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# THE ACTION & REACTION

Newsletter of the Mid-Michigan Section of the American Institute of Chemical Engineers

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## Team MMAIChE Claims 2<sup>nd</sup> Homebrewing Title

BY DAVID COULING

This year's Fall AIChE meeting in Pittsburgh featured the 2<sup>nd</sup> annual Young Professionals' Beer Brewing Competition. Teams were required to present a poster detailing their process, including recipe, final alcohol concentration, and, naturally, a mass balance. The beer tasting and judging was performed according to the Beer Judge Certification Program (BJCP) standards and procedures. All told, there were over thirty entries to the competition.

Team MMAIChE, consisting of Bill Liechty, Scott Tipler, David Couling, Bala Sreedhar, and Pat Heider, submitted three entries: "Beyond a Reasonable Stout" (Stout), "Saison's Greetings" (Saison), and Open Loop IPA (New England IPA). Beyond a Reasonable Stout claimed the "Biggest Beer" award for the highest starting gravity, and "Saison's Greetings" claimed the grand prize, based on 80% tasting score and 20% poster presentation.

Please congratulate Team MMAIChE on a job well done!



*Bill Liechty Representing Team MMAIChE in Pittsburgh*

## Great Lakes Bay STEM Festival

BY DEBOLEENA CHAKRABORTY, K-12 OUTREACH CHAIR

The 2018 Dow Great Lakes Bay STEM Festival took place on Friday and Saturday, 12<sup>th</sup> and 13<sup>th</sup> October at Delta College. According to the organizers, Mind Trekkers of Michigan Technological University and the Science Division at Delta College, a total of 3750 middle school students and an additional 1000 community members attended over the course of two days through organized field trips.

Over 30 different organizations came together to host over 150 hands-on activities and demonstrations for the students. This year, Mid-Michigan AIChE brought back a number of hands-on activities that demonstrated friction in packed granular systems, density flotation separation of solids and introduced the important chemical engineering concept of scaling up and troubleshooting a unit operation using the making of lemonade (Thanks to Mr. Tim Geiger of Mattoon & Lee Equipment of Farmington MI). For the scale-up demonstration, we start with how to stir and dissolve sugar in a short beverage glass to make lemonade, then progress to a taller glass followed by a pitcher while comparing the time and effort required and discussing the efficiencies and economic profits gained.

The students can try to stir the undissolved sugar (simulated using fine white sand and small red colored beads) and actually feel the difference in fluid resistance on the spoon.

After experimenting with the beverage glass and pitcher-scale processes, we move on to illustrate a failed attempt to stir and suspend undissolved sugar in a larger un-baffled tank using a motorized agitator. We guide the students in observing the defect in the flow, as evidenced by the formation of a deep vortex and accumulation of sugar at the vessel bottom, and demonstrate how to correct the problem by adding baffles.

With the generous help of Mike Molnar of Dow Performance Silicones, MMAIChE also introduced a new exhibit station that demonstrated the concept of fluidized bed drying operations. The set up was a retrofitted hand-held vacuum with adjustable suction. The team demonstrated the impact of particle size and density on the degree of fluidization using sand and cotton balls as examples. We introduced the concept of fluidized bed dryer and troubleshooting using these examples. With interactive demonstrations the volunteers made possi-



ble an engaging, hands-on, relaxed environment for area youth and their families to experience the "WOW" of STEM. The demonstrations and discussions gave many young minds an insight into career opportunities in Chemical Engineering.

Mid-Michigan AIChE recognizes the following individuals for volunteering at the Festival to make this event a huge success: De-Wei Yin, Stacie Santhany, Patrick Heider, Thu Vi, Jing Luo, Jay Rose, Michael Molnar, Margaret Hwang, Jyo Lyn Hor, Meera Shete, Joseph Dewilde, Balamurali Sreedhar, and Deboleena Chakraborty. If you are interested in helping with MMAIChE K-12 outreach activities in the future, please contact Deboleena Chakraborty (for contact information please see the newsletter masthead).

# Words from the Chair: Lifelong Learning

BY JAY ROSE

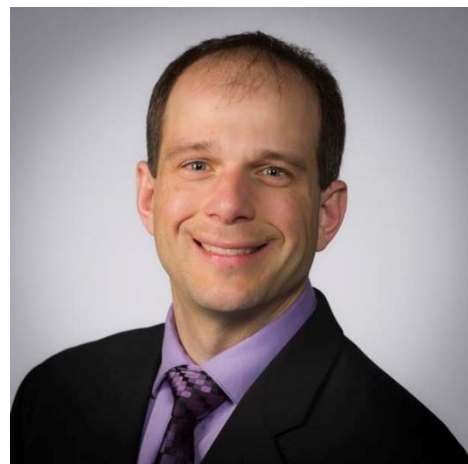
It was once said, "Develop a passion for learning. If you do, you will never cease to grow." As the MMAICChE season gets into full swing, I hope you are finding things that help you continue to grow. I was inspired by the faces of the children attending the 2018 Great Lakes Bay STEM Festival. Seeing their expressions, as they try to push the piston on the squirt gun and learn about surface tension in the process. Their level of curiosity is energizing.

If your curiosity lies in learning about and from the environment around us then our seminar series gave you some interesting things to ponder. I had no idea that the very soil under our feet, used in a better way, could help solve part of the issue with rising levels of CO<sub>2</sub> in the atmosphere. Or how animals and plants have developed complex chemistries to solve issues like

better surface adhesion. For me it is easy to be curious about the wonders in nature.

Stay open to your curiosities. They can come from the least likely of places. Ever been strolling through Meijer, and saw the explosion of the number of "Craft Beers" they offer and wondered how you might be able to brew your own? Well, the MMAICChE team is now the two time winner of the annual AICChE Beer Brewing Competition. So you can ask one of the team members for some tips for brewing that winning taste.

I hope some of what MMAICChE is offering is developing that childlike level of perpetual curiosity in you that will help you continue to grow. And if not, I would be happy to hear your thoughts about how we could expand in your area of curiosity.



Sincerely,  
Jay Rose

## Coming Soon: 2019 Undergraduate Chemical Engineering Education Scholarship

BY SHEILA COMBAR-FETNER, SCHOLARSHIPS CHAIR

### Chemical Engineering Education Scholarship

Mid-Michigan AICChE strives to promote the vision of the American Institute of Chemical Engineers (AICChE) by offering financial support to high school seniors who wish to study and ultimately become professionals in the field of chemical engineering. The scholarship will reward past academic performance as well as school and community involvement. It is not strictly based on financial need. It is intended for a student who has demonstrated a high proficiency in core academic courses and who has a high probability of success at obtaining a chemical engineering degree.

**Who:** High school seniors in the Great Lakes Bay Region.

**What:** A \$2000 scholarship over 4 years to study chemical engineering. Past winners of the scholarship must re-apply prior to each upcoming academic year.

**Where:** Any ABET-accredited chemical engineering program. If the senior is not enrolling in a traditional 4-year institution with an accredited chemical engineering program, please explain in the application how the alternative program has been designed to result in a chemical engineering degree from an accredited program.

**When:** Begins Fall 2019.



**Application Period:** Applications are accepted from February 11 until March 29, 2019.

Submit applications online at:  
[www.aiche.org/community/sites/local-sections/mid-michigan/scholarships](http://www.aiche.org/community/sites/local-sections/mid-michigan/scholarships).

Questions? Contact Sheila Gombar-Fetner at [SGombar-Fetner@dow.com](mailto:SGombar-Fetner@dow.com)

# Speed-Networking with U. of M.

BY PAT HEIDER, YOUNG PROFESSIONALS CHAIR

On November 29<sup>th</sup>, the MMAIChE hosted 13 chemical engineering students from the University of Michigan to kick off the third year of our university outreach program. The student group was made up of student chapter members ranging from sophomores just starting their undergraduate education to graduate students in the fourth year of their research program. The students arrived at Michigan Operations where they were taken on a tour of three different plants. They started with a multiproduct agricultural chemicals plant where they saw how many different products could be made in a reconfigurable batch process involving reactors, distillation, crystallization, drying, and packaging. They were given the tour from a recent University of Michigan graduate who talked a bit about the transition from school to industry. Next the students visited the ETHOCEL plant where they saw how paper was transformed into a polymer used in pharmaceutical tablets. This was a very different plant where some highly specialized equipment was used to handle specific unit operations involved in the process. Lastly, the students went across the street to visit a

silicones plant for the first time in the program. Here they saw another multiproduct plant where many different silicone products are formulated for many different customers. The students were able to get a close up look at several of the pieces of equipment used in the process from pumps to filters.

Following the plant tours, the students met with a number of volunteers from MMAIChE in a round of speed networking. In a one-on-one pairing, each student got to meet with each networking mentor for 5 minutes where they had to quickly give an elevator speech on their interests and then learn about the career of each mentor. The mentors spanned a wide range of careers from process engineers only a few years out of school to career chemical engineers who have worked throughout Michigan Operations to managers in R&D to specialists in life cycle analysis and sustainability. This was an opportunity to find someone each student could connect with to get feedback on the student's career in chemical engineering.



The students had an enjoyable day despite some initial snow as the students drove up to Midland. Their corporate outreach team contacted MMAIChE and we were happy to continue the program and host another group of students out of the University of Michigan. We plan to continue the program in the spring by inviting the recently formed Kettering University AICHE student chapter and Michigan State University who visited last spring as well. If you are interested in participating in the young professional outreach, please contact Patrick Heider ([plheider@dow.com](mailto:plheider@dow.com)).

## Scenes from the 2018 MMAIChE Kick-Off





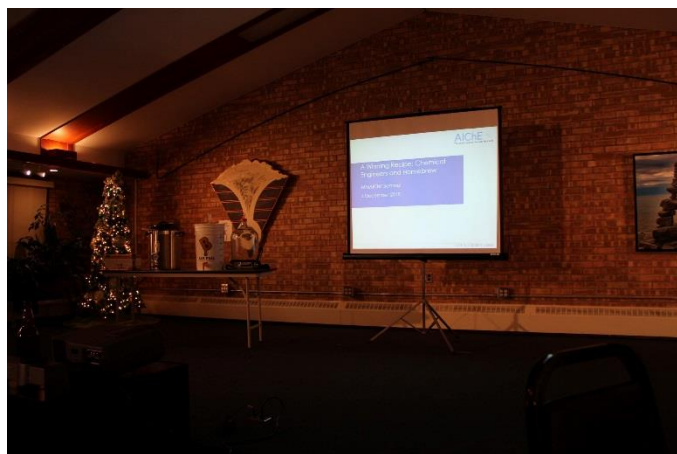
# 2018-19 Fall Seminar Series



*France Guertin's October seminar on Biomimicry*



*Becky Ladewski's November seminar on Sustainable Farming and Carbon Sequestration*



*Bill Liechty, David Couling, and Bala Sreedhar in the December seminar on Homebrewing*



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## 2018–2019 Seminar Schedule

Event	Date, Time, and Venue	Speaker and Topic
October	October 09, 2018, 6–7:30 pm Grand Traverse Pie Co., Midland	France Guertin The Dow Chemical Company <i>"Biomimicry – Inviting Nature @ Our Innovation &amp; Design Table"</i>
November	November 15, 2018, 6–7:30 pm Grand Traverse Pie Co., Midland	Becky Ladewski Ber-Nell Farm <i>"Hitting Pay Dirt: How Sustainable Farming Can Help Mitigate Climate Change"</i>
December	December 4, 2018, 6-7:30 pm Creative 360, Midland	Bill Liechty, Scott Tipler, and David Couling The Dow Chemical Company, Dow AgroSciences <i>"A Winning Recipe: Chemical Engineers and Homebrew"</i>
January	January 16, 2019, TBD Location TBD	Greg Theunick The Dow Chemical Company <i>"Process Intensification: Using LESS to Make MORE"</i>
February	February 2019, TBD Location TBD	Sarah Eck Corteva <i>"Process Safety"</i>
March	March 2019, TBD Location TBD	TBD
April	April 17, 2019, 6–7:30 pm Grand Traverse Pie Co., Midland	Ron Leng Corteva <i>"Defining Moments – things I didn't learn in school that shaped my career"</i>
May Spring Banquet	May 2019 Location TBD	Hank Kohlbrand HT Consulting <i>"Food-Energy-Water Nexus"</i>