

WINTER 2025

UAH Magazine

A PUBLICATION OF THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

IN THE ZONE

The UAH Chargers are wrapping up a successful winter season and setting their sights on spring sports.

ACADEMICS

UAH TO ADDRESS CRITICAL CHALLENGES AS PART OF GULF SCHOLARS PROGRAM

RESEARCH

COLLEGE OF SCIENCE RESEARCHER LOOKS TO AI TO REDUCE WAIT TIMES FOR CANCER PATIENTS

CAMPUS

UAH BLACK BOX THEATRE DEDICATED IN MEMORY OF LONGTIME PROFESSOR DR. ROBERT E. JAMES



SEE YOURSELF AS A CHARGER

Learn what UAH has to offer!

UAH AT A GLANCE | SATURDAY, 4.22

Open to high school and transfer students, UAH at a Glance is a great way for you to gain insight into the Charger experience.

At this event, you'll have the opportunity to:

- ▶ Learn more about UAH academic programs
- ▶ Speak with representatives from Housing, Career Services, Financial Aid, and more at the Student Services Browse Fair
- ▶ Discover what life is like as a Charger and learn more about student organizations
- ▶ Take a student-led campus and residence hall tour

Registration is required.

**THE DEADLINE TO REGISTER IS
MONDAY, MARCH 17, 2025.**

MORE WAYS TO VISIT

INDIVIDUAL CAMPUS TOURS

Individual campus tours can be scheduled on most weekdays at certain times. Visit uah.edu/visit for more information.

VIRTUAL CAMPUS TOURS

You can explore UAH through our virtual campus tour at uah.edu/admissions/undergraduate/discover-uah/visit-campus.

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QUESTIONS?

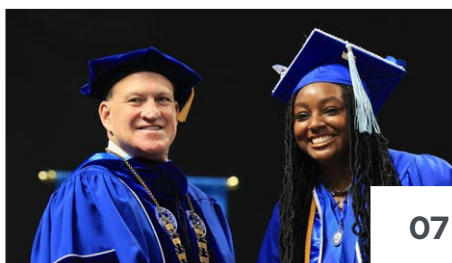
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Athletics

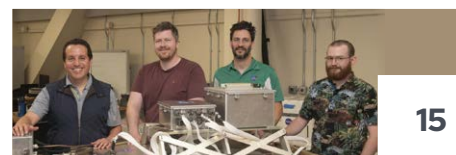
As the spring sports season kicks off, the UAH men's basketball team has broken the school record for most straight wins



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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.

If you would like to receive a hard copy of this issue of UAH Magazine or be added to our mailing list to receive future issues, please contact omc@uah.edu.

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UNIVERSITY ANNOUNCEMENTS



Dr. Michael Poll has been named vice provost for enrollment management. He will join the UAH community in February 2025. "Michael specializes in data-driven decision making, student success, strategic enrollment planning, financial aid leveraging, internationalization, collaborative management, and a balanced approach to success and life," said Dr. David A. Puleo, provost and executive vice president for academic affairs at UAH. "This leadership and experience will be key in advancing UAH to the next phase of its enrollment journey."



Danny Tang has been named the new chief information officer at UAH, effective Feb. 17, 2025. "I am thrilled to welcome Danny to our campus. He brings broad experience and an innovative approach that will be crucial as we continue to advance our information technology infrastructure to better serve the UAH community," said Dr. Charles Karr, president of UAH.



UAH hosted the **2024 AUKUS Industry Forum** in October. Held on the UAH campus, this first-of-its-kind event brought together U.S. administration officials, lawmakers and local industry representatives to explore how AUKUS, the trilateral security partnership between Australia, the United Kingdom and the United States, will impact the defense industrial base in Alabama.



Dr. Gary Zank, Aerojet/Rocketdyne Chair in Space Science, as well as director of the Center for Space Physics and Aeronomic Research (CSPAR), received 2024 Distinguished Science Award from the National Space Club, Huntsville Chapter, during the 36th Annual Dr. Wernher von Braun Memorial Dinner on the campus of UAH. The honor is presented to a scientist who has "made an outstanding contribution in research and discoveries that expands knowledge and understanding of space."



Dr. Jeremy Elliott, associate dean in the College of Education, received the 2024 Faculty Athletics Representative Association (FARA) Newcomer of the Year for Division II during the annual FARA Convention in November. The award is given to a faculty athletics representative who is within their first three years on the job and who has made significant positive impact on their institution's athletic department, demonstrating exceptional leadership, advocacy for student-athletes, and service to student-athletes, the institution, conference and NCAA.



Casey Eaton, a UAH alumna and current doctoral candidate studying Industrial & Systems Engineering and Engineering Management (ISEEM), won the Dr. Barry Boehm Award for Doctoral Student Research Excellence in Washington, D.C., in recognition of her work in applying technical measures to the development of a NASA Human Landing System (HLS). The Boehm Award honors the best research presentation delivered by a doctoral student on the basis of potential impact, advancement to systems engineering, originality, technical content and clarity of presentation.

A MESSAGE FROM THE PRESIDENT

Charles L. Karr

It has been a very busy few months at The University of Alabama in Huntsville. As I look back on the past quarter, I'm excited what our students, faculty and staff have accomplished.

We wrapped up 2024 by celebrating the achievements of our newest graduates: UAH awarded 994 degrees during the fall commencement ceremonies on Dec. 16. The ceremonies honored students who completed their degrees in the 2024 summer and fall semesters. One standout moment was looking out at the beaming faces amid a sea of blue, as the graduates donned new blue robes to display their Charger pride.

We kicked off the new year with the inaugural Dr. Martin Luther King Jr. Leadership Breakfast. This signature event brought together industry leaders to discuss the future of Alabama's economy. Panel discussions from local chamber of commerce representatives also showcased efforts to foster workforce development, tourism and business growth. The event was a powerful reminder of our shared commitment to

building a thriving and inclusive business community, much in the spirit of Dr. King's vision of justice and opportunity for all.

We remain focused on positioning the university for continued growth. I am pleased to welcome Dr. Michael Poll as vice provost for enrollment management. He will play a pivotal role in moving UAH forward in its enrollment journey. I also wish to extend a warm welcome to Danny Tang, our new chief information officer. He will play a crucial role in advancing our IT infrastructure to better serve the entire UAH community and bring us closer to achieving our strategic goals.

I want to give a shoutout to the incredible UAH student-athletes, especially the record-setting men's basketball team. As I write this, they've reached a historic fourth-place national ranking – the highest in UAH's history! I hope that you are able to attend a game in Spragins Hall to cheer on the Chargers. We are looking forward to UAH Homecoming February 12-15. With free food, entertainment and a tailgate experience – it's shaping up to be the best Homecoming yet.

Go Chargers! ■

'The time is always right to do what is right.'

UAH HOSTS INAUGURAL MLK LEADERSHIP BREAKFAST

UAH hosted the inaugural Dr. Martin Luther King Jr. Leadership Breakfast on Jan. 15. Focused on the theme "Leaders Shaping the Business Community of The Future," the event offered messages of economic innovation, growth and cooperation.

Keynote speaker Helena Duncan, president and CEO of the Business Council of Alabama (BCA), shared a quote from King: "The time is always right to do what is right." She said these words resonate as she reflects on the state's many success stories as well as challenges to be overcome.

"Our economy is as strong as it's ever been," she said, citing aerospace and other high-tech industries in Huntsville, the health care industry in Birmingham, shipping in the port of Mobile and manufacturing across Alabama. "At BCA, we work tirelessly every day trying to make sure this is a friendly business climate. We are working to make sure that people can grow their industries and have the people they need to fill the jobs, the good-paying jobs."

Well-educated, skilled workforces and effective technological infrastructure, such as reliable internet service in rural areas, are vital components of a healthy business climate. Duncan said they are partnering with business, education and government entities to address these goals. "In order for us to get these things done, to make Alabama the best place it can be, we have to work in unity. As we're remembering the life and legacy of Dr. Martin Luther King this morning, I want us to make a commitment that we will continue the work that he began, that we will focus on justice and opportunities for all. It is time for us to do what's right and build the Alabama that is good for each and every one of us."

Representatives from chambers of commerce in northern and central Alabama answered questions about the ways they are working to grow their communities and also offered words of encouragement for students. Comprising the panel were Nan Baldwin, president and CEO, Hoover Area Chamber of Commerce; Crystal Brown, president and CEO, Decatur-Morgan County Chamber of Commerce; Pammie Jimmar, president and CEO, Athens-Limestone Chamber of Commerce, and Erin Koshut, executive director, Cummings Research Park, representing Huntsville-Madison County Chamber of Commerce. Tamika Alexander, WHNT-19 anchor, moderated the panel.

Baldwin, who served as an executive for the Birmingham Business Alliance before going to Hoover, pointed out similarities between the larger industrial community and its smaller bedroom neighbor. "Even though the Hoover community has more small and medium-sized businesses, they still want a livable place for people to work and play. I was able to take the things that I



► Dr. Charles Karr, center, president of The University of Alabama in Huntsville, greets speakers for the inaugural Dr. Martin Luther King Jr. Leadership Breakfast held in the UAH Student Services Building Jan. 15, 2025. These special guests who presented the program are, from left, moderator Tamika Alexander; panelists Nan Baldwin, Crystal Brown, Pammie Jimmar and Erin Koshut, and keynote speaker Helena Duncan.

learned from the larger community and take them into the smaller community."

Jimmar talked about increased efforts to promote tourism in Athens and Limestone County. "When visitors come to Huntsville, they can head to Athens, and then head over to Decatur, and it'll be a two-day trip or a weekend trip," she said, noting that Athens is home to the Alabama Veterans Museum.

Alexander asked Brown how she and other Decatur leaders bring top-tier aerospace and manufacturing companies like United Launch Alliance to town. "We started focusing on that many years ago, encouraging parents and children to look at career options," Brown said. "The presence of nearby universities such as The University of Alabama in Huntsville has been helpful. Decatur is also home to our largest community college in the state, Calhoun. That has been very helpful as we focus on workforce development programs."

Koshut urged students to "take full advantage of every opportunity that is provided to you in the college environment," especially internships

and job shadowing. "If there's not something that exists in your field, go talk to people. Be willing to do it unpaid, just to get the experience, to figure out if that's what you want to do before you graduate. Work with your faculty and your advisors, and create something that works for you, that helps you determine what you want to do with your life after college."

When UAH President Dr. Charles Karr thanked speakers and guests at the close of the program, he recalled initial discussions with Kristina Hendrix, vice president for strategic communications, when they were planning the MLK Leadership Breakfast. How, he wondered, would this event tie the business community to a celebration of King's life and legacy?

"She said, we're going to invite in people who embody the traits and characteristics that Dr. King spoke to frequently. We'll have servant leaders who are inspirational, trustworthy, hard-working, engaging and value-driven. I think there's no doubt that all the folks we had here today embody those characteristics." ■



◀ Former U.S. Ambassador to Russia John J. Sullivan was appointed a Distinguished Fellow at Georgetown University in 2022 after retiring from a career in public service spanning four decades and five U.S. presidents. Before his most recent post in Moscow, Sullivan served as the 19th U.S. deputy secretary of state from 2017 to 2019, as well as the acting U.S. secretary of state in March-April 2018. For three years, the diplomat managed the U.S. Embassy in Russia during its most difficult period in many decades.

UAH Distinguished Lecture Series hosts former U.S. Ambassador to Russia John J. Sullivan

UAH hosted former United States Ambassador to Russia John J. Sullivan on Dec. 2, 2024, as part of the final 2024 Distinguished Lecture Series event. The speaker's talk centered on U.S. foreign affairs, in particular the Russian invasion of Ukraine and concerns over Russian aggression.

Sullivan depicted Russian President Vladimir Putin as utterly undeterred by the length of the war or the cost – in lives, materiel and economically – to his country. He also called for the U.S. to stand up to Russia.

"We haven't had the courage of our convictions. Are we really concerned about defeating the Russians in Ukraine? Putin draws all these red lines, and we are a little cowed by them, trying to avoid direct war, but we have continued to cross them."

With its stockpile of nuclear weapons, as well as its relationship with "China and this axis of threats," Russia is not a threat to be ignored, Sullivan said. "So, if you don't care about Ukraine, you have to care about Russia."

ABOUT THE UAH DISTINGUISHED LECTURE SERIES

The UAH Distinguished Lecture Series aims to enhance community collaboration among The University of Alabama in Huntsville, Redstone Arsenal agencies and corporations in Cummings Research Park. The series raises awareness and understanding of current events and future trends, and how these activities can be positively influenced through the knowledge and actions among the region's government, corporate and academic partners. ■


LOOKING AHEAD: 2025 DISTINGUISHED LECTURE SERIES

The 2025 Distinguished Lecture Series (DLS) includes three events throughout the year, as well as a pre-lecture reception with hors d'oeuvres, a catered dinner during the event and a meet-and-greet session with the guest speaker.

Sponsorships available! Secure your sponsorship today and gain access to 2025 events.

For more information about UAH's Distinguished Lecture Series, including a list of previous distinguished speakers, visit the DLS page.





Charger pride was on full display during the fall commencement ceremonies as UAH awarded an estimated 994 degrees on Monday, Dec. 16, at the Von Braun Center (VBC) Propst Arena. A highlight of the day? For the first time, graduates donned blue robes to celebrate their accomplishments in true UAH style.

The two ceremonies included students who completed degree requirements in the 2024 summer and fall semesters: approximately 215 in the summer and 779 in the fall. Degrees from summer and fall combined are 624 bachelor's degrees, 318 master's degrees and 52 doctorates. Of the doctoral degrees, 35 were Ph.D.s and 17 were Doctor of Nursing Practice (DNP) degrees.

"We know that they are going to do great things, and we hope they will return from time to time and share their successes with us," said Dr. Rhonda Gaede, associate provost for undergraduate education and associate professor in the Department of Electrical and Computer Engineering. "As pillars of the community, our graduates contribute greatly to making Huntsville the economic engine and special place that it is." ■

CELEBRATING IN STYLE

UAH awards 994 degrees during fall commencement ceremonies

THE LAST MILE

UAH ALUMNA **ASHRAF OINDRY** CONTINUES PURSUING HER DREAMS AFTER BOOST FROM LAST-MILE FUND



In December 2022, Ashraf Oindry fulfilled her dream of graduating summa cum laude with a bachelor's degree in computer engineering from UAH. But a year before she achieved her academic goal, an unexpected financial hardship threatened her plans for a bright future.

Oindry had worked hard to reach her senior year at UAH with top grades and an internship at Siemens. When her father's business failed in the midst of the COVID-19 pandemic, her family in Bangladesh could not maintain their previous level of support.

Thanks to the UAH Last-Mile Fund, Oindry was able to pay for her final year of tuition. She kept her grades up, completed her Siemens internship and continued to be an active Charger as a member of the Student Government Association, the Society of Women Engineers and the engineering honor society Tau Beta Pi.

"You don't want to give up your dream when you're so close to it," she says. "I needed to focus on my studies because there are so many harder classes in senior year, like the senior design project. Dealing with a financial struggle can only keep you back. It's really helpful to have the Last-Mile Fund to push a student at the very end."

In the two years since Oindry graduated, she's brought other dreams to reality: She became a software developer for Hexagon. She married fellow UAH grad Stephen Stammen, and they bought a house.

"I have adopted a cat as well, and I want to adopt more," she says, mentioning her support of the Huntsville Humane Society.

Oindry says she's glad she can be a productive part of the community she now calls home.

"I contribute to my company and my community. I pay my taxes. I support the economy and charitable organizations. I'm building a life here."

Oindry's life is progressing according to her plans, but she hasn't forgotten her fear when she thought she might have to leave UAH – or her gratitude when the Last-Mile Fund enabled her to stay and thrive.

"This fund has helped me build the life that I'm living right now. This fund is a wonderful way to help someone. Thank you so much, UAH."

To learn more about the Last-Mile Fund and how to contribute to students' success, visit uah.edu/giving/last-mile-fund. ■

▲ Ashraf Oindry, a 2022 graduate of UAH, reached her high academic goals with help from the UAH Last-Mile Fund in her senior year. Now she's living her dreams as a productive member of the Huntsville-Madison County community.



◀ Front row, right to left, Claude Blue, research lead and EPC president; Noa Milivojevic, EPC chief mechanical engineer. Back row, right to left, Ella Hazle, aerospace engineering sophomore; Dmitri Tshelnik, aerospace engineering and physics sophomore.

UAH ELECTRIC PROPULSION CLUB STUDENTS PRESENT AT INTERNATIONAL ASTRONAUTICAL CONGRESS IN ITALY

The Electric Propulsion Club (EPC) at UAH recently traveled to Milan, Italy, to present STARGATE, an experimental gridded ion thruster developed by the group, at the 75th International Astronautical Congress (IAC). The group's STARGATE team consists entirely of UAH undergraduates and is an independent student research organization working in the fields of electric propulsion (EP) and plasma physics.

In recent years, the proliferation of small satellites in Earth orbit has led to an unprecedented demand for small-scale low-power electric propulsion for satellite systems. EP systems offer a wide range of capabilities otherwise difficult or impossible in conventional spacecraft systems, including advances such as autonomous station keeping, collision avoidance, rendezvous, attitude control, orbit modification and forced deorbiting.

The STARGATE system is a proprietary technology invented and developed by the UAH EPC as an alternative method of plasma production in a gridded ion thruster for the application of small satellite propulsion in low Earth and geostationary orbits.

An ion thruster is a form of electric propulsion for spacecraft that creates a cloud of positive ions from a neutral gas by ionizing it to extract electrons from its atoms, which are then accelerated using electricity to create thrust. A gridded ion thruster employs high-voltage grid electrodes, a type of electrical conductor, to accelerate the ions with slow-moving or stationary electric charges, or electrostatic forces. A corona discharge occurs when a direct or alternating current is created between two electrodes, separated by a neutral fluid, like air. By ionization of this fluid, a plasma is created, and the electric charges propagate by passing

from the ions to the molecules of neutral gases.

"We are developing a new type of gridded ion thruster for small satellite propulsion applications that utilizes the corona discharge reaction for plasma production instead of the conventional hollow discharge cathode or radio frequency technology," Blue explains. "This technology is in the process of being patented with the UAH Office of Technology Commercialization (OTC)."

The event in Italy boasted over 11,000 attendees representing over 120 countries, as well as the heads of 60 national space agencies across the world. "The IAC was also a wonderful networking opportunity," Blue notes. "We made a lot of new connections and potential partnerships interested in supporting the development of our technology." ■

Four UAH students named to 2025 class of Capitol Scholars Program



UAH Capitol Scholars: Caleb March, Anastasia Smith, Sierra Rose Aragon, Michael Halvorson

Four UAH students were welcomed to the 2025 class of the Capitol Scholars Program, an immersive, high-impact summer internship experience in Washington, D.C., open to outstanding University of Alabama System students who are interested in careers in or around the federal government. 2025 is the second year of the program.

Composed of 16 students, this cohort of Capitol Scholars students spans from rising juniors to graduate students representing all three UA System universities and represent various academic

disciplines, including political science, finance, history, public health and business administration. Applicants were invited to apply for the program during the fall 2024 semester. Applicants underwent a rigorous, merit-based application and interview process, focusing on areas such as academic excellence, leadership and commitment to national, state and local community service.

"The Capitol Scholars Program provides exceptional students across the University of Alabama System with life-changing career opportunities that may be difficult

to access otherwise," said Charlie Taylor, UA System Vice Chancellor for External Affairs. "The professional and networking opportunities offered through this unique program give students a more comprehensive understanding of government and prepare them for success both on campus and after graduation."

The UAH students accepted into the 2025 class are Sierra Rose Aragon of Madison, Michael Halvorson of Huntsville, Caleb March of Huntsville and Anastasia Smith of Nashville. ■



Lauren Milam wins annual Three Minute Thesis competition

competition mainly because I wanted to share my proposed research and to shed light on the issue of maternal mortality in the U.S., particularly among Black women. I also wanted to share how increasing person-centered care and instilling empowerment could potentially alleviate this problem."

Milam's presentation earned the top prize of \$250 plus \$100 for People's Choice. She also won an all-expenses-paid opportunity to represent UAH at the regional 3MT Competition in March.

Milam said she appreciated the communications experience 3MT provided. "It allowed me to gain confidence in sharing my proposed research and also helped me formulate the explanation of it in simple terms so everyone can understand."

The 3MT program was developed by The University of Queensland in Australia. It challenges students to effectively explain their research and its significance in three minutes using language appropriate to a non-specialist audience. ■

UAH graduate students competed in the annual Three Minute Thesis (3MT) competition presented by the UAH Graduate School on Oct. 14, 2024. Lauren Milam, a Ph.D. candidate in the College of Nursing at UAH, won first place. Her presentation, "Voices That Matter: Ensuring Safe Motherhood for All," also received the People's Choice award.

"My presentation is about ensuring pregnant and postpartum women feel heard and feel their concerns are being validated by health care professionals," said Milam, a clinical instructor in the UAH College of Nursing. "I participated in the Three Minute Thesis

UAH AWARDED \$600K TO JOIN GULF SCHOLARS PROGRAM

The National Academies of Sciences, Engineering and Medicine has announced UAH has been awarded a \$600,000 grant to join the Gulf Scholars Program (GSP). The initiative is part of a five-year, \$12.7 million pilot program aimed at preparing undergraduate students to address environmental, health, energy and infrastructure challenges in the Gulf Coast region. The Gulf Scholars Program network now comprises 24 institutions across the states of Texas, Louisiana, Mississippi, Alabama and Florida.

"The GSP is an interdisciplinary certificate program that encompasses perspectives from nursing, humanities and social sciences, fine arts, natural sciences and business," explains Dr. Azita Amiri, a professor in the College of Nursing at UAH. "UAH's reputation for innovation and dedication to educational excellence played a significant role in our selection.

"The goal of this awarded proposal is to establish a Gulf Scholars Program at UAH, in collaboration with Calhoun Community College (CCC), to prepare the next generation of professionals, scholars, advocates and 'change agents' to address critical challenges in the Gulf region."

Each institution will develop a unique educational program consisting of courses, workshops and a major research or creative project in partnership with a community college and local or regional organization centered on the Gulf Coast region. The five-year grant is supplemented by a \$245,000 pledge from various offices and colleges at UAH, as well as CCC, and community-led organizations.

Students will engage in community-driven research projects and fulfilling community service hours. Faculty members will also have opportunities to participate in the program and align their course content with the goals of

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the GSP certificate program, whenever feasible. The grant will provide funds for tuition specific to the certificate program courses and research projects, as well as support for travel to conferences.

"Additionally, both paid and unpaid internship opportunities will be available through our community partners," Amiri says. "This collaboration will strengthen our ties with Gulf communities and attract talent to our university. It not only enhances our institutional reputation, but also positions UAH as a key player in addressing regional challenges and promoting innovation." ■





Ayaz follows up study of Alfvén waves with ground-breaking new findings

Syed Ayaz, a researcher at UAH, has published a paper in Scientific Reports that builds on an earlier first-of-its-kind study that examined kinetic Alfvén waves (KAW) as a possible explanation for why the solar corona, the outermost layer of the sun's atmosphere, is approximately 200 times hotter than the surface of the sun itself. The new study further confirms that these electromagnetic phenomena – abundant throughout the plasma universe – could prove vital to unlocking the biggest mystery of heliophysics.

"In our earlier work, we explored wave-particle interactions, focusing on the dynamics of kinetic Alfvén waves in plasmas," notes Ayaz, a graduate research assistant in the Center for Space Plasma and Aeronomic Research (CSPAR) at UAH. "However, certain critical aspects – such as the energy distribution of KAWs, the

net resonance speed of particles and the characteristic damping length of KAWs – remained unexplored.

"In this new study, we addressed these critical issues, which have not been investigated in existing literature," Ayaz says. "By comparing our analytical findings with data from NASA's Parker Solar Probe and the European Space Agency's Solar Orbiter missions, we found strong consistency validating our theoretical results. Notably, this work represents the first investigation of these phenomena in non-thermal plasma, marking a significant advancement in understanding KAW dynamics in the solar corona and solar wind."

Looking ahead, this revolutionary work lays the foundation for future research projects aimed at deepening the understanding of the intricate processes at play in space plasma environments. ■

Shehu awarded grant to research 3D-printed lunar concrete

Media Shehu, a doctoral student at UAH, has been selected to receive a NASA Future Investigators in NASA Earth and Space Science and Technology (FINESST) grant for her proposal, "Physics-Based Multiscale Constitutive Model for ISRU-Based 3D-Printed Lunar Concrete." The project seeks to develop a multiscale model for 3D-printed concrete using lunar materials by simulating lunar conditions.

"Sending materials to the moon is incredibly expensive," explains Shehu. "Our solution – using lunar materials to create printable and buildable concrete – will significantly reduce costs and provide a more practical

approach to building on the moon. We're aiming to conduct a detailed theoretical, experimental and numerical study to predict how concrete made from lunar soil and 3D-printed on the moon will behave under different conditions, such as moonquakes, extreme temperatures and more."

The project's aim is to advance the knowledge of the mechanics of in situ resource utilization (ISRU)-based 3D-printed lunar concrete by developing a physics-based multiscale constitutive model and its finite element code. 3D printing will be employed to generate a physical substance similar to lunar regolith, the thick layer of unconsolidated rock, pebbles and dust that covers the entire surface of the moon, to experiment with as a potential building material. The research will also employ physics-based theoretical modeling and its numerical simulations as part of the initiative.

"This research will support future lunar construction by making it more efficient and reliable," Shehu says. ■





BIOLOGY RESEARCHER LOOKS TO AI TO SPEED BREAST CANCER PROGNOSIS AND TREATMENT

One of the most agonizing experiences a cancer patient endures is waiting without knowing: waiting for a diagnosis, waiting to get test results back, waiting to learn the outcome of treatment protocols. Dr. Keka Biswas, a biological scientist, is co-author of a paper that studies the use of artificial intelligence (AI) and neuronal networks to significantly cut the time required for medical professionals to classify lesions in breast cancer ultrasound images.

"While progress has been made in the diagnosis, prognosis and treatment of cancer patients, individualized and data-driven care remains a challenge," the researcher notes. "AI has been used to predict and automate many cancers and has emerged as a promising option for improving health care accuracy and patient outcomes."

Breast ultrasound imaging is useful for detecting and distinguishing benign masses from malignant masses, but imaging reporting and data system features are difficult and time consuming.

"I actually experienced this myself," Biswas says. "I had gone in for a routine exam and told the doctor what my symptoms were, and she said let's run a biopsy. Two days later I got a call: you have cancer. Do you know which stage it is in? I asked. I have a child, a family. That took another three to four

weeks for the results to come in. The delay was the major thing – do I need surgery? How long will it take? My oncologist was very frustrated. I had a diagnosis, but none of the imaging was telling us what stage it was in. Whether it had metastasized or not."

Biswas' study investigated the relationship of breast cancer imaging features and the need for rapid classification and analysis of precise medical images of breast lesions.

"Deep learning employs neural network-based models to imitate the human brain's capacity to analyze huge amounts of complicated data in areas such as image recognition," the researcher explains. "The applications include cancer subtype discovery, text classification, medical imaging, etc. With AI, you can actually use these advances during surgery to see what stage the cancer is in, and the imaging of it is a much faster turnaround time."

The study examined the relationship between breast cancer imaging features and the roles of inter- and extra-lesional tissues and their impact on refining the performance of deep-learning classification. AI applications in oncology include risk assessment, early diagnosis, patient prognosis, estimation and treatment selection, based on deep-learning knowledge. ■



Bringing care to all

College of Nursing's first Health Equity Symposium addresses community's needs

The inaugural Health Equity Symposium presented by the UAH College of Nursing left participants saying they felt "empowered," "supported" and "connected" – and called to take action to improve health care access for everyone in our community.

"This day is all about collaboration," said Dr. Karen Frith, dean of the college, when she welcomed attendees and presenters to the daylong event at the UAH Nursing Building on Nov. 14, 2024.

The symposium was the college's next step on a journey it began last spring with its first Health Equity Summit. Health-care experts, business and nonprofit leaders, and community service providers contributed to the conversation.

"Health equity is getting better, but we're simply scratching the surface," said Dr. Jonn Kim, CEO and CTO of Geeks and Nerds Corp., the presenting sponsor of the symposium. "Today, I celebrate this amazing,

transformational opportunity. I'm certain that we'll be inspired by the summit, and I would like all of us to inspire others to advance health equity for all of us."

Other sponsors included Cepeda, Redstone Federal Credit Union, Huntsville Hospital Heart Center and Huntsville Hospital Spine & Neuro.

"Equitable health care, in my mind, is a basic human right," said keynote speaker Kenny Anderson, president of Maximum Life Enhancement. "I believe that everybody deserves a chance to have access to good health care."

Health equity is also a driver of growth, he said.

"From a purely economic standpoint, it makes much more sense to have a healthy, productive population than to have a population that is suffering from disease."

Anderson cited factors contributing to lack of access:

"Rural areas often struggle with fewer hospitals and clinics. Many residents have to travel long distances to receive good care. Similarly, urban areas with a high concentration of low income families might have fewer options available to them."

Daniel Kasambira, president and CEO, United Way of Madison County, talked about United Way's Community Needs Assessment, which is available to the public on the agency's website.

Sarita Edwards, president of E.W.E Foundation, shared her journey to advocacy as a former nurse who stood up for the health care needs of her son who was born with a disability.

Afternoon breakout sessions addressed cognitive health across the lifespan; health care concerns for veterans, first responders and other careers in service, and cancer prevention, survivorship and supportive care.

"This is not the end," Frith said as the symposium drew to a close. "This is the beginning." ■

UAH SCIENTISTS HELP UNVEIL DYNAMIC GAMMA- RAY EMISSIONS IN TROPICAL THUNDERCLOUDS

Researchers from the Earth System Science Center (ESSC) at UAH have partnered with atmospheric scientists from NASA's Marshall Space Flight Center (MSFC) to make groundbreaking discoveries about gamma-ray emissions from thunderstorms. Once considered rare and short-lived, these high-energy bursts are now revealed to be far more dynamic, extensive and frequent than previously thought, particularly in tropical regions, according to the team's findings, featured in the international science journal *Nature*.

Dr. Monte Bateman, Dr. Daniel Walker, Dr. Hugh Christian and Dr. Phillip Bitzer of the ESSC at UAH teamed with Dr. Timothy Lang, Dr. Christopher Schultz and Dr. Mason Quick at MSFC to support the initiative, alongside an international team. Their research stems from the Airborne Lightning Observatory for Fly's Eye Geostationary Lightning Mapping Simulator and Terrestrial Gamma-ray Flashes (ALOFT) campaign, conducted over Florida, the Gulf and Central America during the summer of 2023.

During the 10 flights, researchers observed 130 transient gamma-ray events, including 10 glow bursts, 96 Terrestrial Gamma-ray Flashes (TGFs) and 24 Flickering Gamma-ray Flashes (FGFs), a newly identified phenomenon that bridges the gap between the longer-lived glows and the impulsive short-lived TGFs.

The study fundamentally alters human understanding of gamma-ray glow activity in thunderstorms. Instead of brief, stationary bursts, researchers detected rapid and dynamic emissions, similar to the bubbling of a boiling pot. These data allowed scientists, for the first time, to observe gamma rays emitted across vast storm areas, sometimes covering thousands of square kilometers and persisting for hours.

Together, these teams have expanded the scientific understanding of tropical thunderstorms and gamma-ray emissions and opened new pathways for studying terrestrial gamma-ray events and their potential environmental impacts worldwide.

Collaboration on the project between UAH and leading national and international institutions included the University of Bergen, the University of Bath, Polytechnic University of Catalonia, Universities Space Research Association, Universidad Nacional de Colombia, Universidad Nacional Autónoma de México, the New Mexico Institute of Mining and Technology, Georgia Institute of Technology, Duke University, the University of Central Florida, the U.S. Naval Research Laboratory, NASA Goddard Space Flight Center and MSFC. ■

▲ Artistic view of a NASA plane flying over gamma ray-glowing clouds in the Caribbean during the July 2023 flight campaign.

Courtesy University of Bergen / Mount Visual, licensed under CC BY 4.0

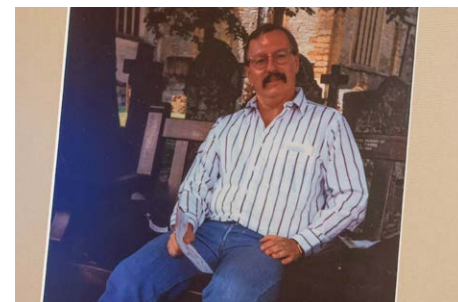
ROBERT E. JAMES BLACK BOX THEATRE



► From left, Dr. Charles Karr, UAH president; Dr. Carolyn Schroeder and Dr. Sean Lane walk out of the newly named Robert E. James Black Box Theatre.

The show goes on...

UAH BLACK BOX THEATRE DEDICATED IN MEMORY OF LONGTIME PROFESSOR DR. ROBERT E. JAMES



Anyone who knew the late UAH professor Bob James knew he loved to teach and he loved the theater. Now his name lives on in a space that combines both.

UAH honored James' memory with the dedication of the Robert E. James Black Box Theatre on Nov. 8, 2024, in the Morton Hall Atrium. When James passed away May 28, 2024, he left a bequest valued at more than \$1 million to support the UAH College of Arts, Humanities and Social Sciences and the UAH Theatre program.

Family, friends and former students joined UAH officials to share stories and remember the many ways he touched their lives.

James "described effective teaching as performance art," said Dr. Sean Lane, dean of the college. The 1999 UAH Foundation Distinguished Teaching Award honored the success of James

and his method. Lane read some of the recommendations for the award.

"During the time he is with [his students], they are the center of the universe," wrote one of James' graduate teaching assistants. "I have seen his enthusiasm spread to the students again and again."

"I am a better actor because of Dr. James," wrote a former student who became a high school teacher. "Even more importantly, I am a better teacher because of him."

James taught at UAH from 1971 until his retirement in 2000. As chair and associate professor in the Department of Psychology, acting chair of the Department of Communication Arts and founder of University Playhouse, which produced theater on campus in the 1980s and 1990s, he left an indelible mark on the university.

He was a force in Huntsville's performing arts scene, too. Along with directing and performing in dozens of local productions, he served in a variety of roles with Huntsville Little Theatre, Huntsville Community Chorus, Huntsville Literary Association, Weeden House Museum, Twickenham Repertory Company and Fantasy Playhouse. In 1988, he received the prestigious Virginia Hammill Simms Memorial Award honoring volunteers for their contributions to the arts.

His cousin Dr. Carolyn Schroeder recalled that James showed his love of performing from an early age and his passion never dimmed.

"Bob loved this university, and he loved the city of Huntsville. He saw academia and performance, as Dr. Lane pointed out, as complementary. Bob said, 'An effective teacher is an effective performer.'" ■



UAH head volleyball coach's office named for founding coach Leila Nabors

The University of Alabama System Board of Trustees approved the naming of the UAH Spragins Hall women's volleyball coach's office in honor of Leila L. Nabors, founding head coach of UAH volleyball during 1986-1988. The name change was proposed and approved at the board's meeting Nov. 8, 2024.

Dr. Pamela Hudson, a member of the UAH Foundation Board of Trustees, made a \$15,000 gift to support the volleyball program and to honor the contributions of Nabors to the program and UAH Athletics.

"'Coach Nabors' is what Leila's players call her, and many of them still keep in touch after all these years," Hudson said. "She was and still is an unfailing advocate for women's athletics and demanded both unselfish team play and individual commitment to excellence from her athletes. In return, Coach Nabors gave her all to her athletes and to the teams she coached."

Hudson noted that Nabors launched the UAH Division II volleyball program after she spent more than a decade successfully coaching at the high school level at Randolph School. Her time at Randolph included two state championships.

When Nabors moved to UAH, Hudson added, "Coach did the unimaginable by responding to the athletic director's urgent recruitment call to also coach UAH women's basketball. She coached both sports, which included the recruiting, for two seasons. It literally took two people to replace her when she left college coaching to pursue a career in professional counseling.

"While Coach Nabors' legacy is really written in the hearts of her athletes, it seems fitting to put her name on the wall as well and to honor her service to women's athletics by this contribution to UAH Athletics." ■

In memoriam: Dr. Fat Duen Ho



Dr. Fat Duen Ho, a longtime professor of electrical and computer engineering at UAH, died unexpectedly on Jan. 9, 2025. His UAH career spanned more than 44 years: Dr. Ho was appointed assistant professor in the ECE Department at UAH in 1980 and attained the rank of full professor in 1991.

A brilliant educator, Dr. Ho focused on the intersection of microelectronic devices, circuits and materials. His recent research centered on device modeling for IC design, metal ferroelectric semiconductor field effect transistors and modeling RF circuits for wireless communication systems. Dr. Ho had over 70 journal publications in his areas of expertise, and most recently served as principal investigator for a NASA/MSFC grant for Optimization of Ferroelectric Ultra-Capacitor for Energy Storage. A senior member of the Institute of Electrical and Electronics Engineers (IEEE), Dr. Ho earned recognition as an Outstanding Educator from the IEEE, Huntsville Section.

"He was dedicated to his students, and I know that he was most energized while teaching and engaging with students," says Dr. Shankar Mahalingam, dean of the College of Engineering. "He will be deeply missed by generations of our students, alumni, current and former faculty and his colleagues across UAH."

Dr. Ho taught a number of graduate and undergraduate electrical engineering courses, including power amplifiers, RF circuits for wireless communications, electric circuit analysis, VLSI circuits and solid state fundamentals. He took a lot of pride in mentoring his Ph.D. students, and he supervised over 30 MSE theses and Ph.D. dissertations at UAH.

"Dr. Ho's unwavering dedication to UAH over his remarkable 44-year tenure has left an enduring legacy, shaping generations of engineers and leaving an indelible mark on the university community," says Dr. Aleksandar Milenković, department chair and professor of electrical and computer engineering. ■



UAH ATHLETICS BEGINS 2025 SPRING SEASONS

The Chargers are set to begin their 2025 spring campaigns, as new UAH baseball, softball, men's lacrosse and women's lacrosse seasons have commenced.

UAH women's lacrosse hosted the first home game of the 2025 spring season at Charger Park on Saturday, Feb. 1, after the Chargers reached the Gulf South Conference championship game last season. The Chargers women's lacrosse team hosts eight games including two GSC contests this spring.

The Chargers softball squad shared the first action overall this spring, starting off on the road on Jan. 31 in Louisiana. UAH reached the NCAA tournament for the 21st consecutive

season in 2024, as the Blue & White look ahead to 20 home games at Charger Park beginning on Friday, Feb. 14.

UAH baseball started up on Jan. 31 in the Sunshine State, before opening at home on Tuesday, Feb. 4. The Chargers will host a total of 26 games at Charger Park, after going 25-22 overall last season and 14-11 at Charger Park.

The Chargers men's lacrosse program starts its 2025 regular season with three road games prior to UAH's home-opener on Saturday, Feb. 22. UAH will host five games total at Charger Park in the 2025 regular season.

Admission to all regular season events at Charger Park is free again this season, courtesy of Alabama Credit Union.



WINTER SPORTS UPDATE

UAH men's and women's basketball teams host three critical games with postseason implications in February with home contests scheduled against Trevecca Nazarene (Feb. 1), Christian Brothers (Feb. 13) and Union (Feb. 15). UAH Athletics will celebrate its annual 4.0 Night on Thursday, Feb. 13, to honor all Charger student-athletes that achieved a 4.0 during the 2024 calendar year.

Limited reserved seating is still available for UAH basketball home games through HometownTicketing, while general admission seating upstairs is free courtesy of Bentley Buick GMC in the regular season. The 2025 GSC Basketball Championships will start with first round matchups on Tuesday, March 4, on the campuses of the top four seeds.

The Chargers men's and women's track and field teams have been hard at work in the 2024-25 indoor campaign with seven meets in the regular season before the GSC Indoor Championships on Feb. 20-21 in Birmingham. ■



FREE ADMISSION



Admission to all regular season events at Charger Park is free again this season, courtesy of Alabama Credit Union.





UAH HOLIDAY JAZZ PRESENTS GIFTS OF TALENT AND INSPIRATION AT THIRD ANNUAL EVENT

A blue Christmas of the very best kind unfolded on the UAH campus on Dec. 10 as students and faculty from the Department of Music, Theatre and Film offered gifts from the heart to guests at the annual Holiday Jazz celebration. Trees sparkling with blue and white lights set a tone of festive sophistication while guests mingled and enjoyed hors d'oeuvres and libations before the show. Theatre Professor David Harwell transformed this site of many UAH special events into a cool jazz club with large ornaments suspended from the ceiling and shimmering curtains creating an intimate setting for sounds of the season.

The Low Brass Ensemble from the UAH Wind Ensemble – Christine Hayes, Nick Latty, Trevor Olmsted, Caleb Ray, Thomas Robison and Brian Williams on trombone, and James Spurlock, tuba – got the party started. Then Dr. Joshua Burel, department chair and associate professor of music theory and composition, welcomed guests to the

third Holiday Jazz and introduced Dr. Jack Hontz, director of bands.

Hontz pointed out that his musicians represent all the colleges at UAH. "For the rest of the evening," Hontz said, "what you're going to see is a cross section of what we have going on in our department – some of the work that's indicative of things we do with our students every single day and throughout the semester."

The UAH Jazz Combo captivated the audience with three sets featuring arrangements and original works by Josh Coutts, director of the Jazz Combo and guitar instructor. Along with Coutts on guitar, the group includes Conor Gilbert, trumpet; Hector Herrejon, trombone; Joshua Carpenter, guitar; Preston Jackson, piano; Luke Mantooth, drums, and Nick Walker, bass.

Interspersed between Jazz Combo sets were a variety of delightful performances from the Piano Trio



UAH theater students Jaylon Mastin, left, as Fitzwilliam Darcy and Jaeda Smith as Elizabeth Darcy present a scene from the play "Miss Bennet: Christmas at Pemberley." Period costumes were by Heather Baumbach with assistance from Blaire Durham and Riley Niblett.

– Dr. Melody Ng, director; Elisabeth Johnson, and Kathryn Hardgrave – as well as the UAH Chamber Choir – Kobe Baffield, Jay Bowman, Faylee Crawford, Blaire Durham, Kathryn Hardgrave, Delia Hendersen, Olivia Henderson, Jay Hendricks, Anthony Jimenez, Oliver Klarer, Josh Mayo, Kholin Mitchell, Bonnie Price and Aulton Rorie. Dr. Matthew Carey directs the group.

UAH Theatre presented a scene from the play "Miss Bennet: Christmas at Pemberley" by Lauren Gunderson and Margot Melcon. Amy Guerin, associate professor and interim director, Theatre and Film, directed the show.

The Vocal Jazz Ensemble – Dr. Amalia Osuga, director; Faylee Crawford; Bonnie Price, and Jay Hendricks – sang "I'll Be Home for Christmas."

The Jazz Combo ended the evening with a spirited version of "Sleigh Ride" – the perfect way to bid a warm farewell to party guests on a chilly evening. ■

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