
THE ACTION & REACTION

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

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MMAICChE 2018: Looking Back on a Successful Year

BY TED CALVERLEY, NOW PAST CHAIR

As we prepare for the upcoming 2018/19 season of MMAICChE activities, it makes sense to look back briefly and reflect on what we accomplished in the 2017/18 season. Ron Leng, Program Chair, put together an excellent program that, coupled with Yi Fan's communication plan, drew higher attendance numbers than we have had in recent years. The themes of the talks were consistent with our mission and included recent trends in the chemical industry, the impact of technology on society, and career paths for chemical engineers.

Our year end banquet, held on May 16th at the Great Hall followed the trend from our seminar series as attendance of over 40 people was higher than in recent years. The highlight of the evening was Mark Weick's talk "The World We Can Create Together". Mark's inspirational message was that we can and we must find ways to ensure the continuing prosperity of humanity consistent with the health and prosperity of our planet and its eco systems. Specific to this audience was the message that chemical engineers are essential to realizing this mission, both because of the technical skill sets of the profession and because of our spheres of influence within the chemical industry and our communities. The question, answer and discussion continued well past the formal end of the evening – a sure sign that some of our members were inspired by the message. For more detail on the seminars of this past season, see Ron Leng's summary in a separate article in this newsletter.

Our STEM outreach efforts were led by Leena Chakraborty for this past year and in addition to being part of the 2017 Great Lakes Bay STEM Festival on October 6th –

7th at Delta College, Leena and her team engaged with over 400 students from local middle schools in exercises demonstrating the scientific method. Patrick Heider stepped in to take over leadership of the Young Professionals efforts of MMAICChE and a successful "Project Connect" grant request from the national AIChE society helped us create an active YP season. These programs are summarized in greater detail later in this issue. Noteworthy in the YP efforts, Alan Stottlemeyer, who has been very active in serving and promoting MMAICChE in recent years, proposed that he partner with Pat for a full year of transition as Alan prepares for a job-related move out of the Midland area. This model of having explicit transition plans, and significant overlap periods for committee chair roles is something I hope the MMAICChE executive and individual chairs will strive to adopt as the future norm.

Finally, as my term as chair fades into memory, let me describe why I'm optimistic that the MMAICChE will remain relevant in the foreseeable future.

- Our current committee chairs are energetic and take personal ownership of making their roles meaningful and productive.
- We have diversity, particularly among our most active members and committee chairs. This diversity – of age, gender, ethnicity and nationality is vital to the long term relevance of the MMAICChE, so I think we need to be active in further strengthening this aspect of our section by actively recruit-

ing chemical engineers who reflect the diversity of the 21st century workplace.

- We have history and wisdom. Our long-term members continue to contribute to MMAICChE events. These people retain the history and experience of decades of section history, while encouraging and embracing the new ideas and initiatives of our younger members.
- We have a viable constituency. The mid-Michigan region is brimming with engineers, chemists and technologically engaged citizens. This gives us the ability to draw people out to events for seminar themes that include "current trends in engineering practice", but we also find that topics related to the impact of technology on society is a popular theme that engages a broader audience in this community.

Please read the summaries of our 2017-18 accomplishments, written by our committee chairs, and think about how you would like to become engaged. All of our activities are team efforts, giving you the option to take on a little or a lot in terms of time and accountability. With Jay Rose assuming the role of Chair for 2018-19 and then Stacie Santhany taking the role in 2019-20, I'm very comfortable we'll have energy to drive an excellent suite of programs in the coming years.

Spring Seminar Series Recap

BY RON LENG, 2017-18 PROGRAMMING CHAIR

The first half of 2018 provided some fantastic seminars, and I am excited about the opportunities that the second half will bring.

January's seminar was delivered by Claudia Walecka-Hutchinson on how the widespread use of chlorinated organic solvents and their subsequent disposal practices resulted in extensive global soil and groundwater contamination. Claudia, a Dow EH&S remediation manager, discussed how *in situ* bioremediation is a favorable alternative to conventional methods as it transforms the contaminants to stable, non-toxic end products without bringing groundwater to the surface, potentially reducing remediation costs.

In February, Leo Chiang, associate technology director at Dow, discussed recent advancements in the big data analytics journey at The Dow Chemical Company in the areas of Enterprise Manufacturing Intelligence, multivariate analysis, on-line fault detection, inferential sensors, and batch data analytics. We learned how Big Data analytics is the journey to turn data into insights for more informed business and operational decisions.

Paul Vosejka, Global R&D Director Formulation Science, Core R&D The Dow Chemical shared his insights at our March meeting, into the future of automotive transportation including many of Dow's initiatives to develop more fuel efficient

and safer components for the auto industry. Get ready for autonomous vehicles; they will be a reality... in the not too distant future.

In April, we invited author and historian John Laurence Busch to town for a highly interesting lecture on the technology and effort in building the first steam powered ship, the *Savannah*, to cross the Atlantic Ocean. Mr. Busch has done a huge amount of research into this steamship technology and the life of Captain Moses Rogers, and has delivered hundreds of lectures both here and abroad on the topic which he has rigorously documented in his book *The Steam Coffin* which was made available for purchase.

Finally, at the annual meeting in May, Mark Weick, *Director of Sustainability and Enterprise Risk Management at The Dow Chemical Company*, delivered an inspirational talk on sustainability titled *The World We Can Create Together*, with abstract below:

If we as humans are to make the transition toward a sustainable relationship with the other life on this planet we share, chemical engineers will be at the forefront with mind and body, heart and soul. My experiences in this journey are informed by a 35-year technical career as a chemical engineer at The Dow Chemical Company - the past 10 directing the creation and accomplishment of sustainability goals and programs. I've



Mark Weick's Keynote Address

*come to realize that market transformation toward sustainability is going to require not only great advances in chemical engineering technology and business strategy shifts, but also the more difficult shifts in public policy and human culture. I think the needed shifts in public policy and culture can be accomplished as we create and tap into a revived romantic and artistic vision for the symbiotic, beautiful, and sustainable relationship that humans can have with other life on this planet we share. I plan to discuss how we can steer ourselves and those around us toward a positive sustainability vision, and the critical role of chemical engineering in *The World We Can Create Together*.*

All in all it was a great season of engaging speakers, and we hope you can join us this Fall as the excitement continues!

Please join us for a Fall Kickoff Meeting at 6 pm at Oscar's in Midland (140 E. Main St) on September 25!

MMAIChE Section Award Recipients Honored At Spring Banquet

BY MIKE MOLNAR, AWARDS COMMITTEE CHAIR

Each year the Mid-Michigan AIChE Section recognizes distinguished members by presenting awards at the Annual Spring Banquet. This year MMAIChE recognized three extremely qualified honorees.

Young Chemical Engineer of the Year – Greg Theunick



Greg obtained a Bachelor's degree in Chemical Engineering from the Michigan Technological University in 2006 and became a licensed Professional Engineer in 2013. After early experiences at an EPC, he joined Hemlock Semiconductor Corporation (HSC) in February 2008 as a Process Design Engineer. In January 2015 Greg moved to Dow Corning Corporation (now Dow) and joined the Process R&D Engineering Sciences team. This individual has worked on several successful projects across both HSC and DCC and now Dow.

At HSC, Greg was directly responsible for process design activities for over \$500 million in process capital and oversaw the work of 6 external EPC firms related to Solar expansion (primarily in distillation areas and infrastructure). At Dow Corning and now Dow, he has had numerous successes troubleshooting distillation challenges. One such was a capability improvement project on a problematic reactive distillation column. This shared asset was used to produce a highly profitable silane, but the product was hampered by excessive waste particularly during start-up product transitions. He brought the technical understanding of distillation to the control room to help educate the area, thus making it a point

to learn from the historical experiences the operators had encountered and while at the same time tackling the problem with a scientific approach. Manufacturing continues to benefit from our winner's time as the effort associated saved over \$300,000 in annual expense as well as freeing up time for other work. On another project, Greg replaced the pressure control strategy on a dual stick distillation process, resulting in another \$500,000 in expense savings through avoidance of out of specification material resulting from pressure deviations in the second column.

Greg recognized the value for and has successfully established a global Natural Work Group (NWG) within Dow Corning for distillation practitioners across the enterprise, which has turned into an active forum of 50+ members that get together bimonthly to share distillation knowledge and expertise. The payback on this NWG has been seen in a broadening of technical understanding across the enterprise and identification and resolution of process performance issues scattered across the plants. Following the acquisition by Dow, our recipient raised awareness within the Dow separations community and as a result practitioners and experts from all over Dow now participate in the NWG. With over 160 members from different functions and businesses, the forum has become the global platform for process separations.

Greg has also been active within the Mid-Michigan Local Section, serving since May of 2015 as Membership Chair. Within the national AIChE organization, Greg presented at the 2017 AIChE Spring Meeting's Kister Distillation Symposium, sharing a troubleshooting case study with industry experts in the field of distillation ("*Rectifying a Reactive Distillation Column*"). He is also active on the Dow RAPID (Rapid Advancement of Process Intensification Deployment) team serving as the focus area lead for Modular Manufacturing. At the 2018 AIChE Spring Meeting on modular manufacturing, he delivered what is needed to further advance the implementation of

this strategy with a presentation titled "*Building with Blocks.*"

Service to Society Award – John Anderson



For this year's recipient of the *Service to Society* Award, a 37 year chemical engineer in Corteva™ Agriscience, the Agriculture division of DowDuPont™, serving society is a way of life.

John Anderson has had a long-standing service to the AIChE serving as past chair of Mid-Michigan Local Section and chairing the AIChE Process Development Section Scale Up Symposium in 2012. Within Dow and now Corteva, he is an expert in economic process analysis and has presented talks at AIChE conferences and authored a number of papers in *Chemical Engineering Progress*, freely teaching cost estimation expertise to the greater chemical engineering community. As an example, he is currently preparing an AIChE webinar on cost estimation that will reach even more engineers via the internet.

John has been actively involved in his local church leading teams of youth into areas of Kentucky, South Carolina, Oklahoma and West Virginia to help out with mission and outreach projects. He has donated personal time and expenses to be a part of the Hurricane Katrina rebuilding project in New Orleans, Hurricane Harvey in Texas as well getting involved with local Habitat for Humanity projects. On one occasion John visited Haiti to deliver needed supplies to a children's hospital, and also organized the

shipment of surplus lab equipment to a Peace Corps project in Africa.

John is also an active member of the Midland Kiwanis group, serving as secretary and president while assisting with the construction of playgrounds and picnic shelters within our community. John is an accomplished saxophone player and has used this talent to entertain many people in the Tri City area. He has played at numerous charitable events including Relay for Life, Magic Ride, United Way Kickoff, and the Dow Gardens Christmas Walk. Additionally, John has also inspired young people in

the arts having served as the Jazz Band Director at Jefferson Middle School and the Pit Orchestra Director for Dow High musicals. Another area of volunteerism has been mentoring local underprivileged youth. For several years John has worked with teens from the Juvenile Care Facility through programs sponsored by Judge Doreen Allen, and has also been involved with the Actso Jazz Ensemble outreach to underprivileged youth in Saginaw County.

On a final note, John is a survivor of leukemia and so often volunteers for Midland Cancer Services to play saxophone at

events or to share the miracle of life a person can give by donating organs for transplant.

On the behalf of Mid-Michigan AIChE, we would like to congratulate John Anderson as a recipient of the Service to the Society Award for the 2017-2018 program year. John is the first two time recipient of this award in the history of our section, an accomplishment that is well deserved.

Congratulations to all this year's award recipients!

Honoring the MMAICChE Scholarship Recipients

BY SHEILA GOMBAR-FETNER, SCHOLARSHIP CHAIR

Chemical Engineering College Scholarship Awarded to Gabrielle Reszke



Gabrielle Reszke, a graduating senior at Pinconning Area High School, received the 2018 AIChE College Scholarship. The Mid-Michigan AIChE Chemical Engineering Scholarship is a \$2000 scholarship awarded over 4 years to a graduating high school senior from the Great Lakes Bay region and neighboring counties who plans to study chemical engineering at an accredited university or college. The scholarship rewards academic performance, as well as school and community involvement. It is intended for a student who has a high probability of obtaining a chemical engineering degree and becoming a practicing engineer. Gabrielle plans to attend the University of Michigan in the fall to study chemical engineering.

During her high school years, Gabrielle was Treasurer of the National Honor Society and Vice President of Student Council, co-captain of the varsity volleyball and basketball teams, and on the varsity track and field team. Gabrielle was a member of the 4-H Club, cantors and alter serves at her church, and is a Peer Mentor at school. She has received the American Chemical Society Outstanding Chemist Award, the Society of Women Engineers Award of Merit, and the Daughters of the American Revolution Good Citizen Award.

MTU Summer Scholarship Awarded to Tanner Reeds



The Section awarded the 2017 Engineering Exploration Scholarship for the Michigan Tech Summer Youth Program to Tanner Reeds of Gladwin High School. Tanner is

an ascending junior who decided to attend the Electrical and Computer Engineering program. Tanner plays on his school soccer and basketball teams. He also volunteers at a local non-profit re-sale store in West Branch that provides clothing, toys, and school supplies to foster children free of charge.

The MMAICChE Engineering Exploration Scholarship is open to students in grades 9-11. This scholarship provides an opportunity for a student from the Great Lakes Bay region and neighboring counties to explore science and engineering careers through hands-on laboratory, classroom, and field experiences at the Michigan Technological University Engineering Explorations Summer Youth Program at the MTU campus in Houghton, MI. The scholarship includes tuition, room, and board, along with a travel allotment for a one-week exploration during the summer. In providing this scholarship, the Section seeks to help young people learn about engineering careers.

But Mother Nature surprised us this year! The Keweenaw Peninsula experienced record rainfall on Sunday, June 17th that caused flash flooding in Houghton, resulting in cancellation of all camps that week. Tanner and his family were contacted by MTU personnel as they were driving through the U.P. to Houghton, and were forced to return home. The university was unable to reschedule, so MMAICChE received a refund and will sponsor Tanner at SYP camp *next* summer instead, in addition to our 2019 scholarship winner.

STEM Outreach 2018: Surface Tension at Midland Middle Schools

BY DEBOLEENA CHAKRABORTY, K-12 OUTREACH CHAIR

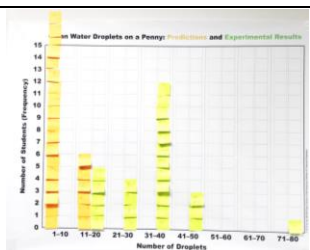
In the academic year 2017-2018, MMAICHe reached out to a total of 420 7th graders in two local Middle schools in Midland, MI to introduce the concept of surface tension through three simple experiments. In the first experiment, students attempted to place as many drops of clean water as they can on a penny and learn that it is something called surface tension holding the blob of water together. In the second experiment, students used soap to weaken the surface tension of milk and observe the induced flow patterns traced by streaks of food coloring. In the third part, students applied the knowledge gained from the first

two parts and repeat the first experiment using soapy water. Students also practiced aspects of the scientific method in this lesson.

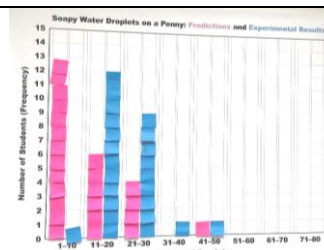
MMAICHe reached out to ~271 7th graders in North-East Middle school on April 13th and April 20th and to ~148 7th graders in Jefferson Middle School on June 12th. MMAICHe wants to extend their heartiest thanks to Ms. Rebecca Stinson and Ms. Victoria McPeak of North-East Middle School and to Ms. Jennifer Lehman of Jefferson Middle School for arranging these class room demonstrations. With these interactive experiments and demonstrations the volunteers made possible an engaging,

hands-on, relaxed environment for young minds to experience and explore the concept of surface tension and relate that to explain various phenomena around them.

Mid-Michigan AICHe recognizes the following individuals for volunteering at the schools to make this event a huge success: De-Wei Yin, Megan Donaldson, David Couling, Patrick Heider, Mrunmayi Kumbhalkar, 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).



Bar graph of predicted and actual number of drops of clean water on a penny



Bar graph of predicted and actual number of drops of soapy water on a penny

Outreach to Local Universities

BY PAT HEIDER, YOUNG PROFESSIONALS CHAIR

The past year saw MMAICHe host two groups of chemical engineering students from local universities using funds from the national AICHe Project Connect Grant program. In the fall of 2017, we hosted 14 students from the University of Michigan to visit Dow's Michigan Operations site. In the spring of 2018, a group of 10 students from Michigan State University also traveled to Midland for a plant tour and speed networking session. This is the second year running the event and was the first time MSU has participated.

The students arrived for lunch and then went on a tour of process R&D labs in Dow's 1710 building. Here they saw mini-

plant and kilo-lab reactors used to make different Dow products. They also toured environmental operations and got to climb to the top of the kiln while learning how a large industrial site treats its solid and liquid wastes. The students were especially excited to see what full scale equipment looked like in use rather than just boxes on a process flow diagram. They also got to see Dow's METHOCEL plant which makes a product that goes into a number of different consumer items. The MSU students were surprised to see one of their own recent graduates giving the tour.

The day wrapped up with a two hour speed networking session. This event brought together several MMAICHe members from

all points in their careers across a number of disciplines to spend approximately 5 minutes talking to each student. The students were able to practice their networking skills and make connections that they could then draw on in the future to help them during their undergraduate career and as they look to career options once they graduate. MMAICHe plans to reapply for Project Connect again in fall of 2018. If you have an interesting plant or business you think students would like to see or if you want to be a mentor, contact Patrick Heider (plheider@dow.com) to find out about plans for 2018-2019.

Words from the Chair

BY JAY ROSE

This issue kicks off a new year for the Mid-Michigan AIChE and with each new season, we have new people filling key roles for the local chapter. On the experienced side of personnel changes, Stacie Santhany from Core R&D, Process Science, has agreed to take the role of Chair Elect for 2018-2019 and will take over the role of Chair next season. Pranav Karanjkar, from Dow Performance Silicones, has agreed to take on the role of program chair from Ron Leng.

I am looking forward to the 2018-2019 MMAICHe session. The Executive Committee is already working to deliver a great program of events this year.

I want to thank Ted for his contributions and guidance as Chair this past session. Similarly, I want to thank Stacie for all her efforts as the past chair. But also congratulate her on a second tour as chair elect. I am excited to continue to work with both of them as the year progresses. MMAICHe

has a great history, from its humble roots in 1952, the chapter continues to bring robust programming covering a wide range of topics and working to engage engineers and the community. This coming year will be no exception, our kick off meeting is planned for Tuesday September 25th.

We have a building list of potential technical seminar topics and our outreach programs are strong. We also hope to continue great work with national chapter by building on some great items from the past year, like defending the AIChE Beer Brewing Nation Championship at the annual meeting.

As 2019 unfolds, one constant is there will always be change, as the spins of the three companies Dow, DuPont, and Corteva become reality, MMAICHe is a great place to build a network but also keep those valued relationships going. We are always in need



of energetic individuals that want to contribute. If you are interested don't hesitate to contact one of our team members.

Thank you for the opportunity to serve the chapter this year.

Sincerely,
Jay Rose

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