



TEXAS A&M UNIVERSITY

J. Mike Walker '66 Department of
Mechanical Engineering

2020 Magazine



LEADERS IN ENGINEERING

The J. Mike Walker '66 Department of Mechanical Engineering is one of 14 departments in the Texas A&M University College of Engineering (the biggest college on the Texas A&M campus). Among public institutions in the nation, our undergraduate program is ranked 11th and our graduate program is ranked 9th. Our faculty members are internationally recognized in research areas including thermal and fluid sciences, materials and manufacturing, mechanics and design, systems and controls, biomechanics and human health, energy and environment, and robotics and mechatronics.

HIGH IMPACT

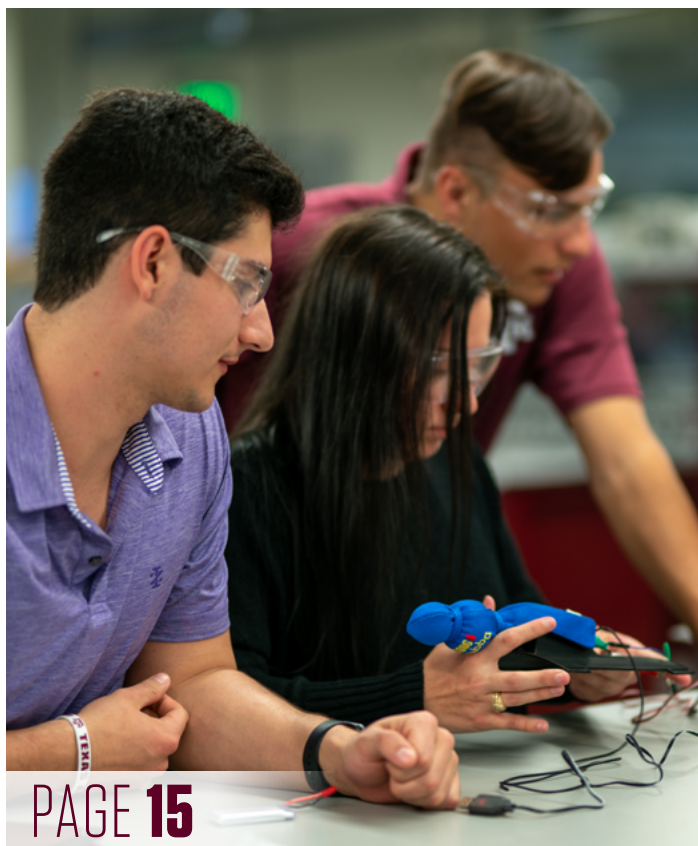
The department's research encompasses a wealth of mechanical engineering disciplines and houses both state-of-the-art turbomachinery and energy systems laboratories, as well as national network for manufacturing innovation and connected autonomous safe transportation facilities. Active research efforts within the department are in the areas of combustion, energy systems mechanics, fluid mechanics, heat transfer, polymers, systems and controls, tribology, and turbomachinery. Research within the department has resulted in improved processes in various industries, new companies and increased economic activity.

STUDENTS

Students within the department receive a broad education in basic theory courses complemented by laboratory experiences in dynamic systems and controls, design, experimentation, fluid mechanics, heat transfer, manufacturing, and materials. Graduates of the department's undergraduate and graduate programs are recruited by manufacturers, health care providers, transportation companies, engineering consulting firms, national laboratories and universities.

TABLE OF CONTENTS

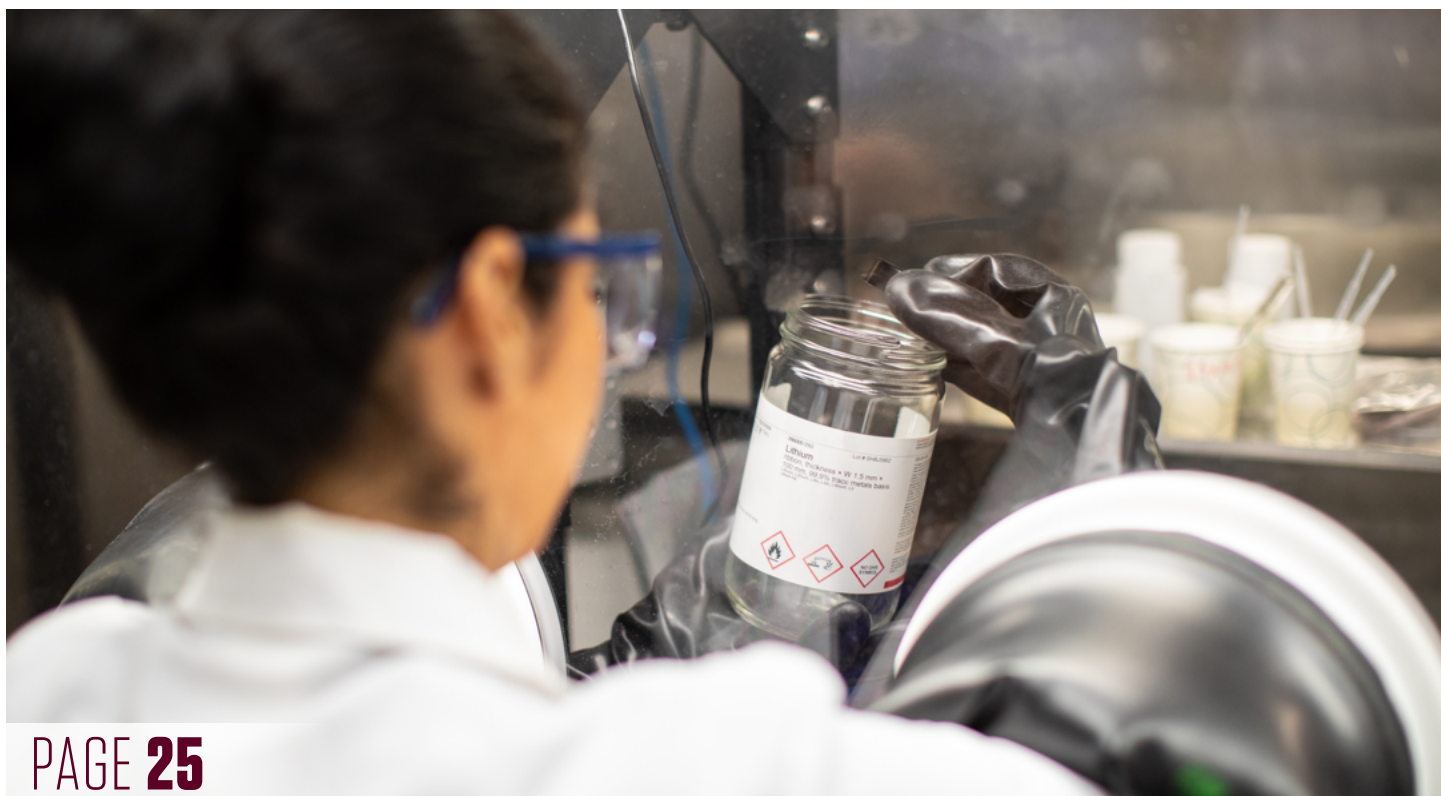
4	Letter from Department Head
5	Department Overview
6	Faculty Awards
8	Staff Awards
10	Staff Spotlight
11	We Bleed Maroon
12	The Sky is the Limit
13	A Life-Saving Cause
14	Playing on Keys
15	On Alert
16	Into the Extreme
18	Fulfilling Dreams
19	Critical Shortage
20	Boeing & Beyond
21	One Gallon to the Future
22	Inspiring Students Through Teaching
23	Smart Building Ventilation
24	Advancing Energy Storage
25	NSF Award
26	Walker Eminent Lecture Series
27	Fowler Distinguished Lecture Series
28	Legacy of Remembrance
29	Industrial Advisory Council
30	Stewardship



PAGE 15



PAGE 22



PAGE 25

LETTER FROM THE DEPARTMENT HEAD



Greetings from Aggieland!

Howdy! On behalf of the J. Mike Walker '66 Department of Mechanical Engineering, I hope you and your family are safe during these trying times.

As we face this global crisis together, I have been proud to see how our department has responded with resilience, compassion and innovation. I am confident that we will overcome this together and be stronger on the other side.

This past year has been filled with achievements and a number of exciting developments.

The generous endowment provided by the late Dr. J. Mike Walker '66, established in 2018, has already made a big difference in the department. The J. Mike Walker '66 Impact Award was established and awarded to four undergraduate and six graduate students for their academic and innovative excellence. Additionally, four faculty members have received grants to pursue research. The department was also able to make renovations to both the Mechanical Engineering Office Building and the James J. Cain Building, including an expanded rapid prototyping lab.

Our faculty continue to gain success in high-impact research, obtaining major research grants in areas of national importance and receiving recognition from their peers as recipients of prestigious awards, including Dr. Matt Pharr, who received the National Science Foundation's CAREER Award for his work on developing improved rechargeable batteries, and Dr. Thomas Lacy, who partnered with the

Army Futures Command and established his Hypervelocity Impact Laboratory.

We welcomed three new tenured faculty this year and are actively screening top-notch candidates for recruitment. We know their contributions to the field of mechanical engineering will continue to propel our department toward preeminence.

The department continues to transform our undergraduate curriculum to promote experiential learning while fostering student growth and development. Our faculty continue to be recognized for their outstanding contributions to engineering education. We are committed to leading the way in innovations to advanced pedagogy in engineering education to educate the mechanical engineers of the future.

There are so many undergraduate and graduate students in our program who exemplify the standard of excellence in education and research we hold in the department, and it is my pleasure to introduce some of them featured in this issue along with their many accomplishments.

I would also like to offer a sincere thank you to the donors who generously support programs in our department through significant contributions in support of faculty, students and facilities. Your support enables us to continue enhancing the quality of education we provide to our students.

Andreas A. Polycarpou, Ph.D.

Department Head

James J. Cain '51 Chair in Mechanical Engineering
Meinhard H. Kotzebue '14 Professor

DEPARTMENT OVERVIEW

DEGREES AWARDED (2018-19)

387 Bachelor's

51 M.S.

37 M.Eng.

47 Ph.D.

ENROLLMENT (2019-20)

1,447 Undergraduate
(excluding freshmen)

144 M.S.

100 M.Eng.

254 Ph.D.

AREAS OF RESEARCH

- Energy Conversion and Combustion
- Heat Transfer and Thermodynamics
- Materials
- Fluid Mechanics
- Solid Mechanics
- Design and CAE
- Controls
- Dynamics, Vibrations and Acoustics



FIELDS OF APPLICATION

- Energy and Environment
- Micro and Nanosystems
- Advanced Manufacturing
- Biomechanics and Health
- Rotating Machinery
- Robotics and Mechatronics

FACULTY

TENURED/TENURE TRACK	64
FULL PROFESSORS	29
ASSOCIATE PROFESSORS	18
ASSISTANT PROFESSORS	17
ACADEMIC PROFESSIONAL TRACK	17
PROFESSORS OF PRACTICE	4
INSTRUCTIONAL FACULTY	8
RESEARCH FACULTY	6
TEXAS A&M AT QATAR FACULTY	11
EMERITUS FACULTY	23
NATIONAL ACADEMY MEMBERS	5
AFFILIATED FACULTY	18

ENDOWMENT
\$86.4M

RESEARCH
EXPENDITURES
\$28.9M

ENDOWED POSITIONS

CHAIRS	7
PROFESSORSHIPS	12
FACULTY FELLOWSHIPS	11
CAREER DEVELOPMENT PROFESSORSHIPS	4

FACULTY AWARDS



N.K. Anand, Ph.D.

James M. and Ada Sutton Forsyth Professor – Regents Professor – Executive Associate Dean of Engineering – Associate Director, Texas A&M Engineering Experiment Station

American Society of Mechanical Engineers – James Harry Potter Gold Medal



Dion Antao, Ph.D.

Assistant Professor

TEES – Engineering Genesis Award

Peggy L. and Charles Brittan '65 Outstanding Undergraduate Teaching Award



Shadi Balawi, Ph.D.

Associate Professor of Instruction

Mechanical Engineering Industrial Advisory Council Outstanding Faculty Contribution Award



Debjyoti Banerjee, Ph.D.

Professor – James J. Cain '51 Faculty Fellow I

Texas A&M Engineering Medicine Program (EnMed) – Fellow



Adolfo Delgado, Ph.D.

Associate Professor

James J. Cain '51 Faculty Graduate Teaching Award



Ali Erdemir, Ph.D.

Professor – TEES Eminent Professor

Governor's University Research Initiative



Alan Freed, Ph.D.

Professor

National Academy of Sciences – Member



Jaime Grunlan, Ph.D.

Professor – Linda & Ralph Schmidt '68 Professor

Government of Australia – Australian Research Grant



Cynthia Hipwell, Ph.D.

Professor – TEES Eminent Professor – Member, National Academy of Engineering

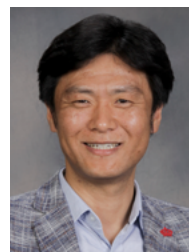
Aggie Women Network and the Texas A&M University Office of the President – Eminent Scholar Award



James Hubbard, Jr., Ph.D.

Professor – TEES Eminent Professor – Member, National Academy of Engineering

The Academy of Medicine, Engineering and Science of Texas – Member



Pilwon Hur, Ph.D.

Assistant Professor

South Central American Society of Biomechanics – Best Paper Award



Waruna Kulitilaka, Ph.D.
Associate Professor – Morris E. Foster Faculty Fellow I
TEES – Engineering Genesis Award



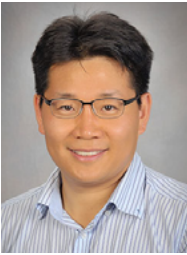
Tillie McVay, Ph.D.
Associate Professor of Instruction
Mechanical Engineering Industrial Advisory Council Faculty Mentoring Award



Thomas Lacy, Ph.D.
Professor
TEES – Engineering Genesis Award



Michael Moreno, Ph.D.
Assistant Professor – Director of Innovation for Engineering Medicine – J. Mike Walker '66 Faculty Fellow
College of Engineering – EnMed Fellowship



ChaBum Lee, Ph.D.
Assistant Professor
Gwangju Institute of Science and Technology – Alumni Award
American Society of Mechanical Engineers – Blackall Machine Tool and Gage Award



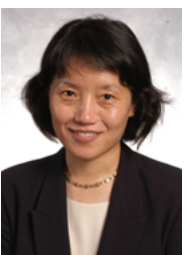
Prabhakar Pagilla, Ph.D.
Professor – James J. Cain Professor II – Associate Department Head of Undergraduate Programs – Director, Advanced Robotics Manufacturing Institute
15th International Conference on Web Handling – John J. Shelton Best Paper Award



Ying Li, Ph.D.
Associate Professor – Pioneer Natural Resources Faculty Fellow III
American Chemical Society – New Direction Award



Eric Petersen, Ph.D.
Professor – Director, Turbomachinery Laboratory
Institute of the Dynamics of Explosions and Reactive Systems – Vice President
Mercator (Germany) – Mercator Fellow
J. Mike Walker '66 Department of Mechanical Engineering – Nelson-Jackson Chair
American Institute of Aeronautics and Astronautics – Associate Fellow



Hong Liang, Ph.D.
Professor – Oscar S. Wyatt J. Professor
European Union Academy of Sciences – Member



Matt Pharr, Ph.D.
Assistant Professor
Kaneka Foundation – Kaneka Junior Faculty Award
National Science Foundation – CAREER Award



Daniel A. McAdams, Ph.D.
Professor – Robert H. Fletcher Professor – Director of Undergraduate Programs – Associate Department Head of Research and Strategic Initiatives
NFL Helmet Challenge Symposium – Travel Grant Award



Bryan Rasmussen, Ph.D.
Associate Department Head for Graduate Programs
College of Engineering – Charles Crawford Distinguished Teaching Award



Sivakumar Rathinam, Ph.D.

Associate Professor

Institute of Electrical and Electronic Engineers – Senior Member



Steve Suh, Ph.D.

Associate Professor

American Society of Mechanical Engineers – Fellow



J.N. Reddy, Ph.D.

Professor – Oscar S. Wyatt Jr. Chair Professor – University Distinguished Professor – Regents Professor – Member, National Academy of Engineering
American Society of Mechanical Engineers – The Timoshenko Medal; TEES – Engineering Genesis Award; International Research Center for Mathematics & Mechanics of Complex Systems, University dell'Aquila – The Eugenio Beltrami Senior Scientist Prize



Bruce Tai, Ph.D.

Assistant Professor – Mechanical Engineering Industry Advisory Council Faculty Fellow

Texas A&M Engineering Experiment Station – Engineering Genesis Award



Luis San Andres, Ph.D.

Professor – Mast-Chilids Chair Professor

American Society of Mechanical Engineers-Structures and Dynamics Committee – Best Paper Award



Ya Wang, Ph.D.

Associate Professor – Leland T. Jordan Career Development Professor

Texas A&M Engineering Experiment Station – Engineering Genesis Award



Arun Srinivasa, Ph.D.

Professor – Holdredge/Paul Professor

American Society of Mechanical Engineers – Worcester Reed Warner Medal

Texas A&M University at Qatar, Mechanical Engineering Program – Faculty of the Year



Justin Wilkerson, Ph.D.

Assistant Professor – James J. Cain '51 Faculty Fellow II

TEES – Engineering Genesis Award

STAFF AWARDS

JAMES J. CAIN STAFF EXCELLENCE AWARD



Amy Caldwell

Budget Manager



Reveca Vazquez

Administrative Associate IV



Ashley Schmitt

Academic Advisor III



Mitch Wittneben

Associate Director, Information Technology

AGGIES LEAD by Example

IMPACT AN ENGINEERING STUDENT

Scholarships

You can give undergraduate students a better opportunity to succeed at Texas A&M through a variety of scholarship programs that allow you to direct your gift in creative ways.

Faculty Fellowships

The College of Engineering has made a significant investment in obtaining world-class faculty. Endowed faculty fellowships are needed to reward exemplary career achievement and retain these distinguished researchers and professors in today's competitive market.



YOU CAN MAKE A DIFFERENCE



FOR MORE INFORMATION CONTACT:

Reagan Chessher, Senior Director of Development
rchessher@txamfoundation.com
979.862.6415

Stephanie Lampe, Assistant Director of Development
slampe@txamfoundation.com
979.458.3137

STAFF SPOTLIGHT ASHLEY SCHMITT



In her role as an academic advisor, Ashley Schmitt spends her time advising undergraduate students and supporting their educational and career goals, as well as helping to develop targeted recruiting programs, developing support programs for current students and creating semester course schedules for the department. In addition to her normal job duties, she also serves as chair of the department's staff advisory council.

"I enjoy many things about working in this department," Schmitt said. "I enjoy

working with my co-workers, they are a fabulous group of individuals that make this department function. I also enjoy our students, they are amazing and I am honored I get to support their growth."

After receiving her bachelor's degree in music from Texas A&M University-Corpus Christi, and her master's degree in music education from Stephen F. Austin State University, Schmitt spent two and a half years at Stephen F. Austin State working on high-impact practices for the school's quality enhancement plan before traveling abroad to Japan, where she taught English to elementary and junior high students in Higashimatsushima, Japan.

After a year in Japan, Schmitt decided to a return to higher education in Texas – and what better place than Texas A&M. An Aggie connection through her family, combined with an interest in joining a larger university and the school's resonant culture, helped draw Schmitt to Texas A&M. "I knew it would be a great environment to work in," she said.

Before joining the mechanical engineering department in 2017,

Schmitt first worked in the Office of Graduate and Professional Studies, first as graduate student specialist processing student documents, then as an assistant editor in Thesis and Dissertation Services.

Her time in the mechanical engineering department has helped to fuel further professional growth outside of her job as well. In 2019, Schmitt earned her Doctor of Education degree from Concordia University - Portland.

Now, every day Schmitt's goal is to provide exceptional service and information with those she works with.

"In my position, I want to make an impact on those I serve," Schmitt said. "It doesn't have to be large, even small ones are important. I want to impact students for a positive college experience. I want to be their advocate and their guide in navigating college processes, opportunities and choices. I want to create positive experiences for them at the university through advising and superior programs."

PRESIDENT'S MERITORIOUS SERVICE AWARD



Sharli Nucker has been honored as one of the 2020 President's Meritorious Service Award recipients for Texas A&M University. Nucker serves as administrator in the J. Mike Walker '66 Department of Mechanical Engineering, where she acts as chief of staff.

Recipients of the prestigious award have demonstrated their commitment to the Aggie core values of excellence, integrity, leadership, loyalty, respect and selfless service.

"I am very happy to have recruited Sharli in the department more than five years ago," said Dr. Andreas Polycarpou, mechanical engineering department head. "Her contributions to the department have been substantial and I am very thankful for all her hard work to make our department better."

WE BLEED MAROON

Quentin Baker arrived on the Texas A&M University campus in 1974 with one goal in mind; to become a mechanical engineer.

His experiences as an Aggie have played a significant role in his success. The lessons that Texas A&M instilled in Baker is why he strives to provide the same opportunities for current students in the J. Mike Walker '66 Department of Mechanical Engineering.

"When you go through undergrad, your blood turns maroon," said Baker. "I had the chance to speak at a seminar and reconnect with the university, and I realized how much I missed it. I then had the inspiration to give back to the institution that helped me make my way through life."

Baker, who serves as president of Baker Engineering and Risk Consultants, Inc., is heavily involved with students on campus. He frequently speaks at seminars and recently funded two capstone projects.

"Companies who aren't taking advantage of the opportunities to have those interactions with students are missing a great time," Baker said. "It's a chance to learn how they're doing, and for us to feed off their energy."

As a member of the J. Mike Walker '66 Department of Mechanical Engineering's Industry Advisory Council, Baker has an avenue to ensure that students are prepared for their careers.

"I get to have interactions with faculty, learn what's being done in terms of curriculum and give feedback on what industries need from the students," said Baker. "It's a rewarding experience, and I will continue to be involved because of that."



In addition, Baker and his wife, Jana, created the Jana and Quentin A. Baker Faculty Fellowship. Currently, the recipient of this fellowship is Dr. Lesley Wright, an associate professor.

"My wife and I created the endowment so that there would be funding to help with the attraction and retention of high-quality faculty," said Baker. "Dr. Wright is the first recipient. I recently met with her and had the chance to see her laboratories. It is great to make that connection and see how our endowment is being put to use."

In 2018, Baker was awarded the Outstanding Alumni Award by the College of Engineering. He hopes that his work inspires other alumni to contribute to Texas A&M.



"The Industry Advisory Council is trying to get alumni and companies more connected to support the department," Baker said. "The council's Mechanical Engineering Advancement Fund is a great way for alumni to support the mechanical engineering department since 100% of the funds go to department advancement, faculty support and student scholarships."



THE SKY IS THE LIMIT

Catherine Dillier has always loved the science of mixing chemicals – now, her attention is on the fuel that makes rockets go.

Growing up with a strong interest in math and science, Dillier enjoyed mixing random household items together, spent summers doing educational workbooks and found refuge in her ability to solve equations.

Although she did not know then how to apply her interests, she has found her niche within the Turbomachinery Lab.

Her current research focuses on solid composite propellants. Using formulations, she adjusts additives to a propellant so it can meet specific criteria. This criterion can include things like burning rate and how this burning rate can affect the impact and

temperature sensitivity, or the strength of a propellant.

"I get to formulate these propellants, and then burn them, it is the best of both worlds. You get the chemistry and then you get the combustion and fire," Dillier said. "That's the fun stuff. If you had told me when I was little that this is what I was going to do, I'd laugh and say that this is not a real job."

As an undergrad, Dillier intended to work toward a safety certificate in chemical engineering until she crossed paths with Dr. Eric Peterson, director of the Turbomachinery Laboratory. Peterson invited her to tour the lab and offered her a position.

Dillier graduated from the department with her bachelor's degree in December 2014, completed her master's degree



in 2016 and is now working toward her doctoral degree.

"The nice thing about mechanical engineering is that you're exposed to so much," said Dillier. "You can find the avenue you like because of the broadness and available routes within mechanical. For me, that avenue is combustion."

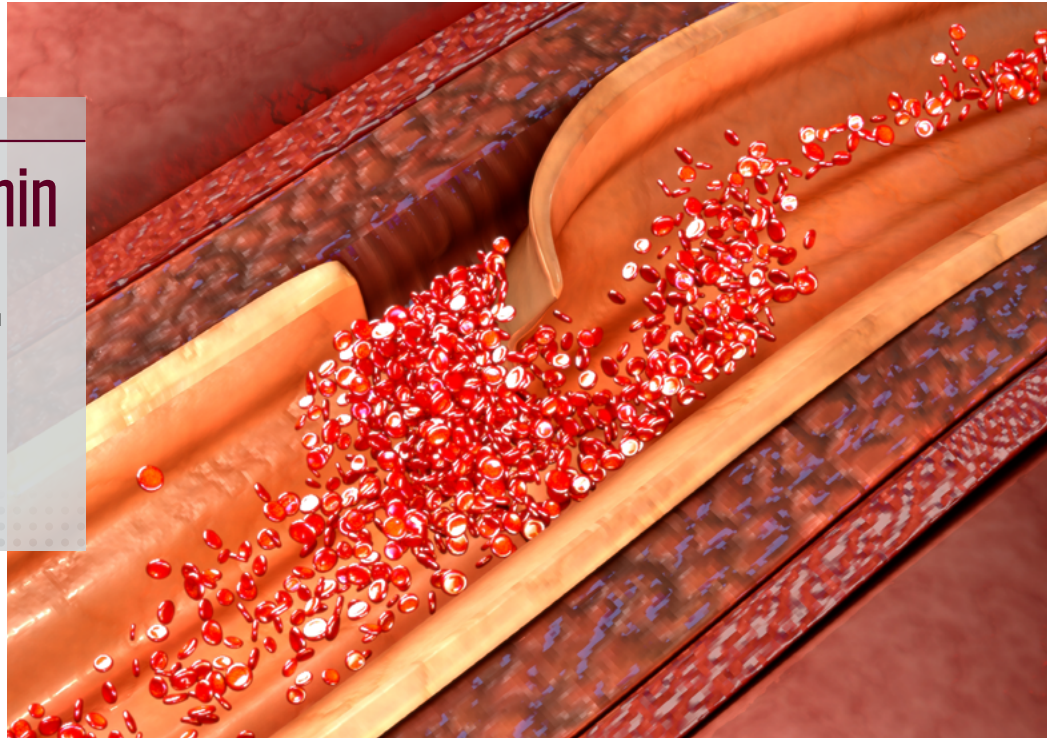
A LIFE-SAVING CAUSE

Featured Faculty

Dr. Chandler Benjamin

Assistant Professor

ccbenjamin@tamu.edu
979.862.4201



Although engineering is typically associated with metals, polymers and plastics, day-to-day materials from paint and toothpaste to the human body have also been engineered to perform. For those researchers who study these materials, the impacts are potentially life saving.

These materials must first be tested so that it is known how they behave in certain situations – a task which Dr. Chandler Benjamin and his lab approach through the use of material characterization and nonlinear models.

One of the main areas of Benjamin's research focuses on harnessing these models to help health care providers determine a condition of the body's largest artery – aortic dissection – which can often be fatal.

An aortic dissection typically occurs when an injury to the innermost layer of the aorta allows blood to flow between the layers of the aortic wall, forcing the layers apart.

"If an aortic dissection occurs on the arch – the part that attaches right into the heart – I hope you are already in the hospital on the operating table," Benjamin said. "If it occurs in the descending or the abdominal aorta, it's very bad and you have some time to get to the hospital, but still, the fatality of that disorder is high."

Unfortunately, the condition is difficult to diagnose and can often be confused with an aneurysm based on current methods of detection, including an MRI, leaving physicians with no choice but to perform surgery to physically observe the artery.

To help assist health care providers in determining the likelihood of an aortic dissection, Benjamin and his lab group are working to create a model that could accurately detect the conditions

under which it might occur, allowing the patient and their physicians time to take steps toward prevention.

To accomplish such goals, they take the materials they study and seek to determine how they behave when put under stress. It is at this point where Benjamin's lab sets itself apart, taking these characterizations and using them to test nonlinear models.

"If you're unable to describe how a material is going to behave under different loads and different conditions, and if you have no models to represent this, you can't even start," Benjamin said. "You can't even think about how you're going to predict something like this. So, this is always the first step in any mechanical development, it's the first thing that has to be done."

These capstone senior design projects were funded by an endowment from the department's namesake, Dr. J. Mike Walker '66. For more information about the senior capstone design program or to sponsor a future capstone project, email Dr. Joanna Tsenn at joanna.tsenn@tamu.edu.



A team of mechanical engineering seniors brought music back to the Children's Museum of the Brazos Valley by refurbishing a large walk-on piano.

"The importance of this project is to help out the people of this community," said senior Madelyn Dudley, who is partially responsible for the fabrication of the design as well as team communication. "As a student at Texas A&M, it is sometimes hard to remember that there is so much more to the community than just the university. This is a small way that the mechanical engineering department can say thank you."

The piano serves as an interactive way to expose children to music. By utilizing

pressure sensors, a child can step on a piano key, and the corresponding key plays music. After years of excited children bouncing on the keys, the piano has several parts that no longer function.

The mechanical engineering department used this as an opportunity for a new group of students to develop their skills. Along with Dudley, the team included Randall Mozingo, Charlie Green, Reagan Tucker, Etoroabasi Nwoko, Joanna Steele and Moyinoluwa Adejumo.

The team of seven students were responsible for reconstructing the piano in a way that provides more durability. Realizing that the pressure sensors would only work for short time

periods, it became evident that a whole new design was needed.

Rather than work through pressure, it now uses a switch-like function, which the team believes will be more suitable for the environment the piano is in.

"We are changing the way that the piano actuates energy — how the piano detects someone stepping on a key and turning that into a sound and light response," Dudley said. "We have redesigned the piano to use a switch-like function, which we are expecting to last much longer. We have also designed a code that enables the piano to hold notes as long as a child stays on the key, which was not the case beforehand."



ON ALERT

A new mechanism designed by a team of students from the mechanical engineering department looks to innovatively help those who suffer from seizures by way of a small computer-like device attached to a service dog's vest. The goal of the design is to send an alert when the user is experiencing symptoms of a seizure.

Its inspiration comes from a local family's teenage son, M.J. Rocha, who needed a better way to alert his family when he may be in danger. After hearing the options for their capstone senior design project, Claire Riordan and her five fellow teammates Lexi Atwood, Garrett Brewer, TJ Chorba, Walker Clayton and Zac Yelich, felt an instant pull toward the assignment.

"Everyone in the team connected with the topic immediately and were excited

to be able to help the Rocha family," said Riordan, who is responsible for the mechanical aspects of the design, as well as team communication. "Right now, our biggest hope is to produce a sturdy and reliable prototype."

Rocha's illness causes him to experience frequent seizures. Through technology, he desires to live safely, but also self-sufficiently. After months of deliberation, using a small, computer-like device connected to a service dog's vest yielded the most promising idea.

"We came to this design firstly with help from Dr. Srikanth Saripalli, who helped immensely in answering our questions about circuitry, sensors and microcontrollers. We also really tried to encourage thinking outside of

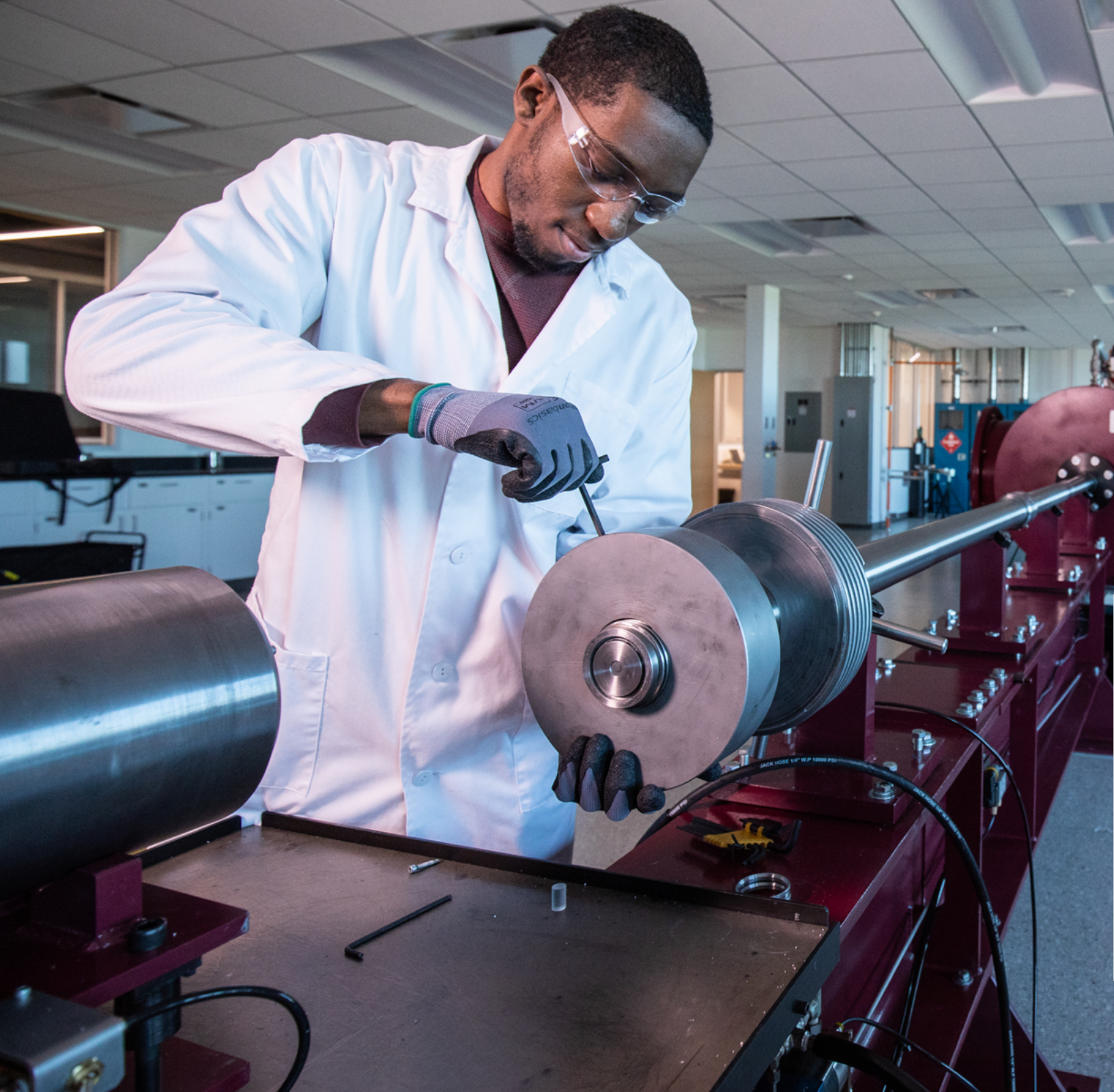
the box, as well as researching other solutions," said Riordan.

When the handler showcases signs of a seizure, the dog activates the mechanism by pulling on a cord that is a stretch sensor. The stretch sensor connects to a microcontroller that is, in essence, a small computer equipped with a SIM card and GPS capable of alerting the emergency contact of the user's location. The team hopes that this could be a system used by other families with similar issues.

"Our team is in the process of exploring options with the Engineering Entrepreneurship program," said Riordan. "If this is a route our team decides to go, we may consider a way to make this product something families everywhere could buy for their service animals."

HIGH IMPACT

INTO THE EXTREME



Featured Faculty

Dr. Thomas Lacy Jr.



Professor

telacyjr@tamu.edu
979.845.9397

Modern cars use lightweight plastics to cushion travelers in high-speed crashes. Police use Kevlar vests to stop speeding bullets.

But the science behind those safety measures isn't much use to researchers exploring which

materials can best mitigate the damage from hypervelocity blasts.

The scorching heat caused by speeds exceeding Mach 5 radically alters how different materials tolerate collision.

"It's one of the grand challenges," said Dr. Thomas Lacy, professor.

"The nature of material response is fundamentally different."

Lacy is on a Texas A&M team that is tackling the problem along with a team of experts in engineering, polymer chemistry, materials science, mathematics and computational mechanics.

This challenge is a key research area for the university through its partnership with Army Futures Command (AFC). Its aim is to mitigate damage from extreme-speed blasts and shock waves.

The research might lead to better-built vehicles and safer gear, such as helmets. It could help with construction of protective buildings and low-cost, portable structures that would be flown into endangered areas or be made from what's readily available nearby.

The research also could improve the materials used to make hypersonic weapons, which have to tolerate weather and possibly other obstacles as they race toward targets.

"It's really about the material that will withstand hypersonic flight," said Gen. Mike Murray, AFC commanding general. "That's the important part."

Texas A&M will employ an Agile methodology in computer modeling, experimentation, adjustment and repetition. The academic team will work closely with Army researchers and other experts in the field.

Much of the experimenting will occur at the Hypervelocity Impact Laboratory, established by Lacy in fall 2019 at the RELLIS Campus.

The lab features a two-stage light-gas gun (two stages of acceleration are needed to reach hypervelocity). The 45-foot gun accelerates 4- to 10-millimeter diameter spherical projectiles up to 8 kilometers per second, the equivalent of Mach 24 or 18,000 mph.

The gun will impact projectiles through a variety of target materials at various speeds and measure the resulting eruption of shrapnel and debris. It uses high-tech diagnostics including laser intervalometers, high-speed imaging and, in the future, flash X-ray, ultra-high rate laser diagnostics systems to characterize fracture of both projectile and target, study debris cloud expansion and perform three-dimensional fragmentation tracking.

Hypervelocity impact experiments will focus initially on thermoplastic polymer materials, which are plastics that soften when heated, as well as lightweight metals and geomaterials such as concrete. The team also will test layered combinations of various metals, ceramics, polymers and composites.

The entire field of study began out of NASA's concerns for satellites and other spacecraft being smacked by out-of-this-world debris.

When the Earth's gravity gets hold of even small pieces of dust in space, the pieces can accelerate to 10 to 70 kilometers per second.

"It's absolutely devastating," Lacy said.



FULFILLING DREAMS

Interning at General Dynamics Mission Systems (GDMS) last summer in Georgia earned Eddie Chavez an opportunity to work with electronic security systems for the government and travel coast to coast.

"The internship was a brand-new program, and I was able to play a big part in defining my role," Chavez said. "GDMS allowed me to explore various areas that fall under the company's umbrella."

Chavez, a mechanical engineering junior, believes it was through his involvement with the Society of Automotive Engineers, the Society of Hispanic Professional Engineers and help from the Career Center that helped him stand apart from other applicants.

His role at GDMS involved supporting and analyzing the maintenance of security systems, system installation and vulnerability testing. The internship gave him the chance to learn how to write procedures at a technical level and learn about team and project management.

Chavez's internship also meant fulfilling a few of his lifetime dreams of traveling.

"Getting to travel through work was a fantastic experience," Chavez said. "Most of my time on travel was spent working, but I never expected to have an opportunity to visit Seattle."

Although moving to another state can be challenging emotionally because students are away from family, Chavez was able to find emotional support in his manager.

"Overall, I had a lot of talks about leadership with my manager and grew from my experience while having fun," Chavez said.

Next summer, Chavez said that he hopes to find a dream position where he can get involved in designs and work with structural analysis, using Finite Element Analysis. Ultimately, he discovered that seeking an internship far from Texas allowed him to experience new adventures and forced him to mature.

"I highly encourage other students to pursue internships out of their comfort zones because that is the best way to learn," Chavez said.

CRITICAL SHORTAGE

Texas A&M, through its unique Engineering Medicine (EnMed) partnership with Houston Methodist Hospital, stepped up to help the health care system keep up with the demand for medical supplies brought on by the increasing number of confirmed and suspected COVID-19 cases.

By early April, a team led by Dr. Michael R. Moreno has already delivered hundreds of 3D-printed diffusers for metered dose inhalers (MDI) to the Houston hospital.

"The spacer, or diffuser, that we created will allow the doctors to use metered dose inhalers to treat diagnosed and suspected COVID-19 patients who are not yet in need of ventilator therapy, without using nebulizers that may aerosolize the virus," Moreno said. "And this is important because if this early stage intervention is effective, then it is possible that these patients may recover before reaching that critical point where ventilator therapy is required." Moreno said the hospital was facing a critical shortage after being unable to find the diffusers from its normal suppliers.

He said one of the most powerful aspects of the project is that it came from direct communication with doctors who, at the forefront of this crisis, are identifying emerging unanticipated needs.

"In some cases, the solutions are not that complicated, but you have to know that the problems exist," Moreno said. "And the only way you're going to know that as an engineer is if you have an open line of communication with the doctors."

While ventilators are reserved for patients experiencing severe symptoms, respiratory inhalers are a part of the early treatment plan for most hospitalized patients exhibiting signs of the COVID-19 infection.

Bronchodilator drugs used for treatment of asthma can be utilized in COVID-19 patients to improve their ability to

Featured Faculty

Dr. Michael R. Moreno



Assistant Professor

J. Mike Walker '66 Faculty Fellow

Director of Innovation for Engineering Medicine

michael.moreno@tamu.edu
979.845.8500

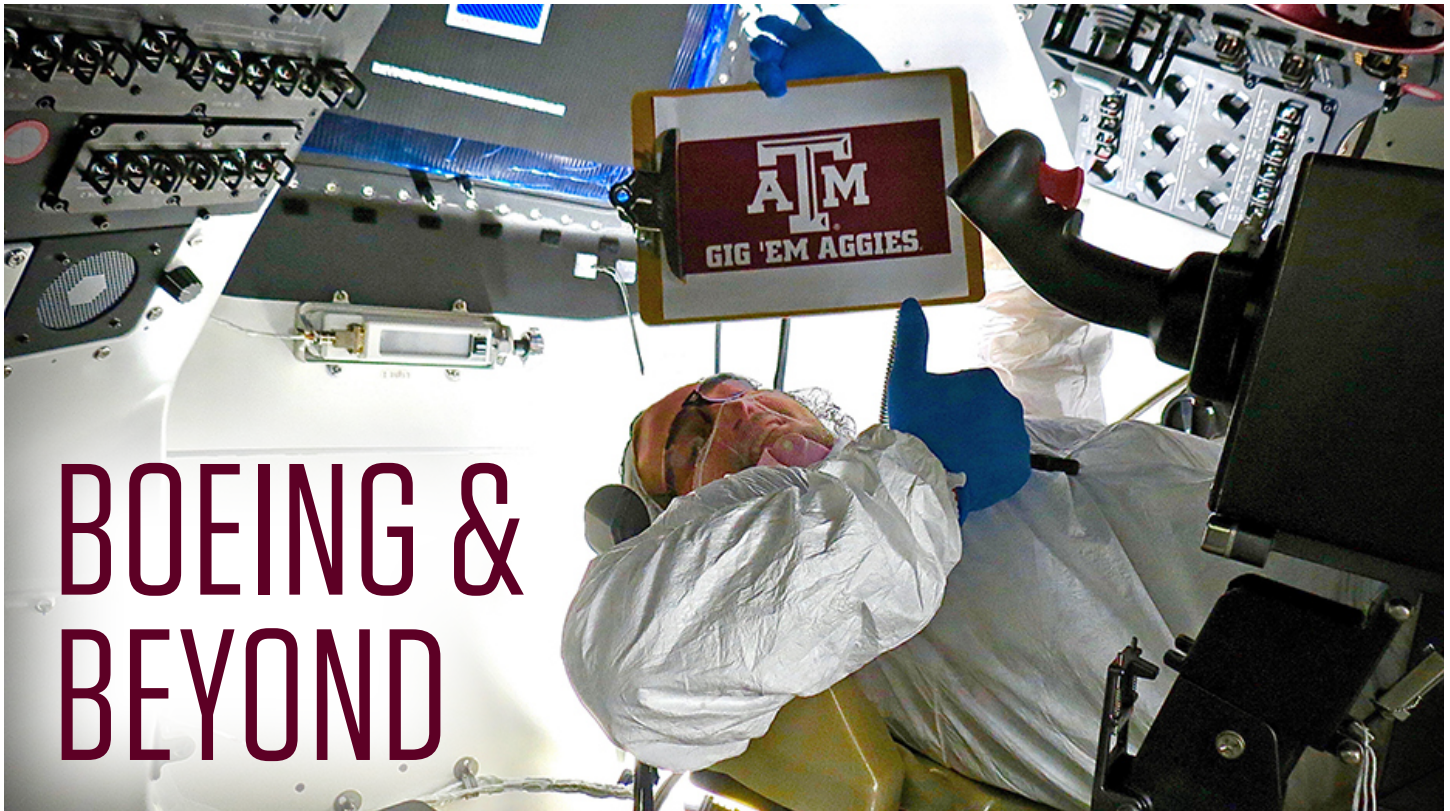
breathe. In the hospital setting, these would typically be administered using nebulizers. The concern is that the use of nebulizers could aerosolize the virus, placing those in the area at a higher risk of contracting the disease.

Consequently, inhalers are the preferred method of delivery for these drugs with confirmed and potential COVID-19 patients. The inhaler devices require precise timing of inhalation for proper delivery to the lungs, which is something Moreno said even experienced users, like himself, can find challenging.

With the help of a diffuser, patients are better able to get more of the medication into their lungs.

Although the concept being utilized for the diffusers is not new, this is among the first times it has been locally 3D printed and delivered on this scale.

Moreno and his team have made the stereolithography file for the 3D-printable design publicly available on the EnMed website at no cost.



BOEING & BEYOND

Mitch Carson '17, a graduate of the mechanical engineering department, is making the most of the skills he learned while at Texas A&M.

Carson, who started with Boeing by interning as a student, now works as a shift engineer and helped oversee the production of the company's Starliner space capsule, which made history last year as the first crew-capable capsule to make a land-based touchdown in the United States.

Q: What interested you in mechanical engineering?

A: Growing up, I spent a lot of time taking things apart, figuring out how they worked and putting them back together again. I played with Legos, built props for plays and even restored a 1976 Camaro. I knew that I had a knack for all things mechanical but needed more than just intuition to really build things well. With that in mind, I started seeking a career that would both employ my talents and provide financial stability to the family

I hoped to have. After researching different fields, it became clear that mechanical engineering was the perfect discipline to meet these goals.

Q: What do you do in your job now?

A: Many engineering designs look great on paper but turn out to be unviable when it comes time to build them. My job is to work with technicians to identify these issues during spacecraft construction, modify the design so that it can be built, analyze my modifications to make sure that they maintain the spacecraft's design intent and integrity, and finally oversee the solution's implementation. I really enjoy it; I've gotten to work on several satellites and for the past seven months have been helping build the Starliner space capsule.

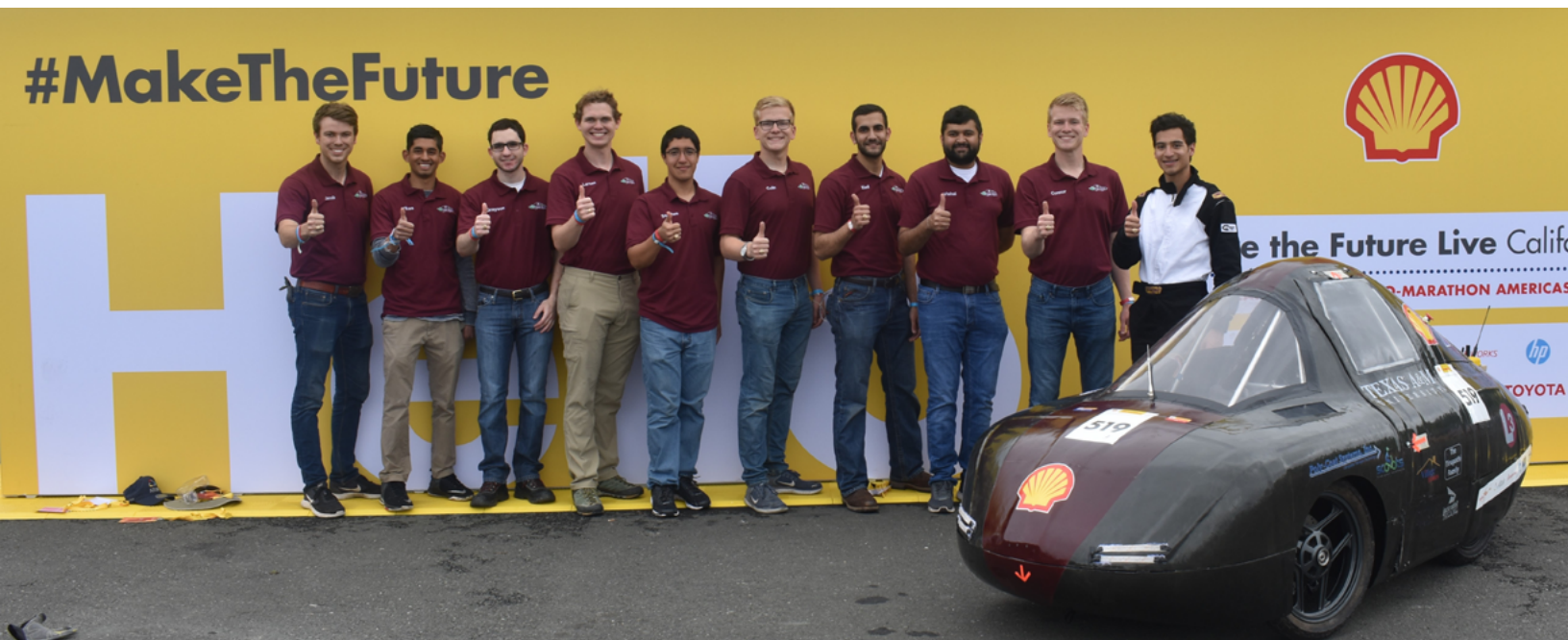
Q: What excites you most about your work?

A: I feel like an artist. I get to take ideas as they pop into my head and then go build them. It's really cool getting to see

a picture in my head become a physical structure in front of me, especially one that gets put on top of a rocket and shot into space.

Q: How did your time in the mechanical engineering department help prepare you for your career?

A: It made me tough and gave me the grit I need to persevere through difficult situations. It also taught me how to effectively manage my time, work productively with a variety of people from diverse backgrounds, and create tools to solve mechanical problems. The department put an emphasis on learning how to use Matlab and C++. I didn't understand why at the time, but can now see how useful those skills are. Already at Boeing I've been able to take what I've learned and automate processes that other engineers have been doing manually for years. As a result, I'm able to create more robust designs and complete my work much more quickly and correctly than many of my peers.



ONE GALLON TO THE FUTURE

Texas A&M University senior design students are doing their part to move automobile energy efficiency into the future alongside their peers from around the world.

A team of 10 graduating seniors from the department won the prize for off-track safety at the annual Shell Eco-marathon energy efficiency competition in Sonoma, California. It was the first time a team from Texas A&M had competed.

The global competition — which began in 1939 as an informal competition between Shell scientists to see who could get a car to run furthest on one gallon of fuel — aims to give high school and university students the opportunity to participate in a collaborative, hands-on experience pursuing the development of highly energy-efficient vehicles.

The team, led by project manager Vishal Modi, competed in the Urban Concept

and Internal Combustion Engine categories at the competition with a goal of developing a vehicle that could average hundreds of miles per gallon and featured four wheels, space for a driver, a luggage compartment and other common car components such as headlights, brake lights, turn indicators, hazards, a horn and a windshield.

Team member Jacob Hartzler said he and his peers were inspired by the competition's goal of directing the brightest young minds from around the planet toward making an impact on some of the challenges facing the future of energy consumption among vehicles.

"This project serves to propel technology and innovation in the automobile industry, technology that could impact the daily lives of billions of people," Hartzler said. "On a much smaller scale, this project introduces students to an extremely complex and comprehensive project. The experience

gained by members of the team far exceeded the standard senior design project and will likely be built off of in our careers."

In addition to Modi and Hartzler, the team included Grayson Aldrich, Larsen Dempsey, Colin Michels, Connor Michels, Stephen Lara-Ramirez, Vikas Rao, Christian Rivera and Ziad Wardeh.

Ultimately, the team's win for the off-track safety award was a testament to their dedication to the project with no previous car to improve upon like many of their peers at the competition.

"We were able to build a car from scratch in less than seven months and clear technical inspection, a feat many first-year teams are not able to accomplish," Modi said. "The judges were overwhelmed with the quality of the team's safety report submission and display of safety concern at the competition itself."



INSPIRING STUDENTS THROUGH TEACHING

Dr. Shadi Balawi feels that as a professor, it is his job to make sure every student who walks into his classroom fully grasps the concepts he is teaching. It is this connection that inspires his passion for academia.

"I think one of the things to maintain as a professor is that we need to encourage and inspire," said Balawi, an associate professor of instruction in the J. Mike Walker '66 Department of Mechanical Engineering at Texas A&M University. "We need to help the students fulfill their potential. We need to make sure they are engaged and that they like what they're doing."

When he gets the opportunity to see a student truly understand a topic, Balawi said it is gratifying to know they will be able to move forward independently.

"That type of interaction is something that I really treasure," he said.

Balawi comes from a history of academia, beginning with his graduate studies at the University of Cincinnati, where he was adjunct faculty in the Department of Aerospace Engineering and received his Ph.D. It was then he realized his passion for teaching others.

"I liked the idea of clarifying issues that people may not have understood," said Balawi. "I figured out that I could do that. I had always liked academia, and I felt that maybe I had some kind of talent there."

With nearly 20 years of teaching experience, Balawi has worked for Texas A&M since January 2018. He currently teaches Materials and Manufacturing (MEEN 360 and 361).

Balawi wants his students to learn skills that can be applied to make important decisions. To him, teaching goes beyond numbers and words.

Featured Faculty

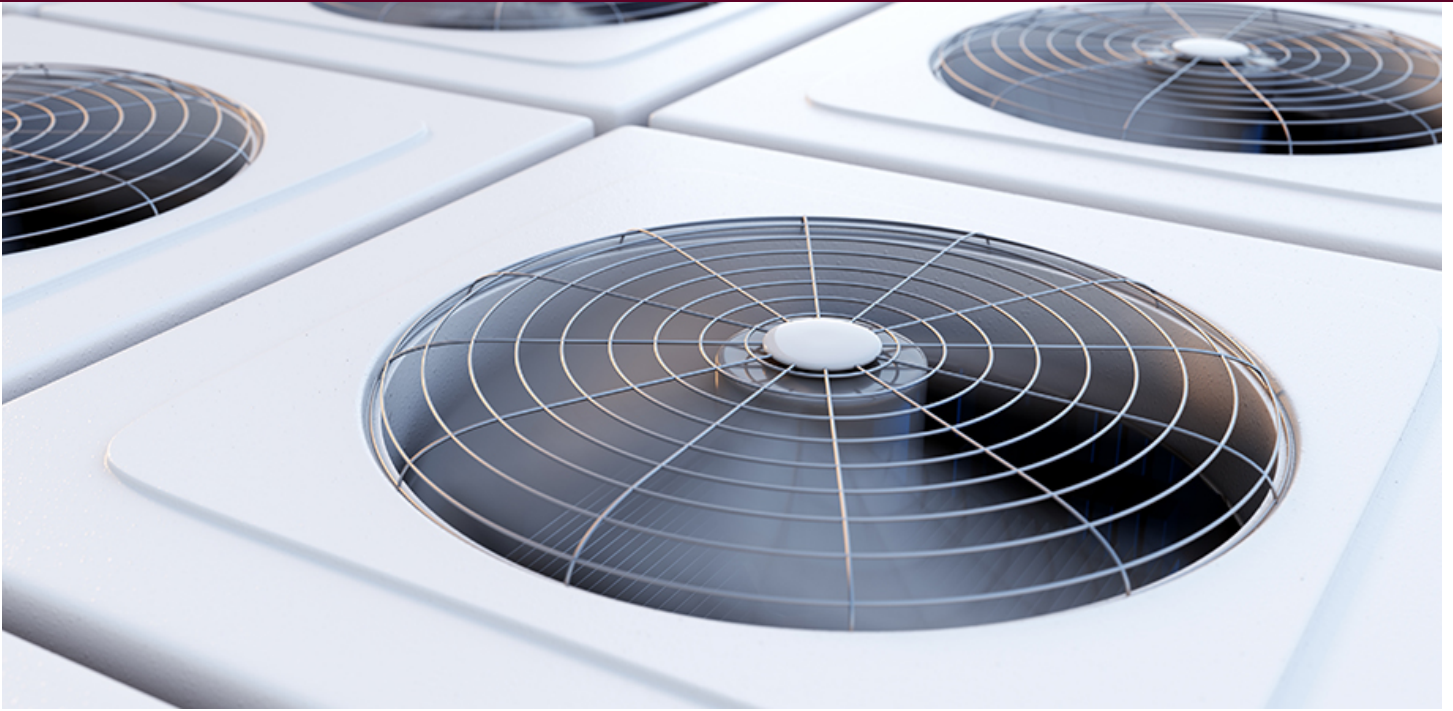
Dr. Shadi Balawi

*Associate Professor
of Instruction*

sbalawi@tamu.edu
979.862.2060



"I always tell my students that you are not hired for your ability to do math and figure out what to do with the numbers in terms of equations and models," Balawi said. "It is about what these numbers actually mean and how you make use of them in real-life applications."



SMART BUILDING VENTILATION

While the COVID-19 pandemic continues, there is a need to look ahead for innovative new ways to make public buildings safer for both visitors and employees.

Dr. Zheng O'Neill of the J. Mike Walker '66 Department of Mechanical Engineering and a team of Texas A&M University researchers are seeking to develop a smart ventilation control system with grant support from the National Science Foundation.

O'Neill, who serves as associate professor and J. Mike Walker '66 Faculty Fellow II in the department, is partnering on the project with Dr. Qingsheng Wang, associate professor in the Artie McFerrin Department of Chemical Engineering, as well as her postdoctoral research associate Dr. Yangyang Fu and her doctoral student Xing Lu.

The goal of the project is to investigate the viability of a smart ventilation control system that could operate with a normal mode and an emergency "pandemic mode," as needed, for

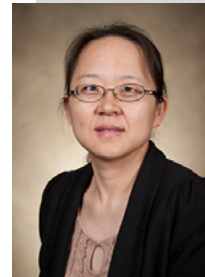
common public buildings such as offices, classrooms and retail stores.

"During the outbreak period of the pandemic, to maintain essential activities, some public buildings such as retail stores and essential government facilities have to remain operational. Critical employees are required to work inside these public buildings," O'Neill said. "With proper measures, the built environment could help minimize the potential for COVID-19 infection, including smart and enhanced heating, ventilation and air-conditioning (HVAC) design and operations, higher humidity levels, surface cleaning and hygiene specification, spatial configuration, etc."

She said the social-economic impact generated by COVID-19 has the potential to be mitigated by the implementation of the proposed smart ventilation control system, increasing the resilience of HVAC systems and possibly reducing the infection risk even during times of global pandemic.

Featured Faculty

Dr. Zheng O'Neill



*Associate Professor
J. Mike Walker '66
Faculty Fellow II*

zoneill@tamu.edu
979.845.4931

"These buildings are designed and operated in normal conditions by default," O'Neill said. "The fundamental question is, with the current HVAC equipment and systems in existing public buildings, can we do something with a transformative and smart ventilation control by diluting the air in a space with cleaner air from outdoors to reduce the infection risk of an individual occupant?"

ADVANCING ENERGY STORAGE

Dr. Shima Hajimirza has been awarded two grants from the National Science Foundation (NSF) for her research in radiation heat transfer in materials.

Her first project "EAGER: Predictive Surrogate Modeling and Analysis of Radiative Heat transfer in Porous Media" aims to develop a more efficient and effective way of measuring the response that materials have to radiation.

"We are using artificial intelligence to study the radiation effects in materials," said Hajimirza, an assistant professor. "To our knowledge, this is the first time that these methods have been used for problems in this context, and I'm very excited to be one of the pioneers of this area."

As Hajimirza described, radiative heat transfer in porous media is a complex and ambiguous phenomenon that is vital to the simulation and design of energy technologies such as pebble beds, solar absorbers, solar thermochemical reactors, biological tissues, and thermal barriers for jet engines and space vehicles.

As such, the development of a reliable method of measurement and estimation of a material's radiative

properties is integral to the continued advancement of clean, renewable energy – both on a national and global scale.

By applying machine learning and artificial intelligence to the investigation of radiation transfer, Hajimirza aims to revolutionize how researchers and engineers approximate, predict and understand the properties of porous materials undergoing radiative heat transfer. Her state-of-the-art computational models will be a vital tool to both industry and academia.

Similarly, her second project "Enhancing Quantum Efficiency of Thin Film Solar Cells via Joint Characterization of Radiation and Recombination" focuses on conducting a fundamental investigation of nano-textured complex thin films used in harvesting solar energy. The findings will lead to improved methods used to systematically enhance the efficiency of this emerging technology.

"Thin film solar cells are at the forefront of innovation in photovoltaics technology. (They) are lightweight and can be made flexible, which makes them ideal for a lot of applications.

Featured Faculty

Dr. Shima Hajimirza

Assistant Professor

shima.hm@tamu.edu
979.845.4280



However, the efficiency of thin film solar cells is significantly lower than bulk cells," said Hajimirza.

Because the technology is still very new, there have not been rigorous analytical models and studies that fully describe the operation of thin film solar cells – creating a gap in knowledge that makes it highly difficult to pinpoint how to best target and solve efficiency issues. This project will provide an understanding and modeling of joint radiation and carrier transport effects – two critical elements used in thin film solar cells – that will lead to more efficient, cost-effective solar cell devices.

"Both projects aim to study the fundamentals of radiation heat transfer in materials," said Hajimirza. "Both projects are based on very novel scientific approaches and, if successful, will lead to breakthrough technologies."



NSF CAREER AWARD

Dr. Matt Pharr has been awarded National Science Foundation (NSF) support for his work on developing improved rechargeable batteries.

Pharr, an assistant professor, was selected for the 2020 NSF Faculty Early Career Development (CAREER) award for his work, an honor designed to allow promising junior faculty to pursue cutting-edge research while simultaneously advancing excellence in education.

In addition to supporting Pharr's research, the award will also provide resources toward developing interactive and immersive augmented and virtual reality-based learning modules, with the goal of improving undergraduate and graduate students' understanding of the mechanics of materials in electrochemical systems.

"I am honored to receive this award," Pharr said. "The funding will provide key resources to develop my research program at an important stage in my career. In particular, it will allow me to continue to pursue mechanics of materials-based research in nontraditional areas, in this case, that of electrochemistry."

From portable electronics to electric vehicles, rechargeable batteries are abundant in daily life, with lithium-based batteries often selected as the power source of choice. By properly distributing batteries into a connected grid, Pharr said energy storage from renewable resources — such as wind, solar and wave — could be enabled.

Coupled with broader integration with electric vehicles, the emission of greenhouse gases could be reduced. However, challenges still remain.

"Commercial batteries utilize materials with relatively low energy densities: batteries add substantial weight to vehicles and occupy huge volume in portable electronics, but must be recharged every few hours," Pharr said.

Pharr's research is investigating lithium and sodium metal anodes and key alloys as potential components of next-generation batteries and how to overcome the challenges of safety and durability currently associated with these chemistries.

"While the electrochemistry of lithium and sodium has been studied extensively, at the heart of the issue lies a mechanics of materials problem," Pharr said.

Featured Faculty

Dr. Matt Pharr

Assistant Professor

mpharr85@tamu.edu
979.458.3114



"Unstable deformation occurs during operation, producing so-called dendrites and damage. Materials and mechanics-based studies are thus necessary to enable safe and durable operation."

Pharr said the goal of this project is to provide an understanding of the interplay between functional and structural behavior of lithium and sodium anodes.

"Combined with materials discovery of alloys, these studies will guide appropriate charging conditions, applied pressures and material properties that prevent damage with an eye toward enabling safe and durable operation," Pharr said.

WALKER EMINENT LECTURE SERIES

The Walker Eminent Lecture Series was established by Dr. J. Mike Walker '66 in 2018. With this endowment, the J. Mike Walker '66 Department of Mechanical Engineering invites nationally recognized scholars to Texas A&M University to conduct lectures as part of the graduate department seminar class.

Dr. Jacqueline H. Chen

Dr. Jacqueline H. Chen is a senior scientist at the Combustion Research Facility at Sandia National Laboratories.

She has contributed broadly to research in turbulent combustion elucidating turbulence-chemistry interactions in combustion through direct numerical simulations. To achieve scalable performance of domain name systems (DNS) on heterogeneous computer architectures, she leads an interdisciplinary team of computer scientists, applied mathematicians and computational scientists to develop an

exascale direct numerical simulation capability for turbulent combustion with complex chemistry and multiphysics.

She is a member of the National Academy of Engineering and a fellow of the Combustion Institute and the American Physical Society. She received the Combustion Institute's Bernard Lewis Gold Medal Award in 2018 and the Society of Women Engineers Achievement Award in 2018.

From left: Dr. Andreas A. Polycarpou and Dr. Jacqueline H. Chen, speaker.



FOWLER DISTINGUISHED LECTURE SERIES

The Fowler Distinguished Lecture series was established by Mr. Donald Fowler '66 and Dr. Joe Fowler '68 in 1999. With this endowment, the J. Mike Walker '66 Department of Mechanical Engineering invites nationally recognized scholars to Texas A&M University to conduct lectures as part of the graduate department seminar class.

Dr. Ali Erdemir

Dr. Ali Erdemir was previously a distinguished fellow and a senior scientist at Argonne National Laboratory. He recently joined the department as a professor and TEES Eminent Professor. He received his B.S. degree from Istanbul Technical University in 1977 and his M.S. and Ph.D. in materials science and engineering from the Georgia Institute of Technology in 1982 and 1986, respectively.

In recognition of his research accomplishments, Erdemir has received numerous coveted awards (including the University of Chicago's Medal of Distinguished Performance, six R&D 100 Awards, two AI Sonntag Awards and an Edmond E. Bisson Award from the Society of Tribologists and Lubrication Engineers (STLE) and the Mayo D. Hersey Award from ASME) and such honors as being elected to the National Academy of Engineering,

the European Union Academy of Sciences, the presidency of the International Tribology Council and STLE. He is also a fellow of the American Association for the Advancement of Science, ASME, STLE, the American Vacuum Society and ASM International. He has authored/co-authored more than 300 research articles (230 of which are peer-reviewed) and 18 book/handbook chapters, edited three books, presented more than 180 invited/keynote/plenary talks and holds 26 U.S. patents.

His current research is directed toward the development of novel tribological technologies for a broad range of applications in manufacturing, transportation, and other energy conversion and utilization systems.

From left: Dr. Ali Erdemir, speaker, Dr. Joe Fowler, Mrs. Joyce Fowler and Mr. Donald Fowler



LEGACY OF REMEMBRANCE



Jamie C. and Christopher D. White '99 have established the Allie Estelle White Memorial Scholarship. This endowment will be used to provide one or more scholarships to full-time students in good standing pursuing an undergraduate degree in the J. Mike Walker '66 Department of Mechanical Engineering.

White decided to attend Texas A&M based on the reputation and standing of the mechanical engineering program. However, he said that the Aggie culture and camaraderie were what initially drew him to the university and ultimately made him pick Texas A&M. "The four and a half years at A&M helped me develop the technical and leadership skills needed to be successful in the real world," Christopher said.

White has established this scholarship not only to help mechanical engineering students offset financial burdens

and stress while attending Texas A&M, but also to honor the memory of his late daughter, Allie.

"We recently lost our youngest child, Allie Estelle White, due to a tragic accident in Round Rock. Allie was 2 years and 9 months old when she died, so we want Allie's memory to live on and help raise awareness of the dangers of distracted driving," Christopher said. "Establishing an endowed scholarship in her name is a great way for her name to always be remembered."

White hopes that recipients of this scholarship can learn about Allie's legacy and realize the importance of safe driving.

"I really value the education and leadership skills I received at Texas A&M," he said. "I continue to see strong leaders graduate from the school and want to support this in Allie's name."

INDUSTRY ADVISORY COUNCIL

The Industry Advisory Council (IAC) consists of former students who volunteer their time to keep the department informed of the challenges they face each day in their respective fields.

Members of the IAC are selected for their leadership, accomplishments and willingness to support the mission of the council, which is to support the department and mechanical engineering students.

Executive Committee

Brenda Hightower Chair
Solomon Associates

Lance Simmang Vice Chair
The Dow Chemical Company

Thomas Roesner Faculty-Industry Liaison
Cameron

Kathy Lynn Resource and Development
Sumitomo Mitsui Bank

Jack Miller Steering
Stress Engineering Services Inc.

Michael Smith Student Development
Bell Helicopter Textron

Arnold Muyshondt Secretary/Treasurer
Sandia National Laboratories

Members

David Adams *Halliburton Company*

Lane Anderson *QTS*

Randy Armstrong *Raytheon Company*

Quentin Baker *Baker Engineering and Risk Consultants Inc.*

Susan Bankston Goertz

Russell Bayh III *Halliburton Company*

Larry Bloomquist *Mechanical Reps Inc.*

Tom Bundy *ConocoPhillips, Retired*

Cary Chenanda *Cummins Inc.*

H. Craig Clark *Wishbone Energy Partners*

Wade Cleary *Cleary Zimmermann Engineers*

Shelly Cory *Baker Hughes*

Chris Eberly *ParkUSA Engineering*

Craig Fox *Apollo Management*

Jim Havelka *ASI Healthcare*

Charlie Havis *Lockheed Martin Aeronautics*

Sandeep Kishan *Eastern Research Group*

Craig Kuiper *Pioneer Natural Resources*

George Land III *Ingersoll Rand*

Jeff Lipscomb *JWL Engineering*

Russell Martin *ExxonMobil Upstream Ventures*

Kenneth Meline *DFW Consulting Group Inc.
& Command Commissioning*

Gary Mitchell *Anadarko Petroleum Corporation*

Laurie Morrow *The Boeing Company*

Scott Moses *Oil States Industries Inc.*

Suzanne Mottin *Occidental Energy Ventures LLC*

Andrew Nelson *Lisam Systems*

Edis Oliver *Wiss, Janney, Eistner Associates, Inc.*

Tony Pelletier *Alamo Resources, LLC*

David Pierpoline *Solomon Associates*

Michael Piper *Conley Rose*

Alan Quintero *Rowan Companies, Inc.*

Holly Ridings *NASA*

Jaswant Sihra *BP, Global Ops*

Robert Simmons *Petra Seismic Design Consulting Engineers*

William Sims *Accent Wire*

John Spicer *Breeze Energy, LLC*

Scott Spreen *Mobile Impact*

Allan Taylor *Wood Group*

Robert Tolles *Applied Materials Inc.*

Larry Wall *NextEra Energy US Producing, LLC*

Denzil West *Reliance Energy Inc.*

Gary Young *Tymco Inc.*



STEWARDSHIP

DONOR CONTRIBUTIONS

Gifts to the department may be in the form of cash, securities, real estate or personal property. Many of our supporters have contributed using planned gifts, including, but not limited to:

\$500-\$999

Mr. Patrick J. Fisseler '92, Mrs. Kristine M. Fisseler '93
Silver Ventures, Inc.
Mr. John G. Lipton '17
Mr. and Mrs. David Tucker
Mr. Thomas J. Boedecker '63
Ms. Aerial Corey
Textron
Mr. William J. Manning '55
Dr. Venkat P. Vallala '09
Don McGill Toyota of Katy
Mr. Jeff A. Bergeron '99
Mr. Don P. Dixon '57
Dr. Stephen E. Kibbee '77
Mr. A. Kishan Rao
Lutron Electronics
Mr. Brian Keith Odom '16
Texas Instruments Foundation
Dr. Maryann G. Couch
Mr. William O. Hildebeitel '10
Dr. Roman A. Arciniega Aleman '05
Mr. Robert E. Simmons '86
Mr. Sandeep Kishan '85
Mr. Ronn G. Tips '89
Mrs. Suzanne M. Mottin '88

\$1,000-\$9,999

The Hartford Steam Boiler, Inspection and Insurance Co.
Dr. and Mrs. Michael E. Coker '70

Mr. Edis T. Oliver '63
Mr. and Mrs. Arthur V. King '75
Mr. William H. Stindt '61
ASME Foundation, Inc.
TerraTek, Incorporated
Charities Aid Foundation- Dow Chemical
Dr. Madhusudan R. Malladi
Mr. William E. Hickman '96
BP America, Inc.
Mr. Donald G. Hervey '65
Mr. Norman O. Oliver '63
Mr. John B. Spicer '83
Dr. Namhee Kim '16
Mr. Thomas A. Sparks
Mr. Christopher D. White '99
Mr. Michael C. Young '85
Mr. Jeffrey M. Bolner '04
Mr. Thomas E. Bundy '78
Mr. Wade A. Cleary '94
Mr. Michael W. Piper '90
Mr. Satya Y. Reddy
Chevron - YourCause, LLC
CustomInk, LLC
Mr. Jose E. Garcao
Occidental Petroleum Corporation
Ms. Caitlyn N. Talbert '16
Mr. Donald R. Schroeter '63
Mr. Harold B. Warnick, Jr. '57, Mrs. Carolyn Warnick
Wiss, Janney, Elstner Associates, Inc.

charitable remainder trusts, lead trusts, gift annuities, bequest provisions and life insurance. These are all excellent ways to benefit Texas A&M and the J. Mike Walker '66 Department of Mechanical Engineering while fulfilling philanthropic goals and possibly achieving financial planning or tax benefits.

Mr. Donald R. Ray '68
Mr. Nameer A. Siddiqui '94
Mr. Eduardo X. Castro-Wright '75
Mr. William P. Sims '89
Mr. Clayton W. Vaughn '80
Halliburton Foundation, Incorporated
Society of Plastics Engineers, Inc.
Mr. and Mrs. Lawrence R. Fleming
Mr. Oscar J. Peraza '85
Mr. Craig A. Fox '77
Caterpillar Incorporated
Mr. J. Christopher Cook '93
Mr. Doss A. Cunningham '04
Shell Oil Company
Doug and Allison Frey Foundation Inc.
Mr. Arthur V. King
Dr. Dakshina C. M. Moorthy '97
Mr. Charles R. Smith '58
American Endowment Foundation
Mr. Emil G. Swize, Jr. '68
Mr. and Mrs. Michael Phillips
Mr. John P. Mihalick '61
Mrs. Laurie H. Morrow '85
Mr. Albert B. Glasgow '73
YourCause, LLC
Jack E. Miller, PE '74
Dr. Early B. Denison '66
Foster Family Foundation
ConocoPhillips

\$10,000-\$99,999

SABIC Innovative Plastics US LLC
Dr. Ranga R. Kattegummula
Chevron U.S.A. Inc.
Shell Oil Company Foundation
Bank of America Charitable Gift Fund
Ms. Kathleen M. Lynn '79
FW Murphy Productions Controls
Fidelity Charitable Gift Fund
YourCause, LLC Trustee for Phillips 66
Kaneka Corporation
Robert and Mary Haythornthwaite
Mrs. Nancy Fletcher
Mr. Gerald H. Britsch '75
Mr. Jesse T. Luce '56
Mr. William W. Latimer, Jr. '61
Mr. Robert B. Conn '51
Dr. Melanie D. Sarzynski '02
Mr. Philip S. Moses '90
Dr. L. S. "Skip" Fletcher '58
ExxonMobil Foundation
General Motors LLC
Mr. and Mrs. Charles J. Kitowski '91
Pioneer Natural Resources USA
The Ayco Charitable Foundation
Dr. Leroy S. Fletcher '58

\$100,000+

Dr. Junuthula N. Reddy
Mr. Jay H. Stafford '48

NEW GIFTS

Douglas and Allison Frey Foundation
Scholarship

ExxonMobil Aggies MEEN Scholarship

Angela L. and Travis J. Everett '93
Scholarship

Landen Family Endowed Scholarship
Student Development Fund

Matt '81 and Lisa Lawrence '81
Formula SAE Team Fund

Rene and Scott Moses '90 Fellowship

Bobbie J. and Gerald H. Britsch '75
Scholarship

Beth and Bryan Shultz '90 Endowed
Scholarship

Allie Estelle White Memorial
Scholarship

Jeanette and Robert B. Conn '51
Scholarship

Vivian and William "Bill" Latimer, Jr.
'61 Scholarship

GIVING TO THE DEPARTMENT

Giving to the J. Mike Walker '66 Department of Mechanical Engineering is critical to continuing the legacy of our nationally recognized standards of educational excellence and is now easier than ever. The Texas A&M Foundation has recently opened its GiveNow secure online giving website, and it is available to use for direct contributions to the mechanical engineering department.

Mechanical Engineering Undergraduate and Graduate Scholarships

These funds directly support our students by providing scholarships and fellowships through a competitive process.

Dr. J.N. Reddy Chair

These funds provide support to a faculty member to enable them to improve the quality of research for their field, support graduate students and ultimately to impact society. The Reddy Chair honors Dr. J.N. Reddy, Oscar S. Wyatt Jr. Chair Professor, Regents Professor, Distinguished Professor and National Academy of Engineering member, who has been with the department since 1992.

Mechanical Engineering Excellence Fund

These funds provide general support to the department for a variety of endeavors that include professional development for faculty, staff and students; student organization support; development activities; award recognition and more.

Student Development Fund

To provide a truly impactful learning experience to our students, we must be able to venture outside of the classroom. In order to provide meaningful content, the student development fund can be utilized for study abroad opportunities, emergency scholarships, bring in esteemed guest lecturers or public speakers, and ensure that student groups have financial means to attend national conferences and competitions.

Mechanical Engineering Advancement Fund/Industry Advisory Council Fund

The Mechanical Engineering Advancement/Industry Advisory Council Fund provides support to recruit and retain the best faculty and students through faculty fellowships, endowed undergraduate scholarships, department head strategic initiatives and faculty and staff recognition and support.

Please contact us for more information

Reagan Chessher

Senior Director of Development

979.862.6415

rchessher@txamfoundation.com



Stephanie Lampe

Director of Development

979.458.3137

slampe@txamfoundation.com





TEXAS A&M UNIVERSITY

J. Mike Walker '66 Department of Mechanical Engineering

NONPROFIT ORG.
U.S. POSTAGE
PAID
COLLEGE STATION
TEXAS 77843
PERMIT NO. 215



J. MIKE WALKER '66 DEPARTMENT OF MECHANICAL ENGINEERING

3123 TAMU
COLLEGE STATION, TX 77843-3123

engineering.tamu.edu/mechanical
979.845.1251



@TAMUengineering



@TAMUengineering



TAMUmechanical