BAEG LifeLine

University of Arkansas | Spring 2014

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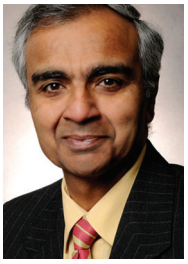

It is a pleasure to share the accomplishments of our faculty, students and staff during the past few months in this newsletter. The monthly departmental seminars brought back our alumni, Kyle Kruger of Garver, Drake McGrudder of Kraft Foods, and Tyler Gipson of U.S. Corps of Engineers. One outstanding alumnus, Mr. Glenn Davis, was inducted in the Arkansas Academy of Biological and Agricultural Engineering on April 4. The Senior Design Expo, under Dr. Tom Costello's leadership, was held on April 30 with eight senior design students in three teams showcasing their projects.

On May 9, at the College of Engineering Spring Faculty meeting, Drs. Scott Osborn, Julie Carrier, and Yi Liang were recognized with the departmental faculty awards for teaching, research, and service to students, respectively. Ms. Linda Pate, Departmental Administrative Manager was recognized with the Employee of the Semester and also the Employee of the Year awards. There were 12 graduates of the B.S. in Biological Engineering and five M.S. in Biological Engineering at the 2014 commencement on May 10. Our undergraduate enrollment is back on the rise after a drop following the establishment of a separate Biomedical Engineering program and department. The fall 2014 sophomore class is on track to be one of our larger ones. The faculty will engage in a retreat June 5-6, to review our academic program and plan for the upcoming ABET Accreditation visit in Fall 2014.

I have had a busy but productive Spring as ASABE President, with travel to state section meetings and international forums. The highlight was representing ASABE at the first-ever Global Forum for Innovations in Agriculture (GFIA) sponsored by the Abu Dhabi Food Control Authority, which highlighted the grand challenges that we face in achieving sustainable food, water, and energy. Our profession is critically important to addressing these challenges. BAE research and teaching faculty on the U of A campus, extension colleagues in the state office of the UA System Division of Agriculture's Cooperative Extension Service, and our colleagues at the Rice Research and Education Center in Stuttgart are engaged in addressing problems important and relevant to our state and nation, dealing with challenges in sustainable food, agriculture, water and energy systems in support of the Arkansas agriculture enterprise. These are very much in line with the grand challenges being faced by society in general.

I invite you to review our programs and contributions and feel free to call (479-575-2351), e-mail (lverma@uark.edu) or if you are in the area, drop in for a visit. It would be our pleasure to share our activities with you and help answer any questions you may have.

Lalit R. Verma
Professor and Department Head

SIGNIFICANT FACULTY ACCOMPLISHMENTS

BAEG FACULTY

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Scott Osborn Receives the Dale Bumpers College Alumni Society Advising Award

Dr. G. Scott Osborn, associate professor of biological and agricultural engineering, received the Dale Bumpers College of Agricultural, Food and Life Sciences Alumni Society Advising Award. Osborn has provided leadership in developing the department's honors requirements. He mentors undergraduates, advises Honors College thesis projects, supervises funded undergraduate research projects and advises senior design projects.

The award was presented on January 10th, 2014 in Little Rock.

Sammy Sadaka Wins Outstanding Researcher Award 2014

Dr. Sammy Sadaka, Assistant Professor, Extension, was awarded Outstanding Researcher Award 2014 from the Arkansas Association of Cooperative Extension Specialists (AACES). Dr. Sadaka's research is focused on Grain Drying and Storage, Gasification of Fresh and Torrefied Cotton Gin Waste, Bioenergy and Energy Conservation.

U of A System of Agriculture Recognizes Biological and Agricultural Engineering Patented Projects

The Division recognized several BAEG faculty for patents that were issued on their projects. The faculty and their patented projects are:

A Capillary-Column-Based Bioseparator/ Bioreactor With An Optical/Electrochemical Detector for Detection of Microbial Pathogens.

Yanbin Li (Biological and Agricultural Engineering)

Yongcheng Liu (Biological and Agricultural Engineering)

System and Method for Dissolving Gases in Fluids and for Delivery of Dissolved Gases.

G. Scott Osborn (Biological and Agricultural Engineering)

Marty D. Matlock (Biological and Agricultural Engineering)

BAEG Faculty Members Receive John W. White Awards

John W. White awards for outstanding teaching, research and extension service are named for the U of A System's first vice president for agriculture when the Division of Agriculture was made a statewide unit of the U of A System in 1959.

The John W. White Outstanding Research Award went to Dr. Jin-Woo Kim, professor of biological and agricultural engineering. Kim has made significant

SIGNIFICANT FACULTY ACCOMPLISHMENTS

contributions in nano-biotechnology for device development, molecular computation and molecular biological engineering. He has established an internationally recognized research program in bio/ nanotechnology engineering.

Dr. Dharmendra Saraswat, associate professor of biological and agricultural engineering, received the John W. White Outstanding Extension State Faculty Award. Saraswat manages an extension program focused on developing geospatial technologies for managing natural resources. His applied research enables him to investigate and share engineering solutions with policymakers, state and federal agencies, farmers and agricultural consultants.

Dr. Julie Carrier presents at Indian Society of Agricultural Engineers Annual Convention

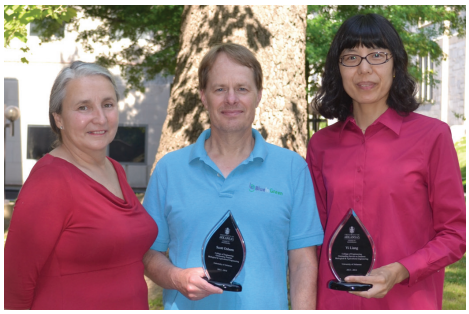
Dr. Julie Carrier presented at 48th Annual Convention of Indian Society of Agricultural Engineers (ISAE) last February 2014 in Udaipur, India.

She presented on her ongoing experiment with Anju Arora of Indian Agricultural Research Institute on saccharification of Arkansas rice straw by biological methods.

Dr. Carrier as Scientific Panel Member for Quebec Government

In March, Dr. Carrier served as panel manager for the Quebec Government in Quebec City.

The panel overviews Chemistry, Biological, Chemical, and Environmental Engineering development in Quebec, Canada.



College of Engineering Recognizes BAEG Faculty Members

The College of Engineering recognized faculty and staff members in a college-wide meeting on Friday, May 2.

Biological and Agricultural Engineering department also presented Outstanding Teacher, Outstanding Researcher and Outstanding Service to Students awards to the faculty member. The following faculty received awards:

- College of Engineering Outstanding Teacher: Scott Osborn
- College of Engineering Outstanding Researcher: Julie Carrier
- College of Engineering Outstanding Service to Students: Yi Liang

Congratulations and thank you for the hard work!

Journal Publication

Fu, Y., Z. Callaway, J. Lum, **R. Wang**, J. Lin, and Y. Li. 2014. Exploring enzymatic catalysis in ultra-low ion strength media for ion strength increasebased impedance biosensing of virus using a bare interdigitated electrode. Analytical Chemistry 86 (4):1965-1971.

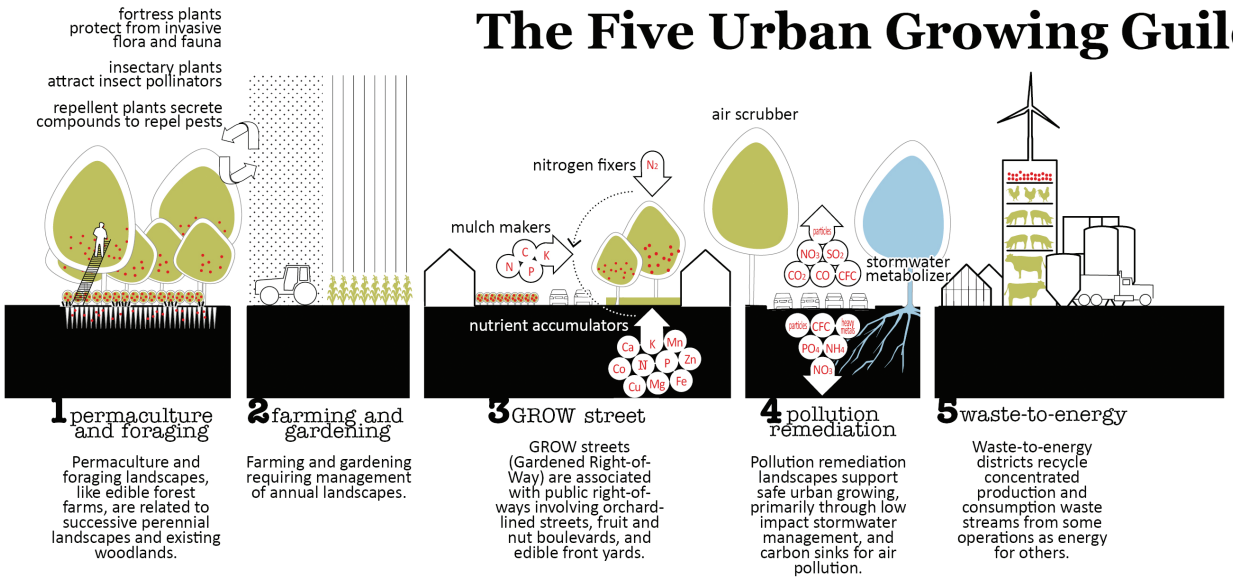
Hu, Y.H., C.C. Wang, B. Bai, M.T. Li, **R. Wang**, and Y. Li. 2014. Rapid detection of Staphylococcus aureus using quantum dots as fluorescent labels. International Journal of Agricultural and Biological Engineering 7(1):77-83.

Lau C, Clausen E, Thomas G and **Carrier DJ** (2014). "Kinetic modeling of xylose oligomer degradation during pretreatment in dilute acid or in water." Industrial Research Engineering Chemistry DOI 10.1021/ie403722d

Rajan K and **Carrier DJ**. (2014). "Effect of dilute acid pretreatment conditions and washing on the production of inhibitors and on recovery of sugars during wheat straw enzymatic hydrolysis. Biomass and Bioenergy http://dx.doi.org/10.1016/j.biombioe.2014.01.013

Sharara, M. and **S. Sadaka**. 2014. Thermogravimetric Analysis of Swine Manure Solids Obtained From Farrowing, and Growing-Finishing Farms. Journal for Sustainable Bioenergy Systems. Vol. 4 No. 1, pp. 75-86. doi: 10.4236/ jsbs.2014.41008.

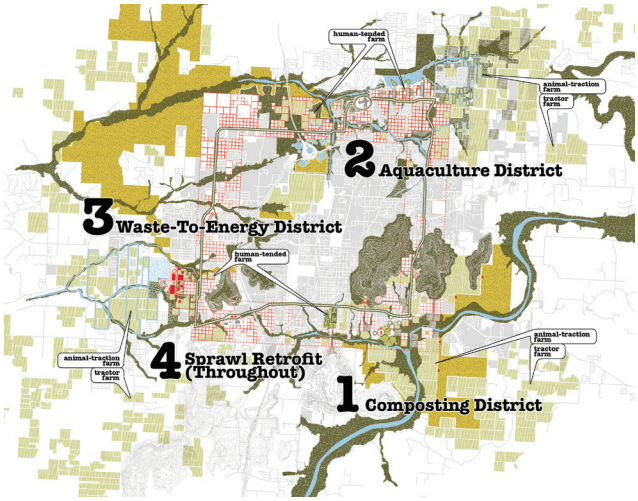
Sadaka, S., M. Sharara and G. Ubhi. 2014. Performance Assessment of an Allothermal Auger Gasification System for On-Farm Grain Drying. Journal for Sustainable Bioenergy Systems. Vol. 4 No. 1, pp. 19-32. doi: 10.4236/sbs.2014.41003



Community Design Center Leads Interdisciplinary U of A Campus Team for 'Food City Scenario'

The University of Arkansas Community Design Center led an interdisciplinary team whose project, *Fayetteville 2030: Food City Scenario*, speculates on what Fayetteville would look like if its growth integrated local urban food production substantial enough to create self-sufficiency.

Food City Scenario devises a new planning tool that outlines an ecology of five urban growing guilds. Each guild is associated with a niche function like pollution remediation, through low-impact storm water management landscapes and carbon sinks that support safe growing, as well as waste-to-energy districts for recycling of waste streams toward effective nutrient management and rebuilding of healthy soils. Incorporating agriculture back into the city environment will benefit economic development, add value to food products, provide community- wide ecosystem enhancement, and promote healthy lifestyles by expanding access to nutritious foods.



The interdisciplinary team at the University of Arkansas worked with local nonprofit groups dedicated to fighting hunger and poverty. This collaborative plan involved the Fay Jones School of Architecture, the department of biological and agricultural engineering, the Center for Agricultural and Rural Sustainability, the School of Law and its master of laws program in agricultural and food law, the department of food science, and the city of Fayetteville.

Marty Matlock, professor of Biological and Agricultural engineering in the College of Engineering, and executive director for the University of Arkansas office for sustainability, led a class that worked with the Community Design Center's team to evaluate soil, climate, and topography characteristics for this project.

"Sustainability begins with understanding our connection to and dependency on the land," Matlock said. "This project created a template for cities to understand how they can design for the most essential ecosystem services such as provisioning food, recycling of nutrients, treatment of water, and creation of corridors for wildlife habitat. The genius of the approach the Community Design Center takes is that they design systems for people first. Luoni's team focuses on human habitat ecological optimization, creating visions of a place where people want to live."

SIGNIFICANT STUDENT ACCOMPLISHMENTS

BAEG Student Named New Face of Engineering

Grace Richardson, a master's student in the department of biological and agricultural engineering, has been named a New Face of Engineering by DiscoverE. Since 2003, this organization has honored the work of up-and-coming engineers who are already making their mark on the industry and on society

The DiscoverE group includes individuals from all branches of engineering. Richardson was nominated for this recognition by the American Society of Agricultural and Biological Engineers, which selected her as one of the the top nominees out of 14 ASABE New Faces of Engineering. As ASABE's representative in the DiscoverE group, Richardson will work to promote the society as well as the field of biological engineering by attending conferences and helping with national events that promote engineering.

Richardson received a bachelor's degree in biological engineering from the U of A in 2008. Her first job after college was with BlueInGreen, a company that manufactures water treatment equipment, where she headed several projects, including deployment of a new technology for wastewater treatment at a site in Austin, Texas. As part of this project, Grace invented a new method for controlling water level within the device. She has a US patent pending on her invention.

Grace also led projects cleaning water in the Gulf of Mexico from the Horizon Oil Spill, treating the J.C. Boyle Reservoir in Oregon to prevent fish kills, and did several designs for clients including Lake Wister in Oklahoma for treatment of drinking water reservoir. In 2012, Grace entered the master's program in biological engineering at the University of Arkansas. Her research focuses on treatment of lake sediments to reduce oxygen demand and extend the life of reservoirs while improving water quality

Richardson plans to pursue a doctorate in water resources engineering, and she would eventually like to work in the field of water conflict management and transformation.

Graduate Students Wins Gamma Sigma Delta 2014 Students Competition

Two students won the Gamma Sigma Delta 2014 Students Competition.

Zach Callaway, BAEG Graduate Student, won 1st Place in PhD posters in Gamma Sigma Delta 2014 Students Competition. His advisor was Dr. Yanbin Li. His poster was titled "Modelling the electro-magnetic properties of E.Coli cells with different biological immobilization components on an interdigitated screen printed microelectrone using Comsol."

Congrats Zach!

Also, Sardar Abdullah, Cell & Molecular Biology Graduate Student, won 3rd Place of PhD oral presentation. His advisor were Dr. Ronghui Wang and Dr. Yanbin Li. His presentation was titled. "Aptamer and microelectrode based impedance assay for detection of H5N1 influenza virus." Congrats, Sardar!

The awards were presented on April 11, 2014 at AFLS Building in Fayetteville.

College of Engineering Honors Outstanding Students

The College of Engineering recognized several students at its Student Awards and Honors Reception on Tuesday, April 28.

Nine students received Outstanding Senior Awards from the departments including Russell Bair in biological and agricultural engineering.

Russell Bair was recognized as a First Ranked Senior Scholar for having achieved a 4.0 grade point average for coursework completed on this campus along with the other eleven students.

Congrats Russell!

SIGNIFICANT STUDENT ACCOMPLISHMENTS

Scholarship Recipients

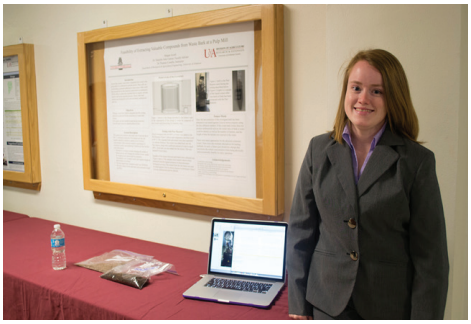
Arkansas Academy Biological and Agricultural Engineers Scholarship
Russell Thomas Bair
Jacob Hickman

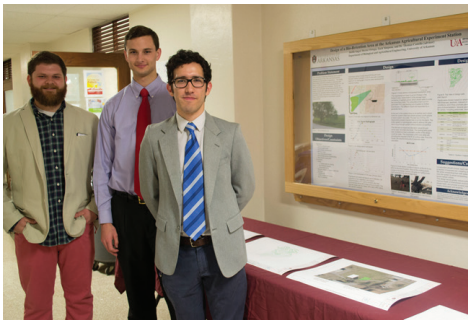
Biological & Agricultural Engineering Scholarship
Kyle Lawrence
Lee Nosal

Billy Bryan Scholarship
Kelli Barker
Benjamin Matthews

Riggs Tractor Scholarship
Colby Reavis

Xzin Mcneal Scholarship
Kelli Barker
Barret Knutson
Lee Nosal
Jared Schnebelen





Senior Design Expo

The Senior Design Expo was held on April 30, 2014 under Dr. Tom Costello's supervision.

There were eight senior design students in three teams presenting their projects.

SIGNIFICANT STAFF ACCOMPLISHMENTS

College of Engineering Recognizes Outstanding Staff

The College of Engineering recognized outstanding staff members at a meeting on Friday, May 2. Linda Pate, departmental administrative manager for the department of biological and agricultural engineering, received both the Employee of the Semester and the Employee of the Year awards.

Congratulations Linda!

2014 ACADEMY INDUCTEE

Alumni Mr. Glen Davis were inducted into the Arkansas Academy of Biological and Agricultural Engineering during the ceremony on April 4, 2014.

Mr. Glen Davis graduated with a Bachelor of Science in Agricultural Engineering from the University of Arkansas in 1967. Following graduation from the University of Arkansas Biological and Agricultural Engineering Department in 1967, he started to work at John Deere on July 10, 1697. Davis also started a small business named Iowa Laser Technology in 1978. He has worked with John Deere until he retired in 2000. In his professional career, he was a member of the ASTM Standards organization that set national standards for heavy duty diesel engine coolants.

BAEG SEMINAR SERIES

Rajeev Kumar Kapoor: "Creating and Protecting Intellectual Assets"

Rajeev Kumar Kapoor presented "Creating and Protecting Intellectual Assets." Kapoor is a visiting scientist at the University of Arkansas department of Biological and Agricultural Engineering.

Kapoor received his doctoral degree in microbiology from the University of Delhi and his master's degree in biotechnology from Maharshi Dayanand University, Rohtak, India. Research areas include industrial enzymes, microbiology and fermentation technology, biofuels, purification and characterization of enzymes, recombinant DNA technology, gene cloning, expression of recombinant proteins and preteomic and genomic suquence searches.

Drake McGruder: "Transition to Work Life"

Drake McGruder, a former student in BAEG department, presented how he transitioned from college graduation to working in industry as the SSE manager for the Kraft-Planters factory in Fort Smith, Ark.

Big Creek Research Team Seminar

The research and extension team is conducting an in-depth examination of the hog farm in the Buffalo River watershed as it lays groundwork for the multi-phase, long-term study. The team is conducting the work using funds from Gov. Mike Beebe's office. Funding was approved by a legislative subcommittee last September. Site work on the study began in October.

The team's first quarterly report was delivered Jan. 31 to the Arkansas Department of Environmental Quality and the Arkansas governor's office. The report is available online at http://arkansasagnews.uark.edu/bigcreekquarter1.pdf.

An addendum to the first quarter report is available online at http://arkansasagnews.uark.edu/bigcreekreport.quarter1addendum.pdf

Gajendra Singh: "Value of Global Experiences in Engineering & Technology Education"

Gajendra Singh is a fellow of the National Academy of Agricultural Sciences-India, International Commission of Agricultural Engineers, American Society Agricultural & Biological Engineers, Indian Society of Agricultural Engineers, and the Institution of Engineers in India.

Tyler Gipson: "The #1 Skill Engineers Use the Most"

Tyler Gipson, a former student in BAEG department, presented how he transitioned from college to working in industry as an environmental engineer at the Corps of Engineers. His new duty is technical management of environmental remediation contracts at Air Force Bases across the country.

He talked about the skill that is useful in the working world.

NEW GRADUATES

In the picture: (back row from left) Thomas Matthew McVey, Zachary Simpson, Deandrae Smith, Russell Bair. (Front Row from the left) Rian Eddins, Megan Acord, Hector Ortega.
Not in the picture: Justin Angel, Colby Reavis and Matthew Martin

Congratulations Class of 2014!

Undergraduates
Megan Acord
Justin Angel
Russell Bair
Rian Eddins
Matthew Martin
Colby Reavis
Zachary Simpson
Deandrae Smith
Thomas Matthew McVey

Graduates
Grace Richardson
Nathan Holeman
Morgan Welch
James McCarty
Eric Boles
Prathamesh Bandekar

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
- ☐ Biological and Agricultural Engineering General Scholarship Fund
- ☐ Biological and Agricultural Engineering Student Support Fund

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