

# CHEMICAL ENGINEERING ALUMNI NEWSLETTER

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# FROM THE CHAIR

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*John C. Flake  
Jay Affolter Endowed Professor  
Department Chair*

Dear Friends,

I hope everyone enjoyed the summer. The past year has been great! I will always remember the total solar eclipse last August and the equally rare three inches of snowfall in December. I am happy to report that our department is doing very well. Our faculty now includes 15 tenure and tenure-track professors, three full-time Professionals-in-Residence and six part-time faculty, including instructors and emeritus faculty. The three Professionals-in-Residence and part-time instructors have had a remarkable impact on our students. Students value their real-world experiences and benefit from learning the more practical aspects of chemical engineering. Fortunately, our faculty continues to grow. We plan to fill three more tenure/tenure-track positions this fall. These new faculty members will join a group of dedicated professionals and will strengthen our mission to teach, research and serve.

Speaking of service, I should note a very important milestone. I am happy to relay that Armando Corripio has completed 50 years of service to our department. His level of service and dedication is rare. Please see the article about Armando in this newsletter. Likewise, I should note that several other faculty have received prestigious awards this past year, including Mike Benton, Harry Toups, Chris Arges, Kevin McPeak and Adam Melvin.

In April, we hosted 26 chapters from the southeast for the AIChE Regional meeting. It was wonderful to see our students act as gracious hosts and share their passion for chemical engineering. We had over 400 ChE students who engaged in poster competitions, presentations, a job fair, ChE Jeopardy and the ChE Car competition. We were happy to show them our new building, particularly the Cambre Atrium. Our students won the Jeopardy competition and placed fourth in the ChE Car competition.

Lastly, I want to thank the 100+ volunteers who judged our junior and senior poster presentations. Your time is a valuable gift to LSU ChE!

Sincerely,

A handwritten signature in blue ink that reads "John C. Flake". The signature is fluid and cursive.



## ON THE COVER

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The Junior/Senior Poster Presentations were held in April 2018. Students enjoyed the chance to meet and greet some of Louisiana's best and brightest industry leaders. This year, 100+ industry professionals attended the presentations, which were held in the Cambre Atrium of Patrick F. Taylor Hall. As you can see from the picture, it was a huge success. Full article on page 16.

The logo for Louisiana State University (LSU), consisting of the letters "LSU" in a bold, yellow, sans-serif font.

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# FACULTY AWARDS & NEWS

## Mike Benton & Harry Toups Selected as William A. Brookshire Award for Teaching Excellence Recipients



It is our absolute pleasure to announce that Mike Benton and Harry Toups have been selected as this year's William A. Brookshire Award for Teaching Excellence recipients! Each year, only two CoE faculty members are chosen to receive this award, making their selection as recipients in a single year even more special. In addition to the honor of being selected, they each received a one-time cash award of \$25,000. Help us in congratulating them on receiving this amazing honor. We can't think of two more deserving professors.

Dr. William A. Brookshire made a philanthropic commitment to create the William A. Brookshire Award for Teaching Excellence endowment. This award is eligible to full-time faculty members in the College of Engineering. A faculty member has to complete at least 12 credit hours of in-classroom teaching in an academic year (fall, spring) and has to complete at least an additional 12 credit hours of teaching for the year, though this latter 12 hours can be accomplished with either thesis supervision or in-classroom teaching or both. Qualified faculty should thrive on student success, create and implement new pedagogies, and embrace technology to improve the overall in class experience for our students. At the core is a deep concern for student success.

## Mike Benton Receives 2018 Dow Excellence in Teaching Award



Mike Benton received the 2018 Dow Excellence in Teaching Award. This marks the fifth time that Mike has received this award in the last six years. Professors Kevin McPeak and Adam Melvin rounded out the top three.

Balloting was conducted earlier in the semester, and all seniors who expected to graduate during the 2017-18 academic year were eligible to vote. Voters were instructed to identify their top three choices from the list of full, associate, and assistant professors. The ballots were then tabulated anonymously and the top three selections in order of overall preference were determined.

At the ChE Awards Banquet, hosted by Dow on April 26, 2018, each finalist was introduced by a student who recounted several of their experiences with the faculty member. The results were then announced and every finalist was given a trophy to commemorate the event. In addition, Benton received a monetary award and his name was emblazoned on the plaque memorializing past recipients in the display case outside the Lopez Chemical Engineering Suite in Patrick F. Taylor Hall.

The Excellence in Teaching Award was started in 1988 with financial support from Dow Chemical USA, and is intended to recognize the chemical engineering professor that graduating seniors consider to be the most outstanding teacher in courses they have taken from the department during their time at LSU.

## Harry Toups Receives CxC Outstanding Faculty Award



Harry Toups was presented with the 2018 LSU Communication Across the Curriculum (CxC) Outstanding Faculty Award at a ceremony on Tuesday, May 2, in the Lod Cook Alumni Center on LSU's campus. As part of the

honor, Toups received a \$1,500 cash award thanks to the Renee and Leslie Hull Fund.

Toups, who earned his bachelor's, master's, and PhD from LSU before embarking on a 30-year career with Exxon, was selected for this year's award by a faculty jury because of "his extensive commitment to CxC's mission of transforming teaching, learning, and ultimately, student success."

As an instructor in LSU's Cain Department of Chemical Engineering, Toups has taught a senior laboratory course as communication-intensive for more than 10 years. He has also inspired numerous faculty at the annual LSU Faculty Summer Institute and mentored students through the LSU Distinguished Communicator Certification program.

## Chris Arges Receives 3M Non-Tenured Faculty Award



Professor Chris Arges won 3M's Non-Tenured Faculty Award (NTFA). There were 21 winners out of 100 applications received nationwide. The award provides Arges with \$45,000 of unrestricted funds over three years. The award will help accelerate his research activities in membranes with nanostructured interfaces generated by self-assembled block copolymer templates. Arges will travel to 3M's corporate headquarters later this year to present his research with the other national awardees. The initial amount of the award is \$15,000 for the first year.



## The department would like to welcome Barry Guillory & Brian Hanley to our faculty ranks.



Barry joined the faculty in fall 2017 as a part-time instructor. In spring 2018, he accepted the full-time position of Professional in Residence. Barry received his MS from our department in 1984. After graduation, he enjoyed a career with Dow.



Brian joined the faculty in fall 2017 as a Professional in Residence. He received his PhD from the University of Minnesota in 1987. He then went on to work in industry for over 30 years, with companies such as Aspen Technologies, Koch-Glitsch, Jaeger Products, and Air Products.

### K. T. Valsaraj Receives 2017 Jacobs Professor of Excellence Award



Dr. Kalliat Valsaraj, Vice President for Research & Economic Development at LSU, has been named the recipient of the 2017 Jacobs Professor of Excellence Award, which is presented annually by LSU's Cox Communications Academic Center for Student-Athletes.

Valsaraj was recognized during the LSU-Texas A&M Football game on Saturday, November 25.

"It is with great distinction to announce Dr. Kalliat T. Valsaraj as the 2017 Jacobs Professor of Excellence Award recipient," said Kenneth O. Miles, Assistant Vice Chancellor and Executive Director of the Cox Communications Center. "Jacobs is one of the world's largest technical, professional, and construction service providers. Dr. Valsaraj's credentials are in alignment with five of their competencies: customer focus, business insight, cultivates innovation, drives vision and purpose, and technical competency. Dr. Kalliat T. Valsaraj's passion, dedication, and work epitomizes the essence of the award."

Valsaraj joined LSU in 1986 as a research associate, later becoming a regular faculty member in the Cain Department of Chemical Engineering and then a tenured full professor. He served as the Department Chair from 2005-11. He has also provided service as a member of the Faculty Senate, Chair of the College of Engineering Policy Committee, and several other committees during his 31 years of service to LSU. He is an elected fellow of the American Institute of Chemical Engineers (AIChE), American Association for the Advancement of Science (AAAS), and National Academy of Inventors (NAI).

"Jacobs strongly supports higher education. As a company, we pride ourselves on creating sustainable solutions for our clients," said Michael Authement, VP, Operations in Baton Rouge. "We must invest in our future leaders in order to foster innovation and technical excellence. We would like to congratulate Dr. Kalliat T. Valsaraj as the Jacobs Professor of Excellence at LSU and salute

his commitment to the development of students in the field of engineering to help ensure future success."

This is Jacobs first year to be the presenting sponsor of the Professor of Excellence award.

"We are excited to start a new partnership with an organization like Jacobs, which shows commitment to the success of the great professors and students at LSU," said Ward Wyatt, general manager of LSU Sports Properties. "Congratulations to Dr. Valsaraj, whose work represents the excellence we each strive to attain both on and off the field at LSU."

### Kevin McPeak Receives LSU Alumni Association Rising Faculty Research Award



Kevin McPeak was chosen to receive an LSU Alumni Association Rising Faculty Research Award. The award recognizes faculty at the rank of assistant professor who have outstanding records of scholarship and published research and carries a one-time cash award of \$5,000.

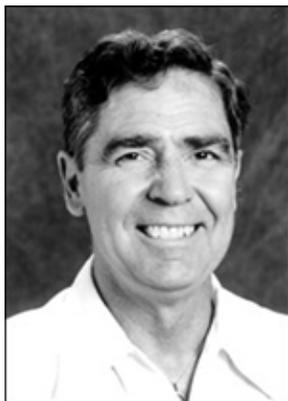
### Harry Toups Receives 2018 Wetzel Award



Harry Toups was selected as the recipient of the Wetzel Award for the second year in a row. The honor goes to an instructor for excellence in teaching. Toups received a trophy signifying his achievement.

# FACUTLY SPOTLIGHT

## Armando B. Corripio Professor Emeritus



### From Havana to Baton Rouge: ChE Professor Marks 50 Years of Teaching at LSU

LSU Chemical Engineering Professor Emeritus Armando Corripio's life story is nothing short of inspirational. From fleeing his native Cuba during Fidel Castro's reign to becoming a professor in an unfamiliar country, Corripio has proven that if you work hard and keep your eye on the ball, good things will come.

This year, he celebrates 50 years of teaching at LSU, where his lessons have been invaluable to not only his students, but to anyone needing a bit of motivation to follow their dreams.

Corripio's story begins in 1941, when he was born in the tobacco-growing town of Mantua in western Cuba. Cuba was prosperous at the time with a "great standard of living," Corripio said. His hard-working father owned a successful store that sold everything from gas and groceries to clothes and shoes. The capital city of Havana was seeing a boom in commerce, fashion, music, and gambling. Even American celebrities like Frank Sinatra and Ernest Hemingway frequented Havana hot spots. As the 1950s neared, however, things changed.

Corripio referred to his high school years as "very shaky ground" due to Castro taking over Cuba.

"When I finished high school, most universities were closed due to the rebellion," Corripio said. "Castro didn't like that some Cubans were studying while others had to fight. Santo Tomas was the only university open."

Knowing their son wanted to study chemical engineering, Corripio's parents bought a house in Havana so he could attend Universidad de Santo Tomas de Villanueva, a Catholic university with an American rector. He was only one year away from graduating when everything suddenly went wrong.

It was April 17, 1961, the day of the Bay of Pigs Invasion in Cuba. Nearly 20,000 Cubans were taken prisoner by Castro and his regime seized Santo Tomas, padlocking the campus and holding the students as prisoners.

"We were in the middle of taking an exam and had two months of school left when the teacher came in and told us to go home before the gunmen took us prisoner," Corripio recalled.

"We hopped in my car, and I dropped off three of my friends. One of them was taken prisoner right after I dropped him off. On my way

to drop off the last guy, we were stopped by Castro's militiamen and told to get out of the car while they searched it. We got out and they took the seats out. I was sure I wasn't going to make it home, but they let me back in [my car]. I don't know how."

After Corripio arrived home safely, he immediately tried to fly to Kingston, Jamaica, where he had to obtain a visa before he could fly to Miami. The problem was that most Cubans were doing the same thing. There were only two flights a week to Kingston, and they were always full. He tried eight times to board a flight before finally succeeding on the ninth try.

"There were so many people trying to get out that it was hard to get on a plane," Corripio said.

Once in Kingston, Corripio had to stay in a refugee camp for a month while waiting on X-rays and other documents he needed to obtain his visa. Men and women were separated in the camp, with women preparing the one meal a day and men cleaning all of the dishes.

"There was a mail strike the week I was supposed to get my documents, so then I had to wait another two weeks before I could get my visa," Corripio said.

Once he did, Corripio boarded a flight to Miami, and a year later, sent for his mother to join him. His father stayed behind to run what was left of the family business until that proved fruitless, and he flew to Miami on a Freedom Flight four years later to join the family.

"For a while, I was in Miami and didn't know what to do," Corripio said.

The U.S. government offered Cubans in Miami a free one-way ticket to a U.S. city of their choice. It was a huge decision for most, since it meant deciding where they wanted to live in a country they had never been to.

"A friend of mine, Alfredo Lopez, said we can go to LSU with a loan from the federal government, which was \$500," Corripio said. "That covered tuition and everything at the time. So, we both came together."

Since they "didn't quite finish" their junior year in Cuba, Corripio and Lopez had three semesters of classes to take at LSU, which accepted all of their previous course credits.

"Coming to LSU was one of the greatest ideas Alfredo ever had," Corripio said.

Corripio boarded a plane to Louisiana and continued his studies in chemical engineering at LSU. On the day of his last final exam in 1962, he took a Greyhound bus back to Miami to marry Connie, his sweetheart of more than a year. The newlyweds would spend their first summer together in Midland, Texas, where Corripio had a job with Mobil Oil. Soon after, LSU Chemical Engineering Professor Jesse Coates called Corripio to tell him that he needed three humanities courses in order to graduate in the spring.

"So, I added one class that semester, took a credit exam during the Christmas break, and took another class in the spring," Corripio said.

The spring of 1963 saw Corripio celebrating two special occasions — his college graduation and the birth of his first child, a daughter named Connie.

"Two weeks before commencement, my daughter was born, the same day the plant design report was due," Corripio said. "I gave it to Dr. Coates one day late with a cigar that said 'It's a girl.' He smiled."

After receiving his bachelor's degree, Corripio went to work for Dow Chemical in Plaquemine while taking evening graduate courses at LSU. It would be four years of balancing work and school, but he finally earned his master's in ChE from LSU in 1967. By this time, his family had expanded to include a son, Bernardo, and another daughter, Mary. Michael followed in 1972. Both sons, and his future son-in-law, would later graduate from LSU in chemical engineering.

During his second semester of graduate school, Corripio took a course on process control from LSU Chemical Engineering Department Chair and Professor Paul Murrill, who later became chancellor of LSU in 1974. Murrill wanted Corripio to consider getting his PhD at LSU.

"He said he had done it with a family and did not starve," Corripio said. "After five years, I followed his advice and found out he was right. Murrill helped me by giving me an instructorship in the department in 1968. So, I took my courses, worked on my dissertation and finished in one-and-a-half years."

Corripio earned his PhD in chemical engineering from LSU in January 1970. He had planned to look for a job in the field until fate intervened. One of his students, Dwight Fontaine, found out Corripio was looking for an off-campus job and started a petition to keep Corripio at LSU. As a result, the LSU Engineering Council gave him the Outstanding Faculty Member Award, and Murrill and College of Engineering Dean Roger Richardson offered him an assistant professorship.

"The dean said 'I guess they really want you,'" Corripio laughed.

Thanks to a U.S. Air Force Scientific Research grant secured by Murrill, Corripio spent 1970-1978 teaching Analog/Hybrid Simulation and Automatic Process Controls to juniors using a new hybrid computer — the EAI 680 analog operated by SDS Sigma 5 digital computer.

"The reason I got the job at LSU was because, at the time, hybrid computers were very popular because of the space program," he said. "While working for Dow, I learned about this particular hybrid computer [EAI 680]. LSU was trying to acquire the same computer and wanted me to run it."

In 1978, Corripio took a sabbatical and worked for the Massachusetts Institute of Technology (MIT) in Cambridge, where he developed the Aspen Process Simulator and also aided in computer control and process design.

"The Department of Energy wanted a program that people writing

proposals to them could use to present new sources of energy during the Energy Crisis, such as liquid from coal," Corripio said. "They gave a lot of money to MIT to develop that project. So, I joined them to work on the project.

"That was a very enjoyable time. We rented a house there [in Newton, Mass.] and enjoyed the new surroundings."

When he returned to LSU in 1979, Corripio continued teaching undergraduate and graduate courses and was promoted to professor in 1981. From 1984 to 1993, Corripio partnered with IBM to deliver training to students and practicing engineers in the Advanced Control System.

"I was very familiar with the new system since that's what they used at MIT," Corripio said.

He also taught several ACS courses in Brazil and Israel between 1985 and 1990, when IBM sent him around the world to promote the ACS program. Also around this time, LSU College of Engineering Dean Ed McLaughlin put Corripio in charge of the Central American Program for Undergraduate Scholarships (CAMPUS), sponsored by the U.S. Information Agency, in which he worked with 10 students from Panama and Nicaragua.

In April 1990, he received the Charles E. Coates Memorial Award from Professor Frank Groves, which Corripio said "was an honor to receive."

When the IBM program became outdated, as was common with computer software, Corripio taught the senior course, Plant Design, from 1993 until his retirement in 2005.

"It was a great opportunity to pass on to them what I had learned from my professors," he said.

Though officially retired, Corripio still teaches one senior course five mornings a week at LSU.

"I really like teaching at LSU," he said. "Especially since this is the only course I teach and I teach it every year. Not only have I acquired the experience teaching it, but I've also worked in that industry. I like meeting the students. They never get old."

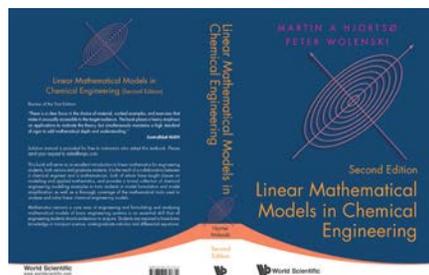
As for how long he will continue teaching, it's anyone's guess.

"As long as I can do it, I'm going to keep on doing it," he said.



# RESEARCH NEWS

## Martin Hjortsø Publishes Second Edition of *Linear Mathematical Models in Chemical Engineering*



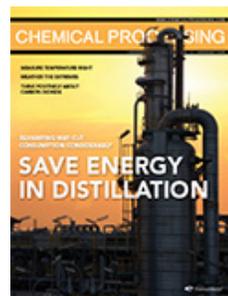
The second edition of LSU ChE Professor Martin Hjortsø and LSU Mathematics Professor Peter Wolenski, entitled *Linear Mathematical Models in Chemical Engineering*, became available summer 2018.

## Chris Arges Serves as Guest Editor for *Journal of Power Sources*



Arges was a Guest Editor for the 31 January 2018 issue for the *Journal of Power Sources*. This issue contains a special section dedicated to Alkaline Membrane Fuel Cells: State-of-the-Art and Remaining Challenges. There were 29 contributions from leading research groups across the globe. Arges and the other guests wrote an editorial review on the topic.

## John Pendergast Published in *Chemical Processing*



John Pendergast recently published an article entitled “Save Energy In Distillation: Revamping may cut consumption considerably” in *Chemical Processing*, a widely read publication, targeting plant and process engineers. Pendergast joined the ChE department in spring 2018 as a part time instructor. He received his MS from Louisiana Tech University in 1977. John comes to us after a 40-year career with Dow. He serves the department as an

instructor. In addition, John is a preeminent expert on distillation columns and is in the process of designing one for our Unit Operations Laboratory.

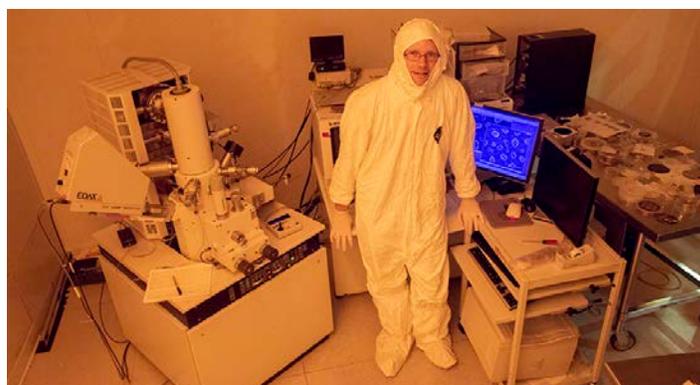
## Bill Shelton Published in *Scientific Reports*



Bill Shelton recently published an article in *Scientific Reports* entitled “Predicting hidden bulk phases from surface phases in bilayered  $\text{Sr}_3\text{Ru}_2\text{O}_7$ .” *Scientific Reports* is in the family of Nature publications.



## Kevin McPeak Secures Grant for CAMD Cleanroom



Thanks to LSU Chemical Engineering Assistant Professor Kevin McPeak, LSU's Center for Advanced Microstructures and Devices (CAMD) Cleanroom will soon house a bevy of state-of-the-art nanofabrication and characterization equipment.

McPeak recently secured a Louisiana Board of Regents Departmental Enhancement Grant for \$907,000 to be distributed over a five-year period. It was one of three awarded by the BoR across the entire state, with McPeak's being the only one awarded to LSU.

The CAMD Cleanroom is a campus-wide, multi-user facility cost center that offers instrumentation and technical support for device fabrication and characterization. It supports the micro- and nanofabrication of a diverse range of mechanical, electronic, and optical devices for scientists and engineers from Louisiana universities, as well as distinguished scientists from national and international institutions.

The new equipment will serve 17 investigators in the Institute for Advanced Materials (IAM) who represent five different departments — chemistry, physics, chemical engineering, electrical and computer engineering, and mechanical and industrial engineering.

“The requested equipment will enhance the ability of graduate students and faculty in the IAM, and throughout LSU, to perform advanced device and materials fabrication,” McPeak said. “Improving the capabilities of LSU's [CAMD] Cleanroom will ultimately increase the competitiveness of LSU investigators for national funding and provide students with cutting-edge research skills.”

"The service that this grant provides is for the existing faculty, but beyond that, it will be a great tool for faculty and student recruitment," McPeak said.

## Chris Arges Receives LSU LIFT<sup>2</sup> Fund Grant



On June 4, 2018, Chris Arges received an LSU LIFT<sup>2</sup> Grant in the amount of \$50,000. His project is entitled, "Modular electrochemical reactor-separator for upgrading methane to higher order carbons and simultaneous production of hydrogen." The goal of the grant is to advance Arges' project from basic research to market.

The LSU LIFT<sup>2</sup> Fund was created by the LSU Board of Supervisors in January of 2014 to help "Leverage Innovation for Technology Transfer" across all the campuses of the LSU system. By permanently securing a portion of licensing income for the LSU LIFT<sup>2</sup> Fund, LSU has ensured continual reinvestment in innovation opportunities and affirmed its commitment to advancing discoveries for public benefit. Moving concepts closer to commercialization is the fundamental purpose of the LSU LIFT<sup>2</sup> Fund.

A primary objective of technology transfer at LSU, like most other research universities nationwide, is the transition of innovations from the academy to the marketplace for public use and benefit. Many discoveries, however, require significant additional development to prove sufficient technical feasibility to attract commercial partners. Funding for this type of research is difficult to obtain from either government or private sources, leaving many promising innovations languishing in a funding gap often referred to as "the valley of death." The LIFT<sup>2</sup> Fund is specifically designed to increase the number of LSU innovations licensed to industry partners.

Grants awarded from the LIFT<sup>2</sup> Fund will provide LSU's entrepreneurial and creative community with small "proof-of-concept" funds to support further commercialization of innovations, help establish data which can support commercial feasibility of the innovations, and thus reduce the risk for companies interested in licensing them. "Innovations" are defined broadly, to include both creative and artistic works as well as devices, drugs, software, and other more traditional concepts; thus, faculty from all disciplines on all LSU campuses are encouraged to consider an application.

## REU 2018



This summer, the department hosted 12 students as part of a Research Experiences for Undergraduates (REU) program entitled "Developing Entrepreneurs in Energy Storage, Catalysis, and Biofuels." The 10-week program gave students from across the country a chance to perform graduate-level research under the direction of the professors in the department. Students were also given instruction in entrepreneurship and how research and new ideas could translate to new products, startup companies, and collaboration with industry.

**Tyler Brentzel** (Florida Institute of Technology)  
Mentor: Prof. Mike Benton

**Kanoa Cook** (University of California - Berkeley)  
Mentor: Prof. Adam Melvin (Co-advisor: John Pojman, Chemistry)

**Howard Craig** (University of Connecticut)  
Mentor: Prof. Kevin McPeak

**Harshapriya Koritala** (Rensselaer Polytechnic Institute)  
Mentor: Prof. Ying Wang, Mechanical Engineering

**Kelly Lannigan** (Bucknell University)  
Mentor: Prof. Bhuvnesh Bharti

**Sarah Livingston** (Michigan Technological University)  
Mentor: Prof. Chris Arges

**Nickolas Newnham** (Arkansas State University)  
Mentor: Prof. Kerry Dooley

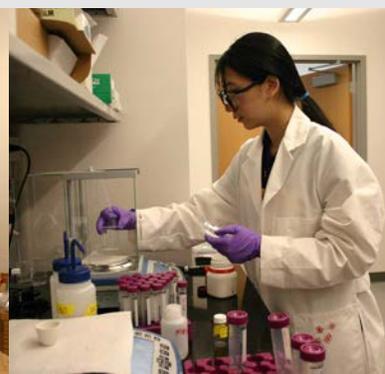
**Padma Pellegrin** (University of Louisiana - Lafayette)  
Mentor: Prof. Manas Gartia, Mechanical Engineering

**Joseph Penrod** (Trine University)  
Mentor: Prof. Jangwook (Philip) Jung, Biological Engineering

**Diya Yang** (North Carolina State University)  
Mentor: Prof. Kunlun Ding

**Jade Young** (McNeese State University)  
Mentor: Prof. Adam Melvin

**Xiao Zheng** (Syracuse University)  
Mentor: Prof. Ye Xu



## LSU Helps Students to ENGage in Engineering



More than 150 middle school students, grades 6-8, recently took a break from their normal class schedule to attend college for a day. Specifically, the students visited the LSU College of Engineering as part of ENGage LSU, an initiative started by Adrienne Steele, STEP manager for the college, and Adam Melvin, assistant professor in the LSU Cain Department of Chemical Engineering. The duo created the program to attract students at an early age to STEM — or science, technology, engineering, and mathematics — related fields.

“Although young children seem to have an inherent desire to explore STEM activities, most students lose interest in pursuing a career in these fields in middle school,” Melvin said. “Exposing students to STEM experiences in middle school, and even earlier, can have a positive impact on their choice of career in the future. With the growing workforce demand for STEM professionals, it is important to reach children at this critical juncture in their development.”

The students met with 14 faculty members from biological, chemical, electrical, environmental, and mechanical engineering, as well as construction management, and participated in demonstrations like producing electricity using seawater and river water with battery systems and showing how small amounts of fluid can complete a chemical reaction to diagnose a disease using microfluidic devices made of patterned paper.

The group of students represented Baton Rouge College Prep, Belfair Montessori Magnet School, Capital Middle Magnet School, Greenville Superintendent’s Academy, North Banks Middle School of Excellence and Woodlawn Middle School. Additionally, 52 percent were female and 83 percent were minority students.

“While 20.8 percent of all engineering bachelor’s degrees in 2016 were earned by females, only 3.9 percent were African American and 10.7 percent were Hispanic,” Steele said. “These numbers are far lower for women of color. With the low percentage of females and ethnic minorities represented in STEM careers and the high percentage of these underrepresented groups attending public schools in Louisiana, more students should be exposed to these types of engineering career possibilities.”

The hope for Steele and Melvin is that the program will help do just that. Melvin said that if interest continues, they will examine offering the program twice a year — in both the fall and spring semesters. Another possibility is to include faculty from departments outside of the College of Engineering.

## Kevin McPeak’s HNRS 3035 Nano-Optics Class Goes from Moths to Metamaterials



The students of Dr. Kevin McPeak’s HNRS 3035 Moths to Metamaterials: An Introduction to Nano-Optics are getting the big picture on nanoscale optics. Nano-optics is all about light — specifically how light behaves on the

nanometer scale. It also covers how nanometer-scale objects interact with light. In HNRS 3035, students are learning the basic principles, applications, and latest advances in the field of nano-optics.

McPeak, who specializes in chiral plasmonic materials and holds a Gordon A. & Mary Cain Professorship, has been introducing the many topics within nano-optics to his class. He is also an Honors Faculty Fellow.

“Dr. McPeak is an incredible lecturer. He answers questions well, has a great sense of humor, and has taught us all a lot, even coming from diverse backgrounds. We have chemical engineers, biological engineers, I’m in physics,” Corey Matyas, a sophomore physics major said. “We’ve had all sorts of people come to this class.”

“There are a lot of different areas to look at with nanoscale optics: structural color — like why certain butterflies are blue — negative index refraction materials, bending light the wrong way,” McPeak said. “We took those different, big subject matters within this broad field of nano-optics and gradually marched through those.”

After getting acquainted with the basics, each of the students picked one area within the field and made a poster designed to introduce it to a broad audience. The poster presentation was the culmination of their semester-long studies and a way to bring this highly-specialized field to the rest of the campus community.

“They were tasked with designing a poster that would introduce a broad audience — not like a super technically optically savvy audience — but just a broad audience that we would have here to that field,” McPeak explained. “I told them to really try to angle it for the applications. Applications first, then you can talk about how this works, and the fundamentals, but get people interested in why this is important to them.”

What are some new developments in nano-optics worth sharing across majors and disciplines? For starters, there has been some recent buzz around the cloaking potential in nano-optics that McPeak explored with his class.

“There is this cloaking idea that I am going to hide an object, like Harry Potter. We can do that right now at microwave frequencies,” McPeak said. “This operates at much longer wavelengths, still electromagnetics but much longer wavelengths, they can cloak things in a laboratory setting at these kinds of frequencies, but no one can do it at optical wavelengths.”

Or at least not yet. The class is looking at how you take that particular technology and make it get smaller and smaller wavelengths. As for McPeak, he is excited about the future of nano-optics that his students are studying.

“You want to have a glass that’s auto-cleaning? That if dirt gets on the glass, then sunlight hits the glass and it cleans itself? Traditional photocatalysts do it with ultraviolet light, just a small portion of the spectrum — like what gives you a suntan. Now I want to expand that out the visible and infrared portion of the spectrum,” McPeak said. “I need to use different types of photocatalysts, and that starts interacting with nano-optics.”

This is vital research that he hopes will have some impact on society. With an audience of Honors students at his disposal, McPeak has enjoyed introducing the complex subject matter to a smaller class that gave room for more individualized attention.

“That ability to have one-on-one interactions through some challenging topics at their pace is very unique.”

# ADVISORY COMMITTEE

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Our Advisory Committee is a driving force behind the success of our department. We would like to express our appreciation for their passion, commitment, and leadership.



**Kevin J. McCarroll**  
**Chair**  
Operations Director  
BASF Corporation – Geismar Site

**Marvin Borgmeyer**  
Operations Manager (Ret.)  
ExxonMobil

**Claire Cagnolatti**  
Vice President, Chemicals  
HSB Solomon Associates

**Dr. Mario Eden**  
Chair, Department of Chemical Engineering  
Joe T. and Billie Carole McMillan Professor  
Director, NSF-IGERT on Integrated Biorefining  
Auburn University

**Glynn Fontenot**  
Plant Manager  
Methanex – Geismar

**Charlie Freeburgh**  
Vice Chancellor for Work Force Development  
Baton Rouge Community College

**Sharon Hulgan**  
LHC9 Production Leader  
Oyster Creek Site Director  
Dow Chemical Company

**Kim Odell**  
Technical Services Manager  
Louisiana Refining Division  
Marathon Petroleum Company LLC

**Enrique Osuna**  
Process Control Applications Section Head  
ExxonMobil

**Rodney Porter**  
Manager – CTM and HMB Improvement  
Shell – Woodcreek Complex

**Dr. Ronald Rousseau**  
Professor & Cecil J. “Pete” Silas Endowed Chair Emeritus  
School of Chemical & Biomolecular Engineering  
Georgia Institute of Technology

**Dr. Phillip Westmoreland**  
Professor, Department of Chemical & Biomolecular Engineering  
North Carolina State University

# DEPARTMENT NEWS

## College of Engineering Officially Opens New Facility, Largest Academic Building in Louisiana



Five years to the day that Phyllis M. Taylor announced she was making a \$15 million gift to honor the legacy of her late husband, Patrick F. Taylor, and help kick-start the Breaking New Ground campaign to renovate and expand the building that bears his name, the LSU College of Engineering celebrated the grand opening of the new Patrick F. Taylor Hall on April 20, 2018, with a ribbon-cutting ceremony, followed by building tours and engineering student demonstrations.

The facility now measures more than 400,000 square feet and is the largest academic building in Louisiana and one of the largest freestanding engineering academic buildings in the United States. It was designed by the architectural firms Perkins+Will and Coleman Partners and was constructed by The Lemoine Company.

It includes a 110,000-square-foot chemical engineering building addition; state-of-the-art labs and gathering spaces; the William Brookshire Student Services Suite; the 250-seat Roy O'Martin Auditorium; and the MMR Building Information Modeling (BIM) Lab.

"The resources we provide help ensure that, not only do our students receive the best engineering education possible, but that we prepare them for life after graduation and in the workforce," said Judy Wornat, dean of the College of Engineering. "I cannot wait to see how our students make the most of everything we have to offer."

"This is an exciting day for our engineering students, faculty, staff, and alumni, and for LSU as a whole," said LSU President F. King Alexander. "I believe it shows the investment that we as a university and the state of Louisiana have made in our students and their future success, and it demonstrates LSU's ongoing commitment to solving the biggest challenges facing our state, many of which can be solved through the education and research taking place in Patrick F. Taylor Hall."

Indeed, as part of the Breaking New Ground campaign, \$114 million was raised — \$57 million from private contributions and a matching \$57 million from the state. It is one of the largest public-private partnerships in Louisiana and the most successful fundraising effort by LSU to date.

"This success would not have been possible without the vision, the passion, the leadership, and the persistence of our committee co-chairs, Phyllis Taylor and Harry Longwell, and that of Ron Cambre," said LSU Executive Vice President and Provost Rick Koubek.

"Their enthusiasm and energy, along with the other steering committee members and our donors, were resolute."

### About Patrick F. Taylor

In 2007, LSU formally named the Center for Engineering and Business Administration (CEBA) building in honor of Taylor, a 1959 petroleum engineering alumnus. He believed that everyone deserved the opportunity to earn a college degree, regardless of his or her economic means. Consequently, he was responsible for the creation of the Taylor Opportunity Program for Students, better known as TOPS.

### Patrick F. Taylor Hall by the Numbers

\$114 million – Total Cost of Project

410,000 – Total Square Feet of Patrick F. Taylor Hall

300,000 – Total Square Feet of Renovated Section

110,000 – Total Square Feet of Chemical Engineering Building Addition

134,989 – Square Feet of Teaching and Laboratory Space

41,202 – Square Feet of Student Collaboration Space

1,576 – Classroom Seats

272 – Faculty and Staff Offices

250 – Seats in Largest Classroom, the Roy O'Martin Auditorium

3 – Years to Complete

## Dow Chemical Engineering Unit Operations Laboratory Officially Opens



LSU College of Engineering Dean Judy Wornat was joined by LSU President F. King Alexander; former Executive Vice President & Provost Rick Koubek; and members of Dow, including David Mongrue, vice president of operations and Dow/LSU executive liaison; Jenny Champion, operations leader; Jeremy Jenkins, energy commercial manager, and Stacey Gautreau, US South corporate affairs, to celebrate the grand opening of the Dow Chemical Engineering Unit Operations Laboratory and Dow Student Leadership Incubator on April 20.

The Dow Chemical Unit Operations Laboratory and Dow Student Leadership Incubator were made possible by a \$2 million donation in support of the College of Engineering's renovation and expansion of Patrick F. Taylor Hall.

"This is a proud moment for Dow and LSU! We've enjoyed a very strong partnership and excellent collaboration for more than 50 years," said Mongrue. "You need first-class facilities to attract and retain top-tier faculty and attract and educate top-tier students. LSU produces engineers who do a tremendous job of serving our industry both locally and globally."

The lab offers two chemical engineering courses annually and provides hands-on experiential learning. The first course, Engineering Measurements Laboratory, is offered to chemical engineering juniors and provides emphasis on experimental work in momentum, heat, and mass transfer. The second course, Unit Operation Laboratory, is offered to chemical engineering seniors, and focuses on kinetics and reactors, unit operations and separations, and process dynamics/process control.

The incubator is a space for all engineering student organizations to work on projects, collaborate with other student organizations, and a place to call "home."

"The Dow Chemical Unit Operations Lab and Dow Student Leader Incubator are true assets for our students and college," Wornat said. "Students are able to solve complex problems, integrate overall knowledge into experimental work, and design and conduct realistic experiments. Because of Dow, students are building upon the attributes of problem solving, team building, effective communicating and leading, which are all defined in the characteristics of the LSU Engineer."

DowDuPont is a holding company comprised of The Dow Chemical Company and DuPont with the intent to form strong, independent, publicly traded companies in agriculture, materials science, and specialty products sectors that will lead their respective industries through productive, science-based innovation to meet the needs of customers and help solve global challenges.

## A Celebration – Doug Harrison's 80<sup>th</sup> Birthday



On November 17, 2017, the Cain Department of Chemical Engineering celebrated Prof. Doug Harrison's 80<sup>th</sup> birthday with a reception in his honor. The reception was held in the Dean's Flex Room in the new Chemical Engineering Building next to Patrick F. Taylor Hall. Several of his former students were in attendance, including Don Ristroph (BS 1976) and wife Cindy, Gary Focht (BS 1983, MS 1986, PhD 1988) and wife Lisa, and Yiding "Neil" Zeng (MS 1997, PhD 1999).

Many of his former colleagues were also in attendance, including Paul Murrill, Art Sterling, Ralph Pike, Armando Corripio, Louis Thibodeaux, David Wetzel, Kerry Dooley, Greg Griffin, K. T. Valsaraj, Judy Wornat, Martin Hjortsø, and Karsten Thompson. In addition, all the current faculty and staff participated in the celebration, and Phillip Westmoreland sent a video reflection to be played at the party.

Harrison received both his BS and PhD degrees from The University of Texas in Austin in 1961 and 1966, respectively. He began his career at LSU as an assistant professor in 1969 after spending a few years at Monsanto in North Carolina, conducting new product research. During his time at LSU, he served the department and the college in many capacities. From 1976-79 he was the chairman of the department. In 1984, he served as acting director of the

Hazardous Waste Research Center. He also served on various departmental, college, and university committees. Harrison was a highly respected and well-liked professor, receiving the Dow Chemical Excellence in Teaching Award four times, in 1988, 1995, 2000, and 2002. He is well remembered by many of his former students. David Caillet (BS 1974, MS 1976, PhD 1980) was quoted as saying, "Dr. Harrison is a great teacher and a great researcher, a combination that is, in my opinion, becoming increasingly rare at most universities where research is the main emphasis. I have nothing but praise for Dr. Harrison as both a teacher and a researcher, as I have experience with him in both of those areas." This insight is typical of many of Harrison's former students who respect the "gentle firmness" with which he approached teaching and research.



## LSU Hosts AIChE Southern Regional Conference

On April 6 and 7, 400 chemical engineering students from 26 universities convened in Baton Rouge for the 2018 American Institute of Chemical Engineers Southern Regional Conference.

The two-day event, hosted by the LSU Cain Department of Chemical Engineering and the College of Engineering, featured industrial plant tours, the ChE Car Competition, ChE Jeopardy, ChE Paper and Poster competitions, career fair, crawfish boil mixer, banquet, and more. We spoke with AIChE SRC Chair Josh Baldassaro, a senior in chemical engineering at LSU from Metairie, prior to the event and he was confident this year's conference would be one for the books.

"It seems like a lot of people are coming and they're interested now that it's at LSU," Baldassaro said. "I think it's going to be a good one."

The conference unofficially kicked off on Thursday, April 5, with a crawfish boil mixer at Tin Roof Brewing Company, where attendees who arrived early met and got a taste of Louisiana's famous mudbugs.

On Friday, April 6, three industry tours were scheduled throughout the day — BASF and Syngenta in the morning and Dow Chemical in the afternoon. There were also two recreational tours — one at Cane Land Distilling Company in the morning and the other at Tin Roof Brewing Company in the afternoon.

"That way, if you arrive later in the day, you can choose between an industry tour and a recreational tour," Baldassaro said. "You get the best of both worlds."



Students had the chance to network with representatives from various companies such as Chevron, BASF, Shell, Exxon, Dow Chemical, Baker Hughes, Marathon, and others at the Futures Fair in the Patrick F. Taylor Cambre Atrium.

"The thing that will make us stand out the most from other conferences is our strong base of companies attending the Futures Fair," said ChE junior and SRC organizer Hailey German, a native of Prairieville, La.

ChE Jeopardy took place in PFT, where approximately 20 teams of students from visiting schools answered questions written by ChE students and faculty. It was a tournament-style bracket, with the winners qualifying to compete at the national conference in Pittsburgh in the fall.

The day drew to a close with a mixer at Club XO in the Belle of Baton Rouge. All participating students and faculty were invited to attend. Baldassaro and his team purposely wanted to have mixers outside of the actual conference to give attendees a chance to network and have fun.

"That's the whole point in going to the conference — networking and meeting people, and seeing what other schools have to offer, because you never know who you'll meet or the opportunities that could come up," German said.

Day two began with breakfast at the Hilton, followed by the Presidential Breakfast and registration in the lobby. The ChE Paper and Poster competitions were held in the morning and ended around lunchtime. Students in the paper competition presented their research to a panel of judges consisting of faculty from LSU and visiting universities, along with LSU graduate students, the local AIChE chapter, and national AIChE members. Winners of both competitions received cash prizes.

The main event that day was the ChE Car Competition, where students made a shoebox-size car that was able to move and stop by chemical reaction.

"For just four or five hours, teams will run and try to get their cars to go and stop at a specified distance," Baldassaro said.

German not only helped Baldassaro organize the SRC, she also participated in the car competition.

"I'm on the LSU ChE car team, and we've been working on it since last semester," she said. "There are a few surprise features, like specifying a distance the car must go and a water load the car must carry. They give you that information about two hours before the competition starts."

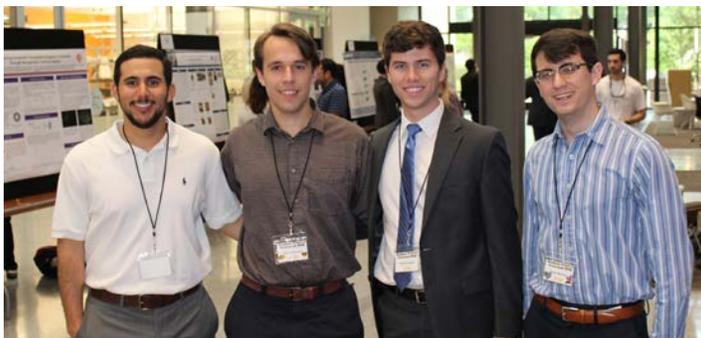
Immediately following the ChE Car Competition were breakout sessions, hosted by industry representatives, students and academia with topics such as process safety, transitioning from student life to being a young professional, and fundraising for local chapters.

The winner of the ChE Car Competition and other competitions throughout the day were recognized at a formal banquet in the Capitol Park Museum.

"The banquet really rounds out the conference," German said.

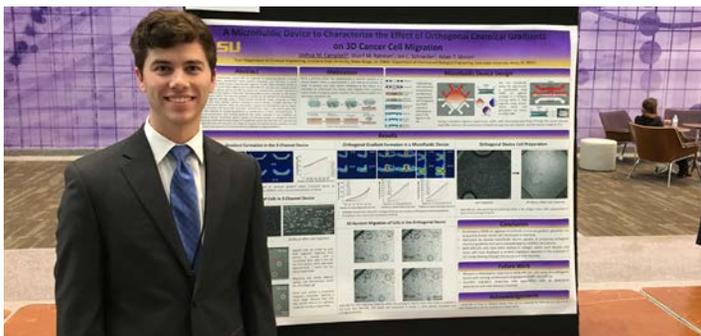
The department would like to thank all involved in the conference. Because of you, it was a huge success!

## Jeopardy Team



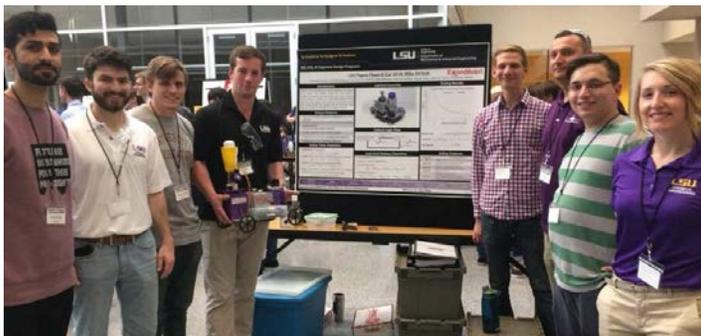
The LSU ChE Jeopardy team took first place at the 2018 AIChE Southern Regional Conference and have qualified to compete at the annual meeting in Pittsburgh this fall. Team members are Riad Elkhanoufi, Hunter Simonson, Joshua Campbell, and Trey Wortmann.

## Joshua Campbell Wins Regional Student Poster Competition



Joshua Campbell won first place in the research poster competition at the 2018 AIChE Southern Regional Conference. His poster was titled "A Microfluidic Device to Characterize the Effect of Orthogonal Chemical Gradients on 3D Cancer Cell Migration." Campbell's research aims to develop a new method to study cellular decision making during the early stages of cancer metastasis. Specifically, he wants to learn how cells migrate preferentially to competing chemical gradients similar to conditions found in the body. He is advised by Adam Melvin.

## ChE Car Competition



Mustafa Al-Ajmi (ME), Nathan Brignac (EE), Zachary Burchfield (EE), Jake Campesi (ME), Patrick Holden (ChE), David Lewis (ME), Katrina Taylor (ChE), and Matthew Walsh (ME) were part of an ME Capstone Design team that took 4<sup>th</sup> place in the 2018 AIChE Southern Regional Chem-E Car Competition and 2<sup>nd</sup> place in the

Chem-E Car Poster Session. By placing 4<sup>th</sup> in the car competition, they qualified to compete at the annual meeting in Pittsburgh this fall. They demonstrated the great ability of engineers to come together from diverse fields to accomplish their goals.

This year marked the first time that Chemical Engineering students took part in the Mechanical Engineering Capstone Design series. Over the course of two semesters, John Flake advised eight students from ME, EE, and ChE to produce a chemical car.



## National Student Poster Competition Winners



Andrew Kristof – 1<sup>st</sup> place Food, Pharmaceutical, and Biotechnology; Single-cell analysis on effects of fluid shear stress on cancer cell deformation and migration; work performed as part of the CHE REU program; advised by Dr. Melvin.

Justin Hayes – 2<sup>nd</sup> place Environmental; Plasmonic water purification for developing countries; work performed as part of the CHE REU program; advised by Dr. McPeak.

Joshua Campbell – 3<sup>rd</sup> place Food, Pharmaceutical, and Biotechnology; A microfluidic device to characterize the effect of orthogonal chemical gradients on 3D cancer cell migration; advised by Dr. Melvin.

## Nationally Recognized Members



Joshua Campbell was awarded the Donald F. Othmer Sophomore Academic Excellence Award over the summer and was recognized at the Freshman/Sophomore Awards Ceremony, as well as the Student Awards Ceremony. This award recognizes the sophomore member with the highest GPA.

# STUDENT AWARDS & NEWS

## 2018 Graduate Recruitment Weekend



On Thursday, March 8, five prospective graduate students arrived in Baton Rouge to take part in our 2018 Graduate Recruitment Weekend. They met LSU ChE Graduate Student Association President Daniel Willis for lunch at Walk-Ons, then went on tours of LSU's campus and UREC. On Friday they attended the College Kickoff Breakfast, then traveled to Tiger Stadium for a tour of the facilities and field. Next, they attended a Q&A session led by Prof. Mike Benton, Director of Graduate Studies, and participated in a round robin of faculty poster presentations and lab tours. That evening they enjoyed a good old-fashioned crawfish boil. Afterwards, they traveled to Alex Box Stadium where they watched LSU play Hawaii. Saturday morning, they parted our company.

The department would like to thank all who participated and made this event a success. We are excited to announce that four of the five attendees will be joining our PhD program fall 2018!

## Junior/Senior Poster Presentations – April 2018

The department would like to thank the 100+ industry professionals — and the companies they represent — who gave their time, energy, and thoughtfulness in judging this year's student participants. Without their efforts, the event would not have been such a success. In addition, the students enjoyed the chance to meet and greet some of Louisiana's best and brightest industry leaders. This year, the department held the poster presentations in the Cambre Atrium of Patrick F. Taylor Hall.

Each year, juniors in CHE 3171 and seniors in CHE 4172 are placed in small groups and assigned a problem for which they must find a solution. During the semester, they work together to research the problem, prepare a solution to the problem, produce a poster demonstrating their solution, and present that poster to industry leaders and members of the ChE faculty.

Thirty groups of three or four seniors were asked to design a process to produce Styrene Monomer. The process consists of two reactors in series to produce styrene from ethyl-benzene. The reaction is endothermic and the ethyl-benzene is mixed with steam to maintain the temperature and reduce the partial pressure of the reactants and shift the equilibrium.





A kinetic model was made available to the students to study the effect of reactor conditions on the residence time and reaction conversion and selectivity. The project was carried out in four phases:

1. Review the literature on the process and carry out the material balances to determine the raw material requirements and the recycle flows.
2. Simulate a simple base case of the process in Aspen HySys.
3. Do a complete economic evaluation of a simple base case to determine the costs of the major equipment and utilities, and the cost per pound of producing styrene.
4. Evaluate design alternatives to reduce the cost of production.

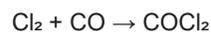
The problem is defined as producing styrene for internal use by a plant that produces polystyrene. Thus, there is no income and the cost of capital is determined by setting the net present value to zero to calculate the required uniform annual income that produces 15% effective annual rate of return on the total capital investment. It is assumed the impure hydrogen produced in the reaction can be sold for credit to a hydrogen producer. The toluene and benzene by-products are recovered and purified for credit.

In Phase 4 the students used pinch analysis to design a heat exchanger network. The major result of the pinch analysis is the installation of a cross-exchanger between the exit stream from the second reactor and the feed to the first reactor to reduce the fuel costs.

The cost estimate is a study-level estimate that considers only the major pieces of equipment and is expected to have +/- 25% confidence limits on the costs, so all the costs are estimated by quick methods and correlations.

Thirty-eight groups of three or four juniors were asked to take on the role of process engineers for XYZ chemical company located in Geismar, Louisiana. XYZ is interested in expanding phosgene production at the facility and has asked a team of engineers to compare alternative designs. The total increase in phosgene production required is 10,000 lbs/hr.

Phosgene is produced by mixing vapor chlorine with carbon monoxide and passing over a carbon catalyst. The reaction is exothermic. A shell and tube heat exchanger is used as the reactor. The tubes serve as a tubular plug flow reactor with carbon in the tubes and the cooling media in the shell.



For the purposes of this project, they were to assume that the reactants are fed at stoichiometric amounts and that there is 100% conversion to the product.

#### Alternative #1

The first alternative is to build the new reactor using existing cooling water capacity. Cooling water is available in abundant supply. You can tap into an existing cooling water supply and return header. You may also install an additional heat exchanger to produce steam for on-site usage.

#### Alternative #2

The existing phosgene reactor uses hexane to remove the heat of reaction (hexane barrier fluid system). The second alternative is to design a similar system. You may also install an additional heat exchanger system to produce steam for on-site usage.

## Breanna Lee Receives Women of Color STEM Research Award



Breanna Lee's passion for research has followed an interesting path.

As the youngest child in her family by 13 years, Lee said she sometimes felt like she grew up an only child. This left her to pursue her scientific curiosity by building her own toys, playing on her parents' Dell Pentium 2 Windows '98 computer, and conducting science experiments at home.

While there are surely more stops to come on her journey, Lee recently reached an important one by receiving the Women of Color STEM Research Award.

For more than 20 years, Women of Color STEM has recognized the achievements of women in science, technology, engineering, and math (STEM) careers. The Women of Color STEM awards advance the organization's mission to recognize excellence as a means for sustaining and growing the STEM pipeline.

Lee, a senior in chemical engineering and Baton Rouge native, said it is inspiring to have a community that wholeheartedly supports her and roots for her success.

"I was overcome with gratitude," Lee said. "Being selected to receive a national award from such a tremendous organization is beyond amazing."

"This passion for discovery has never left me," she added. "In high school, I attended REHAMS and fell in love with chemical engineering. The idea of scaling up small experiments was exciting and I dreamed of managing large processing operations."

During her freshman year of college, Lee received the LASTEM scholarship, which played a pivotal role in providing her with the resources to pursue research.

"This program inspired me to not only acquire knowledge in engineering, but to push the limits and discover what has not yet been discovered," Lee said.

As a freshman at LSU, Lee sought to determine concrete and asphalt compositions to reduce nitrogen-oxide emissions in big cities. She also participated in a Research Experience for Undergraduates at the Colorado School of Mines in Golden, Colorado, where she worked to optimize anion exchange membrane fuel cells.

In January 2017, Lee attended the Focus event at Georgia Institute of Technology, a program in which top students are invited to campus in order to encourage them to pursue graduate school at the university.

Ayanna Howard, professor and chair of bioengineering in the Georgia Institute of Technology's School of Electrical and Computer Engineering, said Lee took the initiative to request a meeting with her while she was at Georgia Tech.

"I was immediately impressed with her poise, intellect, and excitement for engineering and science, and her desire to continue the pursuit of her graduate education," Howard said.

Over the summer, Lee worked with Howard to program a Nao robot that acts as a therapy coach during rehabilitation scenarios for children with cerebral palsy while playing a virtual reality serious game called Super Pop VR™. Her research resulted in her obtaining a first-author publication.

Lee is currently working with LaVonda Brown, an assistant professor in the Division of Electrical and Computer Engineering at LSU, to develop gestures on a humanoid platform that conveys emotions humans are able to understand. In addition to this, she is working on a robotic therapist system to better the quality of life for children with motor skill disorders.

After graduation, Lee plans to pursue a doctorate degree in computer science with a focus in machine learning and data science. She would like to utilize medical big data to optimize diagnostic technology for neurological disorders. She is also interested in developing recommendation algorithms for personalized treatment plans.

"I am a firm believer that learning should never be a limit," Lee said. "I want to spread the message that diversity in STEM is beneficial to everyone. It allows an array of unique perspectives to come together and tackle the world's greatest challenges."

## Grant Landwehr Joins LSU Research Ambassadors



For the past five years, the LSU Discover Undergraduate Research program has given students the opportunity to conduct research in their field of study with the funding they need. From English and music to finance and engineering, every college is welcome to participate. In order to spread the word about these research opportunities, LSU Discover added a new component to its system — the Research Ambassador program.

Three engineering students currently represent LSU as research ambassadors — biological and agricultural engineering junior Tim Mixon from Auburn, Ala.; electrical and computer engineering junior Patrick Kearney from Denham Springs, La.; and chemical engineering senior Grant Landwehr from Covington, La. These students not only do their own research, but also serve as a guide for those students interested in doing the same.

Mixon is currently working with Professor Hans Rudolph Berthoud at the Pennington Biomedical Center on a project to discover the relationship between the brain and digestive tract, thereby gaining a better understanding of how gastric bypass surgery affects weight loss. Mixon said he found out about the Research Ambassador program through his roommate, who is an ambassador himself.

"He told me about all the great events they put on and persuaded me to join," Mixon said.

"Most of our students find out about the [Discover] program through word of mouth," LSU Discover Program Manager Sarah Ferstel said. "So, when the students who participate graduate, we lose that word of mouth."

This is where Research Ambassadors come in.

"Students will come to my office and ask how to get involved with research, and I tell them to pick a faculty member and knock on their door," she said. "They generally don't feel comfortable doing that when they hear it from me, but when another student says that's how they did it, it's more encouraging for them."

"They're promoting undergraduate research in general. That way, if you're an engineering student and want to get involved, you just contact one of the engineering majors and ask what to do. They are great. They will walk students through the entire process."

"It can be a daunting task to reach out to a professor when you're a freshman," Landwehr said. "We can serve as a resource for students to help them get grants for their research."

Landwehr added that he got into Research Ambassadors "by complete chance."

"I got a travel award from LSU Discover to attend an AIChE conference, and by doing that, I was signed up to receive all of the emails," he said. "I was going through emails and saw one about Research Ambassadors and thought now is my opportunity to do something like that. So, I joined."

His research involves working with LSU Chemical Engineering Professor Adam Melvin to build a device capable of capturing and isolating single cancer cells, leading to a greater understanding of the fundamental mechanisms behind cancer metastasis. Landwehr plans to publish a paper on his research in May and then look at graduate schools.

Kearney is building a soft robotic assistive device for a person with a paralyzed hand and determining how to control it by processing voltage signals taken from a glove with a multitude of pressure sensors attached.

"When I get questions from undergraduates looking for a research position, I enjoy helping them find research that interests them," Kearney said.

As for his own research, he said most of his time is spent in a lab working with data from pressure and position sensors.

"The lab work is very rewarding once everything falls into place and the data begins to tell what actually happened in the trials," Kearney said.

All research ambassadors are asked to talk to different classes, clubs, or even Greek organizations about the Discover program and encourage them to attend Discover Day and learn more.

Discover Day, which took place on Tuesday, April 10, showcases the students' research through poster and oral presentations, as well as a juried art show for art students. Ferstel received 215 Discover Day applications this year.

"The goal of Discover Day is to accept as many students as possible," she said. "We also invite non-LSU students to apply."

As for the Discover program itself, Ferstel has received 27 applications for the spring semester, has funded 12 new students and renewed funding for four engineering students. Undergraduates are also able to apply for research grants, five of which were awarded to engineering students this year.

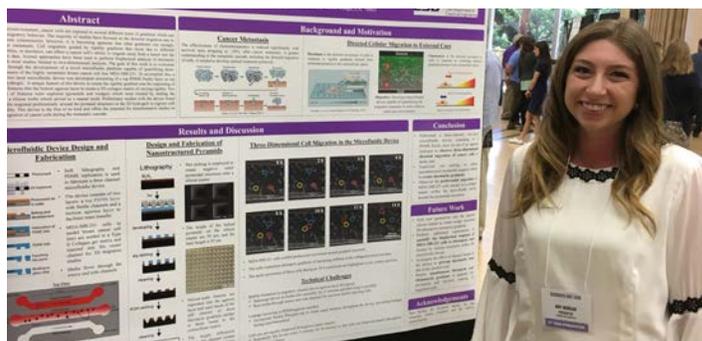
Two engineering students received the 2018 Discover Scholar Awards for their achievements in outstanding undergraduate

research or creative endeavors.

"LSU Discover has two main goals," Ferstel said. "One is to get students interested in undergraduate research and make them aware of what it is. Secondly, we provide them with resources, goals, and events like Discover Day when they are researchers. We're talking about more than what's happening in the classroom, though it can also be what's happening in the classroom."

"I like being a research ambassador a lot," Landwehr said. "If I hadn't been placed into a lab, I wouldn't have started doing any kind of research or have even known that it was a thing until much later into my time at LSU. So, I think the Research Ambassador program is a cool way to help other people realize that earlier."

## Amy Morgan Places Third at LSU Discover Day



Amy Morgan took third place in the STEM discipline poster presentations at LSU Discover Day 2018. Her poster was titled "Evaluating Three-Dimensional Cancer Cell Migration to Durotactic Cues in a Microfluidic Device." Morgan's research deals with the development of a new platform to quantify how cells migrate in response to changes in tissue stiffness found in the tumor microenvironment. This work will provide a greater understanding of the early steps in cancer metastasis. Morgan is advised by Adam Melvin and Kevin McPeak.

Discover Day is a campus-wide undergraduate research symposium. This year over 200 students participated.

## Three ChE PhD Students Receive Awards at 255<sup>th</sup> ACS National Meeting



**Jin Gyun Lee** (Advisor: Prof. Bhuvnesh Bharti) won the Colloid & Surface Chemistry Division Outstanding Student Poster Award.

The research presented for this award is titled "Programming the microdynamics of an active particle: From linear to helical trajectories." In nature, flagellated microorganism and spermatozoa self-propel along helical trajectories using the organized beating of their flagella. This work shows a new class of metallodielectric colloids that can be programmed to navigate through 3D helical trajectories. The principle presented in here enables the fabrication of artificial materials capable of mimicking 3D active motion, which is the key to designing future micro-robots with the ability to navigate through complex biological environments such as tissues.



**Natalia da Silva Moura** (Advisor: Prof. James Dorman) was awarded a Catalysis Science & Technology Prize for her oral presentation at the ACS Spring Symposium.

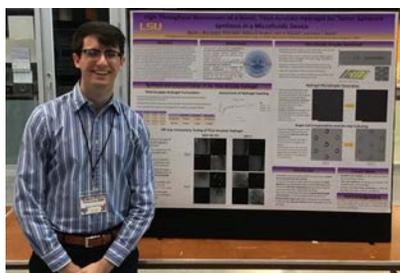
The work presented in this talk is titled "Catalytic activity of anisotropic magnetic nanoparticles activated via RF induction heating" and it is focused on utilizing iron oxide nanoparticles for in situ heat generation applied to catalysis. When these nanoparticles are exposed to an alternating magnetic field, heat is generated on the surface of the particles, which is where catalysis happens. As a proof of concept, we show that the catalytic reaction of butanol on iron oxide follows a different reaction mechanism under RF induction heating when compared to conventional thermal heating. These discoveries may contribute to the management of thermal accumulation on reactor walls in industrial sectors and allow the understanding of reaction mechanism from a different perspective. This work was done in collaboration with the LSU Chemistry Department and Oak Ridge National Lab.



**Pragathi Darapaneni** (Advisor: Prof. James Dorman) earned the Division of Physical Chemistry Outstanding Student Poster Award.

The work presented in this poster is titled "Modifying the Hybridization of Transition Metal d Orbitals via Weak External Fields." The transition metal ions are seldom used in luminescent or magnetic applications due to their field dependent properties. This work showcases how the external fields can control the hybridization of transition metal ion in a stable but reversible manner. The phenomenon of manipulating the transition metal energy levels in a host with surface dipoles is demonstrated for the first time using a combination of techniques within the lab and across the campus. The collaborations with the Department of Chemistry and Department of Physics at LSU were very helpful in performing the first principle calculations and state-of-the-art imaging characterizations. The direct implications of this work will be in the development of adaptive luminescent materials, sensors, flexible electronics, and more.

## Wortmann Receives Ogden Honors College Outstanding Thesis Award

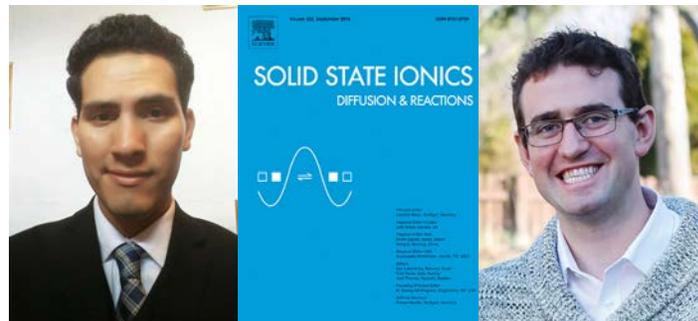


ChE graduating senior Wayne 'Trey' Wortmann III was selected as a recipient of an Ogden Honors College Outstanding Thesis Award for his work entitled "Development of a Thiol-Acrylate-based Hydrogel for Tumor Spheroid Generation in a

Microfluidic Device." Wortmann's honors thesis investigated the incorporation of a novel synthetic polymer into a microfluidic droplet trapping as a new method for the high-throughput generation of three-dimensional cell cultures. This work has several implications as a new method for 3D culturing including understanding spatial

limitations in drug efficacy in tumors, as well as investigating cellular crosstalk between different types of cells in the tumor microenvironment. This project is in collaboration with Prof. John Pojman in the Department of Chemistry.

## ChE Senior Juan Rubio Published in *Solid State Ionics*



Prof. Chris Arges and Juan Rubio, an LSU undergraduate senior in Chemical Engineering, recently published a paper in *Solid-State Ionics* on topographically patterned anion exchange membranes for microbial desalination. Juan was the 2<sup>nd</sup> author on the paper and the lead contributor from LSU. The paper, in collaboration with researchers with University of New Mexico, illustrates that membranes with low electrical resistance improves the power output of the microbial fuel cell while co-currently enhancing the desalination rate.

## PhD Student Varada Menon Palakkal Published in ACS' *Energy & Fuels*



A paper by Prof. Chris Arges and ChE PhD student Varada Menon Palakkal, entitled "Low Temperature Electrochemical Upgrading of Bio-Oils Using Polymer Electrolyte Membranes," was accepted in ACS's *Energy and Fuels*. The paper reports low temperature upgrading using an electrochemical process with polymer electrolyte membranes. The work was in collaboration with Idaho, Pacific Northwest, and Argonne National Laboratories.

## BASF Awards \$5,000 in Scholarships to LSU Students

BASF recently awarded \$5,000 in scholarships to two ChE students at LSU. This is the fifth year BASF has provided annual scholarships to students as part of the company's education outreach and workforce development efforts.

"BASF's scholarships provide financial support to students pursuing careers in engineering," said Tom Yura, Senior Vice President and General Manager of the BASF site in Geismar, La. "Through our

partnership with LSU's College of Engineering, BASF promotes career opportunities for students in our industry."

Each student received a \$2,500 scholarship from BASF based on criteria that included maintaining excellent grade-point averages and being active in campus and community organizations.



Jordan Cantrell



Mary Harrell

Jordan Cantrell is a sophomore chemical engineering major from Baton Rouge, Louisiana. He plans to combine his interest in chemistry with his problem-solving skills to become a chemical engineer. Cantrell's overriding goal is to obtain his degree in chemical engineering and make a career in the petrochemical industry. He wants to be challenged while having fun making things happen that will help his future employer.

Mary Harrel is a sophomore chemical engineering major from Baton Rouge, Louisiana. She hopes to complete an internship and possibly a co-op. Her passion and dream is to make a difference in the world. As a chemical engineer, Harrel hopes to be able to help recognize and find solutions for the world's energy and environmental problems.

"The LSU College of Engineering is grateful to BASF for its steadfast and multi-faceted support of our college's students," said LSU College of Engineering Dean Judy Wornat. "Its support of our top students is one of the highlights of the partnership between BASF and the university."

BASF's manufacturing presence near LSU includes facilities in Geismar (including the corporation's largest site in North America), Zachary, and Vidalia. These sites employ a workforce of nearly 2,000 people and invest approximately \$300 million in Louisiana through annual payroll, purchases, taxes, and charitable contributions.

### Three ChE Students Recognized as President's Alumni Scholars

Three chemical engineering students were recognized as 2017-18 President's Alumni Scholars — Jaxon Cade Adkins, Alexis G. Booe, and Henry J. Kantrow.

"I would like to express my heartfelt gratitude to the Cain family and the LSU Alumni Association for making it possible for me to attend LSU. I have worked hard and done well, and I owe my opportunity to be here to this scholarship." Cade Adkins, President's Alumni Scholar.

The President's Alumni Scholars, also known as Cain Scholars, receive awards funded through the association from an endowment

made in memory of Ola and Ruth Cain by Gordon A. Cain and Mary H. Cain.

Resident and nonresident students receive the full cost of attendance for eight semesters. The current value for Louisiana residents is about \$32,000 per year; for nonresidents, \$49,000 per year. The award also includes a \$2,000 study abroad stipend and the opportunity to earn up to an additional \$1,550 per year by participating in the President's Future Leaders in Research Program.

### Hunter Simonson Participates in NSF's REU Program



Junior Hunter Simonson spent his summer at the University of Florida conducting chemical engineering research under the direction of Dr. Carlos Rinaldi. His research focused on particle purification using different methods.

Simonson worked on a project to use gel permeation chromatography to improve nanoparticle purification from organic reactants and solvents. He conducted experiments and gave presentations on his weekly data and future plans in the lab.

"Imagine water trickling down a tube filled with pebbles, except the pebbles have small holes in them," Simon said. "Larger particles... pass through the beads in the empty space between the beads, whereas smaller particles...pass through the holes of the beads and this slows down their rate of flow."

According to Simonson, REUs are a "great opportunity to expose yourself to a real-world research environment, gain knowledge in a research field, and build connections with researchers and professors that you may end up working under."

### Eleven ChE Graduating Seniors Inducted into Order of the Engineer



"Upholding Devotion to the Standards and Dignity of the Engineering Profession"

In April of 2018, Joseph Fishburn, Mischael Daniel, Seth Kaplan, Aamani Kura, Chase Ellefson, Josh Baldassaro, Samuel Wilson, Andrew Jordan, Gregory Riley, Peter Youngblood, and Karisha Olson were inducted into the Order of the Engineer.

The Order of the Engineer was initiated in the United States to foster a spirit of pride and responsibility in the engineering profession.

Candidates are inducted into The Order of the Engineer through a Ring Ceremony where they formally accept the Obligation of an Engineer and receive a stainless-steel ring to be worn as a symbol. The Order is not a membership organization; there are never any meetings to attend or dues to pay. Instead, the Order fosters a unity of purpose and the honoring of one's pledge lifelong.

The Order of the Engineer is for engineers who will receive a degree in the following majors: Biological Engineering, Chemical Engineering, Civil Engineering, Environmental Engineering, Computer Engineering, Electrical Engineering, Mechanical Engineering, Industrial Engineering, and Petroleum Engineering. Engineering graduate students or graduate students with an undergraduate engineering degree are also eligible to participate.

Every fall and spring semester the CoE will host a Ring Ceremony for any graduating students (summer graduates can participate in the spring ceremony) who wish to be inducted. There were two ceremony options this semester. The ceremonies were held on April 16 and 17. The event was open to the public and hosted by the Louisiana Engineering Society and the LSU College of Engineering.

### Michael Denham Among Tiger Twelve Class of 2018



The LSU Office of the Dean of Students presented the Tiger Twelve Class of 2018, and Michael Denham, ChE and economics major, was among the chosen twelve.

Tiger Twelve is an honor that has been presented to 12 seniors by the Office of the Dean of Students since 2003. Students selected as members of the Tiger Twelve are current, full-time students, who have maintained at least a 2.5 GPA and best exemplified the seven tenets outlined in the LSU Commitment to Community, a statement of LSU's basic principles as an academic community. It was crafted by a committee of students, faculty, and staff in 1995 and states the expectations for each LSU community member.

Mandeville, La., native Michael Denham received a BS in Chemical Engineering and Economics in May 2018.

Denham also received the Leo & Insa Abraham Outstanding Honors Senior Award, graduating summa cum laude with College Honors.

Denham was a four-year member of both the YMCA Louisiana Youth and Government program and the American Institute of Chemical Engineers (AIChE). He was a founding member of the

National Alliance on Mental Illness (NAMI) and later served as president. His volunteer efforts include traveling to Panama with the Global Brigades to set up medical and dental clinics and working in hospice care at the medical surgical unit at Ochsner hospitals in Baton Rouge and New Orleans. He also conducted research on fossils with the Presidential Future Leaders in Research program.

Denham plans to attend the University of Cambridge to pursue a master's degree in health, medicine, and society to explore the ways in which the structural design of healthcare markets and medical institutions affect public perception of health and medicine. After completion of the program, he plans to attend medical school at Columbia University Vagelos College of Physicians and Surgeons.

### Monica Guillot Looks to Go the Distance After Graduation



Monica Guillot is a chemical engineering major at LSU and a distance runner for LSU Track and Field. But with graduation quickly approaching, you might say the 21-year-old is unsure of where the finish line is.

Four years ago, the Covington, La., native joined the track team as a walk-on. It was something she said she may not have done without the help of her teammate at St. Scholastica Academy, Carley Boyce, or her coach, Chris Pool.

"I joined the team because I had a passion for the sport and wanted to continue my running career for one of the most storied track programs in the nation," Guillot said. "To be able to say that I am on the track team is a great honor."

In the last four years, she has become a specialist in 5k and 10k races, producing a number of top-10 finishes over her career. She's also been named to the SEC Academic Honor Roll the last two years and was awarded the LSU Track and Field Women's Academic Achievement Award in 2017.

Her focus now, however, is what comes next.

Guillot is interested in working in the chemical engineering sector after graduation and will intern with Methanex this summer, the world's largest producer and supplier of methanol to major international markets in North America, Asia Pacific, Europe, and South America.

But she is also interested in pursuing a medical degree and helping athletes like her. Guillot will take the Medical College Admissions Test (MCAT), this spring and apply for medical school next August.

"I have considered being an orthopedic surgeon," Guillot said. "Being an athlete and in the sports field, I would love to help other athletes, specifically those who get injured, with orthopedic medicine."

Whatever she decides, one thing is certain, Guillot will go the distance.

# DEPARTMENTAL AWARDS



## GLORIA ALVARADO RECEIVES 2018 WETZEL AWARD

Gloria Alvarado was selected to receive the 2018 Wetzel Award. The honor goes to a sophomore for outstanding scholarship. Gloria received a trophy signifying her achievement and \$500. In addition, her name was added to a commemorative plaque honoring recipients of the Wetzel Award, located in the display case outside the Lopez Chemical Engineering Suite in Patrick F. Taylor Hall.

## MICHELLE WEST RECEIVES 2018 JESSE COATES AWARD

Michelle West was presented with both the Jesse Coates Award and an engraved watch at the Cain Department of Chemical Engineering's 2018 Undergraduate Awards Banquet. The Coates Award is voted on by all department faculty and is given to a student who exemplifies both academic integrity and leadership in extracurricular endeavors.



## 2018 JUNIOR AWARD



Kyle Bankston, Giuliano Campesi, Riad Elkhanoufi, Andrew Jordan, Michelle West, Stacey Wieseneck, and Wayne "Trey" Wortmann III received the 2018 Junior Award for holding GPAs above 4.0 at the end of the semester in which they had completed 90 hours.

## 2018 CHAIR'S AWARDS

The Chair's Award is given to graduating seniors that complete the program in four years with no dropped courses. This year's recipients were Aranya Ahmed, Victor Alvarado, Kyle Bankston, Matthew Berg, Rupert Breland, Michael Denham, Emily Duplechain, Chase Ellefson, Madison Ferda, Joseph Fishburn, Patrick Holden, Samuel Houston, Andrew Jordan, Cole Kirkpatrick, John Lacey, Matthew Langston, Natalie Legendre, Rachel Nguyen, Gregory Riley, Austen Theriot, Caroline Varnado, Nicholas Volpi, Michelle West, Stacey Wieseneck, and Wayne "Trey" Wortmann III.

## 2017-18 OUTSTANDING TEACHING ASSISTANT (TA) AWARDS



Fall 2017  
Behnam Safavinia



Spring 2018  
Luis Dias Bumba Manuel

# SCHOLARSHIPS

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## 2017-18 UNDERGRADUATE SCHOLARSHIP RECIPIENTS

### **Alan M. Raymond Endowed Scholarship** Wayne Wortmann

### **American Society of Sugar Cane Technologists Scholarship**

Gloria Alvarado  
Kyle Bankston  
Giuliano Campesi  
Stacey Wieseneck

### **BASF Team Chemistry Scholarship**

Jordan Cantrell  
Mary Harrell

### **BP Scholarship for Energy in Engineering**

Rachel Nguyen  
Kelly Robertson  
Isaiah Williams

### **Chevron Energy Leaders Scholarship in Engineering**

Erica Bickham  
Joshua Janway  
Darby Maloch  
Isaiah Williams  
Cameron Ysidron

### **Clara & Frank R. Groves Sr. Engineering Scholarship**

Andrew Jordan

### **David S. and Martha L. Bunnell Scholarship**

Jeffery Anderson

### **Donald W. Clayton Engineering Excellence Scholarship**

Giuliano Campesi

### **Dorothy Wise Worth Greater Baton Rouge State Fair Award**

Hope Idakwoji

### **Eugene R. Cox Scholarship**

Thomas Abrahams  
Allison Terry

### **ExxonMobil Diversity Scholarship**

Riad Elkhanoufi  
Breanna Lee  
Leonardo Martinez  
Tristin Paul-Olivier

### **Floyd S. Edmiston Jr. Endowed Memorial Scholarship**

Grant Landwehr

### **Francis P. Richard Sr. Family Scholarship in Engineering**

Andrew Badeaux

### **Gene Perdue Lowe Scholarship**

Alexandria Adams  
Emily Bergeron  
Ashley Brignac  
Cole Guillory  
Wyatt LeJeune  
Jeffrey Millet  
Maggie Perry  
Victoria Pham  
Kelly Robertson  
Nicole Rozier  
Damian Runkle  
Britain Saunier  
A'mer Abu Shamleh  
Marin Thomas

### **Gerard Family Undergraduate Scholarship**

Riad Elkhanoufi  
Michelle West  
Stacey Wieseneck

### **Halliburton Scholars Program**

Kelly Cohen  
Morgan Donaldson  
Abigail Ferrell  
Phuc Nguyen  
Annie O'Keefe

### **Hargrove Foundation Scholarship**

Cole Guillory

### **Jerry and Gloria DesRoche Fund**

Kelsey Blosser

### **Leo Broering Memorial Scholarship**

Rachel Nguyen

### **Leo C. Comeaux Chemical Engineering Scholarship**

Giuliano Campesi

### **Leonel E. Tustison and Helen L. Tustison Scholarship**

Jordan Cantrell  
Brandon Perrien

### **Lubrizol Scholarship**

Kyle Bankston  
Madeline Pipkin

### **Mable and Boykin W. Pegues Scholarship**

Joseph Balhoff  
Kelsey Blosser  
Michael Denham  
Eleanor Golson

### **Marathon Oil Undergraduate Minority Scholarship**

Dillon Deshotel  
Matthew Faucheux

### **Mathcounts**

Michael Denham

### **NACME Scholarship**

Victor Alvarado  
Erica Bickham  
Alexander Douglas  
Riad Elkhanoufi  
Talisha Parker  
Andrew Peterson

### **O. Dewitt Duncan Jr. Endowed Scholarship**

Joshua Campbell  
Jordan Cantrell  
Morgan Donaldson  
Monica Guillot  
Patrick Holden  
John Lacey  
Jacob Pettigrew  
Michael Rodehorst  
A'mer Abu Shamleh  
Hunter Simonson  
Haley Strong

### **Patrick F. Taylor Scholarship in Engineering**

Emily Heath

### **Paul M. Horton Memorial Undergraduate Scholarship**

Kelly Cohen  
Darby Maloch  
Trey Poirrier

### **Paul N. Howell Endowed Memorial Scholarship**

Michael Denham

### **R.L. Hartman Memorial Scholarship**

Matthew Faucheux

### **Ram N. Bhatia Scholarship**

Aamani Kura

### **Robert Sherrod Stricklin Scholarship**

Monica Guillot

### **Ryan D. Fontenot Scholarship**

Kayla Haydel

**S&B Engineers Brookshire Scholarship in Engineering**

Thomas Abrahams  
Elizabeth Allain  
Courtney Antie  
Colleen Atkins  
Andrew Badeaux  
Joshua Baldassaro  
Joseph Balhoff  
Kyle Bankston  
Gena Bergeron  
Brannon Bienasz  
Kelsey Blosser  
Claire Boudreaux  
Nicole Braud  
Vanessa Cabrera  
Megan Campbell  
Stephen Cannon  
Regina Champagne  
Joseph Chavalitlekha  
Haotian Chen  
Theron Cooper  
Kathryn Craft  
Joseph Daigle  
Mischael Daniel  
Gabrielle Davis  
Michael Denham  
Tristan Dorgan  
Emily Duplechain  
Riad Elkhanoufi  
Austin Fabre  
Aaron Faulkner  
Sandini Fernando  
Joseph Fishburn  
Wesley Fontenot  
Jonathan Garitty  
Abigail Geiger  
Mark Graham  
Corey Guercio  
Rathnayaka Gunasingha  
Rebecca Hansen  
Terra Harris  
Paul Hebert  
Dat Hoang  
Melissa Holmes  
Austin James  
Tyler Johnson  
Brandon Jones  
Andrew Jordan  
Seth Kaplan  
Caroline Kieffer  
Chanmonyneath Kim  
Grant Landwehr  
David Lawrence  
Christopher Leblanc  
Madeleine LeBlanc  
Breanna Lee  
Emily Loisel  
Mae Mangaoil  
Amoni McNair  
Jeffrey Millet  
Mason Miranda  
Amy Morgan

Courtney Musso  
Phuc Nguyen  
Rachel Nguyen  
Sonja Nguyen  
Thu Nguyen  
Truong Nguyen  
Schuyler Pablico  
Andrew Perrodin  
David Phan  
Bradley Poret  
Diana Raborn  
Christopher Reed  
Blake Ritchie  
Kory Robert  
Damian Runkle  
Jacqueline Samson  
Ryan Scroggins  
Sarah Servat  
A'mer Abu Shamleh  
Hunter Simonson  
Connor Sinanan  
Stephanie Sullivan  
Brent Talamo  
Noah Taylor  
Austen Theriot  
John Tooraen  
Linda Tran  
Caroline Varnado  
Nicholas Volpi  
Jeremy Wade  
Austin Watts  
Bryanna West  
Michelle West  
Francesca White  
Omer Wolff

**Suzanne and Jamal al-Barzinji Engineering Scholarship**  
Michelle West**Thomas H. Hopkins Scholarship**  
Lindsay Blouin  
Lee Burnett  
Jacob Pettigrew**Tiger Athletic Foundation Scholarship**  
Jeffery Anderson  
Jianfeng Chi  
Riad Elkhanoufi  
Cole Guillory  
Gregory Roy**Traditions Scholarship in Engineering**  
Thomas Abrahams  
Nihal Agrawal  
Christopher Fowler  
Darby Maloc  
Estelle Seghers  
Angela Stark  
Katrina Taylor**Walter G. Middleton, Jr. Endowed Scholarship**  
Chase Ellefson  
Rebecca Hansen**William E. McFatter Endowed Scholarship**  
Seth Kaplan  
Bryan Paul**2017-18 GRADUATE STUDENT AWARD RECIPIENTS****William A. Brookshire Graduate Assistantship in Chemical Engineering**  
Ben Peterson**Clayton Engineering Excellence Award for Outstanding Graduate Students**  
Elizabeth Hurst**Gordon A. & Mary Cain Graduate Assistantship**  
Yuxin Fang**Coates Conference Travel Award**  
Jorge Chebeir  
Kushal Ghale  
Changyi Jiang  
Nora Safabakhsh  
Daniel Willis  
Jielin Yu  
Chuanlin Zhao**Economic Development Award**  
Zhizhong "John" Ding  
Sharareh Heidarian**Flagship Graduate Assistantship**  
Aaron Harrington  
Tochukwu Ofoegbuna  
Behnam Safavinia  
Daniel Willis**Fulbright Fellowship**  
Daniel Norena Caro**George A. Daniels Graduate Fellowship**  
Daniel Norena Caro  
Daniel Guedes de Oliveira  
Sara Figueredo Stofela**Science Without Borders Fellowship**  
Daniel Guedes de Oliveira  
Sara Figueredo Stofela



## SUMMER 2017

**Doctor of Philosophy in  
Chemical Engineering**  
Navid Ghadipasha

**Bachelor of Science in  
Chemical Engineering**  
Al-Khalil Ahmed Al-Maskari  
Jason Rukevwe Diedjomahor  
Andrew Neil Dasgoswami  
Jasmine Ra'esha Marcia Jones

## FALL 2017

**Doctor of Philosophy in  
Chemical Engineering**  
Evan Michael Andrews  
Gongqiang He

**Master of Science in  
Chemical Engineering**  
Manibarathi Vaithiyanathan

**Bachelor of Science in  
Chemical Engineering**  
Ricardo John Aguilar  
Mohammed Mahdi Eissa Alqallaf  
Nicholas David Barbin  
Robert Blake Beddingfield  
Lindsey Renee' Blouin  
John Tyler Boyce  
Seth Madison Brown  
Erica Renee Christophe  
Mindy Thuy Duong  
Xinmei Guo

Hannah Marie Holmes  
Si Xing Hu  
Logan Robert Jacob  
Thomas Patrick Johnson  
Samuel Lemoine Justice  
Bradon Michael LeBourgeois  
Mallory Margaret Mire  
Whitney Leigh Nobile  
Caroline Emily Pearson  
Chase Andrew Pereira  
Shelby Annette Rochelle  
Ellis Joseph Sartain  
Joshua David Story  
Joshua Roy Vaughn  
Thao Trinh Phuong Vo  
Bryanna Marie West  
Ryan William Wise

## SPRING 2018

**Doctor of Philosophy in  
Chemical Engineering**  
Mutharasu Lalitha Chockalingam  
Timothy Wayne Thibodeaux

**Master of Science in  
Chemical Engineering**  
Keiron Anton Durant

**Bachelor of Science in  
Chemical Engineering**  
Aranya Ahmed  
Victor Emilio Alvarado  
Joshua Stephen Baldassaro  
Kyle Devin Bankston  
Vanessa T. Beall

Matthew John Berg  
Jonathan Gage Bolton  
Candace Jade Booker  
Claire Lindsey Boudreaux  
Rupert Earl Breland III  
Tyranica Sharde Burkhalter  
Michael Anthony Cangelosi  
Joseph Ott Chavalitlekha  
Tyler John Clark  
Chelsea Lynn Clouatre  
Chelsea Nicole Crochet  
Mischael Daniel  
Michael Waitus Denham  
Emily Nicole Duplechain  
Chase William Ellefson  
Abigail Patrice Erwin  
Matthew Wilhelm Faucheux  
Madison Elizabeth Ferda  
Joseph Wayne Fishburn  
Sean Michael Forestier  
Rama Rejendra Ghaisas  
William Joseph Ghrist  
Paulina Gonzalez Quiroga  
Corey Matthew Gourney  
Mark Thomas Graham  
Monica Lauren Griesser  
Andrew Michael Guarisco  
Sean Joseph Guillory  
Rebecca Lynn Hansen  
Elizabeth Mae Herman  
Dat Cao Hoang  
Patrick Thomas Holden  
Samuel David Houston  
José Carlo Jaar Faraj  
Sunwoo Joo  
Andrew Lavine Jordan  
Seth Miles Kaplan  
Caroline Grace Kieffer

Chanmonyneath Dary Kim  
Cole Stevens Kirkpatrick  
Aamani Kura  
John Michael Lacey  
Jeremy Joseph Laiche  
Emily Louise Landry  
Matthew Davis Langston  
David Anthony Lawrence II  
Madeleine Rae LeBlanc  
Breanna Marie Lee  
Natalie Eileen Legendre  
Justin Madrigal  
Alex Michael Medine  
Gregory Ike Muradyan  
Rachel Elizabeth Nguyen  
Thuan T. Nguyen  
Karisha Jayne Olson  
Bryan Howard Paul  
Darrin Kade Paul  
Andrew Lawrence Peterson  
Rafael DeAndré Plummer  
Troy Nicholas Porter  
Adriana Meira Campos Ready  
Gregory Patrick Riley  
Juan Eduardo Rubio  
Scott Aaron Salinas  
Jacqueline Noel Samson  
Dylan Cole Schaul  
Austen Joseph Theriot  
Caroline Elizabeth Varnado  
Nicholas James Volpi  
Michelle Elizabeth West  
Stacey Ann Wieseneck  
Samuel Scott Wilson  
Wayne Joseph Wortmann III  
Peter Terry Youngblood II  
Yina Zhang

## ChE Summa Cum Laude – 3.90-4.00

Kyle Bankston, Michael Denham, Andrew Jordan, Breanna Lee, Michelle West, Stacey Wieseneck, and Wayne “Trey” Wortmann III

## ChE Magna Cum Laude – 3.80-3.89

Nathan Brignac, Chase Ellefson, John Lacey, and Rachel Nguyen

## ChE Cum Laude – 3.70-3.79

Aranya Ahmed, Matthew Faucheux, and Peter Youngblood II

## HONORS COLLEGE GRADUATES



The LSU Honors College engages a diverse population of high-achieving students in a dynamic interaction of outstanding instruction, innovative research, and public service, and seeks to train today's high-achieving students to become tomorrow's leaders. These students graduate with college honors, completing a minimum of 32 hours of honors coursework, including the upper-division honors program. 2018 Chemical Engineering honors graduates were Michael Waitus Denham, Paulina Gonzalez-Quiroga, and Wayne "Trey" Joseph Wortmann III.

## LSU DISTINGUISHED COMMUNICATORS

This semester three chemical engineering students earned the LSU Distinguished Communicator Award by meeting high standards set by faculty in various colleges and by the LSU Communication Across the Curriculum program. The students earned high GPAs in communication-intensive courses — based on written, spoken, visual, and technological communication — and built digital portfolios, displayed as public websites, which included their communication projects from courses, internships, leadership roles, and public service. The LSU Distinguished Communicator program was created in 2006 to enhance learning experiences for LSU students and support the improvement of students' communication skills. Breanna Lee was advised by Prof. Mike Benton. Michael Denham and Gregory (Patrick) Riley were advised by Prof. Adam Melvin.



# ALUMNI SPOTLIGHT

## Claire L. Cagnolatti



### Claire L. Cagnolatti Inducted into E. J. Ourso College of Business Hall of Distinction

A native of DeRidder, La., who grew up in Gonzales, La., Claire Cagnolatti holds a bachelor's degree in chemical engineering and an MBA, both from LSU. During her days as a student, Cagnolatti was a Tau Beta Pi Engineering Honor Society member and four-year member of the Tiger Marching Band.

As a female engineer who launched her career in the late 1970s, Cagnolatti broke gender barriers and was the first female in nearly every position she held. Through roles at Stauffer Chemical (now Olin Chemical) in St. Gabriel, La., and at Occidental Chemical Company (OxyChem) in Lake Charles, La., and the company's Dallas headquarters, Cagnolatti gained experience in chemicals manufacturing and economic optimization for ethylene manufacturing.

Cagnolatti spent the last 24 years at HSB Solomon Associates LLC, the leading performance improvement company for the global energy industry. She currently serves as vice president for chemicals. Cagnolatti was both the first female consultant hired and the first female vice president at Solomon.

Numerous notable accomplishments mark Cagnolatti's tenure at Solomon. She developed and solicited the first worldwide propane dehydrogenation study. She served as the lead chemicals consultant on a project commissioned by the German government following reunification. Since 2003, she has managed the Solomon

Worldwide Olefin Plant Performance Analysis, increasing study participation to over 130 plants representing 75 percent of the global ethylene-producing capacity from all of the world's major ethylene-producing regions.

Cagnolatti is a frequently-requested speaker at conferences. She was the keynote speaker for the Fuels and Petrochemicals Division of the American Institute of Chemical Engineers 2017 Spring Meeting. Cagnolatti has authored and presented technical papers on a wide variety of topics, including the impact of shale gas production on the competitiveness of North America's chemical industry; common elements of top-performing plants; reliability performance of major compressors; trends in energy efficiency and emissions; ranking of reliability-related causes of lost production; and plant turnaround trends.

She gives back to her alma mater through volunteer service. Cagnolatti served as the Dallas-area representative on the Campaign Cabinet for the Forever LSU campaign. She was also a member of the Band Hall Task Force for the College of Music and Dramatic Arts, a group that successfully raised funds needed for the construction of the new Band Hall. She is a lifetime member of the national band honor fraternity, Kappa Kappa Psi. Cagnolatti lends her enthusiasm and expertise through board service to the College of Music and Dramatic Arts, the College of Engineering Office of Diversity, the Cain Department of Chemical Engineering, and the E. J. Ourso College of Business.

At the end of 2018, Cagnolatti will retire and return to her native Louisiana to be near family and friends, and most importantly, to attend as many LSU athletics events as possible. She also plans to contribute to both the Cain Department of Chemical Engineering and to the E. J. Ourso College of Business' energy and analytics programs, as a resource and guest lecturer. Her hobbies are LSU sports, music, travel, crossword puzzles, and soon, she can add "spending time with family" to the list.

### Reflections - In Her Own Words

My first exposure to the mystique that is LSU was listening to football games with my dad. When you're the eighth of nine children, you seek out whatever one-on-one time with your parents that you can manage. Saturday night football games were those special times with my dad. We'd listen to John Ferguson's play-by-play on WWL radio. I could hear Sid Crocker's PA announcements and the Tiger Band playing in the background. Daddy taught me the words to "Hey Fightin' Tigers" and taught me about football. I became a passionate Tiger fan at the tender age of five.

I began attending LSU football games at about age 13 with my church youth group. I admired the Italian Renaissance architecture and thought it'd be neat to be an LSU student. I was absolutely bug-eyed with excitement once I saw inside the stadium. Seeing and hearing Tiger Band convinced me that someday I wanted to play in that Golden Band from Tigerland.

When it came time to choose a university, I got offers from many schools, but I turned them all down to attend the university nearest and dearest to my heart — alma mater of my dad — LSU. I auditioned for Tiger Band and was accepted. Not only was I going to LSU, but I was going to be in Tiger Band! A young girl's dreams were coming true.

I changed majors from computer science to chemical engineering at my dad's recommendation. I liked "ChemE" and did surprisingly

well in the math, ChemE, and chemistry courses. Of course, I was the only female in most of those classes, but that didn't bother me — I was treated with respect by most of my professors. My favorite ChemE professor had also taught my eldest brother, Bill, who was one of his favorite students. Therefore, I could do no wrong in Dr. Callahan's thermodynamics classes.

I knew my early experience as a ChemE would be in a chemical plant, like my dad and brothers, but thought it might be nice to lose the hard hat and steel-toed shoes. I remember reading about combining an engineering degree with an MBA. This sounded great, and I began working business classes into my schedule. I thought I'd work in an office someday, helping to run the business of the chemical industry. I took a job at a plant in St. Gabriel and went to classes at LSU two nights per week for nine semesters to get my MBA. My favorite recollections are Dr. Timmons' business psychology classes (where I learned a lot about human interaction on the job) and economics studied under Dr. Loren Scott.

The economic crash of 1985 took my job. Unemployed for nine months, I waited tables to pay my bills. But if I'd never lost that job, I'd never have found the job in petrochemicals that was a turning point in my career. At the time, I had no idea how far, literally, the MBA would take me.

After seven years in petrochemicals manufacturing, I worked at OxyChem's Dallas corporate office doing business analysis for multiple plants, using knowledge from my favorite MBA classes in quantitative business analysis. After two years, I found an ad in a journal for a consultant at Solomon Associates. The list of qualifications looked exactly like my résumé, so I had to check it out. I was hired by company founder Mr. Lee Solomon — becoming the first female consultant on his staff. My expertise in the technical and business aspects of petrochemicals was the perfect fit for the job. Over a 24-year career at Solomon, I progressed from consultant to senior consultant to senior manager to vice president. I now travel the world to advise petrochemical companies on optimizing profit from their operations. I'm truly thankful that God put me in the right place at the right time for my career.

I am both humbled and honored to be chosen for the Hall of Distinction in the E. J. Ourso College of Business. My LSU MBA was a key factor in my career success at Solomon. Being able to combine business acumen and a deep understanding of petrochemicals economics with technical skills and experience as a plant engineer defined my career success. It has been a more exciting and illustrious career than this girl from Gonzales could ever have imagined. Upon retirement at the end of this year, I plan to pay it forward. I plan to continue to give back to today's and tomorrow's LSU students. I plan to be guest lecturer and perhaps even part-time instructor in both the E. J. Ourso College of Business and in the Cain Department of Chemical Engineering.

One of my favorite activities is attending LSU sporting events, and I think of my dad each time I cheer for my Tigers. I'll soon be seeing many such events when I retire and move back to South Louisiana this December. LSU is much more than a university to me. It's a tradition, a family legacy, and the key to this girl's dreams coming true in ways she never imagined, leading to a career that exceeded all my expectations, thanks to my education at LSU.

Thank you, Dean White and the E. J. Ourso College of Business, for this incredible honor.

# IN MEMORIAM

Patrick Allen, BS 1952

Maynard Leslie "Andy" Anderson, MS 1957

Charles Clifford "Cliff" Cameron, BS 1941

Titus Lloyd "Lloyd" Crasto Jr., BS 1973

Jean de Chazal, BS 1962

Grover Lynn Dobbins, BS 1956

Ray Goodell Jr., BS 1952

Edgar R. "Dito" Guillot III, BS 1999

Larry Michael Hall, BS 1981

Gerald Lee Katz, BS 1949

John W. Kirkpatrick, BS 1970

Robert Linton Jr., BS 1961

Thomas Bedford Lucas Jr., BS 1947

Paul Whitfield Murrill, MS 1962, PhD 1963

Adam Nugent Jr., BS 1962

John Bethel Petty III, MS 1962

Harold Vernon Rodriguez, MS 1958, PhD 1962

William Frank "Bill" Snyder, BS 1964, MS 1966

Roy St. Pierre, BS 1952

Wilson "Bill" AKA "Pops" Stevens, BS 1958

James J. Swearingen, BS 1957

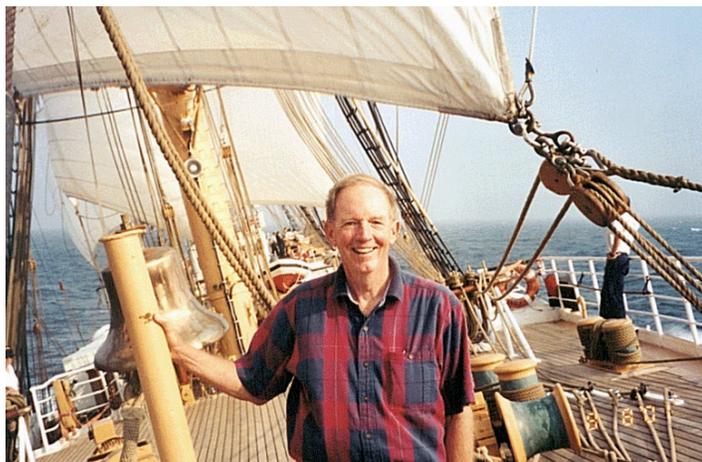
Joseph Guy Thibodaux Jr., BS 1942

Bruce S. Tregre, BS 1953

John Wurster Wheeler, BS 1960

# IN MEMORIAM

## Paul Whitfield Murrill



Paul Whitfield Murrill, an LSU alumnus and former department chair, dean, provost, and chancellor, died April 2 at his home in Baton Rouge, La. He was 83.

Born in St. Louis, Mo., Murrill grew up in Hinds County, Ms., after his family moved there. A lifelong learner, his early education began in a one-room school in Pocahtonas, then continued in the public schools of Clinton, from which he graduated in 1952.

Receiving a Navy ROTC scholarship, he began his college education at UM, graduating magna cum laude with a degree in chemical engineering in 1956.

While at the university, Murrill met his wife, Nancy Hoover Williams, of Lexington. Upon graduation, he received his commission as an ensign in the U.S. Navy and spent the next three years as a naval officer aboard USS Valley Forge. Thus, began a lifelong love for the Navy and the sea. He was initially machine division officer in charge of Valley Forge's engine rooms, but always in search of a challenge, he requested and received permission from the captain to train for officer of the deck – underway, a position that was conferred upon him in 1958. He was later promoted from ensign to lieutenant (junior grade).

After discharge from the Navy, Murrill and Williams married in May 1959, and were married for 59 years. Murrill had a brief career as a chemical engineer at Columbia-Southern (PPG) in Lake Charles, La., but soon pursued higher education in chemical engineering. Encouraged by a mentor at UM, he attended LSU where he completed his master's degree and then his PhD in 1963. Murrill was hired initially by LSU as an interim professor, but his natural leadership ability and intellect led to his being hired for a full-time position as professor in the chemical engineering department. He was named head of that department, then dean of academic affairs and provost of the university soon thereafter.

In 1974, at only age 39, Murrill was named chancellor of the Baton Rouge campus and served in that capacity until 1981. During that time, he was the 21<sup>st</sup> living American to be named a distinguished member of Phi Kappa Phi honor society, and in 1978, *Change* magazine named him one of the top 100 educators in the country. Under his leadership, LSU applied for and was granted a chapter

of Phi Beta Kappa and became the 13<sup>th</sup> university to be named a Sea Grant institution.

Murrill oversaw the implementation of Title IX for women's athletics at LSU and during the country's bicentennial (1976) he launched a special project, "The Native Flora of Louisiana," with botanical artist Margaret Stones executing watercolor drawings. He was a member of 13 honorary and professional societies, including the LSU and Ole Miss alumni halls of fame. He wrote and edited many books, including seminal texts on process theory, which are still in use today.

In 2003, the Instrument Society of America named him one of the 50 most influential people in history in the fields of automation, instrumentation, and control technologies. Murrill retired from LSU in 1981 and began an accomplished career in the corporate world. As a testament to his abilities, he was asked to and served on the boards of 27 publicly traded corporations regulated by the SEC. He was chief executive officer of Gulf States Utilities and continued on that board after it was acquired by Entergy Corp. He served as lead director of the board of Tidewater Inc., which named an offshore supply ship the Paul W. Murrill in his honor.

His corporate career also included serving on the boards of Piccadilly Inc., Foxboro Corp. (Massachusetts), Zygo Corp. (Connecticut), and the Baton Rouge Water Co. From 1979 to 1997, he was an adviser to the U.S. Department of Energy's National Nuclear Laboratory at Oak Ridge. He served on numerous nonprofit boards and foundations, including the Baton Rouge Food Bank and two years as chairman of the board of the Franciscan Missionaries of Our Lady.

Murrill was an ordained deacon at University Baptist Church, which he and his wife joined in 1960, and over the years he taught various ages in Sunday school. He had many and varying interests: early lighting, fishing and gardening, to name a few, but none so important to him as his family and religion. Of his many accomplishments, the most important was that he was humble, kind, ever-loving, and compassionate. During his later years, he taught a Sunday school class of his peers (some older, some younger), and this was a most meaningful experience for him.

For six years, until January of this year, he wrote a newsletter he called "The Peep," which began with his class and expanded to include a wide range of devoted friends in various parts of the country, who he greeted weekly as "my fellow pilgrims."

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### John Flake, ChE Department Chair, remembers Dr. Murrill.

In April we lost Prof. Paul Murrill. It is hard to articulate the overall impact he had on our department, the university, industry, and our profession, but I can say that he touched the lives of many. I was new to the department when I first met Paul. It was at a holiday party and I only knew that he was a retired professor.

He went out of his way to welcome me to LSU and to share some kind words to let me know that I was in the right place after leaving a career in industry. I later learned that he was not only a retired professor and author of several textbooks, but also a former ChE Department Chair, Dean of Academic Affairs, LSU Provost, LSU Chancellor, and CEO of a Fortune 500 company.

Since his passing, I have heard wonderful stories from many of his former students and colleagues. It is clear he was a gifted

engineer, but also an exceptional teacher, mentor, and leader. A man of divergent talents. Below, I have assembled some notes and reflections from his former students. Our department will miss Paul. He was a prince and we will long benefit from his time at LSU.

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#### **Dr. Paul W. Murrill, a remembrance from Armando Corripio.**

In the spring semester of 1964 (the second semester after getting my bachelor's degree from LSU), I took an evening course from Dr. Murrill on automation while working full time at Dow Chemical, Plaquemine. My job at Dow was in process automation. The course was a Mechanical Engineering course and Dr. Murrill, in his second semester at LSU, was then an interim professor. I found out he was an excellent teacher, always presenting the fundamental concepts in each lecture and conveying full understanding of the topic.

The following summer Paul taught a course at Dow and I helped by presenting computer simulations of the control responses he was discussing. The course was once a week after quitting time and he gave me a ride home after each lecture, as I was missing my car pool. It was then that he started working on convincing me I had to return to school and earn a doctorate.

I continued to take evening courses at LSU for the next five years, one of them from Paul on distillation, and then he offered me an instructorship in the department to work on my dissertation under his direction. By then, he was the department chair. It took me one and a half years to earn the PhD, and the summer before I finished he came to me one morning and asked me if I had accepted a position in industry (I was about to accept an offer from Exxon). When I said I hadn't he told me, "Don't do it yet, I can't tell you why right now." A few days later he took me to see the Dean and they offered me an assistant professorship in chemical engineering. It turns out he was moving up to Provost and wanted me to continue his work in the department. This was an unexpected fork in my career, I decided to take it and have never regretted it.

At the time this happened, 1969, several PhD graduates from the department went into academic careers. The number has never been approached. I am certain that Dr. Murrill's inspiration and encouragement had a lot to do with it.

And this is how Paul Murrill changed my life.

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#### **Harry Toups was a student of Dr. Murrill's.**



Dr. Murrill taught me Fortran programming very early on, I would guess my sophomore year. I remember him as a very effective teacher. He was always warm and cordial, maybe it was that Mississippi background that provided that interface.

When I was trying to decide about where to go to grad school, I spoke with Dr. Murrill, concluding with him that — if I were going to industry, which I believed I was — I could get a darn good terminal degree from LSU. My class used his process control textbook for CHE 198. I still have that book on a shelf in my office (the black one).

#### **Remembering Paul Murrill by Louis J. Thibodeaux.**

Professor Paul Murrill was a great teacher. His advanced distillation course was fine, but it was the math modeling course that focused my attention. Coupled with Dr. Pike's transport phenomena course, my academic skill set was complete.

Dr. Murrill was Department Chair in 1967, when I asked for a meeting. We met in his faculty office down the hallway to the Audubon Sugar factory. Being certain working in the chemical process industry was not for me, I needed advice.

"What about an academic job?" was my question to Dr. Murrill.

"Try it," was his answer. "Teach the fundamental course in the fall semester in place of Dr. Jesse Coates who is retiring." I did and loved it.

I loved it so much that I sent umpteen letters out to universities across the nation—mostly I received no response. With the department's research faculty Herbert Berger's connections, I received an invitation to interview for a position with the University of Florida's Civil Engineering Department, but was rejected. Letters to the University of Alabama, University of Arkansas, and Tennessee Technology University yielded interviews with all three. I got three offers and accepted a position with Arkansas.

After thirteen years at Arkansas, LSU Professor and ChE Department Chair Edward McLaughlin offered me the position of full professor with tenure in chemical engineering. Paul's advice suggesting I try teaching was spot-on correct. I retired forty-six years later, being the first named distinguished Jesse Coates Professor of the Cain Department of Chemical Engineering. What a great career that was. GEAX TIGERS!

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#### **Paul Murrill: teacher, mentor, example, friend – by Ron Rousseau.**

Paul Murrill was an important mentor to me. Not that we spoke often in recent years, but in 1968-69, when I was struggling with what I would do with the education I received from LSU, he was there answering my questions and guiding me by his example. I wanted to be like him. So, it was quite a blow to learn of the death of this remarkable man.

I first encountered Paul when I took Chemical Engineering 151 in the summer of 1965. He was the instructor for that class, and it is the only class for which I still have my notes. One aspect of his grading in that course was that students had to submit their notebooks after the final exam (but before grades were given), with class notes, homework papers, quizzes, and exams neatly organized. Clearly, he was trying to teach us more than unit operations with that requirement. In addition to great lectures, he also added some of his personality to classes; for instance, I've never gotten his description of what he had to go through to become an Officer of the Deck in the U.S. Navy. The next class of his that I took was on automatic control; the text was a draft of his book on the topic that was later published. It was one of the last times LSU required Saturday classes, and ours was early morning (I think it was 8 a.m.) Tuesday, Thursday, and Saturday. Paul would be standing at the elevated platform in the second-floor classroom and you could look out the window to the left and see the stadium that was just a few hours from being mobbed.

My research interests in graduate school diverged from Paul's so our interactions during that period were informal, even though he had become Head of the Department of Chemical Engineering. He interacted with graduate students in ways that surprised us: sometimes dropping into the lab and asking if anyone wanted to walk over to Alex Box Stadium to see part of a baseball game, sometimes showing up for late Friday afternoon touch football games, and occasionally we would be invited to social functions with him and his wife, Nancy.

Conversations with Paul covered more than chemical engineering and he wanted us to know and care about more than technology. In fact, he stunned a few doctoral candidates by asking them in oral exams to describe the last non-technical book they had read. His

and wonder. I am fortunate to have had him in my life.

I met Paul Murrill in my junior year at LSU. He taught two classes that year that literally change my life. I was blown away by both the subject and the teacher. His courses were the first to address the "engineering" part of ChE, and he made it magical in his classroom. He knew how to knit together all the bits and pieces of theory in a way that was real and exciting. I was hooked and wanted more, so I soon applied to study under Dr. Murrill in graduate school and started that study when I was still an undergraduate.

At that time, Paul was putting together a research group focused on the problems and possibilities related to using digital computers in the modeling and control of chemical processes. It was a good



"Paul truly liked people and I think his ability to relate to others was a vital part of his personality."

-Nancy Murrill

influence came from classroom teaching, the informal interactions I've mentioned, but most of all from indefinable characteristics with which most great leaders are endowed. You just knew he was someone special. Through his examples, Paul clearly influenced many of the graduate students to consider entering academia. It sure played a major role in my choosing to do so. When I read his obituary, I was struck by the enormity of his accomplishments, but one that was particularly surprising to me was that he was only 39 when he became chancellor of LSU. 39!

Even though our contacts were infrequent after I left LSU with my PhD, I never doubted that Paul had become a true friend. And his role as mentor was reactivated in 2007 when I was a finalist for the position of Provost at LSU. He was on the search committee and we had dinner the night before the big day in which I was meeting campus officials and making a public presentation. As he dropped me off, he very seriously said to me "Ron, in your presentation tomorrow, tell the truth." I did tell the truth, but the offer went to someone else! We talked often after that experience, but I wish I had been more proactive in keeping up with what was going on in his life. A picture of him and Nancy in a recent LSU publication showed Paul with his usual happy expression, but it was obvious that he was not well. I regret that I didn't call him or Nancy to express my concern and to hear that most recognizable of voices one more time.

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#### Remembering Dr. Paul Murrill by Dr. Charlie Moore, Professor Emeritus, University of Tennessee.

Recently, I watched a PBS interview of Joseph Campbell by Bill Moyers. The topic was the importance of heroes. Looking back over the past 50 years, it is clear that Paul Murrill served that role for me. He was the professional example I often looked to throughout my career. He was also a personal example of someone who could run with the horses but still maintain a youthful sense of enthusiasm

group and a good decision for me. In just a few short years I had a PhD, a half a dozen published papers, and was about to start a teaching job at the University of Tennessee that would last almost 50 years.

In retrospect, I was fortunate to be one of just a few to even have the opportunity to study under Paul. His academic career was brilliant but it lasted only a few years before his intelligence and management skills took him well beyond the classroom and research labs. Paul had an undeniable gift for leading people and managing projects big and small. That talent would lead him to broader and more influential roles than the modeling and control of chemical processes.

Even though his years of active research were short, they have turned out to have had a significant influence on the current practice of industrial control. He directed less than a dozen graduate students who all went on to have careers in process control. Some of us went to universities, some went to industry, some became consultants and some did all three. Regardless of career path, all of us continued to follow Paul's well-grounded philosophy that good process control only comes from a good understanding of how process systems work. There is no magical control algorithm that can compete with good chemical engineering insight and understanding.

(By the way, three of this group of students and Paul Murrill have been inducted into Control Engineering's Process Control Hall of Fame.)

In remembering Paul Murrill, it's important for someone to mention that he was, in fact, a big tease. For example, the day I was busy with loose ends finishing up my PhD. I was trying my best to follow guidelines and meet deadlines when I kept getting messages, "Important, Dr. Murrill needs to see you ASAP." When I finally made contact, he said with a straight face "Charlie, I am afraid you may have a serious problem. You need to go see the dean of men

immediately.” I had no clue until I saw the smile on Dean French’s face. It turned out to be part of an initiation into a national honor society.

Another example of his serious teasing occurred during my oral dissertation defense. At the beginning of the meeting he reminded me and all present that the degree I was pursuing was a doctorate of philosophy and not a doctorate of engineering. As such he thought such applicants should be able to answer some philosophical questions. Then he started with “do you believe in the concept of heaven and hell?”. After my stunned and stumbling reply, I don’t remember anyone on my committee asking questions related to my research.

As background to that question, Paul kept up with books I was reading and often made comments and recommendations. He asked that question knowing that I was reading books on philosophy

and theology and wanted to see how well I could express my philosophical thoughts. I loved his book recommendations and they continued well after my graduate school days. I learned much from Paul that had very little to do with chemical engineering.

This reflection started with me describing Paul as one of my personal heroes. Indeed, he was a hero of mythical proportions. Mythical because his example was clearly well beyond my personal capabilities and limitations. I could have never been another Paul Murrill, but his examples have always pulled me in the right directions. I will be forever thankful for the influence he has had on my life.

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**We are grateful that Paul joined us this past November for Doug Harrison’s 80<sup>th</sup> birthday celebration. The following photos are from that day.**



# OPPORTUNITY TO GIVE

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## SUPPORTING LSU CHEMICAL ENGINEERING

The Cain Department of Chemical Engineering is committed to delivering the highest possible educational experience to its students. To further that end, we invite all who would like to share in this commitment to contribute to the Chemical Engineering Development Fund. These funds are used to support instructors with industrial experience for labs; new faculty start-up costs; equipment, computers, and supplies for undergraduate labs; and numerous other endeavors.

Our alumni, friends, and other supporters are critical to the success of our department and we are grateful for the generous gifts that we continue to receive in support of our academic programs.

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The Cain Department of Chemical Engineering values our esteemed alumni and would like to connect with you! We would enjoy hearing about your first job, new job, promotions, accomplishments, and/or other significant events in your life. If you would like to share your achievements with us, or if you'd simply like to update your contact information, please complete our online update form at <http://www.lsu.edu/eng/che/alumni/update-alumni-info.php>. Thank you for your continued support and best of luck in your future endeavors!





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