FALL 2018

CHEMICAL AND BIOLOGICAL ENGINEERING

UNIVERSITY OF WISCONSIN-MADISON

CONTRIBUTING TO OUR COMMUNITY AND BEYOND

CHAIR'S MESSAGE

Greetings from Madison!

As new Chair, I'd like to take this opportunity to thank Manos Mavrikakis for his three years of service as Chair of CBE. Under his leadership, the department has made great strides in building on our strong legacy of excellence in research and education, while moving forward confidently to meet the challenges of tomorrow.

As the fall 2018 semester comes to a close, we celebrate a few noteworthy accomplishments:

Manos Mavrikakis received the Gabor A. Samorjai Award for Creative Research in Catalysis from the American Chemical Society. This prestigious award recognizes outstanding contributions to theoretical, experimental or developmental research that advances the field of catalysis.

We also wish to congratulate **Michael Graham** on the recent publication of his graduate-level textbook: *Microhydrodynamics, Brownian Motion and Complex Fluids,* published by Cambridge University Press. The book focuses on the fundamental principles of the dynamics of fluids at small scales, and the physical and mathematical foundations of Brownian motion. Both students and researchers can benefit from the book's rigorous development of theoretical approaches, and applications of theory to the analysis of complex fluids such as colloidal suspensions and polymer solutions.

Additionally, our graduate students have been very active, earning awards for their conference presentations. Read about our poster prize winners **John Greenhalgh**, **Ben Gastfried** and **Chris Mehrer** in this issue.

On Engineers' Day, the College of Engineering's annual celebration of engineering, we recognized **William Monfre** (BSChE '85) with a Distinguished Alumni Award. Monfre is the president and owner of Quality Insulators Inc. and Asbestos Removal Inc. It was rewarding to catch up with our alumni during the day's events.

We recently honored **Maria Flytzani Stephanopoulos** as our Hougen Lecturer. Maria is a distinguished professor at Tufts University, and a member of the National Academy of Engineering. Local alumni attended the lectureship events, and we were delighted to have Olaf Hougen's daughter **Esther (Hougen) Taylor**, granddaughter **Martha Taylor** and grandson **Richard Taylor** in attendance.

Within the department, we've been busy with faculty searches and the introduction of a new course.

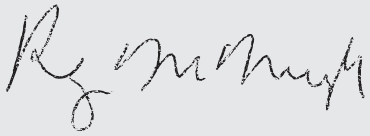
The department has multiple open faculty positions and is busy identifying talented researchers and educators to fill these positions. The search committee, chaired by **David Lynn**, is looking particularly for expertise in catalysis, materials, sensors and systems. We look forward to adding new ideas, creativity and enthusiasm to our exceptional faculty.

This semester we introduced a new course: "Introduction to Chemical Engineering." This 1-credit course gives freshmen a chance to sample thermodynamics, transport, kinetics and process design, to get a taste of the chemical engineering curriculum. Students also learn about engineering ethics, process safety, and contemporary topics such as energy and sustainability, providing them opportunities to explore different career paths as chemical engineers.

In 2005, Olaf Hougen and Bob Bird published *100 Years of Chemical Engineering at the University of Wisconsin*. When Hougen completed the history up to 1965, he left the book's manuscript in the departmental safe with a note stating his hopes for someone to complete the book when the department reached its 100th year. And now that the department surpassed this milestone, a follow-up volume has been completed! *History of the Eleventh Decade*, written by Bob Bird, covers July 2005 - August 2015. If you're interested in receiving a copy, information is available in this newsletter.

If you have news that you would like us to consider including in our upcoming CBE newsletters, please email us at: che@che.wisc.edu. Please also visit our website www.engr.wisc.edu/department/cbe to read all the latest news. You can Like us on Facebook (@UWMadisonCBE), connect with us on LinkedIn (uw-madison-cbe) or follow us on Twitter (@UWcbe)!

ON, WISCONSIN!



Regina M. Murphy, PhD
Smith-Bascom Professor and Chair
regina.murphy@wisc.edu • (608) 262-1587

Meet Kyle Buchmann!

We're excited to welcome a new managing senior director of development to the CBE family. No stranger to UW-Madison, Kyle has worked for the UW Foundation since 2012 as director of development for corporate and foundation relations. Before joining the UW Foundation, Kyle served as associate director for major gifts at the University of Wisconsin-Eau Claire, and he also spent time as the director of tournaments and championships for Collegiate Club Sports in Pittsburgh. Kyle is excited to work with CBE, and he's looking forward to helping our alumni make smart investments so that they can reach their goals.

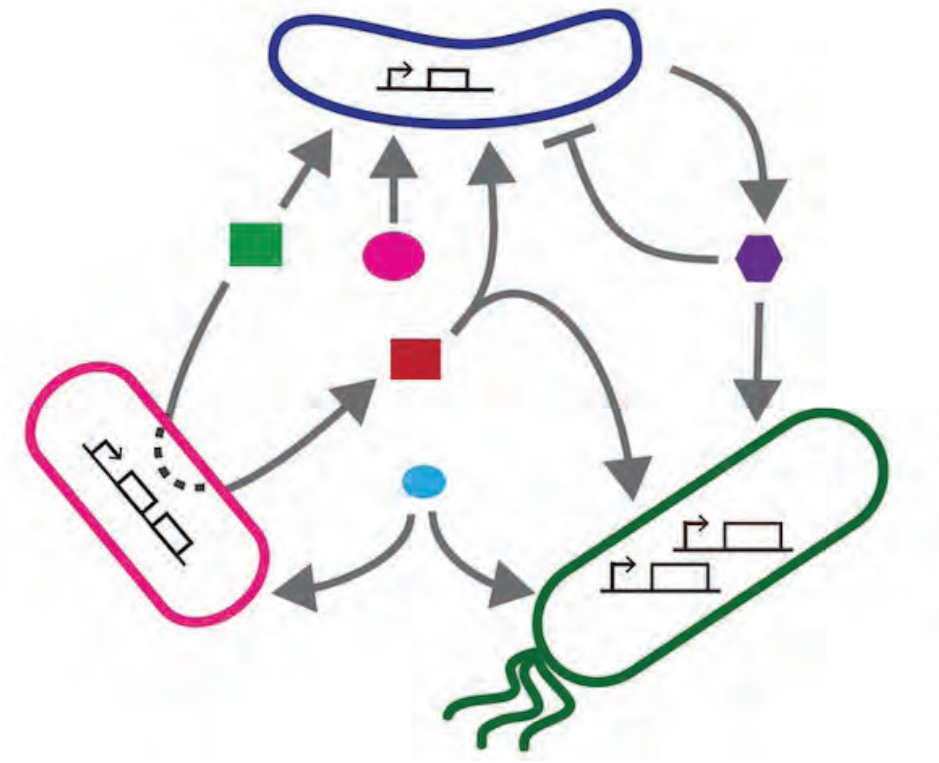
Originally from Spooner, Wisconsin, Kyle enjoys coaching baseball, exploring the outdoors and spending time with his wife and children—7-year-old twins and a 1-year-old. Feel free to contact Kyle at any time—whether you'd like to visit campus, talk with him about a gift, or just to say hi, at **Kyle.Buchmann@supportuw.org**.

GUT REACTION: DYNAMIC MODELING SHOWS WHAT MAKES MICROBES WORK FOR OUR HEALTH

The human gut is teeming with microbes, each interacting with one another in a mind-boggling network of positive and negative exchanges. Some produce substances that serve as food for other microbes, while others produce compounds that kill their neighbors.

Scientists have been challenged trying to understand how this collection of gut microbes known as the microbiome is formed, how it changes over time and how it is affected by disturbances like antibiotics used to treat illnesses. A new study from Ophelia Venturelli, an assistant professor of biochemistry with affiliate appointment in chemical and biological engineering, may help alleviate some of that difficulty.

Published June 21, 2018, in the journal *Molecular Systems Biology*, the study provides a platform for predicting how microbial gut communities work and represents a first step toward understanding how to manipulate the properties of the gut ecosystem. This could allow scientists to, for example, design a probiotic that persists in the gut or tailor a diet to positively influence human health.



Different bacterial species constantly interact by sending signals to each other or making molecules that enhance or inhibit those around them. *Graphic: Ophelia Venturelli.*

> **"Having a model is a first step toward being able to manipulate the gut ecosystem in a way that can benefit human health."**

"We know very little about the ecological interactions of the gut microbiome," Venturelli says. "Many studies have focused on cataloging all of the microbes present, which is very useful, but we wanted to try to understand the rules governing their assembly into communities, how stability is achieved, and how they respond to perturbations as well."

By learning these rules, researchers say they can better predict interactions between microbes using computational tools instead of performing laborious and time-consuming laboratory experiments.

The data can also start to answer questions about how pathogens cause damage when they invade communities, and how to prevent it.

"Without a model, we are basically just blindly testing things without really knowing what we are doing and what the consequences are when we are, for example, trying to design an intervention," she says. "Having a model is a first step toward being able to manipulate the gut ecosystem in a way that can benefit human health."

Read more: www.engr.wisc.edu/dynamic-modeling-helps-predict-behaviors-gut-microbes/

SURVIVING "BOOT CAMP" SUMMER LAB 2018

Every year since 1914 (with a brief interruption during World War II) CBE seniors have completed the Operations and Process Laboratory capstone course CBE 424, affectionately known as "Summer Lab." For roughly 100 years, the five-week long "bootcamp" has pushed students outside their comfort zones and provided unique opportunities for undergraduates to solve open-ended research challenges by conducting hands-on experiments.

In 2018, two sessions took place at the UW-Madison campus, one cohort opted for the international course in Chemical engineering at the Universidad de Oviedo in Asturias province in northern Spain, one went to Hangzhou, China, and a final group took the Operations and Process Laboratory at Hong Kong University of Science and Technology in China. This year, the winners of the O.L. Kowalke and R.E. Harr Award for outstanding performance as a team were Jessica Nurre and Neil Taylor; the R. A. Greiger-Block Award for demonstrated creativity and resourcefulness went to Bradley Schwab and Adarsh Suresh.

UW-Madison Session 1

Front Row:
Kelly Watson, Jessica Nurre, Haley Olsen, Danielle Kuehn, Brittany Martin, Geethanjali Anand, Joey Tan, Jose Coca
Second Row:
Arnoldo Lopez-Hernandez, Faisal Bin Salem, Oliver Altmann, Neil Taylor, Daniel Kurniawan, Raghav Cherala, Adarsh Suresh, Oscar Londono, Matthew Gargulak, Daniel Klingenberg
Third Row:
Bradley Schwab, Benjamin Heying, Seth Winger, Dhushyanth Viswanath, Talal Alqahtani, David Kim Christopher Trafton, Tyler Hafeman, Natthun Harichanwong, Austin Kyle
Fourth Row:
AbdulAziz Albakri, Cyrus Colah, William Guy, Cody Teich, John Henrich, Andrew Shepherd, Aaron Michaelson, Connor Schanke, Ky Christenson, James Miller, James R. Beckman

UW-Madison Session 2

Front Row:
Rusila Tuazon, Andrew Einspanier, Jinan Aljaziri, Alyaa See, Jose Joaquin Burbano de Lara, Sara Thompson, Coty Weathersby, Kyra Dahl, Tara Meyers, Rafael Chavez-Contreras
Second Row:
Shania Vold, Zach Fridl, Matthew Madamba, Kyle Casillo, Natha Tansukawat, Ritvind Suketana, Richard Siegl, Natasha Mallette
Third Row:
Thatcher Root, Kent Steck, Yandi Ma, Michael Hatchell, Paul Meyers, Carmen Stearn, Emma Clark, Alexander Belich, Bryan Watson, Min Zhou
Fourth Row:
Fernando Tiscareño, Danny Windisch, Ariana Saffold, Talha Sultan, Jay Alexander, Jacob Redovich, Austin Laudenbach, Tyler Leach, Arturo Jiménez-Gutiérrez

Hangzhou

Front Row:
Jianling Chen (University of Washington), Yanyun Yu (University of Washington), Sakura Kawano, Qiuming Yu (University of Washington), Robert Coolman (UW-Madison)
Second Row:
Redeen Duran (University of Washington), Madeline Faubion, Mara Nevitt, Shanleigh Sullivan (Colorado University), Tyler Budde, Gary Boon (University of Washington), Monica Esop (University of Washington)
Third Row:
Xiangqun Ye (Zhejiang University), Stephanie Ploch, Doug Millar, Ke Xu, Peter Yuthachack (University of Washington), Yixuan Feng (University of Washington), Zachary Matusinec
Back Row:
Mingqiao Zhu (Zhejiang University), Xiang Gao (Zhejiang University), Adam Fitzsimmons (Colorado University), Liam Witteman, Junrong Yi, David Bosch, Harrison Sarsito (University of Washington), Kuan Chen (University of Washington), Nathan Frelka

Oviedo

Front Row:
María Salvador (Assistant), Rafael Chavez-Contreras (UW-Madison), Fernando Díez (Lecturer), Karen Haman (Lecturer, Iowa State University), Jenna Waligorski, Zachary Filtz, Jefferson Chan, Tanner Phelps, Kunal Dani, Samnuel Miller, Maxsam Donta, Rachel Maguire, Sage Bladow, Kaylin Kartaly, José Ramón Alvarez (Lecturer), Susana Luque (Lecturer)
Second Row:
Sonia Álvarez (Lecturer), Maria Matos (Lecturer), Amanda Moyano (Assistant), Pablo Marín (Lecturer), Ryan Berthiaume, Matthew Richmond, John Laszewski, Katherine Ball, Rachel Ringquist, Christina Hirons, Luke Stoutenborough, Michael Pauletti, Tim Murat, Mathew Lentner, Branden Moreau, Evan Mahoney, Jason Peck, Zachary Konz, Gemma Gutiérrez (Lecturer)

Hong Kong

Front Row:
Brandon Li, Renu Tyagi (HKUST), Po Lock Yue (HKUST), John Yin (UW-Madison), CBE Chair I-Ming Tsing (HKUST), Andrew Gould, Chi Jia Lim, Molly Adam, Pranati Mondkar, Yueli (Anna), Abigail Schmidt
Second Row:
Marshal Liu (HKUST), Ricky Szeto (HKUST), Bruce Chan (HKUST), Zachary Titel, Kamil Adamski, Griffin Lynch, Zachary Schmidt, Zengyang Jia

IDENTIFYING POTENTIALLY PROFITABLE BIOPRODUCTS

Imagine a new and improved biorefinery, one that produces advanced biofuels as environmentally sustainable as they are economically viable. In the biorefinery of the future, every step of the pipeline is optimized, almost every part of the energy crop is used, and the entire system, from field to fuel, serves to drive down carbon emissions.

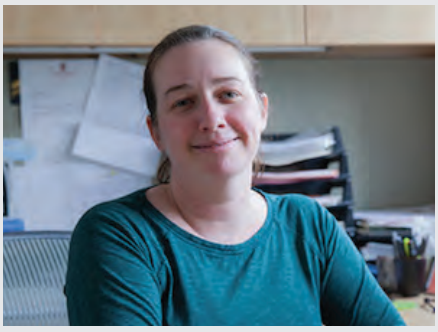
Researchers working toward that vision are finding inspiration in what might seem an odd or unlikely place—the oil refinery. Oil refineries make an array of products from crude oil, including low-cost gasoline and high-value petrochemicals. The practice of making co-products alongside fuels helps improve the refinery's bottom line and could also prove critical to the biorefinery's economic model.

But what bioproducts should or could the future biorefinery produce alongside advanced biofuels? Which will succeed in making the process more economical? A paper published in *Biotechnology and Bioengineering* is providing a much-needed framework for answering those questions, helping researchers to identify the most promising bio-based chemicals.

"We wanted to develop methods that will allow us to identify chemicals that will be promising in a biorefinery," says Christos Maravelias, Vilas Distinguished Achievement Professor and Paul A. Elfers Professor. "This means taking into account what can be done biologically and also taking into account the price of chemicals in the market."

Maravelias, along with Jennifer Reed, William and Karen Monfre Professor, and Tony (Wenzhao) Wu, a graduate student in Maravelias' lab, developed and used a multi-scale modeling process to identify 32 biochemicals as economically promising if maximum yields can be achieved, and 22 biochemicals if the maximum productivities can be achieved.

"It doesn't mean that if we produce that chemical today on an industrial scale, it will be profitable," Wu says of the bioproducts identified. "But it means it can be profitable in the future if the microbial conversion yield and productivity can be increased drastically and low separation cost can be achieved."



Christos Maravelias (top) and Jennifer Reed (bottom) collaborated on a recent publication identifying potentially profitable bioproducts. *Photos: Matt Wisniewski and James Runde.*

Read more: www.engr.wisc.edu/modeling-research-identifies-potentially-profitable-bioproducts/

THE BRUSHES BEHIND MADISON TRADITIONS BUCKY

Buckingham U. Badger, or Bucky, for short, is the beloved mascot of the University of Wisconsin-Madison, and he has worn essentially the same cardinal red and white striped sweater since 1940.

But during the summer of 2018, Bucky finally tried on some new outfits, thanks to a public art event called Bucky on Parade. Madison witnessed an invasion of 85 six-foot-tall fiberglass likenesses of UW-Madison's favorite burrowing mammal—each one decked out in technicolor splendor by local artists.

One of those artists was Aislen Kelly, a chemical and biological engineering student who began her UW-Madison college education in fall 2017. Inspired by the community aspects Madisonians hold near and dear, Kelly painted the "Madison Traditions Bucky," which stood proudly at the intersections of State and Frances streets downtown.

"I thought it would be a good opportunity to show how much I love this community and I love this town," says Kelly.

She found out about the Bucky on Parade project through social media and submitted her design proposal shortly after arriving on campus as a freshman.

Kelly adorned Bucky's red-striped sweater with images of local legends and landmarks—the State Street sign on his right shoulder, the Capitol dome on his torso, a pink flamingo on his left forearm, and an iconic yellow Memorial Union sunburst emblazoned on his back. A modified version of the famous Las Vegas sign proclaims "Welcome to Fabulous Madison Wisconsin" across Bucky's chest.

Growing up as the daughter of a political cartoonist, Kelly spent her childhood surrounded by art. Her preferred media are usually pencils and pens on paper, so painting a giant fiberglass statue was a substantial departure from her comfort zone.

Unlike many of the other artists participating in the project, Kelly did not have her own studio. In fact, when she took a rental truck to pick up the blank statue from the Madison Area Technical College campus in the first week of February 2018, she still hadn't found a dedicated space in which to work, despite many inquiries to building managers across campus as well as to her coworkers, friends, and resident advisors about potential locations (although her roommate was open-minded and enthusiastic about the notion of cohabitating with a giant fiberglass badger).

And while she carefully measured Bucky's height and breadth when planning her artwork, complicating matters further was her discovery that the statue's circular base was much too wide to fit through the door of her dorm room in Sellery Hall.

Fortunately, the building's facilities director found a little-used basement hallway adjacent to the laundry room where Kelly could work on the statue.

For slightly more than two months, Kelly painted late into the night to finish her artwork in time for the April 7, 2018, deadline, all while balancing a busy courseload, a part time job at the coffee stand at the Gordon Avenue Market, and a position on the club softball team.

"I knew it would be work, but I didn't know how much work," she says.

That hard work paid off when her statue was finally unveiled.

"It's been really rewarding seeing it, seeing how other people perceive it," says Kelly, noting that her friends frequently send pictures of themselves with her creation. At the end of the summer, a number of the statues were auctioned off at a gala finale party, with the proceeds benefitting the nonprofit organization Garding Against Cancer, the Madison Area Sports Commission, and other community charities.

"That's what the project was meant to do," Kelly says. "Bind the community together for a common cause."

Sophomore Aislen Kelley poses with the "Madison Traditions Bucky" statue that she painted. *Photo: Sam Million-Weaver.*

A CYLINDRICAL CROSSWORD PUZZLE BY BOB BIRD

INSTRUCTIONS:

Imagine that the grid above is wrapped tightly around a cylinder so that the leftmost column is exactly adjacent to the rightmost column. Thus you are working a crossword puzzle on the surface of a cylinder! Hence, to fill in the word fitting the definition for Horizontal 14, you would put T and E near the right edge and N near the left edge, on the same line.

Answer key on page 11.

1	2	3	■	4	5	6	■
■	7		8	■	9		10
11	■	12		13	■	14	
	15	■	16		■	■	17
	■	■	18		■	19	
	20	■	21		22	■	23
24		25	■	26		27	■
■	28		29	■	30		31

This puzzle was perpetrated by R. Byron Bird.

HORIZONTAL:

1. Dixie _ _ _ (Wilma Winifred Wyatt)
4. Apple pie _ _ _ mode
7. School in Athens, Georgia (abbreviation)
9. "Und" in German corresponds to this in English
12. Select
14. Log to the base _ _ _
16. 3.14159...
12. Capote's nickname
17. Reid _ _ _ Lehn of our dept.
18. Rank below captain in U.S. Army
19. Full of _ _ _ and vigor
21. Shade tree
23. Permit
24. His (in Louvain-la-Neuve, Belgium)
26. Consume
28. "The Raven" by _ _ _
30. Not later

VERTICAL:

1. Roman numeral for 50
2. Past participle of "avoir" in French
3. Some in Hollywood have a big one
4. Indefinite article
5. _ _ Bohème, opera by Puccini
6. Pismire
8. A popular computer
10. The _ _ _ _ _ and Daniel Webster, by Stephen Vincent Benét
11. "James," "Elva," and "Julius"
13. "Lord," or "Count," or "Earl"
14. 14th letter of German alphabet
19. _ for victory
20. You can make it spin
22. _ _ _ of la Mancha
25. In Russian it's "nyet"
27. Homonym of "too" and "two"
29. 2.71828...
31. Chemical symbol for tungsten

Order new version of centennial book

The tome that tells our department's history, *100 Years of Chemical Engineering at the University of Wisconsin*, has been updated with a new chapter. In the 110-page volume titled *History of the Eleventh Decade*, Professor Emeritus R. Byron Bird chronicles goings-on in the department from 2005 through 2015. To obtain a copy, contact Susann Ely at **sely@wisc.edu**.

COULD POWER-HUNGRY DATA CENTERS CONTRIBUTE TO A MORE RELIABLE ELECTRIC GRID?

Large-scale data centers—the massive warehouses full of mainframe computers that form the information backbones of companies such as Google, Facebook, Microsoft, and Amazon—will soon account for as much as one-fifth of U.S. electric power use.

Surprisingly, however, those data centers might actually help ease an important source of strain on the nation's power grid by offering a quick and easy strategy to fine-tune demand for electricity in different geographical regions.

"Flexibility is essential for the grid to withstand extreme events like severe weather or a cyber-attack," says Victor Zavala, the Baldovin-DaPra Associate Professor.

The notion that data centers could help the power grid become more flexible has earned a team of researchers a $1.8 million grant from the National Science Foundation initiative Critical Resilient Interdependent Infrastructure Systems and Processes. Spearheading the effort are researchers at the University of Wisconsin-Madison and the University of Chicago.

> **"The power grid has limited transmission capacity. What power networks need is the ability to distribute loads in space and time."**

"If you put the data centers in different strategic locations in the network, they can operate like valves that help you control the flow of power in the network," says Zavala, who is leading the UW-Madison contingent along with electrical and computer engineering faculty members Bernard Lesieutre and Line Roald.

Excessive electricity that cannot be easily absorbed into one regional grid is a big challenge for the nation's power markets. Oftentimes, one area of the country can have a power surplus while another region might experience rolling blackouts.

"The power grid has limited transmission capacity," says Zavala. "What power networks need is the ability to distribute loads in space and time."

In other words, excessive electricity from a Midwest wind farm on a particularly blustery day can't realistically help alleviate a rolling blackout in California during a heat wave.

Yet that extra electricity needs to go somewhere. When wind turbines or other energy sources produce more electricity than the local cities demand, regional independent system operators must sell that so-called "stranded power" at steep discounts—or even at negative cost.

In 2014 alone, stranded power in the mid-continent region (the swath of land that includes Wisconsin and the Midwest) amounted to 17 terawatt hours, or enough to power one million homes.

Given that one large-scale data center consumes as much electricity as a small town, it seems logical that locating a data center directly adjacent to a wind farm or a solar array could solve two problems at once: making use of stranded power and keeping computer processors humming.

What Zavala and colleagues have found, however, is that the solution lies within the data centers themselves, and distributing those centers at different locations throughout a power grid—not necessarily directly next to the plants—is better for the electrical network as a whole.

"Data centers have the ability to shift demands across the country almost instantly. That gives you unprecedented geographical flexibility," says Zavala. "That flexibility will give you more resilience and enable a more sustainable growth of the power grid."

Read more: **www.engr.wisc.edu/power-hungry-data-centers-help-make-efficient-national-electric-grid/**

FACULTY NEWS

Victor Zavala was invited by the National Academy of Engineering to be one of 84 participants in the 2018 United States Frontiers of Engineering Symposium, held Sept, 5-7, 2018, in Lexington, Massachusetts. An expert in developing mathematical models for optimal control, estimation and system design, and in creating computational techniques to solve those models on high-performance computers, Zavala was also recently awarded the Baldovin-Dapra Professorship. Congratulations, Victor!

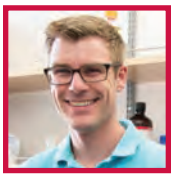
Nick Abbot (left), the John T. and Magdalen L. Sobota Professor and Hilldale Professor and **Jim Rawlings** (right), the Steenbock Professor and W. Harmon Ray Professor, are moving on after many years of distinguished service to the department. Nick will be living in Ithaca, New York, and Jim is moving to Santa Barbara, California. Both will be sorely missed here at UW-Madison, and we wish them all the best.

Sean Palececk, the Milton J. and A. Maude Shoemaker Professor, hosted a conference for the National Science Foundation Engineering Research Center for Cell Manufacturing Technologies—an international multi-institution consortium for developing cutting-edge therapies based on living cells.

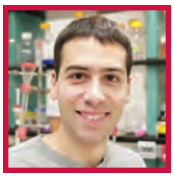
STAFF NEWS

Kathy Heinzen retired from her position as student services coordinator in September 2018. During her six years working in the CBE graduate program office, Kathy assisted many graduate students with advising, financial aid, and career planning. We wish Kathy the best in her retirement!

STUDENT NEWS



PhD student **Jon Greenhalgh** won the best-poster prize in the metabolic engineering category at the Society for Industrial Microbiology and Biotechnology annual meeting, held Aug. 12-16, 2018, in Chicago. He earned the award for his research, "Engineering of an Acyl-CoA Reductase for improved activity towards medium length fatty alcohol production."



The International Brain Barriers Society selected graduate student **Benjamin Gastfriend** to receive a 2018 poster award at the Barriers of the Central Nervous System Gordon Research Conference, held June 17-22, 2018, in New London, New Hampshire. Gastfriend, who is coadvised by Milton J. and A. Maude Shoemaker Professor Sean Palaceck and Howard Curler Distinguished Professor Eric Shusta, presented the poster, "Human stem-cell based models of the neurovascular unit."

Graduate student **Chris Mehrer** had one of the top-two posters at the 2018 Metabolic Engineering 12 conference, winning him a $500 prize sponsored by the American Chemical Society synthetic biology journal. Mehrer works in the research group of Brian F. Pfleger, the Jay and Cynthia Ihlenfeld Professor. His poster, "Anaerobically autoinduced fatty alcohol production in *Escherichia coli*," described a method to produce useful chemicals using genetically modified bacteria.

Pyran, a spinoff company co-founded by **Kevin Barnett**, who completed his PhD under the mentorship of Richard L. Antoine Professor George Huber, won a top award in its category in the 15th annual Governor's Business Plan Contest on June 6, 2018. Pyran won second place in the advanced manufacturing category for a patented method to convert biomass into a chemical widely used in paints and plastics, as well as the "Bright Idea Award."

Puzzle Answer Key

1 L	2 E	3 E	■	4 A	5 L	6 A	■
■	7 U	G	8 A	■	9 A	N	10 D
11 N	■	12 O	P	13 T	■	14 T	E
A	15 N	■	16 P	I	■	■	17 V
M	■	■	18 L	T	■	19 V	I
E	20 T	■	21 E	L	22 M	■	23 L
24 S	O	25 N	■	26 E	A	27 T	■
■	28 P	O	29 E	■	30 N	O	31 W

2018 ENGINEERS' DAY AWARD RECIPIENT

William S. Monfre
Distinguished Achievement Award

Engineering and Manufacturing Management, Procter & Gamble (1985-2008)
President/Owner, Quality Insulators Inc. and Asbestos Removal Inc. (2008-current)
BSChE '85, UW-Madison

Each year, the College of Engineering recognizes outstanding alumni during Engineers' Day—a celebration of engineers, held on Homecoming weekend. In 2018, we honored Bill Monfre with the Distinguished Achievement Award in recognition of the expertise and creativity that enabled him to become a leader in his professional career as an engineer and entrepreneur.

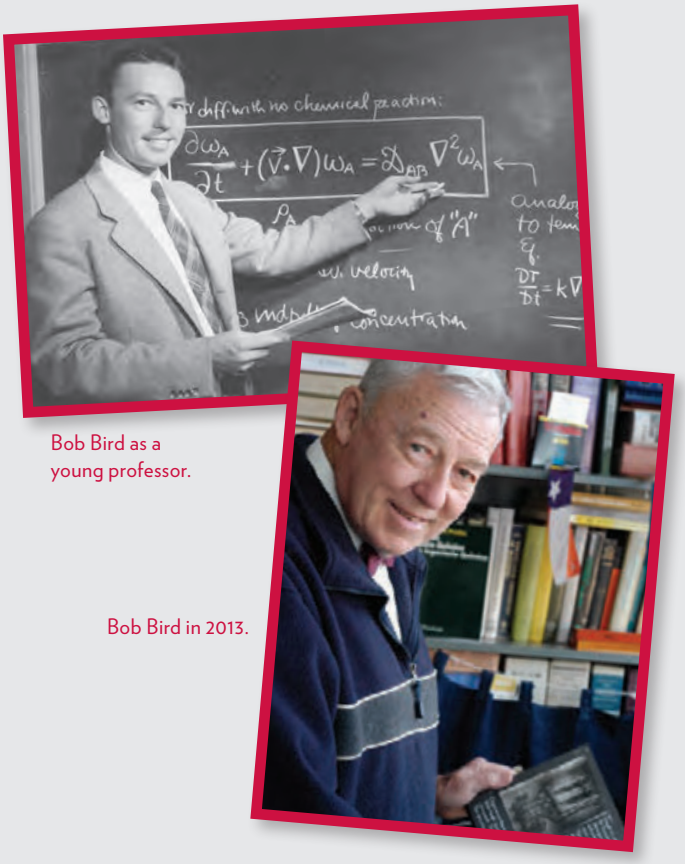
Bill enjoyed a 23-year career in engineering and manufacturing management with Procter & Gamble before leaving and purchasing his industrial mechanical insulation and asbestos abatement companies in 2008. These companies have earned numerous industry awards in areas including safety, training, performance and ethics.

During his acceptance speech, Bill reflected on the tremendous significance that his time at UW-Madison played for his future life and career, which motivates him and his wife of 31 years, Karen, to give to their alma mater.

"I am really, really grateful that I had the opportunity to come here and get my degree. But more importantly," he said. "I want to make sure that those future generations, those that are behind me, also have that opportunity."

We recently chatted with Bill about everything from his memories as a student at UW-Madison to his career and hobbies.

Read the Q&A: www.engr.wisc.edu/william-s-monfre-2018-distinguished-achievement-award-recipient/



Bob Bird as a young professor.

Bob Bird in 2013.

HONORING A VISIONARY LEADER

As Bob Bird approaches his 95th birthday, the Department of Chemical and Biological Engineering is embarking on a major effort to endow the Robert Byron Bird Department Chair, honoring a truly one-of-a-kind person who has done so much to establish and nurture UW-Madison's tradition of excellence.

Bob's scholarly contributions are legendary. His foundational textbooks revolutionized chemical engineering. Outside of the lab and the classroom, Bob is also a linguist, a musician, a composer, a historian, a limerick writer and a puzzle creator.

The Robert Byron Bird Department Chair will honor Bob's leadership and service to the department. Funds from the endowed Bird Chair will be used at the department chair's discretion to strengthen his or her ability to face the particular challenges of the day and to lead the department confidently into the future.

Look for a special mailing in January about the Bird Chair, in anticipation of Bob's birthday in February!

ACCELERATED MASTER'S PROGRAMS

An engineering master's degree from UW-Madison gives you the credentials to get ahead. Find a program that fits your goals and lifestyle.

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UNDERGRADUATES GAIN VALUABLE HANDS-ON RESEARCH EXPERIENCE IN MADISON

For the past 13 years, students from all over the United States and Puerto Rico have spent summers in Madison, where they gain valuable experience working in labs through the National Science Foundation Research Experience for Undergraduates program.

And after the 10-week summer session, some of those students join the CBE family.

"We use this as an opportunity to recruit grad students," says Distinguished Faculty Associate Andrew Greenberg, who has directed the program since 2006. "Oftentimes we have students coming in from smaller schools who realize that they can be successful in a strong department."

In 2018, 42 undergraduates made Madison home for the summer, during which time they worked in labs, attended seminars, and pursued professional development including communication training.

At the end of the summer, the students showcased their results at a poster session in Engineering Hall. For many, it was their first time presenting in a professional setting.

"The most important thing is for students to grow as researchers and professionals and take them out of their comfort zones," says Greenberg.