



UNIVERSITY OF
ARKANSAS

College of Engineering
Biological & Agricultural Engineering

UofA

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System



SPRING 2017 | INEWSLETTER

FROM THE DEPARTMENT HEAD

It is a pleasure to share the progress made in our department since January 2017. Twenty four students in seven teams showcased their senior design projects on May 4th. Ms. Jilian Schneider, one of our 21 graduating seniors was selected as the “Most Outstanding Graduating Senior” in the Department and was recognized at the College of Engineering student recognition reception and graduation ceremony on May 13th. Six outstanding alumni were inducted in the Arkansas Academy of Biological and Agricultural Engineering (AABAE) on April 28th. AABAE provides valuable support annually through scholarships, student membership in ASABE, travel for student competitions and student club activities. The AABAE is engaged in helping us grow the departmental scholarships. We would like to raise funds to endow the Carl Griffis Memorial Scholarship and would appreciate your support.

On April 29th, Mr. Mike Shook, (BSAGE 1982) of Agri Process Innovations was recognized as a “Distinguished Alumnus” and Ms. Toni Peacock McCrory (BSBE 2007) was recognized as an “Early Career Alumnus” of the College of Engineering. Dr. Scott Osborn was named the Faculty Academic Advisor of the year by the University of Arkansas for his outstanding service as a student advisor and mentor. Distinguished Professor Yanbin Li was recognized with the “Dean’s Award for Excellence-Collaborative Faculty Research Award” in the College of Engineering on May 3rd for his multiple research collaborations. Drs. Scott Osborn, Sammy Sadaka and Tom Costello were recognized for excellence in teaching, research and service to students in our department, respectively.

Professor Jin-Woo Kim and Distinguished Professor Yanbin Li were inducted as new 2017 Fellows of the American Institute of Medical and Biological Engineering (AIMBE) at the National Academy of Sciences on March 18, 2017 in Washington, DC. Our student club leaders Ms. Hailey Flatte and Ms. Bailey Smith organized and hosted the ASABE SE Student Rally during March 17-19 with 125 students from 11 universities and presentations by ASABE President Mr. Maynard Herron and Executive Director Mr. Darrin Drollinger. They put on a great program with tours, workshops and social activities.

Please feel free to visit us or look us up at www.bio-ag-engineering.uark.edu about our programs, faculty, staff, and students. Please send us your news and updates, call (479-575-2351), e-mail (lverma@uark.edu), or visit us on campus at your convenience. Your continued support of our programs is greatly appreciated.

Lalit R. Verma, Ph.D., P.E.
Professor and Department Head

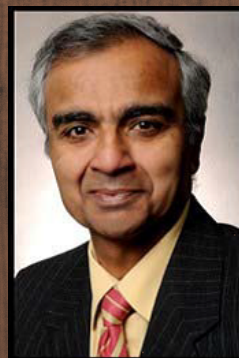


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SIGNIFICANT FACULTY ACCOMPLISHMENT



**Congratulations to our 2016-17
Engineering Departmental
Award Winners
Congratulating Drs.
Osborn, Sadaka and
Costello for the College of
Engineering BAE
departmental awards for
Outstanding Teaching,
Research and Service to
Students, respectively for
AY 2016-17.**

Scott Osborn Named Academic Advisor of the Year

Scott Osborn was selected by the University of Arkansas Academic Advising Council as 2017-18 outstanding academic advisors.

Scott Osborn is an associate professor of engineering in the department of biological and agricultural engineering. As part of his advising philosophy, Osborn individualizes the academic advising experience for his students, believing that "advising and mentoring are about helping another adult get to where they have decided to go, and the best way to advise them is to accept them for who and where they are today."

As a current advisee states, Osborn is "able to make each student feel as though we are just where we need to be in our lives." In his letter of nomination, professor Otto Loewer maintains that "Osborn is the best comprehensive advisor, where 'comprehensive' goes well beyond aligning a student's selection of courses ... and includes a philosophical approach to advising that speaks to a wide range of life choices."

In addition to teaching and advising for the department of biological & agricultural engineering, Osborn researches for the U of A Division of Agriculture's Agricultural Experiments Station and participates in extension outreach through the Division's Cooperative Extension Service. In his department, Scott Osborn has been recognized for outstanding teaching five times, mentoring four times, and service twice. In 2013, Osborn received the John Imhoff award for outstanding teaching and the following year was named outstanding student advisor by the Bumpers College Alumni Society.



Yanbin Li receives the Collaborative Faculty Research Award.

On Wednesday, May 3, the College of Engineering held its annual faculty awards reception at Carnall Hall. Six awards were given at the event. "The purpose of this event was to celebrate the hard work and great achievements of our faculty," said engineering Dean John English. "These individuals have really gone above and beyond in their dedication to students and to research, and it felt good to let them know they're appreciated." Heather Nachtmann, associate dean for research, announced the winner of the John Imhoff Award for Research and the Dean's Excellence Research Awards.

Yanbin Li, Distinguished Professor of biological and agricultural engineering and holder of the Tyson Endowed Chair in Biosensing Engineering, received the Collaborative Faculty Research Award. This award is given to a faculty member who excels in collaborative and interdisciplinary research. It is based on metrics that reflect collaborative research activities, such as the number of co-principal investigators the faculty member works with, the number of departments engaged in their research program, and recent research expenditures.



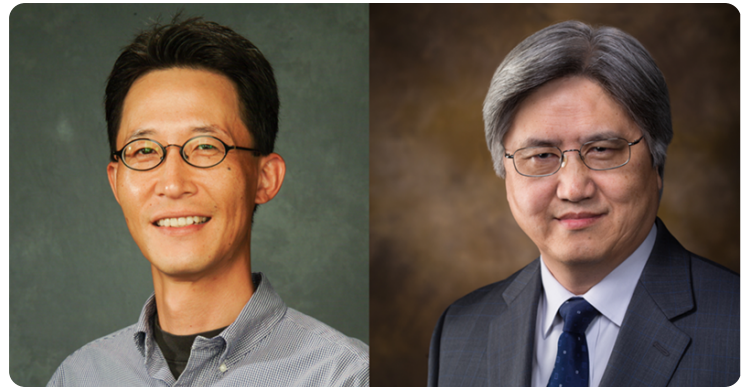
Dr. Scott Osborn Honored at the fifth-annual Inventor Appreciation Banquet.

The University of Arkansas and Chancellor Joe Steinmetz honored 14 faculty inventors Tuesday, Feb. 28, at the fifth-annual Inventor Appreciation Banquet.

The event, held at the Innovation Center at the Arkansas Research and Technology Park and hosted by Technology Ventures — the U of A's technology licensing office — recognized the work of U of A inventors who received issued patents in the past 12 months.

Scott Osborn received three plaques for Systems and Methods for Maximizing Dissolved Gas Concentration of a Single Species of Gas from a Mixture of Multiple Gases, Systems and Methods for Wastewater Treatment, and Systems and Methods for Delivering Dissolved Gases into Force-Main and Gravity Sewers.

Osborn has now been named on 12 issued patents. In 2004, he and Marty Matlock, professor of biological and agricultural engineering and executive director of the U of A's Office for Sustainability, founded BlueInGreen, a water-quality management company affiliated with the university. They have been awarded many patents for a system and method of dissolving gases in fluids and for delivering dissolved gases to improve the quality of drinking water and wastewater.



Professor Jin-Woo Kim and Distinguished Professor Yanbin Li were inducted as new 2017 Fellows of the American Institute of Medical and Biological Engineering

Jin-Woo Kim, professor of biological and agricultural engineering, and Yanbin Li, Distinguished Professor of biological and agricultural engineering, have been named fellows by the American Institute for Medical and Biological Engineering, or AIMBE.

According to its website, AIMBE's College of Fellows "consists of over 1,500 individuals who are the outstanding leaders, engineers, entrepreneurs, and innovators in medical and biological engineering," and fellows represent the top two percent of the medical and biological engineering community.

"We are proud of the recognition of two of our most prolific research faculty working on the cutting-edge of the interface of biology and engineering," said Lalit Verma, head of the Department of Biological and Agricultural Engineering. "This honor is well deserved as their interdisciplinary works are addressing some of the grand challenges facing our society."

Kim directs the Bio/Nano Technology Laboratory in the Department of Biological and Agricultural Engineering and the Institute for Nanoscience and Engineering. His primary research focus is in the area of bio/nano technology, or biologically inspired nanotechnology, which spans interdisciplinary fields of biological engineering, biomedical engineering, biology, chemistry, and nanotechnology. Specifically, his research aims to develop nanoscale bio/abio interfacing technology for programmable integrations of biomimetic advanced materials and devices for biological and biomedical applications. He has authored over 100 peer-reviewed publications and five book chapters, and he has two granted and one pending patents. Kim was recently elected as vice president of publications of the Nanotechnology Council of the Institute Electrical and Electronics Engineers and he is an IEEE Nanotechnology Distinguished Lecturer.

Li holds the Tyson Endowed Chair in Biosensing Engineering. His research focuses on biosensors and bioinstrumentation, microbial predictive modeling, quantitative risk assessment and food safety engineering. His research has applications in the screening of avian influenza in poultry, rapid detection of foodborne pathogens, predictive models of pathogenic bacteria in food products and risk assessment of microbial hazards in food systems. He has authored over 150 peer-reviewed publications and has received 12 patents.

ALUMNI & AABAE

College of Engineering Honors Its Outstanding Alumni

The University of Arkansas College of Engineering honored 16 graduates with College of Engineering Alumni Awards at its annual banquet on Saturday, April 29, at the Hilton Garden Inn in Fayetteville.

The awards recognize alumni of the college who have demonstrated exceptional professional and personal accomplishments and made important contributions to their professions and communities.

"Our alumni are among our college's biggest strengths, and their accomplishments speak directly to the quality of our academic program," said John English, dean of the college. "We are proud of all our alumni, and this group shows how talented individuals use engineering education to benefit Arkansas and the world."

The Distinguished Alumni Award honors College of Engineering graduates who have provided leadership in their communities and achieved distinction in their fields of endeavor. The recipients of the 2017 Distinguished Alumni Awards are:

- L. Patrick Bourne, B.S.E.E. 1968, director of transmission policy, Southwest Power Pool
- Robert Harrison, B.S.M.E. 1974, vice president and principal engineer, ECCI
- Pam McGinnis, B.S.I.E. 1990, president, global marketing, Phillips 66
- Lynn Moore, B.S.C.S.E. 1994, M.S.C.S.E. 1996, chief executive officer, Motio Inc.
- Michael Shook, B.S.A.G.E. 1982, principal, Agri Process Innovations
- Michael Wood, B.S.Ch.E. 1984, chief engineer, space launch system program, Boeing
- L. Carl Yates, B.S.C.E. 1958, chief executive officer, McGoodwin, Williams and Yates



The Early Career Award recognizes exceptional professional and personal achievements of recent College of Engineering graduates. The 2017 recipients are:

- Andy Davis, B.S.C.E. 1999, M.S.C.E., 2001, owner and president, New Water Systems, LLC
- Adam Ekenseair, B.S.Ch.E. 2005, assistant professor of chemical engineering, Northeastern University
- A. Matthew Francis, B.S.E.E. 2003, B.S. 2004, M.S.E.E. 2007, Ph.D. 2009, founder, president and chief executive officer, Ozark Integrated Circuits Inc.
- Amanda Furr, B.S.I.E. 2003, chief of engineering service, Department of Veterans Affairs, Central Arkansas Veterans Healthcare System
- Toni Peacock McCrory, B.S.B.E. 2007, environmental, health and safety compliance senior manager II, Walmart Stores Inc.
- Jonathan Schisler, B.S.Cmp.E. 2004, M.S.Cmp.E. 2005, senior information systems manager-mobile applications, J.B. Hunt Transport Inc.
- Matt Zwicker, B.S.M.E. 2003, senior research and development engineer, Airborne Systems

AABAE Induction Ceremony

The Arkansas Academy of Biological and Agricultural Engineering held its annual induction ceremony on April 28, 2017. The event was held at the Hilton Garden Inn, in Fayetteville Arkansas. There were over 120 guests in attendance for the induction of six new distinguished members.

Dr. Clarence Watson Associate Vice President for Agriculture - Research for the Division of Agriculture Research welcomed the attendees and thanked them for their tireless work in support of the programs in the department of Biological and Agricultural Engineering and its students. The graduating seniors and scholarship recipients were recognized at this event. The senior class gave brief presentations of their Senior Design Capstone projects. Dr. John English, Dean of Engineering thanked the academy for all of the support that it provides to the students, the department and the college of Engineering. Mr. Greg Baltz, president of the Academy and Dr. Verma, Department Head inducted and welcomed the inductees into the Academy and presented them with a plaque to commemorate the event.

The six inductees were Mark Christie, who graduated from the University of Arkansas in 1985 with a Bachelor's degree in Agricultural Engineering ultimately returning to the University of Arkansas to earn a Mechanical Engineering degree in 1988. Currently Mark is the Director of Process Development for Tyson Foods in Springdale AR.

Dr. Thomas F. Garrison is an Assistant Professor in the Chemistry Department at King Fahd University of Petroleum & Minerals in Dhahran, Saudi Arabia. Dr. Garrison obtained his B.S. in Biological Engineering 2005 and M.S. in 2007 in Biological Engineering from the University of Arkansas and his Ph.D. in Chemistry from Iowa State University in 2013

Adam Jokerst acts as principal technical lead for long-range water supply planning efforts for the City of Fort Collins Utilities, which provides treated water to over 130,000 customers. Adam received a B.S. in 2006 in Biological Engineering from the University of Arkansas and M.S. in Civil Engineering from Colorado State University in 2009.

Jim McNeal is a 1986 graduate of the University of Arkansas with a Bachelor of Science in Agricultural Engineering. Mr. McNeal is currently Vice President of Engineering and is a Director for Tokusen USA where he has technical responsibility for 2 facilities in the United States – Conway, AR and Scottsburg, IN., with a combined plant area of 800,000 sq. ft.

Dr. Kati Migliaccio received her BS in Agricultural Engineering from Texas A&M University, MS from University of Kentucky in Biosystems and Agricultural Engineering, and her PhD from University of Arkansas in Biological Engineering in 2005. She is a Professor at the University of Florida in the Agricultural and Biological Engineering Department. Dr. Migliaccio currently has an appointment that includes extension, research, and teaching activities related to water conservation and hydrology.

Amber G. Meisner graduated with a BS in Biological Engineering in 2002. Ms. Meisner currently works at Tyson Foods as a business analyst for the case ready poultry group.

AABAE Inductees

2017



MARK CHRISTIE



THOMAS F GARRISON



ADAM JOKERST



JIM MCNEAL



KATI MIGLIACCIO



AMBER G. MEISNER

SIGNIFICANT STUDENT ACCOMPLISHMENT

Graduate Student Helps Rice Farmers Save Water

Colby Reavis, a master's student in the Department of Biological and Agricultural Engineering, works with local farmers to improve rice growing techniques. As part of the Landscape Flux Research Group, led by assistant professor Benjamin Runkle, Reavis investigates ways to reduce the amount of water used and greenhouse gas produced in growing rice. He recently received first place in a poster competition at the Arkansas Soil and Water Education Conference for his research.

The group is studying a technique called alternate wetting and drying. Rice requires swampy conditions to grow, but farmers who use alternate wetting and drying allow their fields to dry out during certain parts of the season. This approach uses less water and reduces methane gas, which is produced by anaerobic bacteria that thrive in wet conditions.

Reavis is studying different ways to measure the amount of water that alternate wetting and drying saves. It's difficult to get an exact measurement of how much water a rice field actually receives, because some of the water drains off into other fields, so Reavis measures water on the other end of the cycle, as it's released into the atmosphere from the plants, a process called evapotranspiration. He is comparing different techniques to measure evapotranspiration, so that the group can incorporate it into their work with local farmers.

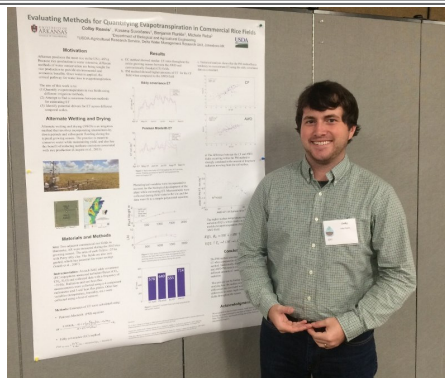
Reavis explained that quantifying water savings is important for farmers who are considering adopting this method. "Farmers need to be able to show how much water they save," Reavis said. "At the end of the day, does this conserve water? If not, they don't save any money."

Rice is an important crop, both globally and regionally. Rice provides one-fifth of the world's calories, and Arkansas produces half of the rice grown in the U.S. The Landscape Flux Group work closely with local rice farmers in order to ensure that the results of their work will be useful in the industry. "Farmers are a huge part of what we do," Reavis said, explaining that all of the fieldwork in the project is carried out in two commercial fields provided by a local farming family.

Having these experts involved provides a valuable perspective for the researchers, who may not be familiar with the day to day aspects of running a farm. "Oftentimes, we as researchers ask questions without thinking about further applications. Working with farmers provides that. They're a great source of information about the process we're studying, as well as the historical and cultural context," Reavis said.

Over the winter break, Reavis traveled to South Korea with a grant from the Asia Rice Foundation. In South Korea, he worked with Youngryel Ryu, an associate professor of environmental ecology at Seoul National University. Reavis learned about Ryu's Breathing Earth System Simulator, known as BESS. BESS collects scientific data using tools such as satellites, sensors and geographic information system data in order to measure the amounts of water and carbon on earth and simulate their movements. Monitoring data from rice fields is a large part of this project.

The trip to South Korea also provided Reavis with a different perspective on rice. "I appreciated seeing how much of a role rice has in Korean culture," he said. "It plays a valuable role for us as researchers to see the impact of our work on people's lives."



Reavis has also worked in Ethiopia and he participated in an international service project in Belize as an undergraduate at the U of A. He explains that he chose to continue his studies under Runkle because the research topics he studies are globally relevant, and he enjoys using science to improve people's lives. After graduating, Reavis would like to continue being involved in research and public outreach while continuing to pursue a doctorate.

Biological Engineering Students Host Regional Gathering

The University of Arkansas student chapter of the American Society of Agricultural and Biological Engineers hosted the organization's yearly rally in March. One hundred and twenty-five students from 11 schools attended. The theme of the rally was "Engineering the Future."

Alan Fortenberry, chief executive officer of Beaver Water District, was the keynote speaker. There were also speakers from the U of A and ASABE. Students attended workshops on food, water, energy, sustainability and climate change. They took tours of the biological engineering labs at the Arkansas Agricultural Experiment Station, as well as touring Beaver Water District, Tyson Headquarters and Core Brewery. The rally ended with a banquet in the Verizon Ballroom on campus.



The rally was organized by U of A biological engineering students Hailey Flatte and Bailey Smith. Flatte was elected president of the Southeastern region of ASABE at the 2016 rally, and Bailey was elected treasurer. One of their duties as office holders was to hold the annual rally on their campus.

Flatte and Smith explained that students get several benefits from attending rallies, including opportunities to network with other students and alumni in their field, learn from speakers and workshops, and explore options for graduate school. They felt the 2017 rally succeeded in all these areas, and that the most successful aspect of the rally was the Experiment Station tour.

"People were surprised and impressed by the projects we do every year," said Flatte. These projects include building aquaponics systems, weather stations, grain dryers and pumping stations. Students on the tour also got to see a dissolved air floatation system that makes it easier to remove algae from water, and they visited a nanotechnology lab.

Flatte and Smith said serving in leadership roles for ASABE has allowed them to acquire skills beyond the engineering they learn in the classroom. "The skills we gained made us more well-rounded," said Smith. "We learned how to communicate well."

"I am very proud of the untiring efforts of our student club and particularly the dedicated leadership of graduating seniors Hailey Flatte and Bailey Smith," said Lalit Verma, head of the Department of Biological and Agricultural Engineering. "This student rally attracted the president and executive director of ASABE, both of whom publicly acknowledged how impressed they were with the program and organization of this rally. Several of our faculty conducted workshops for the many students gathered on our campus. It was a great opportunity to showcase the U of A and our department."

Senior Design Expo

May 4, 2017

This year we had twenty four seniors design students in seven teams presenting their projects under the supervision of Dr. Tom Costello

Core Brewing Carbonation System Design

Casey Gibson, Garrett McMichael, Dylan Pearson, Jillian Schneider
Mentor: Dr. Scott Osborn

Design of an In Situ Dissolved Air Flotation System for Beaver Lake

Hailey Flatte, Andrew Shaw, Bailey Smith, Drew Stephens
Mentor: Dr. Scott Osborn

Design of Retractable Insulation for a Greenhouse

Reed Hill, Haley McLaughlin, Camilla Plana, Brandon Taylor
Mentors: Dr. Thomas Costello and Dr. Yi Liang

Hydrologic Analysis and Engineering Design to Support the Development of a Trail for Wilson Springs Preserve

Callie Acuff, Madison Crowl, Terrian Tyler
Mentors: Dr. Thomas Costello and Dr. Benjamin Runkle

Improving Riceland's Rice Bran Oil Extractions Efficiency through Drying

Dustyn Perkins, Clay Shook, America Sotero
Mentor: Dr. Yanbin Li

LEED Certification of a Restaurant Concept

Lynsey Copley, Kai Imamura, Clint Moore
Mentor: Dr. Jun Zhu

Production of Canned Nitro Cold Brew Coffee

Maureen Broglen, Zack Melvin, and Slater Smith
Mentor: Dr. Jin Woo Kim



SPOTLIGHT ON STAFF



Congratulation Ms. Linda Pate for her selection as the winner of 2017 UA Division of Agriculture Non-Classified Support Personnel Award. She was presented with the Award on January 13 at the Division of Agriculture Awards Luncheon.



Jerry Jackson took a position in the carpenter shop of Facilities Management on campus after 6 years in the BAEG department. We will miss him tremendously.

SCHOLARSHIP RECIPIENTS

Arkansas Academy Biological and Agricultural
Engineering Scholarship

Bailey Keller

Kami Parmenter

Trent Woessner

Biological & Agricultural Engineering
Scholarship

Mckenna Belcher

Billy Bryan Scholarship

Ryan Clark

Division of Agriculture

Brooke Benham

Megan Woodworth

Joe Steele & Hardy Croxton Scholarship
(Beaver Water)

Andrew Stephens

John W. and Trannye Odom White
Scholarship

Nichol Ghanfili

Mike & Yvonne Jones Scholarship

Brooke Benham

Megan Woodworth

Riggs Tractor Scholarship

Dustyn Perkins

Jillian Schneider

Xzin Mcneal Scholarship

Kendrick Hardaway

Thomas Helvick

Madeline Ludwig

Jillian Schneider

His-Cheng "David" Su



Congratulation to the Class of 2017!

Undergraduates:

Callie Acuff
 Maureen Broglen
 Lynsey Copley
 Madison Crawl
 Hailey Flatte
 Casey Gibson
 Reed Hill
 Kai Imamura
 Haley McLaughlin
 Garrett McMichael
 Zack Melvin
 Clint Moore

Dylan Pearson
 Dustyn Keith Perkins
 Camila Michelle Plana
 Jillian M Schneider
 Andrew Shaw
 Clayton Dean Shook
 Bailey Jade Smith
 Slater Smith
 America F Sotero
 Andrew Neal Stephens
 Brandon Taylor
 Terrian Tyler

Scholarship Donation Opportunities

Please accept my contribution to the following scholarship(s). My check for \$_____ is enclosed.

Billy Bryan Scholarship Fund _____

Joel T. Walker Memorial Scholarship Fund _____

Carl L. Griffis Memorial Scholarship Fund _____

Biological and Agricultural Engineering General Scholarship Fund _____

Biological and Agricultural Engineering Student Support Fund _____

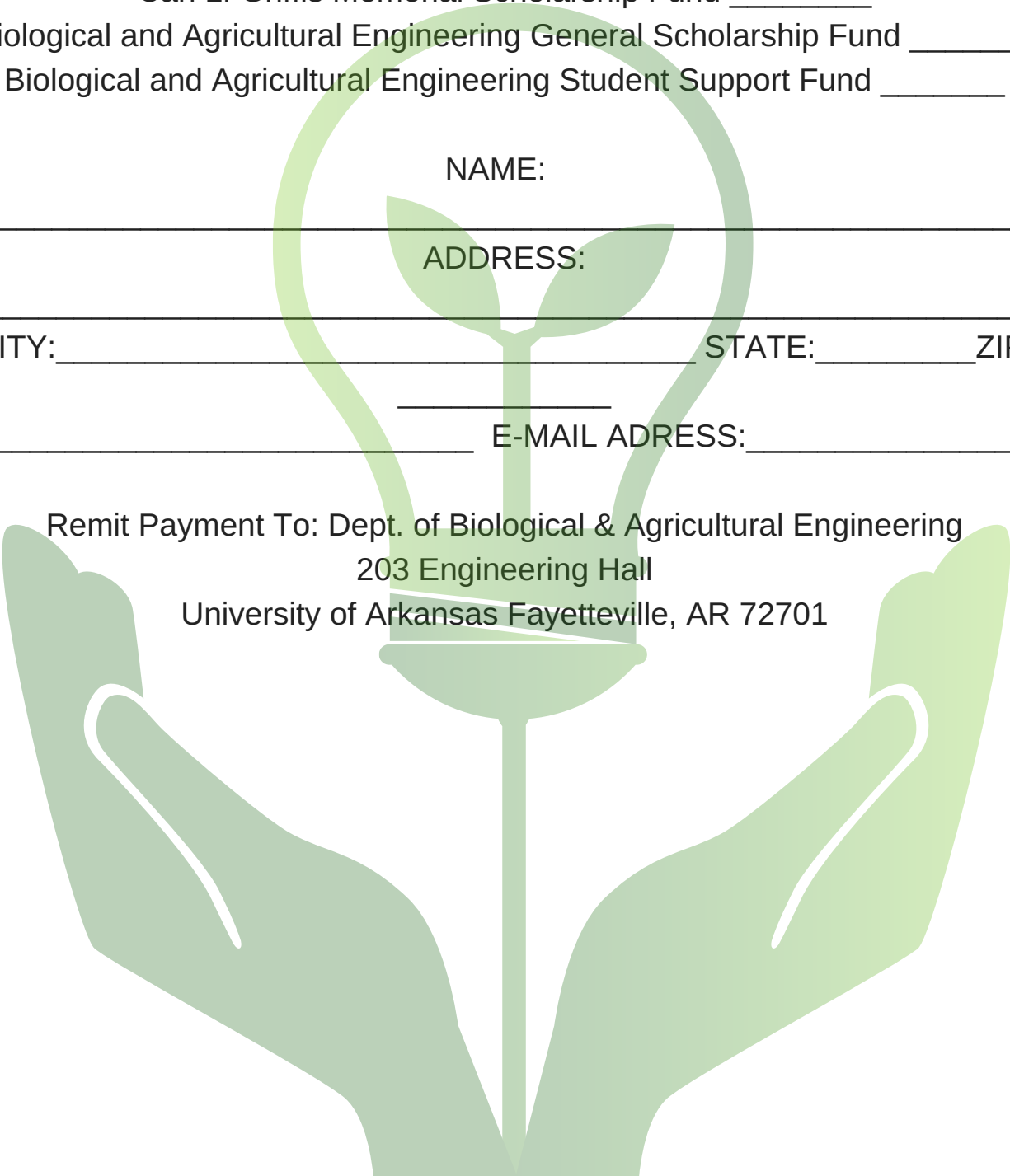
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ADDRESS:

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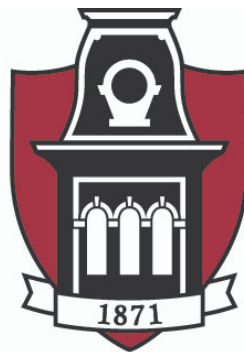
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DIVISION OF AGRICULTURE
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UNIVERSITY OF
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College of Engineering
Biological & Agricultural Engineering