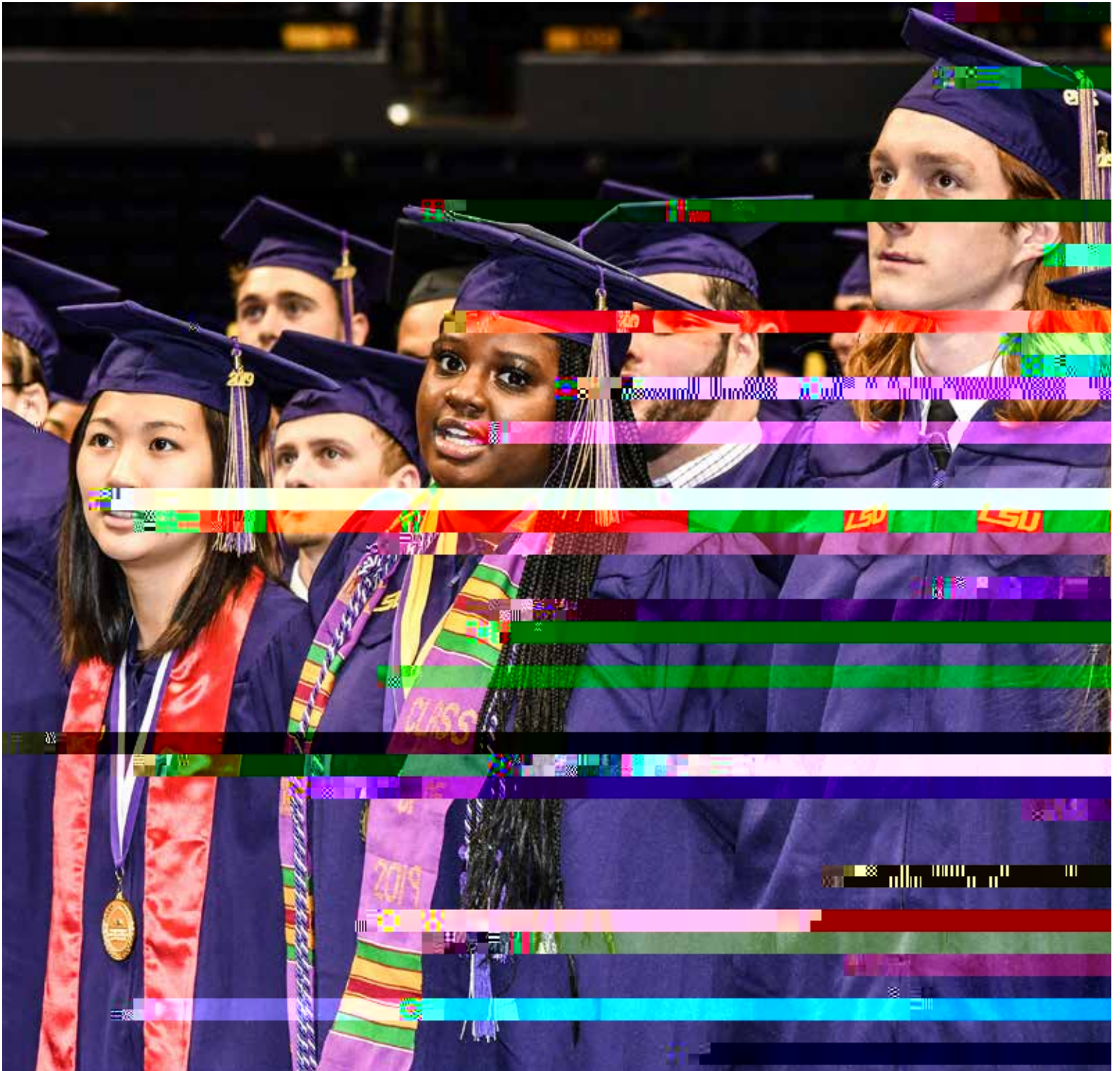


LSU

Department of
Biological & A•

SPRING 2020 NEWSLETTER



DEPARTMENT HIGHLIGHTS

BAE Department

The Department of Biological and Agricultural Engineering would like to thank all alumni, scholarship supporters, industry partners, and advisory council members for your dedication to improving the department and the education provided to current BE students. The BAE community has grown and is more active than ever before. With your support, we are providing more opportunities to students in scholarships, internships, healthcare experiences, and in senior design and empowering those students to reach their goals.

Thank you for your support!

Advisory Council

Mission

The mission of the advisory council is to advise and counsel the chairperson and the faculty of the Department of Biologi-

cal and Agricultural Engineering (BAE) on matters pertaining to academic quality and stature of the department. The council will advise on how the department and college can improve relationships and meet the needs of students, industry, commerce, government, and the society through best utilization of available resources. This includes actively supporting the department's development efforts in securing additional resources through individuals and industry.

Goals for 2019–2020

- Provide funding for two BAE department seminar speakers
- Support and improve the BESO (Biological Engineering Student Organization) Lounge with new furniture and appliances
- Invite alumni and industry partners to senior design final presentations
- Invite alumni to the BESO Crawfish Boil



LSU BE Alumnus Designs Drainage for Tiger Stadium

When alumnus Danny Dehon began working in coastal restoration, he never dreamed that it would land him back where he started—LSU's campus. And Dehon certainly never dreamed the land he'd be working to save would be the one inside Tiger Stadium.

Born and raised in New Orleans, Dehon came to LSU in 2003, majoring in biological sciences before switching to biological engineering his sophomore year.

"I had a strong math and biology background in high school and felt that BE was a good merger of the two," he said. "Growing up in South Louisiana, fishing with my family and being out on the water was something I loved to do, so I wanted to focus on coastal engineering."

After earning his bachelor's in 2008, Dehon remained at LSU and earned his master's in BE. Immediately after graduating, he worked as a field scientist for a British Petroleum (BP) contractor, Cardno, alongside a team of four scientists and boat operators to track submerged oil throughout the Gulf of Mexico.

"We were stationed in different cities between Louisiana and Florida for two to three weeks, then would go home to get our next assignment," Dehon said. "I wasn't really utilizing my degree, but I stayed for six months."

He then reconnected with fellow BE graduate Tyler Ortego, who had started his own company, Ora Engineering. Dehon followed up Ortego's research on artificial oysterries, a technology Ortego had taken to the commercial scale.

"I worked with him on engineering design for nearly three years, working out of my house and also in the field," Dehon said.

In 2013, Dehon began working for Manchac Consulting Group, where he served as a coastal engineer on all of the company's coastal projects, which included marsh creation, bank stabilization, artificial reefs, island construction, and sediment transport. The most exciting project, however, came when the company got a contract to work on drainage in LSU's Tiger Stadium.

"I started working with LSU 18 months ago and worked with a landscape architect who has done a number of SEC fields," Dehon said. "So, he was the guy I leaned on for the irrigation and the under-drain system out there. I could take care of drainage on the sidelines, concrete work, and civil site work, and adding drainage capacity."

Dehon credits LSU BE Professor Marybeth Lima's Community Playground Project for helping him with his work on a daily basis.

"Dr. Lima is awesome," he said. "One of the big things most people take away from her class is the work you get to do on the playground projects. It's very fulfilling. Looking back, it's very applicable to working with building standards and design and working with a client and going through a design process on a project."

Though Dehon has recently accepted a new position with

**LSU AgCenter Professor Co-Authors
Book Protecting Coastal Cities**

**LSU Engineering Professors Offer Lab Experience
to Science Olympiad Team**

"The students can now get more information about the existing research studies in these domains and raise their own ideas for the Olympiad competition," Lee said.

Kwon introduced the students to his cell-free synthetic biol-

Royal Rookery: LSU BE Alumna Helps Restore Queen Bess Island

It's been 51 years since the brown pelican was reintroduced to Louisiana after the species completely disappeared from the state due to pesticide use in the 1960s. Since then, it has thrived on Queen Bess Island, making it the third largest brown pelican rookery in Louisiana. Another battle looms, however.

BESO

Our Mission

As a professional networking organization, BESO aims to forge

Congratulations to our December Graduates!

We wish you the best in your future endeavors!

BSBE

Acosta, Jeremy Jules

Cavalier, Maryn Bailey

Craven, John Bailey

DeSilva, Catherine Marie

Fuller, RaeDiance

Garcia, Brittany Claire

Hebert, Tyler Faye

Hutchins, Matthew Spencer

Khalif, Layah Ayana

Lam, Meggie

Lee, Alexander Francois

Lindsay, Athena Loren

Moldovan, Laura Alexandra

Opiri, Michelle Mulaa

Schmidt, Eva

Shanberg, Vincent Joseph

Veneracion, Kristen Michelle

MSBAE

Daniel, Dideolu Joshua

King, Connor Tuohy

PhD BE

Barekati Goudarzi, Mohamad

Distinguished Communicators



Congratulations to our Fall 2019 Distinguished Communicator, Layah Khalif.

Distinguished Researchers

Congratulations to Maryn Cavalier and Meggie Lam for being awarded the LSU Distinguished Undergraduate Researcher. This designation recognizes the achievements of outstanding undergraduates who participate in a track of educational and research activities leading to a final and public presentation or publication of a faculty-mentored undergraduate scholarly project. An LSU Distinguished Undergraduate Researcher is a student who has demonstrated outstanding ability as an advanced student researcher in their discipline. Distinguished Researchers will be honored at a special medal ceremony in their graduating semester and the designation will be noted on their transcripts.

[Click here](#) for more information.

Engaged Citizen Distinctions:



We are proud of the three Engaged Citizen Distinctions earned by Rae-Diance Fuller, Maryn Cavalier, and Layah Khalif!

Kodi Guillory, 2005 BSBE, Profiled in Greater Baton Rouge Business Report



3 things to know: Kodi Guillory

1. Before opening her civil engineering firm in April, Guillory had always dreamt of owning a company, building a career with both private industry and public sector experience (as a civil engineer at

CDM Smith in Baton Rouge and an engineering supervisor at the Coastal Protection and Restoration Authority of Louisiana, respectively).

2. She wants to dispel any misconception that Sustainable Design Solutions exclusively deals with green infrastructure; for Guillory, “sustainable” means taking into account a client’s budget and existing resources in order to give them a project that lasts.

3. One leadership skill she’s learned the hard way: A strong leader is a patient leader—and the best ones know how to calmly navigate whichever clients, stakeholders or funding sources might be holding up a process.

Favorite things:

Guillory Family time

“Almost every ounce of free time I get is spent with my husband (David) and my sons (David Ryan, 4, and Matthew, 3).”

To-do lists

“I have one on my phone—it’s the first thing I check once my alarm goes off in the morning so that nothing falls through the cracks.”

Planetarium visits

“Up until I was 18, I always wanted to be an astronaut and the first person to visit Mars. Science and space are still things that interest me.”

Dinner for two

“On a date night, I enjoy the atmosphere at Fleming’s, as well as the ribeye and snow crab legs.”

Kids’ bops

“When I do listen to music, I’m generally in the car with my two boys and listening to a soundtrack from a movie they’ve seen. Some all-time favorites are The Greatest Showman and Despicable Me.”

The Art of Science: Gallery Showcases Cancer, Bacteria Designs by LSU BE Senior

The art of LSU Biological Engineering senior Meagan Moore was featured as part of "Metis-Muses: Women of Art Through



**\$2,979 contributed
during the campaign**



RESEARCH HIGHLIGHTS

BE Faculty, Students' Paper Published in ACS Publication

BE Assistant Professors Carlos Astete and Jangwook (Philip) Jung, BE graduate students Jorge Belgodere and Katie Hamel, and BE undergraduate student Syed Zamin were co-authors on a paper titled, *Modulating Mechanical Properties of Collagen-Lignin Composites*, which was published

in the American Chemistry Society's publication, *ACS Applied Bio Materials*.

They were joined by fellow authors University of Kentucky Professor of Chemistry Bert Lynn, University of Kentucky Assistant Professor of Biosystems and Agricultural Engineering Jian Shi, University of Texas School of Engineering & Applied Science Assistant Professor Jai Rudra, University of Kentucky Graduate Research Assistant Ryan Kalinoski, and North Carolina State graduate student Joseph Penrod.

Abstract

Three-dimensional matrices of collagen type I (Col I) are widely used in tissue engineering applications for its abundance in many tissues, bioactivity with many cell types, and excellent biocompatibility. Inspired by the structural role of lignin in a plant tissue, the group found that sodium lignosulfonate (SLS) and an alkali-extracted lignin from switchgrass (SG) increased the stiffness of Col I gels. SLS and SG enhanced the stiffness of Col I gels from 52 to 670 Pa and 52 to 320 Pa, respectively, and attenuated shear-thinning properties, with the formulation of 1.8 mg/mL Col I and 5.0 mg/mL SLS or SG. In 2D cultures, the cytotoxicity of collagen–SLS to adipose-derived stromal cells was not observed and the cell viability was maintained over seven days in 3D cultures. Collagen–SLS composites did not elicit immunogenicity when compared to SLS-only groups. The group

Dr. Elizabeth Martin and her graduate student, Ethan Byrne, won a grant

LSU Biological Engineering Assistant Professor Elizabeth Martin and LSU School of Medicine in New Orleans Associate Professor Frank Lau were recently awarded a \$100,000 internal grant for a study on how the obese tissue environment alters response to breast cancer therapy.

Louisiana has the third-highest female breast cancer death

