The Newsletter of

The Mid-Michigan Section of AIChE

American Institute of Chemical Engineers

Mission: To provide opportunities to continuously develop our members professionally – while working with the community to improve the understanding of science and engineering and their impact on society.

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In this issue…

The Annual Spring Banquet was held May 21 at the Great Hall in Midland. Maxine Cottrell (left), 2013-2014 Section Chair, presided over the evening's events. Here she is with Kristen Gooshaw, Webmaster and Young Professionals Co-Chair, and Dewey Yin, Educational Outreach Chair and this year's Young Chemical Engineer of the Year. See pages 4-8 for more about the evening's events.

Words from the Chair…

Summer is now in full swing, providing opportunities for outdoor activities, extra time with the kids, and vacations. For the Mid-Michigan section of AIChE it is a time of transition to a new chair person (and other executive council members and committee chairs), an opportunity to reflect on the events of the past year, and a revving up for the upcoming year. As I take over as chair, I am very grateful for the impact of the chairs who have gone before me, many of whom are still very active in the section and provide tremendous support. I want to give a special note of thanks to Maxine Cottrell, who did a fantastic job leading our section this past year, and is a continuing resource this year serving in the capacity of past chair. Her vibrancy and enthusiasm give a lift to our section activities. I also want to acknowledge the ongoing services our very capable secretary, Bruce Holden, and treasurer, Eric Stangland, who keep our section organized and solvent; as well as our directors, Norm Lake, Tim Frank, and Paul Kehl, who provide historical perspective and wise council. (Tim is also the very capable editor of our newsletters.) Tom Gregory is a welcome addition to the executive council as the new chair-elect.

The real stars of our section are the committee chairs who volunteer their time to plan, organize, communicate, and provide opportunities for our members and community to get to know each other, have some fun together, participate in continuing education, and reach out. In this edition of the newsletter, you will find a recap of many of these activities. Vishesh Shah, our Programming Committee chair, put together a great seminar series, including a couple of field trips to B&P Process Equipment and the Tri City Brewing Company. We also had a group of very impressive students tell us about their experiences with the FIRST Robotics competition. You can read about this great STEM outreach program below. Vishesh is working hard to identify and invite speakers for the upcoming year, that will highlight some interesting technologies, ChE entrepreneurs, academic activities, and foundational speakers. We welcome any suggestions that you may have for seminar topics or speakers (please contact Vishesh or any of the section officers).

Dewey Yin, our Education and Outreach Committee chair and also the recipient of the section's Young Chemical Engineer of the Year award, was instrumental in getting the Mind Trekkers from Michigan Tech involved in the fall science fair at Delta College to create the first annual Great Lakes Bay Science and Engineering Festival. He is currently working with a team to develop some new science and engineering demonstrations and lessons to take into the local middle school classrooms this fall. He will be looking for volunteers for both the classroom demos and this year's festival, so if you are interested, please contact Dewey. We are also partnering with our allied professional organizations, such as ASC, SWE, and NOBCChE, by making you aware of opportunities to help with their STEM outreach events. I encourage you to get involved with these opportunities to influence the next generation of diverse, excited, and well educated scientists and engineers.

Anshul Agarwal and Kristen Gooshaw, our Young Professionals (YP) committee co-chairs, have been busy helping the newest generation of engineering students and young professionals to get involved and stay excited. You can read about Anshul's experiences at the North Central Student Conference held at Michigan State last April and the excitement around the Chem-E-Car competition. The YP group is staying active this summer with a home-brewed beer competition followed by a tasting event scheduled for the fall. If you want to be included in some of the fun

activities that Anshul and Kristen are cooking up, please contact them. Kristen is also our very capable webmaster, maintaining our website, Facebook page, and LinkedIn group. You can check these resources to stay abreast of sections news and activities. Our Publicity Committee chair, Mike Durisin, helps to keep the community aware of our activities by submitting announcements to the local media outlets for publication in advance of the events (including *Midland Daily News*, the *Bay City Times*, the *Flint Journal*, Public Radio and Television at Central Michigan University and Northern Michigan University, contacts in organizations such as the Engineering Society of Detroit and the Society of Women Engineers, etc.). Anshul is also our Membership Committee Chairperson and would love to talk with you about how to become a member of the local section. Local dues go towards community and outreach activities, and our annual scholarships. The recipients of this year's scholarships were selected by Maxine and the Scholarship Committee and are highlighted below. We welcome Nancy Tseng as the new chair of the Scholarship Committee for the coming year.

We capped off this past year with our annual Spring Banquet, where we enjoyed a good meal, recognized our scholarship winners and section award recipients, and heard an outstanding speaker. Mike Molnar and his Awards Committee selected three outstanding award recipients this year. You can read about (and see pictures of) all of the award winners in the banquet highlights below.

I look forward to continuing these great section activities in the coming year, providing opportunities and services for our members, and an impact in the wider community. This is your section and I welcome your ideas and suggestions. I also encourage you to get involved with any of the many opportunities to focus on and highlight the science and practice of chemical engineering for the benefit of society, and to stay connected with the chemical engineering community in the Mid Michigan area. I look forward to seeing you at our kick-off event in September or at any of our upcoming seminars and activities.

Laura Dietsche
Chair, Mid-Michigan Section of AIChE

Scenes from the Annual Spring Banquet

Photos by Catalina Echeverri

The Annual Spring Banquet was held Wednesday, May 21, 2014 at the Great Hall Convention Center in Midland. Maxine Cottrell, the 2013 - 2014 Chair of the Section, presided over the evening's activities which included the presentation of awards and scholarships and introduction of the newly elected officers. The keynote address was given by Dr. Ronald Yocum.

Dr. Ronald Yocum, Chairman of the Board of Directors, Michigan Molecular Institute

Ron Yocum is well known for outstanding leadership in the chemical and polymer industries. In his remarks, Dr. Yocum talked about keys for success, stressing the need to take time to consider both sides of an issue, and to always look for new ways of doing things in leading an organization to be its best.

Dr. Yocum obtained a B.A. degree in chemistry from Gettysburg College and a Ph.D. in organic chemistry from the University of Pennsylvania. He has served as Global R&D Director for Product Development at The Dow Chemical Company, as President and Chief Executive Officer of Quantum Chemicals, as Chairman and CEO of the American Plastics Society, and as Chairman of the Board at Reilly Industries. Dr. Yocum also is a trustee and an executive committee member at Gettysburg College, a board member of the University of Cincinnati Foundation, a board member and an executive committee member of Munson Regional Healthcare Foundation, a National Advisory Board member of Boy Scouts of America, and Chairman of the Board of Cincinnati May Festival, the longest running classical choral festival in America. Dr. Yocum currently serves as Chairman of the Board for Michigan Molecular Institute.

We gratefully acknowledge Catalina Echeverri, our photographer, for capturing the evening's events.

The evening begins as Eric Stangland, Treasurer, makes sure everything is in order.

The evening included a little conversation before dinner. In the photo on the left, Paul Keil, Director, is seen chatting with Shawn Feist, former Chair, and Rebekah Feist. In the photo on the right, Rich Helling, former Chair, is shown with Patrick Smith of Michigan Molecular Institute.

Drew Hanover, Scholarship winner, speaking with Norm Lake, Director.

Maxine Cottrell, Chair, thanks Dr. Bernard (Bernie) Meister for 52 years of service as an AIChE member.

Tom Gregory, the new Chair-Elect, with Ron Yocum, Keynote Speaker.

Long-time member and former Chair Peter (Kip) Mercure speaking with Victor Atiemo-Obeng (former Chair and Director) and Laura Dietsche, Incoming Chair.

Laura Dietsche takes over the role of Chair from Maxine Cottrell.

Daniel Hickman Named Chemical Engineer of the Year

Michael Molnar, Chair of the Awards Committee, is shown congratulating Daniel Hickman on being named the 2014 Chemical Engineer of the Year. Dr. Hickman is a Fellow in the Reaction Engineering group, Engineering and Process Science Laboratory, at The Dow Chemical Company. He received a B.S. in chemical engineering from Iowa State University (1988) and a Ph.D. in chemical engineering from the University of Minnesota (1992). Daniel Hickman began his Dow career in 1992 on the Research Assignments Program, gaining initial experience generating kinetic data and developing kinetic models, modeling thermal runaways in various systems, and developing a new polymerization process. Since joining Dow, he has been a subject matter expert and technical leader in reaction engineering and process development for numerous reaction systems across a variety of Dow businesses and technologies. Dr. Hickman has led the development of kinetic and reactor models for many developmental and commercial reactor systems including stirred tank reactors, trickle bed reactors, and fluidized bed reactors. His contributions include designing reactors for three commercial processes, two currently in operation and a third under construction. Dr. Hickman holds 11 patents and is author of 13 articles in peer-reviewed journals and more than 130 internal Dow reports. He is active in the Catalysis and Reaction Engineering Division of AIChE and currently serves the reaction engineering community as a member of the board of directors for the International Symposium on Catalysis and Reaction Engineering (ISCRE).

Dr. Hickman is a highly accomplished practitioner of catalysis and chemical reaction engineering with a consistent record of leadership in these fields over the past twenty-five years. As a graduate student with Professor Lanny Schmidt at the University of Minnesota, his seminal work on the topic of short contact time reactors transformed the Schmidt laboratory and launched a new field of study for researchers around the globe. As a member and later leader of Dow's Reaction Engineering discipline, Dr. Hickman has driven his company to apply fundamental reaction engineering principles at all stages of the discovery and development process. While many of Dr. Hickman's contributions are of a proprietary nature, publicly documented examples of his invention of industrial catalysts and processes include: a catalyst and process for direct conversion of ethane to vinyl chloride; a continuous process for production of glyphosate; a reductive amination process for production of cycloaliphatic diamines; and a trickle bed hydrogenation process. In addition, Dr. Hickman has been actively engaged in advancing the application of sound chemical reaction engineering principles, such as in the field of microchannel microreactors. Besides these specific examples, Dr. Hickman's contributions to the fields of catalysis and chemical reaction engineering are manifest in many forms: new tools and resources that equip engineers and chemists to design and operate laboratory reactors in a manner governed by sound reaction engineering principles; discovery and scale-up projects executed effectively and implemented successfully; and external collaborations with university partners that both disseminate good practices and advance the fields of heterogeneous catalysis and chemical reaction engineering.

Dr Hickman has received much acclaim for his invention (with Professor Lanny Schmidt) of a short contact time process for conversion of methane to syngas at high rates and yields. This invention changed the course of the Schmidt research program for the next 20 years, as vacuum systems and lasers for surface science studies were replaced by short contact time reactor systems and supporting experimental and computational infrastructure. The impact of Dr. Hickman's graduate work extended well beyond the Schmidt group; his capstone publication in Science has been cited nearly 600 times.

Daniel Hickman actively promotes good reaction engineering practice both within Dow and in the public domain. He regularly contributes to the open literature with examples that teach these principles. For example, he has delivered numerous publications and presentations on trickle bed reactor, fluidized bed reactor, and microchannel reactor technology. Within Dow, he regularly teaches a short course on the proper design and operation of laboratory reactors, as well as a short course on modeling and parameter estimation. For the past several years, he has provided guest lectures to undergraduate students in the reaction engineering and process design courses at the University of Minnesota and Purdue University. Most recently, his reaction engineering peers recognized his leadership in the field by electing him to the board of directors of ISCRE, Inc. and he has been selected by the Board to chair the ISCRE-24 conference in 2016.

De-Wei (Dewey) Yin Named Young Chemical Engineer of the Year

Michael Molnar congratulates Dr. De-Wei (Dewey) Yin on being named Young Chemical Engineering of the Year for 2014. Dr. Yin has been involved with the Outreach Committee of MMAIChE for a number of years and is currently the Chair of Educational Outreach. He worked with the Mind Trekkers STEM Road Show from Michigan Tech University and Delta College to launch the first annual Great Lakes Bay Science and Engineering Festival, taking science, technology, engineering, and mathematics (STEM) educational outreach to a whole new level of community impact this year. He also helped to get the corporate sponsorship needed for this very successful event, and he organized the MMAIChE exhibit. Dr. Yin represented AIChE at the U.S.A. Science and Engineering Festival in Washington D.C. in April, 2014. He is leading MMAIChE's Science in the Classroom program in the local middle schools and has brought together a team (including a former middle school teacher) to develop new teaching modules that will include exploring engineering concepts using the scientific method and student interaction.

Dr. Yin holds a B.A.Sc. in chemical engineering (University of Waterloo), an M.A.Sc. in mechanical engineering (University of Waterloo), and a Ph.D. in chemical engineering from the University of Wisconsin-Madison. He is a member of both AIChE and the Canadian Society for Chemical Engineering. Prior to completing his Ph.D. studies, Dr. Yin worked at ANSYS Canada, Ltd. (formerly AEA Technology Engineering Software) and was a lecturer at the University of Waterloo. In his 6 year career at The Dow Chemical Company, he has been part of the Fluid Mechanics and Mixing discipline within Dow's Engineering & Process Science Laboratory where he has conducted fluid dynamics and mixing experiments, run computational fluid dynamics simulations, and used correlations and engineering know-how to solve critical business problems. Dr. Yin also is a licensed Professional Engineer in Ontario.

Michael Rehberg Honored for Service to Society

Michael Rehberg is recognized by Michael Molnar, Chair of the Awards Committee, for Service to Society. Michael manages Dow's venture capital investments in electronic materials and IT related companies, and also advises Dow's pension plan in private equity investments. Rehberg joined Dow in 1980 in the Process Control Department. In 1985 he was a project leader in the design and building of chemical facilities in Dow's California Operations. Moving in 1988 to the Computing Department, Rehberg implemented Dow's first network monitoring system to monitor and manage Dow's California IBM network. In 1990, he relocated to Midland, Michigan as architect of a high-capability computer network in support of Dow's initial implementation of SAP R2 in North America, and in 1992, he led the technical effort to implement a global TCP/IP network for Dow. Mike also has led Dow's technical IT activities in the telecommunications space, including in 1999 the Technical Architecture effort for DowNET. DowNET is Dow's Voice over IP (VoIP) breakthrough program with Cisco Systems that replaced every Dow employee's phone with a VoIP phone. In 2000, Mike was asked to take a board observer position on the board of one of Dow's IT Telecommunications portfolio companies. This led to a full-time roll in the Corporate Venture Capital group managing all of the IT direct investments, and working with Dow's IT focused venture capital funds.

Michael Rehberg's technical expertise in control systems and passion for working with students led him to be one of the first mentors for "The Charge", the Midland-based FIRST robotics team when it was established in 2010. He dedicated many hours to help the team members understand how to structure and write successful control schemes. As interest in FIRST robotics grew in the region, Mike recognized the need to collaborate rather than compete for funding of the different teams. He created a 501c(3) corporation to solicit and distribute grant money and other funds to the various teams in the region, now totaling six teams. His work was directly responsible for the successful launching of four new teams in the group. Mike has also taken on state-level responsibilities for the operation of the FIRST robotics program. He took his technical skills and business acumen to both help The Charge and significantly increase

opportunities for students throughout the Great Lakes Bay region to participate in FIRST and become excited about science and technology. Michael Rehberg has a B.S. in chemical engineering from Montana State University (1980).

ChemEs and FIRST – an Opportunity to Inspire!

By Rich Helling

Creating the next generations of passionate engineers is critical for our country, and for society and the environment on a global scale. We face many challenges that need inspired, new scientists and engineers. One way to do this is to provide high school students with interesting, challenging, competitive projects, such as in the FIRST (For Inspiration and Recognition of Science and Technology) robotics competitions. You might not think that chemical engineers would find a lot to do with robotics, but in fact there are excellent opportunities for any engineer to bring enthusiasm and share problem-solving, scientific method, and safety skills and experiences.

Mike Rehberg and Theresa Fletcher are two chemical engineers at Dow that have worked as mentors for "The Charge", the Midland-based FIRST robotics teams, and both agree "it's a lot of fun!" As mentors, they ask questions and bring up issues that the students should consider as they design and build their robots. They offer guidance on things such as programming logic and the basics of wiring and assembly.

In addition to the students who work on the design, building and programming of the robots, there ones who work on communications, funding, logistics and other aspects of having a well-functioning project. These are also things that experienced engineers can help with, with either a specific team or more broadly. For example, Mike is president of the FIRST of the Great Lakes Bay Region and active in the state-wide program.

FIRST is growing tremendously in our region, with twelve new teams in addition to four more well-established ones. There is a real opportunity for engineers to work with these teams and help the students understand how engineers approach challenges, and inspire them to STEM careers. One can certainly spend many hours on it – especially during the "build season" (in the first quarter of the calendar year) – but it is very rewarding work. It can also get quite exciting during the competitive meets! The Executive Committee of MMAIChE encourages chemical engineers in our area to volunteer with FIRST. For more details about FIRST, please feel free to contact Mike Rehberg (mcrehberg@dow.com).

Chemical Engineering College Scholarship Awarded to Drew Hanover

Drew Hanover of All Saints Central High School (Bay City) received the Section's 2014 College Scholarship. Drew is congratulated by Maxine Cottrell. Drew has been working all through his high school years, managing to effectively balance coursework, commitments to the All Saints hockey team, and professional commitments to his employers. Drew has demonstrated himself to be resourceful in his quest for knowledge. Drew has also been awarded the Michigan Technological Institute's Scholar of Distinction award. He is looking forward to earning his chemical engineering degree with a focus in helping people through work in pharmaceutical development and analytical testing.

The Mid-Michigan AIChE Chemical Engineering Scholarship is a $2000 scholarship awarded over 4 years to a graduating high school senior 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.

Students pursing this award are required to submit a letter of recommendation, their high school transcript, and complete an on-line application which includes an essay. The completed application package is judged by our committee based on the essay answer thoughtfulness and completeness, the quality of the application and the letter (or letters) of recommendation, and the breadth of coursework successfully completed. The committee that handled the scholarship selections this year was headed by Maxine Cottrell (Dow Chemical) and included De-Wei Yin, Alan Stottlemeyer, Nancy Tseng, and Maureen Ferries from Dow Chemical, Paul Kehl, and Norm Lake, formerly of both Dow Corning and Dow Chemical. The extra people were particularly important as we had several very strong candidates, which made our task very difficult.

MTU Summer Scholarship Awarded to Zackary Czinder

Maxine Cottrell presents Zachary Czinder of Bay City Central High School's Class of 2016 with the Section's 2014 Engineering Exploration scholarship to attend the Michigan Tech Summer Youth Program. Zach is a voracious reader and has a keen interest in learning more about engineering. He has decided to use the Summer Youth Program to explore chemical engineering. He is a bright, engaging student and a very enthusiastic person. We hope to hear more from Zachary in the coming years.

The MMAIChE Engineering Exploration Scholarship is open to students in grades 9-11. This scholarship provides an opportunity for a student from Mid-Michigan Tri-City area 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.

Students pursuing this award are required to submit a letter of recommendation and complete an on-line application which includes an essay. The completed application package is judged by our committee based on the essay answer thoughtfulness and completeness, the benefit of the program to the student, and the quality of the application and the letter (or letters) of recommendation.

A Recap of our 2013-14 Seminars

By Vishesh Shah with Photos by Catalina Echeverri and Anshul Agarwal

Did you check out the robots built by our local high school students? Did you avail of the opportunities to tour B&P Process Equipment and the Tri City Brewing Company? Or did you get a chance to hear from the professors that visited us from the University of Michigan or Michigan State University? These events were a part of our 2013-14 program series and I'd like to thank the speakers and organizations once again for making these events possible.

Doug Bartus gives an overview during the tour of B&P Process Equipment.

In May, we brought our annual calendar of events to a close at our Spring Banquet. Like previous years, we were once again fortunate to have an outstanding speaker with us. Dr. Ron Yocum (Chairman of the Board at Michigan Molecular Institute) traveled from Traverse City to talk to us about the ever-changing role of engineers in our society. His talk generated a lot of discussion among the more than forty chemical engineers present in the audience.

At the Banquet, we recognized three outstanding local chemical engineers. We also awarded scholarships to two high school students to encourage the next wave to pursue careers in chemical engineering. See pages 4-8 for photos of the evening, and pages 9-14 to learn about the award recipients. If you would like to nominate your colleagues for any of our awards for next year (Chemical Engineer of the Year, Young Chemical Engineer of the Year, Service to Society and the Noland Poffenberger Award), please visit http://www.mmaiche.org/ award_description.html to learn about the nomination process. The call for nominations will be sent out sometime in March of next year. For more information about our scholarships, please visit http://www.mmaiche.org/scholarships.html.

We've already started planning an exciting set of events for the coming year. If you have any specific requests about topics you'd like to hear about, I'd love to hear from you at vhshah2@dow.com.

Meet the Newly Elected 2014 - 2015 Officers

Chair – Laura Dietsche

Laura Dietsche has over 25 years experience in process conceptualization and equipment design, with a focus on advancing fluid mechanics and mixing technologies. After receiving a B.S. in chemical engineering from the University of California at Berkeley in 1981, Laura spent seven years at Dow Chemical's Agricultural Sciences R&D Laboratory in Pittsburg, California working on process development from lab bench scale to plant start-ups. She returned to Berkeley for her Ph.D. (1988-1992) and, after a post-doc assignment at Lawrence Livermore National Labs, rejoined Dow in the Engineering Sciences group of Core R&D in Midland, Michigan. At Dow, Laura is known for the application of transport fundamentals and computational fluid dynamics (CFD) tools to advance chemical processing capabilities and for the design of scaled-down high-throughput research devices. Laura is a leader in the CFD community at Dow and an instructor in the Dow Mixing Technology Workshop. In addition to her professional accomplishments, Laura is involved in enhancing the quality of engineering education both as a member of the AIChE Education and Accreditation Committee and as a program evaluator and commissioner for the Engineering Accreditation Commission (EAC) of ABET. Laura was recently elected to the EAC Executive Committee. Laura was the recipient of the 2010 Mid-Michigan AIChE Chemical Engineer of the Year Award and the 2011 Gary Leach Award from AIChE, and she was elected a Fellow of AIChE in 2013. As Chair, Laura will work with the Executive Committee to sustain and grow the programs and the impact of the Mid-Michigan Section.

Chair-Elect – Tom Gregory

Tom Gregory, currently retired from Dow Chemical, is at the helm of Borealis Technology Solutions LLC. Tom has been a member of both AIChE and The Electrochemical Society (ECS) for 36 years and has served ECS at both the local and national level. He received a B.S. in chemical engineering from Case Western Reserve University in 1978 and an M.S. in 1979, then spent 34 years at Dow Chemical working in a variety of R&D roles ranging from bench-scale basic research to production-scale process technology development. A significant portion of his career has involved chemical process conceptualization, analysis, development, and scale-up of technologies including ceramic powder production via co-precipitation, monomer production via catalytic and electrochemical methodologies, condensation polymerization via reactive extrusion, suspension polymerization to produce unique superabsorbent polymers, polymer drying technology, recovery and purification of fermentation-derived products via electrodialysis and simulated moving bed chromatography, and biochemical processes for production of organic chemicals. He is globally-recognized for his pioneering work in rechargeable magnesium battery technology and has also been involved in development of novel lithium ion battery and fuel cell-related technology. Tom retired from Dow in 2013 and formed Borealis Technology Solutions LLC, a consulting company specializing in chemical and electrochemical process analysis, design, and scale-up and electrochemical energy generation and storage. Tom frequently serves on review panels for the National Science Foundation's Small Business Innovation Research and Partnerships for Innovation programs. A Chair-Elect, Tom will work with the Executive Committee to enhance the Mid-Michigan Section's programs including presentations on timely subjects of importance to chemical engineers, outreach programs, and career enhancement opportunities.

Past Chair – Maxine Cottrell

Maxine Cottrell joined the Dow Chemical Company and moved to Midland in 2000. Currently she is the Global Process Engineering Technology Leader for the Dow Consumer Solutions Technology Center. Maxine began her Dow career in process engineering working on projects across the site and the globe, and since then has worked as a run plant engineer for Dowpharma and as an improvement engineer for Specialty Monomers. She has been very involved in mentoring new engineers at Dow Chemical, and in high school and college scholarship programs for the Section, currently leading those activities, and is active in the Section's Executive Committee. As a member of the Engineering Society of Detroit she has been involved for several years judging the Michigan Regional Future City Competition, engaging middle school students in creative and visionary application of STEM concepts. Maxine earned a B.S. degree in chemical engineering from Colorado State University (CSU). She is an active member of CSU's Chemical & Biological Engineering Professional Advisory Board.

Secretary – Bruce Holden

Bruce Holden is the current Secretary of the Section. He was appointed Acting Secretary by the Executive Committee in February of 2010 to fill a vacancy, and he was elected Secretary that year. Bruce has spent 36 years in process R&D, process engineering, and environmental services at The Dow Chemical Company. He is currently a Principal Research Scientist in the Process Separations Group of Dow's Engineering Sciences Laboratory. He is the recipient of the 2008 Doug Leng Award for excellence in engineering research at Dow, the recipient of the 2011 Mid-Michigan AIChE Chemical Engineer of the Year Award, a co-author of Section 15 on liquid-liquid extraction in the 8th edition of Perry's Chemical Engineers' Handbook, and was recently elected an AIChE Fellow. Bruce continues to serve the Section with a focus on timely communications and detailed record keeping. Bruce has B.S. and M.S. degrees in chemical engineering from Clarkson University.

Treasurer – Eric Stangland

Eric Stangland is a Senior Research Scientist in the Inorganic Materials & Heterogeneous Catalysis, Core R&D function, of The Dow Chemical Company, having joined the company in 2000. Eric began serving the Section as the Acting Treasurer in March of 2010, and was elected to the position in the 2010 election. He has previously served the Section as Membership Chair, Webmaster, and Editor of the newsletter. Eric is also active in the broader scientific community, particularly through both the Michigan Catalysis Society and the North American Catalysis Society. He was recently elected a Director of the AIChE Catalysis and Reaction Engineering Division. Eric continues to work with the Executive Committee to fulfill the financial accounting duties of the Treasurer by providing timely and detailed financial reports. Eric has a B.S. degree from the University of Wisconsin and M.S. and Ph.D. degrees in chemical engineering from Purdue University.

Director – Tim Frank

Tim Frank is a Dow Fellow and Associate R&D Director at The Dow Chemical Company responsible for managing the Process Separations group within Dow's Engineering & Process Science Laboratory. Since joining the Section's Executive Committee in 2009, Tim has worked with others to update the bylaws, streamline the election process, and provide a full schedule of meetings for members. Tim served as Chair of the Section in 2010 and was first elected a Director in 2012. As a Director, Tim is particularly interested in serving as editor of the Section's

Newsletter and working with others to promote the Awards Program and help grow the Section's Scholarship Fund. Tim has a B.S. degree from Montana State University and a Ph.D. in chemical engineering from the University of Colorado-Boulder. He is a Fellow of AIChE and editor and co-author of Section 15 on liquid-liquid extraction in the 8th edition of Perry's Chemical Engineers' Handbook.

Director – Paul Kehl

Paul Kehl moved to Mid-Michigan in 2001 where he performed technical service and development focusing on silicones. He has most recently been involved in manufacturing at Dow Corning where he was known for his technical expertise. As Director of the Section, Paul participates as a member of the Executive Committee in conducting the business of the Section. He is particularly interested in encouraging others to participate in the local section, and in pursuing efforts to grow and sustain the scholarship fund. Paul has a B.S. in chemical engineering from the University of Wisconsin.

Director – Norm Lake

Norm Lake has been an active member of the Mid-Michigan Section for many years, serving three terms as treasurer, eleven years as chair of the MTU Summer Youth Program scholarship committee, and more recently as Director of the Section and member of our scholarship committees. His career spans more than 28 years at Dow Corning in TS&D, process R&D, and as the Process Engineering representative on several Personal Care and Urethane Foam commercialization teams. More recently, he spent 5 years at Dow as a Process Engineering contractor working on a variety of Production and FM&E projects. Recognitions include an IR-100 award, 11 Dow Corning technical excellence awards, the AIChE Service to Society award, and the Boy Scouts of America Silver Beaver award. Norm continues his active support of the Section as a voting member of the Executive Committee, encouraging continuation of our scholarship programs and other community outreach activities, and supporting efforts to make our Section relevant to chemical engineering professionals in Mid-Michigan. Norm has a BSE degree in engineering unified science and an MSE in chemical engineering from the University of Michigan.

Mid-Michigan AIChE at the 2014 AIChE North Central Regional Student Conference

By Anshul Agarwal

The 2014 AIChE North Central Regional Student Conference was held on April 11th and 12th at The Kellogg Center and Brody Complex in the Michigan State University, East Lansing, MI. The event was organized and run by the Student Chapter of AIChE at the Michigan State University. The conference featured multiple events, including the annual Regional Chem-E-Car Competition, Student Paper Competition, Chem-E Jeopardy Competition, Professional Workshops, and many others. The details of the conference are available at the following link: http://www.egr.msu.edu/aiche/regional.html

The conference started Friday April 11th afternoon with the tour of the National Superconducting Cyclotron Laboratory. The conference registration started later that evening. A

social-networking event called Mixer Welcome Event was also organized Friday evening to provide a networking opportunity for the conference registrants, students, faculty, and alumni of the Michigan State University. Next day, the conference started with Student Research Poster and Paper competitions running in parallel. Both competitions provided an opportunity for the undergraduate students to showcase their research work. The Chem-E-Car Poster & Safety Competition also started an hour later in parallel. The Chem-E-Car Poster competition was a part of the overall regional Chem-E-Car competition. The students presented posters which described how the car is powered and stopped by chemical reactions or other mechanisms, the unique features of the car, and environmental and safety features of the design. They also had their autonomous vehicle displayed in front of the poster.

During the lunch time, the preliminary round of the Chem-E Jeopardy competition was organized where participating teams answered question on various chemical engineering topics in a standard Jeopardy style. Later in the afternoon, three sessions of Professional Workshops were organized where each session comprised four workshops running in parallel. The workshops included professional seminars given by eminent people from industry and academia. The four workshops in the first session were repeated in the third session in order to allow people to attend workshops missed due to time clashes. The Chem-E Jeopardy Finals ran in parallel with the final session of the workshops. Regional Chem-E-Car Performance Competition was held after the professional workshops where designs from different schools competed against each other. Each car was given two opportunities to traverse a specified distance (50-100 ft) carrying a certain additional load (0-500 g of water). The goal of the competition is to have your car carry the specified water load and stop closest to the specified finish line, while staying within the field boundaries. The car from the University of Cincinnati won the closest distance award, followed by University of Toledo and Michigan Technical University. The top five teams moved on to the competition held at the national conference.

Finally, an Awards Banquet was held in the evening at The Kellogg Center. The banquet featured a dinner, presentation of awards to recognize individual and team achievements in the various competitions, and a keynote speaker from the National Superconducting Cyclotron Laboratory (NSCL), who highlighted many aspects germane to nuclear physics and rare isotope research, and talked about the growing collaboration between Michigan State University and NSCL.

Role of the Mid-Michigan AIChE

The Mid-Michigan Section of AIChE supported and volunteered for the North Central Regional Conference. There was a fair amount of presence of the MMAIChE members at the conference. Patrick Heider and Maxine Cottrell were in the judging panel for the Student Research Poster Competition, while Maxine, Maurine Ferries, and Anshul Agarwal judged the Chem-E-Car Poster Competition with other judges from Dow Corning. Moreover, during the first and the third session of the Professional Workshops, Anshul Agarwal gave a seminar on “AIChE after Graduation” that highlighted AIChE, what it offers for students and young professionals, how students can get involved and become a part of National YPC, and personal experiences of the speaker with AIChE. The MMAIChE members also interacted with the students during various events, such as Awards Banquet, Chem-E-Car competition, lunch, and discussed with them industrial R&D career, its challenges, and what resources AIChE offers to manage these

challenges and develop their professional careers. The following sections describe MMAIChE's involvement during the Chem-E-Car Poster and AIChE after Graduation workshop.

Chem-E-Car Poster Competition

With the help of a poster and their autonomous vehicle displayed in front, students described the power source, unique features, and environmental and safety aspects of their designs. Every team was asked to show creativity and uniqueness in two particular aspects of the vehicle: the drive system and the stopping mechanism. The posters were judged according to description of the chemical reaction / power source, design creativity and unique features of the vehicle, environmental and safety features, and the quality of the poster and team member presentations.

Twelve teams from different schools participated in this competition. In general, the drive mechanism for most designs was multiple assemblies of electrochemical cells running some form of an electrochemical reaction. For instance, University of Michigan used a lead acid battery while Ohio State used a zinc chloride battery. Many designs used fuel cells (hydrogen, PEM etc.) as their drive system. Some vehicles stored hydrogen in cylinders using water columns, such as University of Cincinnati, while others generated it on the fly, such as McMaster University, which generated hydrogen by dropping a metal in a hydrochloric acid solution. Purdue University and University of Illinois used a lego pneumatic motor run by high-pressure carbon dioxide (60-90 psi) generated in a high-pressure reactor vessel using sodium bicarbonate and acetic acid. Michigan Tech and University of Minnesota designed a creative zinc-air battery using zinc and oxate coated gas diffusion electrodes and sodium hydroxide electrolyte.

To stop vehicles, the most commonly employed mechanism was the iodide-clock or its variant, which includes a laser-enabled sensor that stops sensing the laser when the iodine solution converts from being transparent to dark blue due to formation of some iodide. Michigan Tech used a Vitamin C clock where ascorbic acid and potassium iodide react with 3% hydrogen peroxide, while University of Michigan used a unique glyoxal clock. Ohio State used a sodium thiosulphate iodide clock to improve reliability. McMaster University used a novel hydrogel clock where sodium polyacrylate with brine solution was used to generate the hydrogel. Interestingly, the reaction was mass-transfer controlled. Purdue University relied on the stoichiometric ratio of sodium bicarbonate and acetic acid to stop their car. University of Cincinnati used a calcium oxide stopping mechanism that relied on the exothermic reaction and the thermocouple cutting the circuit when temperature reaches below a certain level.

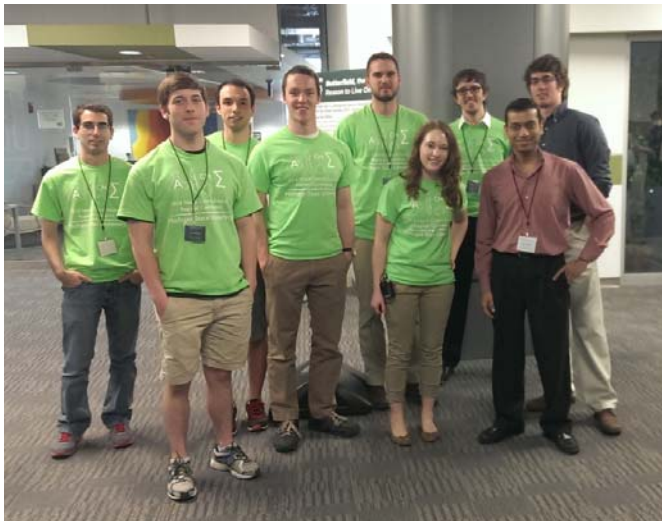
Several other creative features were observed in the designs. McMaster University used rice, salt, and activated carbon to purify hydrogen against moisture before passing it to the fuel cells. University of Cincinnati used belts instead of wheels to ensure that the car goes straight, though increasing friction. Michigan Tech paid special focus on safety using a modular chassis and multiple layered zinc-air battery that allowed it to breathe oxygen with safety. All designs that dealt with high pressure hydrogen and carbon dioxide used pressure relief valves and secondary containment for safety. The poster presentation of the University of Akron was very organized. Each of the team members presented a particular aspect of their poster in a very systematic fashion. After judging all posters, the best poster was awarded to the University of Akron, 2nd best to the McMaster University, and 3rd best to the Michigan Tech. The most creative drive system was given to the McMaster University.

AIChE after Graduation Seminar

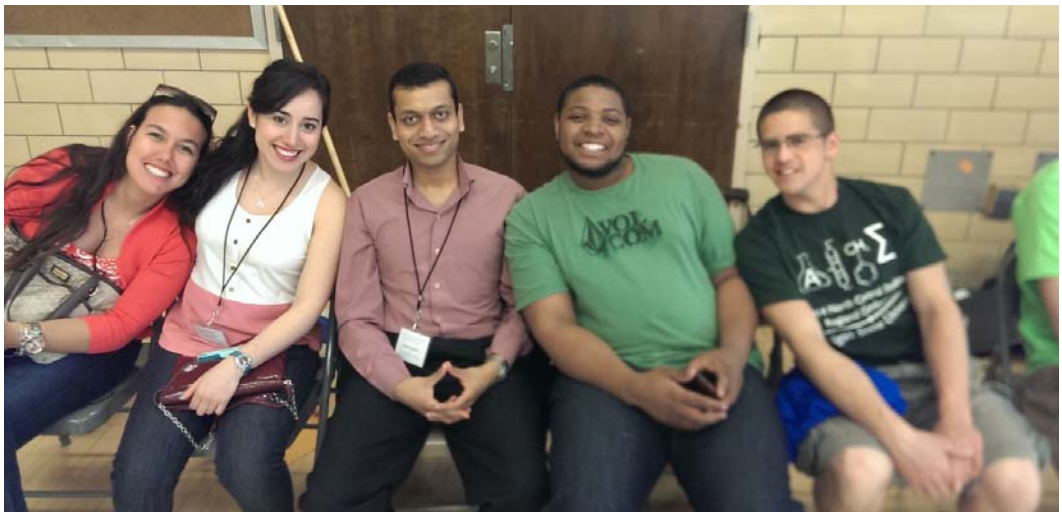
Anshul Agarwal gave a workshop on what AIChE has to offer after graduation. The talk focused on what AIChE offers to students and young professionals, and how they can get involved and become a part of AIChE. The workshop first briefly talked about the three operating councils of AIChE and listed the National opportunities available in terms of technical and community activities. Mostly the workshop focused on the Young Professional Community, its activities and events, and how students and professionals can get involved with YPC by joining the core team or participating in organizing events. The seminar also covered the local sections, their role, and how students can participate in their local technical and community activities. In order to provide perspective, Anshul specifically talked about the Mid-Michigan Section and its various activities such as the seminar series, outreach programs, scholarship and awards program etc. From personal experiences, he explained how remaining actively involved in AIChE helps someone's professional career; particularly, how how AIChE provides opportunities to gain visibility in the chemical engineering community, to network with peers and other professionals, to meet new people, to interact with eminent personalities from industry and academia, to stay updated in the field, and to add another dimension to their career by staying externally involved. The workshop was given twice during the first and the third session of Professional Workshops. On both occasions it was well attended.

The workshop was interactive in its nature and generated considerable dialog with attendees (mostly students) during the presentation. Many students shared their experiences and involvement with AIChE and were interested to know more about the Mid-Michigan Section and its activities, and if they should consider getting active with their respective local sections. They were also interested in getting a perspective on Dow Chemical's involvement in AIChE and how important is participating in external activities in addition to the day-to-day job. Others wanted to enquire more about chemical profession as a career in general, and about the Dow Chemical company. Some students were curious to know how AIChE can be used as a resource in graduate schools to learn new ideas and give research talks. Overall, the workshop generated a healthy discussion that carried on in the Chem-E-Car Performance Competition and the Awards Banquet.

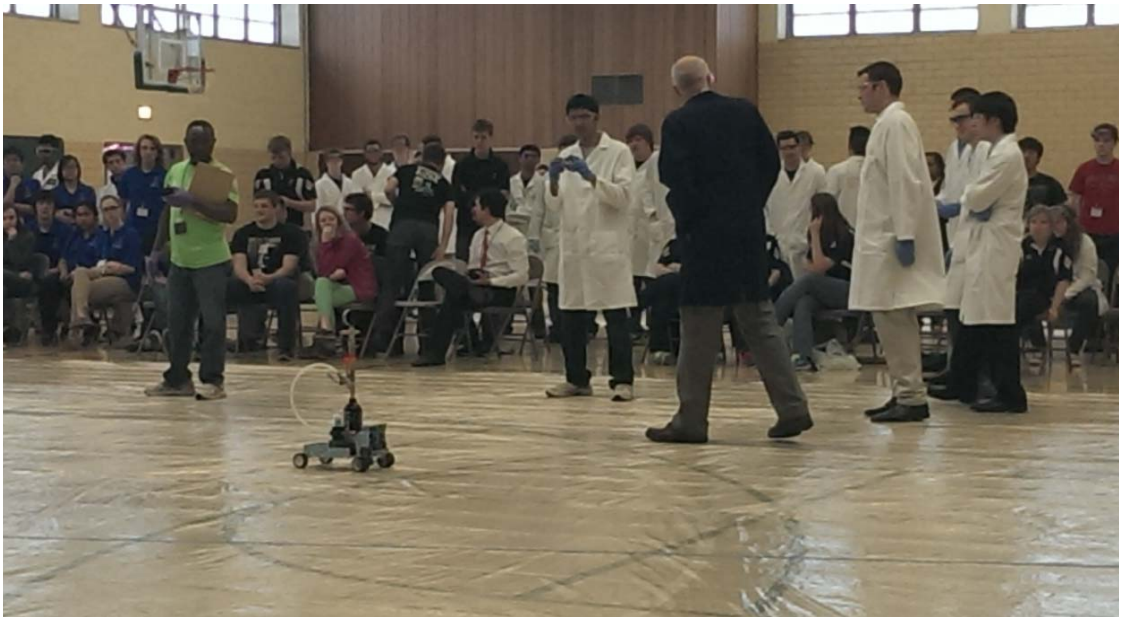
The workshop was a great event, as can be seen in the smiling faces that follow.



Michigan State University student hosts and conference organizers.



Anshul Agrawal (3rd from left) with students from Illinois Institute of Technology-Chicago.



One of the cars in the Chem-E-Car Performance Competition, with the design team in the background.

Professional Education

By Rich Helling

Licensed Professional Engineers in Michigan are required to earn 30 continuing education hours (CEH) every two-year license period "to bring licensees up to date on a particular area of knowledge or skills relevant to a licensee's area of professional practice". AIChE members can earn six per year for free via webinars from the Institute, but seminars and tours offered by the Mid-Michigan section of AIChE also usually qualify as CEH! Since December 2013, we have issued certificates for 15.5 CEH to attendees at our events. Mid-Michigan AIChE will continue to offer this service for events in the coming year.

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