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…

A scene from the Section's Kick-off Meeting held September 12 at Oscar's Cornerstone Pub in downtown Midland. See pages 3 and 4 for additional photos.

Words from the Chair…

I had a great time at the season's kick-off event at Oscar's on the 12th – introducing the new season of events and spending time getting reacquainted and meeting new members. To get things rolling, the evening included the playing of Chem E Charades; and, of course, we reviewed the program of events the section has planned for the upcoming season.

We've got a great line-up of speakers for this year as part of our monthly seminar series. Vishesh Shah has done an excellent job organizing the program, which covers a wide range of topics – including talks about the Professional Engineer licensing process, consulting practices, micro-reactors, sustainable chemistry and engineering, and discussion of new opportunities in science and technology. There is something new and interesting to learn about each month with perspectives from industry to academia to consulting and everything in between. You will also find that this year we are having a couple of joint events with local universities and with the local section of the American Chemical Society. I am truly excited about increasing the interaction with other local organizations and growing the presence of AIChE in mid-Michigan.

The Section also promotes the discussion of science and technology through our educational outreach program, led by Drew Powers. Members of the Section have the opportunity to present fun science demonstrations for students in the local schools. These are excellent activities to truly live the mission of our Section - *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*. Please check our webpage and watch your inbox for further communications about how you can get further involved.

I want to encourage everyone to look through this issue of the Newsletter which Tim Frank, one of our Directors and the Newsletter Editor, has again so eloquently put together. I hope you will take a minute to reserve time on your calendar. I look forward to seeing you throughout the year and being able to work with you to bring the excitement we share about engineering to the community around us.

Shawn Feist
Chair, Mid-Michigan Section of AIChE

Scenes from the Season Kick-off Meeting

Photos by Kip Mercure, Section Advisor

The September Kick-off Meeting was held Wednesday, September 12, 2012 at Oscar's Cornerstone Pub in downtown Midland. The meeting was held to introduce the new calendar of events for 2012 - 2013. See pages 5 to 9 for more information about this year's program.

Shawn Feist and Rich Helling served as Masters of Ceremonies and John Anderson and Bill Heeschen, saxophonist and pianist extraordinaire, provided the music. The following is a collection of scenes from the evening.

Padma Narayan engages the group in a session of Charades.

Tom Gregory, Bruce Holden (Secretary), and Anshul Agarwal (Membership Chair) attempt an answer.

Shawn Feist (Section Chair) joins in the action.

Vishesh Shah (Programming Chair) figures it out.

The Calendar of Events for 2012 – 2013

All meetings will begin at 6:00 p.m. for dinner, followed by the speaker's presentation at 7:00 p.m. Meetings will be held at the Grand Traverse Pie Company, unless otherwise noted (See below). **Be sure to reserve these dates on your calendar!** Read on for more information about each speaker and their presentations.

Schedule

- **Robert Green**, Project Engineer and Manager, Wade Trim
  Advantages of PE Licensure
  Wednesday, **October 17, 2012**, 6:00 p.m. dinner (optional), 7:00 p.m. presentation

- **Lee Rouse**, President and CEO, Omni Tech International, Ltd.
  The Consulting Conundrum – Creating or Transitioning to a Career in Consulting
  Wednesday, **November 14, 2012**, 6:00 p.m. dinner (optional), 7:00 p.m. presentation

- **Paul Dinh & Hanh Vo**, Process Engineering Scientists, Dow Corning
  Micro Flow Reactors and their use in Process Development at Dow Corning
  Wednesday, **December 12, 2012**, 6:00 p.m. dinner (optional), 7:00 p.m. presentation

- **Howard Alper, OC FRSC**, Distinguished University Professor, University of Ottawa
  Creating New Opportunities Through Science, Technology and Innovation – Canada's Experience
  Wednesday, **January 16, 2013**, 6:00 p.m. dinner (optional), 7:00 p.m. presentation*
  (Sponsored by The Dow Chemical Company)

- **Dawn Shiang**, Associate Director, The Dow Chemical Company
  Principles of Sustainable Chemistry and Engineering: Dow Chemical's Pragmatic Approach to Incorporating into Sustainable Innovation
  Wednesday, **February 13, 2013**, 6:00 p.m. dinner (optional), 7:00 p.m. presentation

- **Jonathan Wenzel**, Assistant Professor, Kettering University
  Research and Education in Michigan's Newest Chemical Engineering Program
  Wednesday, **March 13, 2013**, 6:00 p.m. dinner (optional), 7:00 p.m. presentation

Annual Spring Banquet

- **Ravi Shanker**, President and CEO, Dow Kokam
  Keynote Speaker
  Wednesday, **May 15, 2013**, 5:30 p.m. to 9:00 p.m.*

Meetings with invited speakers will be held at:	Grand Traverse Pie Company 2600 North Saginaw Road Midland, MI 48640
*Spring Banquet and Prof. Alper's seminar to be held at:	Great Hall Convention Center, Valley Plaza Hotel and Resort, 5221 Bay City Road, Midland, MI 48642

Admission to regular meetings is free, with a limited supply of free sandwiches and abundant other food available for purchase (for meetings held at Grand Traverse Pie Company). Meeting times and locations are subject to change. Be sure to check http://www.mmaiche.org for meeting locations and any updates to the schedule.

Abstracts and Speaker Information

Contact Vishesh Shah, Programming Chair, at vhshah2@dow.com for more information.

Advantages of PE Licensure

Robert Green, P.E.
Wade Trim
Wednesday, October 17, 2012. Dinner at 6:00 p.m. Presentation at 7:00 p.m.

Rob Green is a Project Engineer / Manager in the Transportation Department at Wade Trim Inc., a civil engineering consultant firm. He has performed roadway geometrics and utility design for local Road Commissions and the Michigan Department of Transportation. He is a licensed Michigan professional engineer. He received his Bachelor's of Science in Civil Engineering from Michigan Tech in 2006, and is currently pursuing a Master's in Engineering Management from Penn State University. Rob is an active member in the Michigan Society of Professional Engineers. He serves as the Saginaw Valley Chapter Scholarship Chair and is also a member of the State's Executive Committee as Northern Region Vice President. Outside of work Rob is an active member of the community. Rob is a youth soccer coach in Freeland. He is also the coach at the Bay City Rowing Club. In addition, Rob participates in many activities helping area students prepare for college and their careers. He speaks at local schools during National Engineers Week, helps with mock interviews, and career days.

The Consulting Conundrum – Creating or Transitioning to a Career in Consulting

Lee Rouse
Omni Tech International, Ltd.
Wednesday, November 14, 2012. Dinner at 6:00 p.m. Presentation at 7:00 p.m.

Have you ever wondered what it would be like to join one of the half million people in the U.S. that call themselves "independent consults?" Or one of the thousands that work for small to large consulting firms providing an array of services? Consulting can be a flexible, challenging, and rewarding career move if you take the time to understand the business and how your particular skills and assets can be marketed. This presentation will address: (i) Common facts and misunderstandings about the consulting industry, (ii) The Consulting Landscape (different types and sizes of consulting firms), (iii) Advantages and disadvantages of being an independent consultant vs. working for a consulting firm, (iv) Consulting career options: generalist or specialist, (v) Key skills required to be a good consultant, (vi) How to prepare for the transition – realities you need to understand before becoming a consultant, (vii) Stupid mistakes that smart people make as new or inexperienced consultants, (viii) Managing a Consulting Business

Lee Rouse is the President and CEO of Omni Tech International, a technical and business consulting firm headquartered in Midland, MI. She has a background in Engineering, Quality Management, Organizational Development, and Business Management with over 24 years of experience working in corporate industry and consulting. Her professional experience includes working as an engineer for both General Motors and The Dow Chemical Company before starting her own consulting company and later merging with Omni Tech. Lee holds a Bachelor of Science degree in Mechanical Engineering from Michigan Technological University and has taken classes towards her MBA from Central Michigan University. She is currently or has been on the Board of Directors for the Midland Public Schools, the Midland Rotary Club, The Midland Center for the Arts, Hidden Harvest, and is an active member of the Midland Chamber of Commerce.

Micro Flow Reactors and their use in Process Development at Dow Corning

Paul Dinh, Jake Remacle & Hanh Vo
Dow Corning

Wednesday, December 12, 2012. Dinner at 6:00 p.m. Presentation at 7:00 p.m.

Microreactors are relatively new in the chemical industries but are gaining more acceptance due to their excellent heat and mass transfer capability. In general, the length scales of microreactors are on the order of tens microns to several millimeters. The corresponding small volumes provide inherently safe operation for processing hazardous materials under extreme temperatures and pressures. Historically, microreactors were developed and used for pharmaceutical applications, but have now become more accepted in the fine chemical industries. For example, microreactors have been used successfully for hydrogenation, oxidation, and nitration. In the last five years, various industrial and academic organizations have been exploring/evaluating various microreactors and micro-separators. We will present results from some of these studies and discuss the potential and limitations of these devices.

Paul Dinh joined Dow Corning in 1984 after receiving a B.Sc. degree in Chemical Engineering from Michigan Technological University and a M.Sc. degree from Purdue University. Paul is currently a Process Engineering Scientist in the Core Product Business. Over the years, Paul has made significant contributions to improving process technology and reducing the cost of organosilanes. Paul has published over 50 technical reports and received four Technical Achievement awards, three Supply Chain Excellence Awards, and ten patents spanning the areas of organosilane manufacturing.

Hanh Vo is currently a Process Engineering Scientist and co-leader of the Mixing & Reaction Engineering group at Dow Corning. He joined Dow Corning in 1978, and has spent most of his time in Process Engineering where he has applied his expertise to develop new processes as well as to improve and optimize existing processes and products. Hanh received his B.S. in Chemical Engineering in South Vietnam, followed by an M.S. in Chemical Engineering from the University of Michigan in Ann Arbor. In 1983, Hanh received a Dow Corning Fellowship to continue his Ph.D. degree in Chemical Engineering at the University of Wisconsin – Madison. He rejoined Dow Corning in 1988. Hanh has published more than 15 external papers/presentations and has been granted several patents on silicone processing. He is a registered Professional Engineer for the State of Michigan.

Creating New Opportunities through Science, Technology and Innovation – Canada's Experience

Howard Alper, OC FRSC
University of Ottawa

Wednesday, January 16, 2013. Dinner at 6:00 p.m. Presentation at 7:00 p.m.

Sponsored by The Dow Chemical Company

In 2007, the Government of Canada released a new science and technology strategy based on three pillars: people, knowledge, and entrepreneurship, and with four overarching principles – excellence, priorities, partnerships, and accountability. This strategy has served Canada well. The strategy mandated the establishment of the Science, Technology and Innovation Council (STIC). It has two responsibilities: (1) to provide confidential advice to government on requests by a Minister or the Prime Minister; (2) to produce State of the Nation reports, every two years, which benchmark Canada against global standards of excellence. The main findings from these reports, which are not only of interest to Canada, but also to the U.S. and other countries, will be presented.

Howard Alper, Distinguished University Professor at the University of Ottawa, is currently Chair of the Government of Canada's Science, Technology, and Innovation Council (STIC). The basic research Alper has been pursuing spans organic and inorganic chemistry, with potential applications in the

pharmaceutical, petrochemical, and commodity chemical industries. Howard has published 535 papers, has thirty-seven patents, and has edited several books. Alper has also received a number of prestigious Fellowships including the E.W.R. Steacie, Guggenheim, and Killam Fellowships. Major awards to Alper include the Alcan Award, the Bader Award, the Steacie Award, the Catalysis Award, the Montreal Medal, the CIC Medal, the Urgel-Archambault Prize, the National Merit Award, and the Le Sueur Memorial Award. He is the recipient of the first Gerhard Herzberg Canada Gold Medal in Science and Engineering. Alper is an Honorary Fellow of the Chemical Research Society of India, the Colombian Academy of Sciences, the Mexican Academy of Sciences, and the Chemical Institute of Canada. He is also a member of TWAS-Academy of Sciences of the Developing World. He was appointed as an Officer of the Order of Canada in 1999, and in 2002 he received the award of Officer, National Order of Merit, by the President of the Republic of France. In 2012, he received the Queen Elizabeth Diamond Jubilee Medal. He has served as President of the Royal Society of Canada, and as its Foreign Secretary. He is passionate about Canada, research and chocolate.

Principles of Sustainable Chemistry and Engineering: Dow Chemical's Pragmatic Approach to Incorporating into Sustainable Innovation

Dawn Shiang
The Dow Chemical Company
Wednesday, February 13, 2013. Dinner at 6:00 p.m. Presentation at 7:00 p.m.

The twelve principles of green chemistry and two similar lists for green engineering are great frameworks to guide innovation for a sustainable future. But the elements can be a lot to digest. At The Dow Chemical Company, we needed a more concise way to explain and teach sustainable innovation to student groups, community members and new employees. One approach we are using now is to condense the elements into four themes. The first theme is reduced hazard by designing products and systems that are inherently safe, both from the standpoint of human health and for the environment. The second theme is atom economy, or making smart use of all mass inputs to a process resulting in the minimum use of natural resources (especially non-renewable). The third theme is energy, since it is often the major contributor to the environmental impact of a product or process. The final theme is holistic design, looking far upstream of the chemical process at the raw materials and far downstream at the use, fate and recyclability of the product. This big picture view is not typically emphasized in traditional science and engineering education, but is critical for sustainable innovation.

Dr. Dawn Shiang is an Associate Director for Sustainable Technologies in Dow. Dawn began her career as a process development chemist and later global leader of production support in the Agricultural Chemicals department. She has held a variety of research leadership roles across many of Dow's businesses and corporate research, as well as diverse geographical experience with global responsibilities as well as overseas assignments in Europe and Asia. She has recently returned from Shanghai where she was part of the leadership team that established a world-class research capability. Dawn has had a passion for sustainability for many years and was a key focal point for several of Dow's businesses in this arena. Dawn holds a bachelor's degree in chemistry and a doctorate in organic chemistry from the University of Missouri-St. Louis and was a post-doctoral fellow in bio-organic chemistry at The Pennsylvania State University. She is a co-author of several publications and holder of five patents.

Research and Education in Michigan's Newest Chemical Engineering Program

Jonathan Wenzel
Kettering University
Wednesday, March 13, 2013. Dinner at 6:00 p.m. Presentation at 7:00 p.m.

To improve its industrial diversity, Kettering University recently established a laboratory intensive undergraduate degree program in Chemical Engineering. Kettering University, formerly known as the General Motors Institute is located in Flint, MI, and is a private institution granting degrees in science, technology, engineering, and math (STEM), as well as business. The university is known throughout the region for its experiential learning programs that focus on cooperative education programs with industrial and government partners. In order to receive an undergraduate degree, a Kettering engineer must complete nearly two years of cooperative education as well as a thesis. Further, the four Chemical Engineering faculty at Kettering University specialize in high pressure reaction engineering and prototyping, nanocomposite materials and polymers, biomass gasification, and surface treatment and modification of materials using plasma. The emphasis of this meeting will be on introducing Kettering University's ChE research program as well as a discussion on the production of polymer feedstocks non-catalytically using supercritical fluids.

Jonathan E. Wenzel, currently an Assistant Professor in Chemical Engineering at Kettering University, received his B.S. and PhD. in Chemical Engineering from the University of Missouri, Columbia in 1999 and 2008 respectively. Prior to joining the faculty at Kettering University, Wenzel worked as a Research Engineer for four years at the Missouri University of Science and Technology, where he specialized in designing, developing, and testing portable, modular process prototype systems capable of using supercritical fluids for gasification, extraction, and polymerization. This work was funded by the US Departments of the Army, Air Force, and Transportation, as well as the National Institute of Health, the Leonard Wood Institute, and DRS Technologies, Inc. He has a patent, 6 journal articles and 27 papers, presentations, and posters at various conferences. Wenzel is a Senior member of the American Institute of Chemical Engineers and is the Grand Master of Ceremonies, 2nd National Vice President of Alpha Chi Sigma, a professional chemistry fraternity.

Spring Banquet

Ravi Shanker, President and CEO, Dow Kokam
Keynote Speaker
Wednesday, May 15, 2012, 5:30 p.m. to 9:00 p.m.

Ravi Shanker is the President and Chief Executive Officer of Dow Kokam. Shanker led the team that created the Dow Kokam joint venture, and has many years of experience building, growing and running businesses with The Dow Chemical Company. Shanker first joined Dow in 1991 and primarily focused on growing Dow's business via new product and new business development. Starting in the research department, he focused on developing new manufacturing processes. Shanker also supported the office of the Chief Executive in strategy development for near- and long-term business opportunities in emerging geographies, as well as in the role of Business Director of Specialty Plastics in the Performance Products Portfolio. Before assuming his role with Dow Kokam, Shanker served as Corporate Director of Ventures & Business Development, where he incubated a portfolio of innovative business opportunities for Dow, driving many to commercialization. Shanker holds a Ph.D. in mechanical engineering from the University of Delaware and a B. Tech. in mechanical engineering from B.I.T. Sindri, in India. He also has an MBA from the University of Houston.

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Young Professionals Discussion Group Chair	open				

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