

SUMMER 2022

UAH Magazine

A PUBLICATION OF THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

SPACE HARDWARE CLUB CREATES FUTURE AEROSPACE LEADERS



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UAH Magazine

UAH Magazine brings together our academic accomplishments, innovative research projects, extracurricular organizations and alumni into one engaging source for all things UAH.

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SHOOTING STARS

UAH's Space Hardware Club
creates future aerospace leaders

UAH students rocketed a payload into space on a suborbital flight to cap a string of successes for the university's Space Hardware Club (SHC).

Produced by SHC's Terminus Research Group, on June 24 the flight monitoring equipment traveled aboard a Terrier-Orion rocket from Wallops Flight Facility in Virginia as part of NASA's RockOn student program. Functional in flight, it was retrieved by an ocean team.

The team's success was covered by television newscasts as far away as Kansas City, Mo. It was the first student-built payload to rocket into space in almost a decade. Team lead and master's student in aerospace systems engineering Ben Campbell from Nampa, Idaho, says more flights are planned.

"By working to establish routine access to space at UAH, Terminus will help enable future space missions supporting a wide field of research areas and help grow the technical expertise of UAH students," Campbell says.

But the Terminus flight was only one SHC achievement in a stellar year. Three mostly freshmen SHC teams placed first, second and third in the nation at the American Astronautical Society-sponsored CanSat competition in June. CanSats are small satellites shaped like a soda can.

▲ Team Star Saber launches at the American Astronautical Society CanSat Competition.

Images courtesy of UAH Space Hardware Club

In the first CanSat experience for everyone, Team Spaceshot was first in the nation, Team Star Saber finished second and Team Highwire was third. Internationally, Team Spaceshot took eighth, while Team Star Saber was 13th and Team Highwire finished 16th.

As depicted on the cover, in early June SHC's 21-member Adaptable Service Transport Research Apparatus (ASTRA) rover team faced larger international teams to finish third among U.S. teams and sixth overall at the University Rover Challenge Finals in the Utah desert, marking the first time UAH has ever competed.

"It's exciting that space hardware designed and built by a student-led club at UAH, a university that was launched from America's quest to conquer space, has done so well," says Dr. Chuck Karr, interim UAH president. "The Space Hardware Club is an outstanding example of how UAH works to ensure that our students have opportunities for practical, real-life experiences that help to make them highly sought, innovative and productive in their future careers."

Community outreach is an essential part of SHC's mission. In early spring eight area sixth and eighth graders from New Hope Elementary, Sparkman Middle and Mountain Gap Middle schools spoke live with astronauts on the International Space Station from the SHC Communications Lab in the UAH Engineering Building. An SHC team coordinated the experience with the Amateur Radio on the International Space Station (ARISS) program.

Overall, through ARISS, College Academy and various other outreach events in the 2021-22 academic year, SHC connected with 850 students in Buckhorn Middle, Sparkman Elementary, New Hope Elementary, Mountain Gap Middle, Jemison High and Hampton Cove Middle schools, says Rebekah Clark, a rising senior in aerospace engineering from Tampa, Fla., who was SHC's outreach program manager.

SHC is mentored by Dr. Gang Wang, an associate professor of mechanical and aerospace engineering, and Dr. Richard Tantaritis, a mechanical and aerospace engineering lecturer.

"With input from Dr. Tantaritis and I, SHC members decide for themselves which projects they select to pursue, how they are going to organize their teams to accomplish their goals, who will lead those teams and who leads the various sub-teams required to get

complex projects from idea to reality," says Dr. Wang.

Many SHC efforts span years before completion. For example, the ASTRA rover project was founded in February 2020 by initial team lead Shelby Tull, now an alumna with a 2022 bachelor's degree in aerospace engineering.

Before being selected for final competitions, SHC teams often go through project reviews and competition phases closely modeled after reviews used by NASA.

"Watching the members of the club develop is very rewarding, because I have experience in the aerospace industry and I know what the industry is looking for, and the leadership skills and expertise SHC members exhibit is exactly what they're seeking," Dr. Tantaritis says.

How could teams of freshmen and sophomores do so well? Team

► Shortly after arriving in Hanksville, Utah, members of the ASTRA team begin assembling the rover for competition.





members credit an intensive SHC training program called Two Month.

"In Two Month, we teach students soldering, circuits, programming, Computer Assisted Design modeling, manufacturing and project lifecycle management," says Two Month lead Tristan McGinnis, a rising sophomore in computer science from Wetumpka. "They learn everything needed to develop their project from an idea to a flight-ready payload."

Most SHC projects are sponsored in whole or in part by the Alabama Space Grant Consortium (ASGC), headquartered at UAH. ASGC inspires, enables and educates students statewide to take up careers in space science, aerospace technology and allied fields.

"We are grateful for ASGC," says Dr. Tantis. "The club could not be performing

at this level without the steadfast support and friendship of Dr. Dale Thomas (B.S., Industrial and Systems Engineering, 1981; Ph.D., Industrial and Systems Engineering/Physics, 1988), the ASGC director, and Debora Nielson, the associate director."

Success has whetted the appetite for more. The ASTRA team selected Andrew Adams, a rising senior in mechanical engineering from Madison, as its new lead. The CanSat teams are looking forward to a new challenge, too, says Tristan Carter, a rising senior in mechanical engineering from Haleyville who is SHC's AutoSat program manager.

"Many of this year's CanSaters are excited and poised to hit next year's competition with all of their experience and lessons learned from this year." ■

▲ Victoria Tarpley solders Terminus Research Group's flight monitoring circuitry while Tyler Ardrey, at left, looks on.

UNIVERSITY ANNOUNCEMENTS



UAH was the only institute of higher learning in the nation to be chosen winner of the 2022 Defense Counterintelligence and Security Agency James S. Cogswell Outstanding Industrial Security Achievement Award. The award focuses on industrial security excellence, including establishing and maintaining a security program that far exceeds the basic National Industrial Security Program requirements and providing leadership to other cleared facilities. The University also received the award in 2018. Only facilities that have a minimum of two consecutive superior industrial security review ratings and show a sustained degree of excellence and innovation in their security program can be nominated.



This spring the Propulsion Research Center (PRC) celebrated its 30th anniversary with over 75 returning alumni, some from as far away as California, Washington state and Florida. Alumni speakers lauded the support provided by UAH and the PRC's founding director, Dr. Clark W. Hawk, as well as Dr. Robert Frederick, "Dr. Bob," the current director. PRC members have gone on to become project managers, senior aerospace engineers and company presidents in fields as diverse as space nuclear propulsion, cancer research and applied hypersonics for organizations like NASA, Blue Origin, the Naval Postgraduate School, Aerojet Rocketdyne, Diakanos Research and many others.



Three new Honors College Faculty Fellows were selected for 2022, including Dr. Themis Chronis, clinical assistant professor of physics and astronomy; Dr. Hamsa Mahafza, lecturer on curriculum and instruction in the College of Education; and Dr. Susan Friedman, senior lecturer in the College of Arts, Humanities and Social Sciences. Dr. Chronis has acted as PI and Co-PI on a number of funded projects for NASA and the Marshall Space Flight Center. Dr. Mahafza conducts educational research focused on foreign/heritage and language. Dr. Friedman has taught a variety of courses on literature, business writing and women's and gender studies.



UAH is one of only eight institutions in the country to be designated as a Focus University by Northrop Grumman. With this title comes a donation of \$90,000 to create endowed scholarships, support UAH student organizations and support programs in business, science, technology, engineering and math. UAH is currently the top provider of interns for Northrop Grumman nationwide, boasting a significant number of alumni employees, many whom have served long tenures at the company or mentored through UAH's i4 Program, created to connect students with internationally recognized companies like Northrop Grumman for training to help secure jobs after graduation.



A message from UAH Interim President, **Charles L. Karr**

It's such an honor and a privilege to serve as Interim President at The University of Alabama in Huntsville. The community and campus have been so welcoming to my wife Jodie and me. And like a lot of citizens of this state, I thought I knew what was going on in North Alabama. But once you get here, it's totally amazing: the quality of life, the caliber of the people, the economic development, the growth of Redstone Arsenal and Cummings Research Park. And especially the vast opportunities for our graduates to immediately join the workforce in a community just named the No. 1 place to live in the country.

Meeting this area's booming labor and research needs is a major effort for us. We are very proud of our history of partnering with NASA and the Army. The FBI and other agencies located at Redstone have significant UAH partnerships as well. Graduates of our education programs are in high demand in the TN Valley, and the same can be said for our graduates of our

nursing program, and in other areas like cybersecurity.

We recently received initial approval from the University of Alabama System Board of Trustees for a major new engineering building as part of our plan to meet the demand for a highly skilled engineering workforce. Another point of emphasis is recruiting the best students to grow our enrollment, which in turn will enable us to hire new faculty and staff. This spring we completed the demolition of the Executive Plaza site on the eastern edge of Cummings Research Park to make room for a conceptual master plan that envisions entertainment amenities, walkable housing and community venues like a conference center and hotel that will dramatically transform our campus and boost recruiting.

Employers will find that our graduates possess the knowledge and proficiency to excel in their careers. Yet employers also want young people who are well-rounded, have leadership

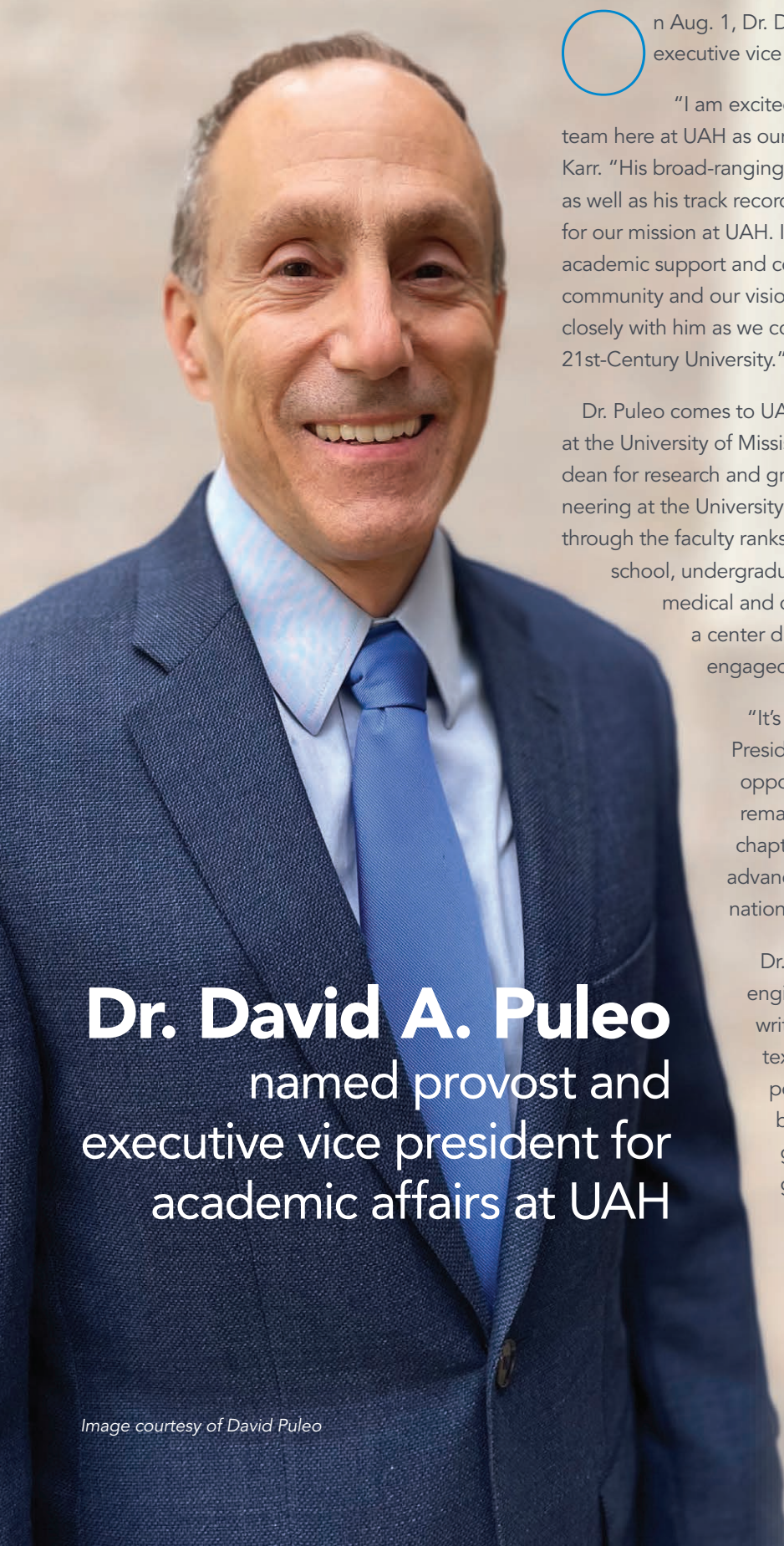
skills, and are engaged in their community. Some call these "soft skills." At UAH, we think of them as "required." That's why we offer enhanced learning experiences through great student organizations like the Space Hardware Club, company internships and study abroad opportunities. We want to educate young people who make an impact.

Everyone should take great pride in what is happening here. Any university likes to talk about its worldwide reach, but we're not even bound by the atmosphere, with programs like solar wind research, CubeSat technology and nuclear thermal propulsion. At least once a week I think, my goodness, we do that?

At UAH, we don't want to be a "best kept secret."

Go Chargers! ■

Charles L. Karr



Dr. David A. Puleo named provost and executive vice president for academic affairs at UAH

Image courtesy of David Puleo

On Aug. 1, Dr. David A. Puleo began his duties as provost and executive vice president for academic affairs.

"I am excited to announce that Dr. Puleo has joined our leadership team here at UAH as our new provost," said UAH Interim President Chuck Karr. "His broad-ranging administrative, academic and technical experience, as well as his track record of research expertise, all make for a wonderful fit for our mission at UAH. I believe his commitment to student, faculty and staff academic support and collaboration will positively impact the entire university community and our vision as an institution. I am looking forward to working closely with him as we continue to grow UAH as a model of an innovative 21st-Century University."

Dr. Puleo comes to UAH after serving as dean of the School of Engineering at the University of Mississippi (UM). Prior to joining UM, he served as associate dean for research and graduate studies and a professor of biomedical engineering at the University of Kentucky. Over the course of his career he moved through the faculty ranks as a productive investigator. He has mentored high school, undergraduate and graduate students, postdoctoral scholars, medical and dental students, and residents and faculty. He was also a center director and department chair and has been externally engaged with industry and fundraising.

"It's an honor to join UAH, and I'm grateful to Interim President Karr and the search committee for this fantastic opportunity," said Dr. Puleo. "The University has a remarkable history, and I'm excited to be a part of the next chapter. I look forward to working with a great team to advance the university's mission and benefit Huntsville, the nation and beyond."

Dr. Puleo earned a B.S. and Ph.D. in biomedical engineering from Rensselaer Polytechnic Institute. He has written over 120 refereed journal articles, co-authored a textbook and been published in several other books and periodicals. As a researcher in the area of regenerative biomaterials, Dr. Puleo has served as principal investigator and investigator on federal, state and industry grants and contracts exceeding \$13 million. His research has led to more than 15 intellectual property disclosures, patent applications and patents, and is associated with two start-up companies. Dr. Puleo is an elected fellow of the American Institute for Medical and Biological Engineering, the Biomedical Engineering Society, the International Union of Societies for Biomaterials Science and Engineering and the National Academy of Inventors. ■

AEROSPACE ENGINEERING UNDERGRAD MEGAN JORDAN SELECTED FOR UAH'S FIRST BROOKE OWENS FELLOWSHIP



Megan Jordan has been selected to receive UAH's very first Brooke Owens Fellowship. The Brooke Owens Fellowship was founded to honor the memory of industry pioneer and pilot D. Brooke Owens. The award celebrates women and minority participation in the aerospace industry to provide opportunities and access to talented young professionals from historically black colleges and universities, liberal arts colleges, community colleges and international universities.

Jordan is a third-year aerospace engineering student. As a freshman, she was elected vice president of the Space Hardware Club which provides

hands-on engineering experiences for students outside of the classroom. In 2021, she was one of 43 students selected to be a part of the inaugural class of Patti Grace Smith Fellows for Black undergraduate students pursuing their first internship in aerospace.

Jordan recently completed an engineering internship at Northrop Grumman and is currently working as an undergraduate researcher with MESMER Research Group at UAH. She was recognized as a 2021 American Institute of Aeronautics and Astronautics Diversity Scholar. As a result of winning the Brooke Owens Fellowship, she is interning at Amazon Prime Air this summer in Seattle, WA. ■

Babak Salarieh (M.S., Structural Engineering, 2018), a doctoral student in civil and environmental engineering, earned a 2022 American Society of Civil Engineers O.H. Ammann Research Fellowship. Salarieh performs research on the effects of climate change on the destruction wrought by hurricanes and how to aid community resilience through mitigation.

The scholarship provides \$8,000 to be used toward tuition, research and living expenses to encourage the generation of new knowledge in structural design and construction. Salarieh will continue to work at UAH to study the effects of climate change on hurricane hazards threatening coastal communities and infrastructures, with an eye to possible mitigation and adaptive measures to prevent property loss and damage.

COMMUNITY HURRICANE RESILIENCE RESEARCH EARNS DOCTORAL STUDENT ASCE FELLOWSHIP

Salarieh's research aims to provide further insight and understanding to local and federal governments, as well as public policymakers, to enable well-informed decision-making regarding community resilience, risk assessment, disaster preparedness and post-disaster recovery.

"Mitigation approaches based on an in-depth understanding of the distressed communities from a holistic risk management framework could lead to reduced damage and loss incurred, timely recovery and further alleviation of the pain and hardships of the members of society due to natural disasters like hurricanes," the alumnus notes. ■



UAH CO-HOSTS ALSAMP CONFERENCE TO BOOST UNDERREPRESENTED STUDENT PARTICIPATION IN STEM

UAH co-hosted the 2022 Spring Research Conference for the Alabama Louis Stokes Alliance for Minority Participation (ALSAMP). ALSAMP is a program funded by the National Science Foundation as part of a project entitled Alabama LSAMP: Sustainability of Best Practices for STEM Education and Research.

The conference was planned by Dr. Sharifa Love-Rutledge in the College of Science and Christopher Smith (M.S., Management, 2020) in the UAH Office of Diversity, Equity and Inclusion, working in collaboration with fellow North Alabama alliance members Alabama A&M University and Oakwood University.

The alliance consists of four-year institutions, community colleges, high schools and industry. The project aims to implement and study innovative, evidence-based, sustainable best practices in STEM education and research to increase the quality and quantity of underrepresented minority students. Each spring ALSAMP participants from across the state meet to present and discuss research findings.

The conference was highlighted by a poster competition. Maleah Rhem, a senior physics and astronomy student, took first place in the Physical Sciences/Math/Computer Science category, while Sidney Martin (B.S., Biological Sciences, 2022), a senior biology major, placed second in the Biological and Agricultural Sciences category. The program also recognized Jamya Patterson, a chemistry major, Juwuan Turner-Howard (B.S., Computer Science, 2022) in computer science, Daniel Torres in mechanical engineering and Brianna Stanley (B.S., Biological Sciences, 2022) in biological sciences. In addition, Martin was recognized as Outstanding Scholar. ■



UAH hosted the inaugural Human Rights Film Festival this spring. The event was provided through a collaborative effort of the UAH Humanities Center, UAH Office of Diversity and Inclusion, UAH Office of Student Life, North Alabama School for Organizers, Southern Fried Film Festival, North Alabama Standing Up for Racial Justice and other campus and community groups.

The Festival highlighted the twin themes of environmental and social justice through screenings of documentaries, short works and feature-length films, as well as appearances by guest speakers, artists and performances that vividly portrayed stories of hope, anguish, resilience and strength in the global movement toward social justice. ■

UAH HOSTS HUNTSVILLE HUMAN RIGHTS FILM FESTIVAL





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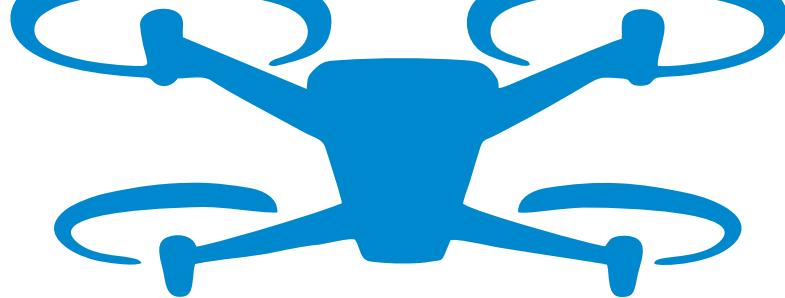
Visit uahlegacy.org to learn how leaving a legacy can help support the causes you care about the most.

"We have chosen to establish a legacy fund to provide ongoing aid for the JoAnn Sloan Memorial Scholarship. This will perpetuate JoAnn's spirit, enthusiasm and passion for nursing by supporting and empowering future medical providers' academic and career goals by reducing some financial burdens."

— JOE AND BETH SLOAN

THERE ARE BENEFITS TO GIVING:

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- ▶ It's **flexible**; gifts can co-exist with other beneficiaries and personal priorities, and you can always update the plan if your philanthropic goals change
- ▶ It's **enduring**; you leave a legacy that ensures UAH's students and our community continue to succeed



CAN RURAL HEALTHCARE BE DELIVERED BY DRONE?

The College of Nursing has teamed up with the UAH Rotorcraft Systems Engineering and Simulation Center (RSESC) Unmanned Aircraft Systems (UAS) Program to explore improving rural healthcare through the use of drones. Getting vital healthcare services and supplies can be a challenge for rural patients because of the long distances involved, and because smaller communities lack doctors, nurses and clinics.

The effort is being led by Dr. Azita Amiri, an associate professor of nursing, and Casey Calamaio (B.S., Biological Sciences, 2022), an RSESC research engineer. "We have been working on several projects utilizing drones in telehealth," Dr. Amiri says.

UAS provide a unique platform for short-range delivery of time-sensitive payloads. Drone delivery could help keep patients at home and avoid constraints in rural infrastructure on the way. Using drones for delivery of healthcare services is well-documented in humanitarian relief efforts and natural disaster events across the globe.

The UAH collaborators recently tested drone delivery technologies for nursing education on campus, with an eye to refining the system for use in the rural U.S. The simulation involved a pregnant woman at risk for preterm labor who

arrives at a rural hospital, where fetal fibronectin (fFN) and betamethasone are prescribed, neither available in the rural agency. Using a drone, an urban clinic dispatched the medicine and a testing kit. Upon receipt, the nursing staff at the rural hospital performed the fFN test and sent the specimen back to the urban clinic, also via drone.

"Our team is now working on a simulation where we have a case of an overdose in a rural area, and a drone is used to deliver the life-saving medication naloxone to reverse the effects of opioids," Dr. Amiri says.

A custom payload bay made of Kydex, a thermoplastic acrylic-polyvinyl chloride material, and standard ruggedized cases that are widely used by emergency services, were tested on the UAS as well.

There are 57.2 million people living in rural areas in the U.S., 17.3% of the population (2020 U.S. Census). In Alabama, 1,146,765 people live in rural areas, or 23% of the population, according to the U.S. Department of Agriculture's Economic Research Service.

"Citizens in rural areas are more likely to experience health disparities," Dr. Amiri says. "People have to travel 30-40 miles to reach a clinic or a health center in many rural areas." ■





CUBESAT PROPULSION RESEARCH LANDS DOCTORAL STUDENT DOE INTERNSHIP

This fall, Andrew Walsten, a doctoral student in aerospace engineering, will be interning at the Sandia National Laboratories in New Mexico under the United States Department of Energy (DOE) Office of Science Graduate Student Research (SCGSR) program. Walsten will be performing research to propel microsatellites and CubeSats with ionized plasma from a micro-electrical engine.

The SCGSR program provides opportunities for graduate students to conduct part of their graduate thesis research at a DOE laboratory or facility in collaboration with a DOE laboratory scientist. SCGSR research projects are expected to advance the awardee's overall doctoral thesis while providing access to the expertise, resources and capabilities available at the DOE laboratories or facilities.

"There are a lot of different types of electric propulsion, but I am specifically looking at a Hall thruster design,"

Walsten says. "Hall thrusters are a mature technology that have been flown in space before."

The engine's propellant is fed in at the base of an annular chamber where an anode is also located. Electrons are emitted from an external cathode that is outside the chamber. The ejected ion plasma provides the thrust.

"These electrons are spiraling around the chamber, then collide with the neutral propellant gas and ionize it," Walsten says. "The resulting ions are then accelerated out of the thruster by the electric field that develops between the cathode and anode. The thrusts are very low when compared to chemical rockets, but the high specific impulse is a big benefit."

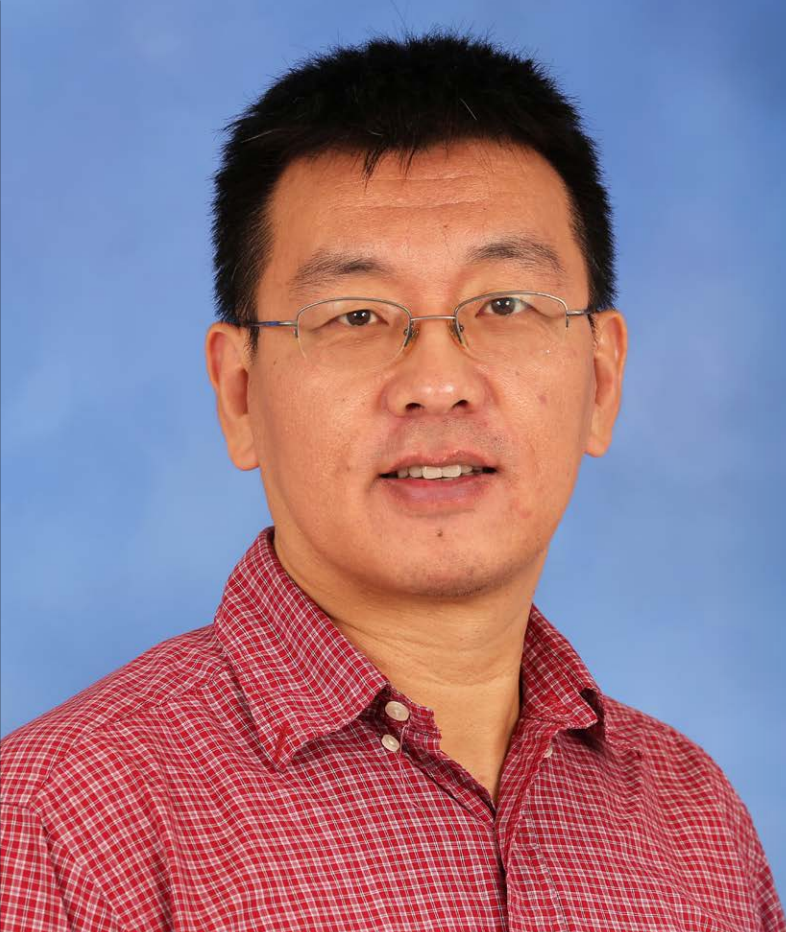
That benefit accrues because specific impulse in propulsion is analogous to gas mileage in cars, and a high specific impulse is more fuel efficient.

"This means that you don't have to bring as much propellant for a given mission," Walsten notes.

Yet engineering problems arise when Hall thrusters are scaled down to CubeSat size, including decreased efficiency and erosion of the chamber wall.

"Some ways to fix this are to remove the inner chamber wall so that the chamber is now cylindrical instead of annular, which helps decrease the surface-to-volume ratio," Walsten says. "This is known as a cylindrical Hall thruster."

The graduate student is working on a two-stage cylindrical Hall thruster innovation that ionizes the plasma in a separate device before it is accelerated from the chamber. "I am hoping that with the two-stage Hall thruster I can operate the thruster at lower powers, which is beneficial when flying a microsatellite, since power is limited," Walsten says. ■



\$2.3 MILLION NSF GRANT BOOSTS UAH EFFORT TO PREDICT HARMFUL SOLAR WEATHER EVENTS

Dr. Gang Li, a professor of space science, has received a four-year, \$2.301 million grant from the National Science Foundation (NSF) to develop a scientific model to understand and predict how coronal mass ejections (CME) from the sun influence the energetic particle radiation environment in the inner solar system and Earth's magnetosphere.

In 1989, CMEs caused a nine-hour, systemwide electrical blackout in Canada, resulting in the loss of some 19,400 milliwatts in Quebec. A similar event today could lead to a multi-million-dollar economic loss. When big blasts of energy from the sun envelop the Earth, they can be so strong that a 2015 event so weakened Earth's protective magnetic field, that it penetrated to the atmosphere, posing a threat to everything from circling space station astronauts to delicate electronics and communication systems.

This research is expected to supply

scientists with a new open-source tool that will forecast space weather, notes Dr. Li, who is the Principal Investigator (PI) for the study and a researcher at the Center for Space Plasma and Aeronomic Research (CSPAR) at UAH. The grant supports a multidisciplinary team including UAH, the University of Michigan, the University of Wisconsin-River Falls and the National Solar Observatory.

"Two widely-used models, the Space Weather Modeling Framework (SWMF) and the improved Particle Acceleration and Transport in the Heliosphere model (iPATH), will be coupled," Dr. Li explains. "Existing gaps in SWMF and iPATH will be bridged by developing two new models – a machine learning-assisted CME model for the lower solar corona and a particle tracing model for transport from the Lagrange L1 point into the magnetosphere."

Co-PI Dr. Ying Zou, an assistant professor of space science at UAH

and CSPAR researcher, will play a major role in helping researchers understand how energetic particles in the solar wind penetrate into the Earth's magnetosphere.

Two other co-PIs at the University of Michigan, including 2015 UAH alumnus Dr. Lulu Zhao (M.S., Physics, 2011; M.S., Computer Science, 2015; Ph.D., Physics, 2015), Dr. Li's first doctoral student, will use the SWMF developed there to provide the background solar wind and CME propagation that will then be coupled to the iPATH model developed by Dr. Li and his student, Dr. Junxiang Hu (M.S., Physics, 2014; Ph.D., Space Science, 2017).

Using the proposed unified model, scientists will gain the ability to simulate the propagation of solar energy particles from their launch during a CME to the time their signals are detected by ground-based neutron monitors, and account for their effects on galactic cosmic rays. ■

UAH RECEIVES INITIAL APPROVAL FOR **MAJOR ENGINEERING BUILDING PROJECT**

The Alabama State Legislature recently passed one of the most significant appropriations in UAH's history, one that sees the University poised to fulfill Huntsville's STEM workforce needs.

The first phase of a new engineering building project at UAH has received conceptual approval from the University of Alabama System Board of Trustees. This initial approval authorizes UAH to formally proceed with planning the construction of an 80,000-square-foot, multistory academic and research facility that will accommodate the College of Engineering's growth and greatly enhance the advanced research and development capabilities of UAH's faculty, staff and students.

"Elevating UAH to reach its highest potential is a top priority of the

University of Alabama System and the Board of Trustees," said UA System Chancellor Finis St. John. "UAH's transformation is well underway, thanks to the vision of the Board, the leadership of UAH Interim President Dr. Chuck Karr and the resounding support from the Huntsville community and local leaders. We are especially grateful to the Alabama State Legislature for supporting this transformative project and passing one of the most significant appropriations in UAH's history."

Expanding and enhancing UAH's engineering facility will promote collaborative learning and foster innovation in fast-growing technical areas that UAH currently supports, such as unmanned aerial systems, big data, hypersonics and artificial intelligence.

"As the preferred site for the U.S. Space Command and the home to Redstone Arsenal and Cummings Research Park, Huntsville is a STEM powerhouse with a critical need for talented professionals in the science, cyber and engineering fields," said Sen. Tom Butler. "The continued growth of this knowledge-based economy requires a significant increase in STEM graduates. With the vast majority of UAH graduates staying in our state, expanding and enhancing the university's engineering facility will directly fill our community's workforce pipeline."

The College of Engineering plays a pivotal role in driving economic development and supporting high-tech industry, space and defense needs. The synergy between UAH, Redstone Arsenal and Cummings Research Park



Renderings are conceptual and subject to change.

forms the hub of the southern technology corridor. UAH recently achieved the rank of “R1 – Very high research activity” status among doctoral-granting universities in the current update of the Carnegie Classification of Institutes of Higher Education, and six of UAH’s research programs rank among the top 25 federally funded programs in the U.S. (National Science Foundation).

“Building on the remarkable momentum in Huntsville, it is critical for UAH to continue fulfilling the region’s educational, workforce and research needs,” said UAH Interim President Dr. Chuck Karr. “A new engineering building will help us drive impactful research efforts and recruit and graduate exceptional students that meet the area’s growing high-tech workforce needs. I am grateful for and excited about the opportunity to provide this remarkable facility for our outstanding students, faculty and staff.”

Phase I of the engineering building project includes plans for new construction that will replace Wernher von Braun Research Hall, constructed in 1964. The new facility will be located west of the existing Engineering Building, adjacent to the campus lake along John Wright Drive. The

preliminary project budget of \$59.3 million would be funded by a variety of sources, including state-appropriated funds, gifts and reserve funds.

State leaders appropriated \$18 million of state supplemental funds towards UAH’s engineering building project. While a significant amount of funding has been secured for the project, additional resources are needed to propel this endeavor forward. The support of corporations, alumni, friends of the University and community supporters is vital to getting this effort off of the ground. Substantial corporate gifts provide an opportunity to expand brand awareness, complement workforce recruitment strategies and help to ensure the next generation of engineers is there to meet our community’s ever-growing needs. For more information on giving, contact Mallie Hale, Vice President for University Advancement, at mallie.hale@uah.edu.

Subject to approval from the University of Alabama System Board of Trustees, Phase II of the engineering building project would include plans to fully renovate the existing Engineering Building. All stages of this multi-phased project are subject to Board approval. ■



MAKE WAY FOR THE FUTURE!

UAH, City of Huntsville partner on Executive Plaza demo

Demolition of Executive Plaza on the eastern edge of Cummings Research Park is complete, paving the way for a bold new vision for the site. UAH’s conceptual master plan seeks to create a “college town” experience on the 58-acre property oriented toward life outside the classroom, with walkable housing and lifestyle amenities, such as dining, entertainment, regular events, outdoor recreation and a conference center and hotel to host both UAH and civic functions. The mixed-used plan combined with industry-ready office space will build relationships among students, faculty, business and the community, boosting recruiting and future job opportunities as well.

UAH is in the early planning phase and is considering several options for the space, all of which would enhance academic and student life at UAH. Once a plan has been formalized, it will be subject to approval by the University of Alabama System Board of Trustees.



Girls in Science and Engineering Days

This spring, UAH hosted the Girls in Science and Engineering Days, a morning exploring hands-on STEM (science, technology, engineering, and mathematics) activities designed for girls in the third through fifth grades. The event was held on the UAH campus at the Shelby Center for Science and Technology.

Attendees to the event participated in a variety of workshops crafted to spark their curiosity and excitement about science, engineering and technology. The girls were divided into groups of 20 each and monitored and supervised by counselors who rotated the children through a series of STEM project activities.

The participants were provided with T-shirts, STEM goody bags, snacks and booklets as well to help foster interest in science and technological fields. Each group followed a schedule of demonstrations and practical activities intended to expose them to the actual opportunities available for women in the STEM fields. ■

For the seventh time, UAH hosted Tech Trek, an event designed to raise awareness and interest in the science, technology, engineering and math (STEM) fields for girls from across Alabama. A total of 64 rising eighth grade girls from 24 counties were invited to the weeklong residential camp, led by successful women scientists, engineers and professionals, to immerse attendees in the wonders of science and technology.

Participants were nominated by their math and science teachers, and the camp featured intensive hands-on experiments and activities to promote interest in STEM. The camp curriculum comprised morning and evening activities, several field trips and a Professional Women's Night to provide

invaluable mentoring opportunities for the students.

Camp workshops emphasized fields of study that are especially relevant to today's STEM challenges, such as computer topics like MIT App Inventor and cybersecurity. Participants visited the U.S. Space and Rocket Center and launched their own rockets. The week was highlighted by a special Friday Expo that featured campers presenting on their core projects to help them visualize possible careers in STEM.

"We have a lot of complex problems to solve in today's world, and we need all hands on deck," said Dr. Rhonda Gaede, an associate professor of electrical and computer engineering and Tech Trek Camp Director. ■

UAH hosts 7th Tech Trek camp to boost STEM interest amongst girls

DR. FRANCES CABANISS ROBERTS



ONE OF UAH'S "FOUNDING LIGHTS" HONORED WITH MARKER

This spring UAH helped honor Dr. Frances Cabaniss Roberts, a long-time faculty member in the history department, who played a major role in the founding of the University and helped shape Huntsville, Alabama, into the community it is today. Dr. Roberts' legacy as an educator and historic preservation advocate led the Historic Huntsville Foundation, City of Huntsville and Huntsville-Madison County Bicentennial Committee to honor her with a historic marker at 603 Randolph Avenue, Dr. Roberts' ancestral home, known as Cabaniss House.

Dr. Roberts knew early on she wanted to be a teacher and pursued her dream, earning a B.S. degree from Alabama State Teachers College and an M.S. from The University of Alabama.

She first taught in the Sumter County Schools before coming to Huntsville to teach for 12 years in the public schools. As an educator, Dr. Roberts continually broke new ground for women. She was the University of Alabama Extension Center's first full-time faculty member in 1950 and gained her Ph.D. in 1956, becoming the first woman at the University of Alabama to receive a doctorate in history.

The historian applied to teach at the University of Alabama Huntsville Center in 1949 and was one of the initial faculty members when the school opened in 1950. She became the first chairperson in the history department in 1966 and was instrumental in restructuring the Huntsville Center into the independent University of Alabama in Huntsville

in 1969. Dr. Roberts established the History Department at UAH, serving as its chair until 1970.

As Huntsville pushed into the space age, the educator worked tirelessly to ensure the city's rapid growth did not come at the expense of its historic buildings and neighborhoods. She was a founding member of the Huntsville-Madison County Historical Society, president of the Alabama Historical Association and, along with local architect Harvie Jones, wrote the nomination that created the Twickenham Historic District. UAH dedicated the Humanities Building on campus in her honor, naming it Roberts Hall in 1988. The Alabama Women's Hall of Fame inducted her into their ranks in 2013. ■

ALUMNI WEEKEND 2022

SEPT 29 - OCT 1

CALENDAR OF EVENTS

Thursday, September 29th

Alumni of Achievement Awards Dinner

Student Services Building

Friday, September 30th

Charger Tipoff

Downtown Huntsville, AL

Saturday, October 1st

8am Charger Classic Golf Tournament

Hampton Cove Golf Course

11am Charger Carnival

Altenkirch Lawn

6pm Athletics Hall of Fame Induction Ceremony

Student Services Building

To learn more and to register for events, scan the code below.



Alumna **Danaë Xanthe Vlasse** wins GRAMMY

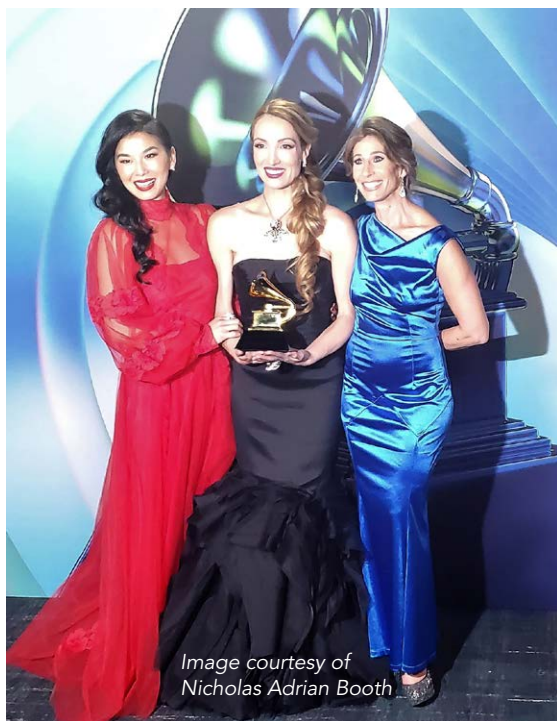


Image courtesy of
Nicholas Adrian Booth

Alumna Danaë Xanthe Vlasse won a 2022 GRAMMY for Best Classical Solo Vocal Album for her most recent album, *Mythologies*. Vlasse graduated in 2003 with a degree in Piano Performance. “UAH may be known for the sciences, but the programs in the arts lay the foundation for nurturing relationships,” the pianist and composer says.

Dr. Carolyn Sanders, a professor of music and one of Vlasse’s mentors, continues to cheer her former student from the wings. “With this GRAMMY award representing both her compositional and piano performance skills, Danaë has truly knocked it out of the park with a string of exceptional musicians, including world-class sopranos Sangeeta Kaur Teresa Mai and Hila Plitmann at her side. And through it all, she has accepted this major career success with the greatest degree of gratitude and humility.”

The alumna says she is planning to continue composing, but is mindful she has worked on 11 albums, either solo or in collaboration, since 2017. “I am thinking about the next album, but I’ve also been resting.” In the meantime, she has returned to “real life.” “People forget you come home from the award show and you still have to vacuum, take out the trash and feed the cat.” ■

A former eminent scholar and professor of mechanical and aerospace engineering and two graduates of UAH were inducted into the Alabama Engineering Hall of Fame in 2022.

Dr. Michael Griffin, a physicist and aerospace engineer, was NASA administrator from 2005-2009. He served as the U.S. Under Secretary of Defense for Research and Engineering from 2018 to 2020. Following his stint with the DoD, Dr. Griffin co-founded LogiQ Inc., providing high-end management, scientific and technical consulting services to corporate and government clients.

Dr. Lisa Watson-Morgan (MSE, Industrial and Systems Engineering, 1994; Ph.D., Industrial and Systems Engineering, 2008) has been the

program manager for NASA’s Human Landing System at Marshall Space Flight Center since 2019. The alumna oversees the integrated lunar landing systems that will transport astronauts to the Moon’s south pole. From 2018-2019, Dr. Watson-Morgan was deputy director of Marshall’s Engineering Directorate.

Jeffrey Langhout (MSE, Industrial and Systems Engineering, 1991) is the director of the U.S. Army Combat Capabilities Development Command’s Aviation and Missile Center (AvMC) at Redstone Arsenal. Prior to AvMC, he served as director of the Army Combat Capabilities Development Command Ground Vehicle Systems Center from 2018 to 2021. From 2017-2018, he was director of the Systems Simulation Software and Integration Directorate. ■

Three Alabama Engineering Hall of Fame inductees have UAH backgrounds





Basketball alum **Josh Magette** helps prep USA Men's Team for Olympics

Josh Magette (B.S., Finance, 2000) set a Gulf South Conference record for assists from 2008-2012, and is currently enjoying an 11-year professional career overseas, while appearing in 26 NBA games for the Atlanta Hawks and Orlando Magic, as well. But he experienced the thrill of a lifetime when he joined the USA Men's Select Team to help the U.S. Men's Basketball Team prepare for the Tokyo Olympics.

"Sean Ford, the Men's Team National Director, called and said we're looking for guys to come practice with us," Magette says. NBA stars Devin Booker, Jrue Holliday and Khristian Middleton had been tapped as Olympians, but were busy chasing an NBA championship, opening the door for the UAH point guard. "They couldn't practice, so they called me to fill in to give the team game reps against live bodies. Then the Suns and Bucks series went to six games, so they couldn't make the trip. So, there we were on the flight to Tokyo with the team!"

USA had recently lost in the World Cup, a point of emphasis for the squad. "It was pretty businesslike," Magette says. "The day-to-day stuff was still enjoyable, putting in the work, but definitely the focus was on the ultimate goal. There was no wasted time; everything had a purpose."

COVID played a factor, too. "In Tokyo, we couldn't even walk across the street! So, we spent a lot of time together. The players were great. They could have easily treated us practice guys like second class citizens, but they were always looking out for us and eager to give advice."

When the Olympic team struck gold, the Charger alumnus scored a gold medal as well. "It's something I will always hold on to," he says with a big grin. "For them to include me was pretty surreal!" ■

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UAH Distinguished Lecture Series Returns January 2023

The UAH Distinguished Lecture Series was conceived to enhance community collaboration among UAH, Redstone Arsenal agencies and corporations in Cummings Research Park.

If your organization is interested in being a sponsor of the lecture series, email LaFreeda Jordan at LaFreeda.Jordan@uah.edu.

- America needs to refocus and reinvest in its nuclear capabilities, Navy Admiral Charles "Chas" Richard told Redstone Arsenal officials, defense industry executives and local economic and political leaders at the May 17, 2022 lecture.

