



Biological Systems Engineering

COLLEGE OF AGRICULTURAL & LIFE SCIENCES

UNIVERSITY OF WISCONSIN-MADISON

DEC 2021



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NEWS FROM THE DEPARTMENT CHAIR

Hello from the Biological Systems Engineering department or Ag Engineering as many still remember the department. We are wrapping up our fall 2021 semester which saw campus start to get back to normal. Classes were held in person, student organizations started meeting again on campus, and career fairs were in full swing. There are still masks requirements, and too many videoconferences for meetings and student interviews, but all in all, things are starting to feel more normal again, which allows a bit of reflection and gratitude. Through this pandemic there has been amazing support from alumni and friends of the department. Although most needed to hunker down during the pandemic, many still found time to help our students and program. We have received generous contributions to support the program, start new scholarships, and a professorship. Alumni have met with the students through ASABE to provide words of wisdom about being an engineer beyond what any professor could convey in a classroom. This support has meant the world to our program and allows us to continue momentum for our future – which I hope is evident in this newsletter through our new hires, scholarships, student activities and research. I am excited by what 2022 will bring and am thankful for your support to our program.

Troy Runge
Department Chair

ALUMNI SPOTLIGHT

Bill Zink, PE, a 1986 grad of UW (BS, Engineering) is currently the President of christopher consultants, a civil engineering firm in Fairfax, Virginia, a role he has held since 2010. Mr. Zink is responsible for the profitability, growth, and operations of the 150-person, \$24M civil engineering firm.

Among many other philanthropic efforts, Mr. Zink, through christopher consultants, initiated and developed the christopher consultants' Civil Engineering Scholarship and awarded it to the first recipient – a Unity Reed High School (Prince William County) graduate of the class of 2021 – last June. He continues to oversee its operation and funding in preparation for the next graduate. Unity Reed High School is a public secondary school in Bull Run, Prince William County, Virginia, near the city of Manassas at which 58% of students are receiving a free or discounted lunch.

Removing barriers to our industry to include the bright and motivated, young, and diverse minds of the future is something that Mr. Zink is passionate about. Under Bill's direction, christopher consultants has partnered with Unity Reed for several years; mentoring, teaching life skills, and now by providing the opportunity for a graduate to continue their education in the AEC or related field.

Heather Fitzpatrick,
Sr. Marketing Manager
christopher consultants

Information about this scholarship can be found here:
<https://www.cfnova.org/scholarship/christopher-consultants>

An article written about Bill & his efforts to increase diversity in the industry is available at the link below:
<https://www.cfnova.org/news-and-stories/impact-stories/advancing-the-growth-of-diversity-in-civil-engineering>

SHINNERS REFLECTS ON CAREER



Photo courtesy of UW-Madison College of Agricultural Life Sciences

With nearly 37 years of service to the University of Wisconsin-Madison in the Department of Biological Systems Engineering, **Kevin Shinnars** has announced his intention to retire in January 2022. Kevin came to the department in 1985, and over the years, he has mentored 53 graduate students, secured \$7.2 million in research dollars, and written various publications and book chapters.

He has served on the Wisconsin Custom Operators (WCO) since 2007 as an advisor and board member. A notable contribution during his involvement was the establishment of a scholarship program in 2010. Through his leadership and oversight, he developed the scholarship committee and the selection criteria for the scholarships.

Kevin's research group has worked on many notable projects over the years. One in particular involved work on kernal processing. His group, along with Randy Shaver (Dairy Science, UW-Madison) led the first US research project of a feeding trial using the technology developed in Europe. This research made an important contribution to the understanding and promoting of the technology in dairy nutrition across the US.

His research group also conducted early research on baleage that provided recommendations for applying the technology under typical US conditions. Baleage is now a common and widely used storage alternative in North America. They also applied the experience and tools they developed with hay and forage systems to research harvest and storage issues of biomass crops such as corn stover and perennial grasses.

Projects he enjoyed most involved those with great students working on them, regardless of the project results. Having great research teams with students who had a real passion



Photo courtesy of UW-Madison College of Agricultural Life Sciences

for agricultural machines and technology made the experiences fun for him. He remembers fondly sitting around the lab playing Sheephead or discussing equipment and farming with his students. He considers his students a blessing to work with, and is immensely proud of them and the impact they have had on the equipment industry here in Wisconsin and throughout the Midwest.

You will still see Kevin around while he finishes up some research projects and the mentoring of his last students. He hopes to find time with his wife as they work on building their "getaway" home in Green County.



Photo courtesy of UW-Madison College of Agricultural Life Sciences

Content provided by Maria Woldt
Wisconsin Custom Operators

WELCOME: DR. MARGARET KALCIC



Dr. Margaret Kalcic is excited to join the BSE department in January, 2022. Margaret has been hired as an Assistant Professor, Land and Water Stewardship through the Dairy Innovation Hub. She is coming from a similar position at Ohio State University, and before that she conducted postdoctoral studies at the University of Michigan and doctoral work at Purdue University.

In the past ten years Margaret has developed a research program in agricultural hydrology that seeks to increase the adoption of effective agricultural conservation measures to protect water quality and the environment. Conservation measures are management practices used primarily to prevent soil erosion, nitrogen leaching, and phosphorus loading from upland areas. In agricultural fields, these include in-field practices, such as nutrient management, cover crops, and continuous no-tillage, as well as edge-of-field and in-stream practices, such as buffer strips, tile drainage management, and wetlands.

To increase conservation adoption requires scientific confidence in conservation effectiveness and clear, trusted avenues of communication with land managers. Margaret aims to improve scientific understanding of the effectiveness of conservation measures through monitoring performance in the field and improving the representation of these practices and processes in computer models that are used to scale up conservation effectiveness to watersheds and regions. She encourages conservation adoption by crossing disciplines to make results meaningful and accessible to a broad audience.

Much of Margaret's recent work has taken place in the watersheds draining to western Lake Erie, where greater adoption of conservation measures is critical to solve harmful algal blooms and hypoxia in Lake Erie. She looks forward to continuing this important work in Wisconsin, similar in its valuable land and water resources, and where land management is critical to preserving water quality entering the Great Lakes and the Mississippi River.

DEPARTMENT NEWS

Xuejun “Jun” Pan was honored with *2021 Andrew Chase Award* from the American Institute of Chemical Engineers (AIChE), Forest and Plant Bioproducts (FPB) Division, in recognition of his outstanding scientific and academic contributions with high impact on the forest bioproducts industry and dedicated service to the profession. The award was presented at the 2021 AIChE Annual Meeting in Boston, MA. His research focus covers biofuels, biochemicals, and biomaterials (including fibers and pulp & paper) from plant biomass (lignocellulose). Jun has served in leadership roles of the AIChE’s FPB for many years.

The McBurney Disability Resource Center recently recognized **Paul Stoy** with their *2021 Forward in Access Award* for his exemplary efforts in creating an inclusive educational experience for all students at the University of Wisconsin-Madison. According to Nicole Bresnick, service provider and captioner in Stoy’s class, “Dr. Stoy repeatedly has shown an above-and-beyond dedication to all his students, with that extra eye on equal access at the same time.”

The ASABE dedicated associate editors spend many hours working closely with reviewers, authors, and editors during the peer-reviewed process for each manuscript. This year’s recipients of the Outstanding Associate Editors Award includes **Chris Choi** and **Anita Thompson**.

Donald and Emily Henderson have established the Donald L. and Emily J. Henderson BSE Machinery Systems and Precision Agricultural Fund as a new undergraduate scholarship. Don enjoyed working in six different Deere operations over 35 years, initially solving complex design and manufacturing problems, and later managing engineering, manufacturing, product support, and sales in Deere Agricultural and Power Systems Divisions. He advises that to be a good engineer and manager, you must continue to learn and adapt to advancing technology. Don and Emily look forward to inspiring future engineers with this scholarship for undergraduates in Biological Systems Engineering.



2021 Andrew Chase Award recipient,
Dr. Xuejun Pan

ALUMNI UPDATES

Shane Williams (BS, 2009; MS, 2011) was the recipient of the ASABE Gale A. Holloway Professional Development Award for his steadfast service to enhancing member value and encouraging young professional involvement through leadership and nurturing of essential growth opportunities.



After graduating from the BSE MS program, **Rachel Johnson** started as a science policy fellow with the National Oceanic and Atmospheric Administration (NOAA). The John A. Knauss Policy Fellowship is one of the nation’s most prestigious science policy fellowship programs, matching highly qualified graduate students with “hosts” in the legislative and executive branches of government for one-year, paid fellowships related to ocean, coastal, and Great Lakes resources. Rachel was placed in the headquarters of NOAA’s National Ocean service, where she supports the implementation of NOAA’s coastal resilience portfolio. Coastal resilience - the ability of communities to “bounce back” - is extremely important in the face of hazards like hurricanes, harmful algal blooms, sea level rise, flooding, and rapidly fluctuating Great Lakes water levels. Rachel assists NOAA leadership in agency, interagency, and external coordination, and strategic planning around coastal resilience. This includes everything from translating science into plain language, to tracking policy opportunities, to briefing leadership, to providing staff support for a White House working group. Rachel was advised by Anita Thompson.

RECENT GRADUATES

Bachelor's Degrees

Chow, Kit
Cooper, Devin
Dorsch, Evan R.
Fares, Diana
Force, Arabelle E.
Johnstone, Daniel J.
Katana, Irene
Katzenberger, Michael J.
Kirsch Tornell, Jacobo
Lakeman, Emily E.
Lazzara, Noah D.
Lemcke, Tess I.
Lutz, Joseph J.
Merkel, Jared M.
Mikolajczak, Matthew E.

Moccero, Emily
Moen, William J.
Morrow, Aidan L.
Olivares, Jacob C.
Olp, Andrew J.
Patel, Priyanka N.
Pavela, Jenna R.
Pham, Jaime A.
Rhee, Yeonsu
Rodriguez Alvarez, Laura K.
Schultz, Katelyn R.
Steiner, Rachel R.
Sternaman, David A.
Tennessen, Nicholas J.
Wellman, Benjamin D.

Master's Degrees

Biological Systems Engineering

Chen, Xi (Thompson)
Ho, Derek (Runge)
Johnson, Rachel E. (Thompson)
Kim, Joonrae Roger (Karthikeyan)
Pintens, David A. (Digman/Shinners)
Sandner, Kelly J. (Shutske)
Wagner, Edward L. (Karthikeyan)
Williams, Parker (Luck)
Water Resource Management
Botelho, Courtney J. (Thompson)
Cobb, Brittany C. (Thompson)
Parr, Jackson G. (Thompson)
Peng, Yangbo (Thompson)

Doctoral Degrees

Biological Systems Engineering

Francis Clar, Jordi (Anex)
Kim, Joonrae Roger (Karthikeyan)
Dairy Science
Silva Bolona, Pablo Manuel (Reinemann)

ASABE UPDATE



UW-Madison's Chapter for the American Society of Agricultural and Biological Engineering (ASABE) is a pre-professional community for BSE Students to participate in networking opportunities and social events. ASABE collaborative events include monthly guest speakers, industry tours, fundraising, and attending sporting events. Highlighted social events of this semester include the Adopt-A-Plant sale, Cornhole Tournament, and attending the UW-Madison Women's Volleyball game! Due to Covid-19 restrictions, the 2020-2021 academic year was difficult for ASABE. The inability to meet in person, caused a lack of connection to guest speakers and between members. Therefore, ASABE has been very enthusiastic about being back in-person this Fall and re-creating an outlet for networking and student camaraderie!

The year kicked off with a BSE Department Mixer and Adopt-A-Plant social event! This was an opportunity for students to meet with faculty outside the classroom. After a year of online classes, it was great to interact with faculty and students in person. Networking opportunities with specified industry speakers were the focus of the monthly general meetings. Meredith Remter, an Associate Principal Engineer from PepsiCo., was the first presenter. Meredith Remter and her Research and Development team shared their Bioprocessing Design process for creating Cheetos Bag of Bones Halloween Snack. She had also provided Cheetos Bag of Bones snacks for students to taste. The next guest speaker was Ketty Clow, an Environmental Engineer for the Chippewa County

Land Conservation and Forest Management. Ketty Clow studied Biosystems Engineering at the University of Minnesota and was able to give relatable advice to BSE students. Ketty Clow discussed many of her environmental projects in Chippewa Valley, WI, and provided information on public vs private sector engineering. She also made a note about an opening internship opportunity that a current BSE student recently completed. The last speaker of the year will be Shane Williams, a Design Engineer for Kuhn North America. He will discuss agricultural machinery projects and possible networking opportunities.

ASABE's biggest fundraising event is the Lawn-Mower-Clinic, which supports attending industry tours, social events, and refreshments. Local Madison, WI residents bring to the clinic their lawn mowers and/or snow blowers for repair. Students and helpful faculty members tune up these machines by power washing, providing oil changes, sanding and sharpening blades, replacing spark plugs, and changing filters. This gives our students exposure



to the BSE Shop and an opportunity to learn new skills! Not to mention, it is a great way to meet students and faculty! This year students repaired 50 machines and raised over \$3,000!

UW-Madison's Chapter for ASABE is so excited and grateful to be back in person this semester! The final general meeting for the semester will take place Tuesday, December 14th at the Agricultural Engineering Building, and guest speakers, industry tours, and fun social events will continue next semester. ASABE is not limited to general meetings and socials; other associated clubs through ASABE include the UW Tractor Pulling Team and the UW Robotics Team. ASABE welcomes new members to the club! A great way to keep up with ASABE activities is through its Instagram, @uw.asabe. ASABE members look forward to continuing to build our BSE community!

Alison Bowe

Public Relations, ASABE UW-Madison Chapter

ASABE AWARDS

Students **Kylie Callahan**, **Jacob Olivares**, and **Priyanka Patel** received 2nd place in the AGCO National Student Design Competition for their project entitled, *Portable Hemp Decorticator*. This design competition encourages undergraduate students to develop a design useful to agriculture.



OUR DONORS

University of Wisconsin-Madison
Biological Systems Engineering
460 Henry Mall
Madison, WI 53706-1533

608/262-3310
bse@wisc.edu

bse.wisc.edu

01/01/2021 to 11/30/2021

Casey Behringer
Gerald and Kay Bizjak
David and Rhonda Bohnoff
David Broten
Robert and Linda Brown
Martin and Kathleen Burkhardt
Christopher Choi and Soyeon Sim
CNH Industrial America, LLC
Anita and Kevin Connors
Didion Milling, Inc
Donald and Sharon Erbach
Todd and Kristine England

Haibo Guo
Donald and Emily Henderson
Brian and Mary Holmes
Brian Huenink
John Deere Foundation
Karl Klingelhofer
Emily Lakeman
Eric McKinney
Midwest Rural Energy Council
Brandon Nigon
Gene Nimmer
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Richard and Margaret Straub
Daniel Thiemke
Gregory and Bobbi Weber
Rene and Todd Wehler

Department of Biological Systems Engineering

I/we wish to join other students/alumni, industry, and friends in enhancing the teaching, research, and outreach programs in the Department of Biological Systems Engineering by contributing as indicated below.

___\$50 ___\$100 ___\$250 ___\$500 ___\$1,000 ___Other

- ☐ Checks should be made payable to UW Foundation-Department of Biological Systems Engineering
☐ Please charge my gift of \$_____ to my (please circle): Mastercard Visa American Express

Card Number:

Expiration Date:

Cardholder's Name (please print):

Cardholder's Signature:

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Name:

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Mail to: University of Wisconsin Foundation • US Bank Lockbox • P.O. Box 78807 • Milwaukee, WI 53278-0807

Online donation is available on our website <http://bse.wisc.edu/support-bse/>

Alumni Update

We'd love to hear from you! Please complete and return this form
or send your updates via email to: jgarvin2@wisc.edu

Name:

Degree(s) and Year(s): BS () MS () PhD ()

Home Address:

Email:

Phone No.:

Position:

Employer:

News to share:

By US Mail, return to:

Department of Biological Systems Engineering • University of Wisconsin-Madison
460 Henry Mall • Madison WI 53706-1533