
Brigham Young University

AIMY WISSA (M.S. '10, Ph.D. '14)
Assistant Professor
Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign

BENJAMIN WOODS
(B.S. '05, M.S. '07, Ph.D. '12)
Lecturer, Swanson University

2016 GOLDEN TERPS

Golden Terp Engineers are Clark School alumni who are celebrating their 50th, 55th, 60th, 65th, 70th, or 75th reunions. During the spring commencement ceremony, Golden Terps, wearing their gold medallions and gold robes, lead the procession and are introduced by name to the Clark School family. This year, two aerospace and aeronautical engineering alumni joined us for the event.

MR. DALE BRADLEY
B.S. '61 Aeronautical Engineering

MR. GERALD G. VALLANDINGHAM
B.S. '61 Aeronautical Engineering

Join Your Fellow Aerospace Engineering Alumni on LinkedIn

The Department of Aerospace Engineering has an alumni group on LinkedIn to help our graduates keep in touch and network with each other. To join, simply search "University of Maryland Department of Aerospace Engineering" and click "Join."

LinkedIn

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and support the Department of Aerospace Engineering at Maryland.