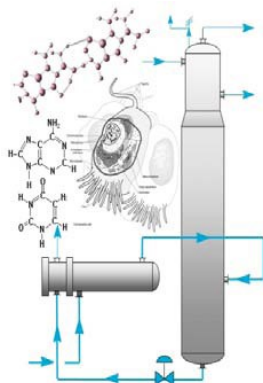


# March Newsletter

Chicago Section

[www.aiche.org/Chicago](http://www.aiche.org/Chicago)

March 2019



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**AIChE**<sup>®</sup>  
MIDWEST  
REGIONAL  
CONFERENCE

**Mar 18—19, 2019**

**University of Illinois at Chicago  
Chicago, IL**

## **Featuring...** **Keynote Speakers:**

Erin Kane, *AdvanSix*  
Huimin Zhao, *University of Illinois at Urbana-Champaign*  
Markita Landry, *University of California at Berkeley*  
Asha Oroskar, *Orochem Technologies*  
Randy Snurr, *Northwestern University*

For Conference Information and Registration, visit the  
[conference website!](#)

## **AIChE Chicago March Dinner Meeting**

*Dr. Markita Landry, University of California at  
Berkeley*

*Nanomaterials Engineering to Probe and Control  
Living Systems*



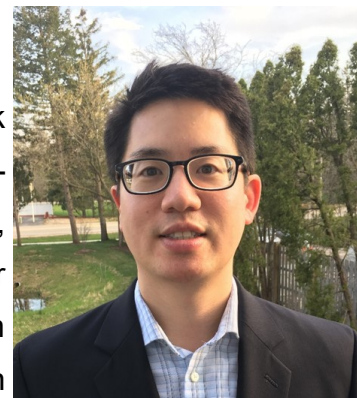
**Monday, March 18, 2019**  
**Student Center East, University of Illinois at Chicago**  
**Registration and Reception: 5:15-6:30 PM**  
**Dinner: 6:30-7:30 PM**  
**Announcements: 7:30-7:45**  
**Presentation: 7:45-8:45 PM**

Event Information and Registration here:

<http://www.cvent.com/d/96q2sq>

**If you are registered for the conference, check your registration if you already paid for the Dinner Meeting!**

## Chair's Corner



The AIChE Midwest Regional Conference (MRC) is only about a week away! The symposium continues into its 11<sup>th</sup> year and as always features a fantastic slate of keynote speakers and technical presentations, which can be previewed further below in this newsletter. Just like prior years the conference will also include a high school outreach program occurring concurrently with the sessions. The lunch hour will be a fun occasion as the students are invited to join us to ask career-related questions and learn about chemical engineering as a profession.

This year is my first time being involved with organization of the MRC, and I can attest that an extraordinary amount of hard work goes into putting the event together. The dedicated volunteers who have devoted numerous hours thus far, along with those who have committed to help onsite during the two days of the symposium, all deserve an enormous thank you. The substantial contributions from the conference sponsors must certainly be highlighted too, because this endeavor could not happen without them.

If you are unable to attend, there is still the opportunity to participate in our monthly dinner meeting, which will be held on the first night of the MRC (Monday, March 18). The conference poster session has been scheduled to take place during the pre-meeting registration and networking hour, so that is a nice chance to catch part of the activities if you otherwise would not have been able to. There is an excellent lineup of posters this year so make sure to stop by and check them all out! I'm positive the presenters will appreciate the discussion as well as feedback on their material.

Of course, if you work hard, then you should play hard too, right? I encourage everyone to come to the Young Professionals Social to kick back and relax for a bit following the conclusion of the MRC. The get-together will be held a brief walk away at La Taberna Tapas on Halsted and should be a great time.

I would like to issue a final reminder that online registration will remain open until March 10. Please sign up! As can be seen, there will be no shortage of interesting content and networking prospects. Hope to see you there!

*Bob Tsai*

*AIChE Chicago Section Chair, 2018-2019*

## **March Dinner Meeting Information**

### **Nanomaterials Engineering to Probe and Control Living Systems**

#### **Abstract:**

Unique physical, chemical, and optical phenomena arise when materials are confined to the nano-scale. We are accustomed to making observations and predictions for the behavior of living systems on a macroscopic scale that is intuitive for the time and size scales of our day-to-day lives. However, the building blocks of life: proteins, nucleic acids, and cells, occupy different spatiotemporal scales. Our lab focuses on understanding and exploiting tunable optical and chemical properties of nanomaterials to access information about biological systems stored at the nano-scale. We present recent work on developing and implementing dopamine nanosensors to image dopamine volume transmission in the extracellular space of the brain striatum in both model (mouse) and non-model (bat) species. We validate our dopamine nanosensor in acute striatal slices with electrical and optogenetic stimulation of dopamine release, and show disrupted dopamine release or reuptake kinetics when brain tissue is exposed to dopamine agonist or antagonist drugs [1]. We characterize our findings in the context of their utility for high spatial and temporal neuromodulator imaging in the brain with 2-photon microscopy [2], and describe nanosensor exciton behavior from a molecular dynamics (MD) perspective [3]. We also discuss how high aspect ratio nanomaterials can be synthesized to carry biomolecular cargo to living systems. In particular, genetic engineering of plants is at the core of environmental sustainability efforts, but the physical barrier presented by the cell wall has limited the ease and throughput with which exogenous biomolecules can be delivered to plants. We will describe how nanomaterials engineering principles can be leveraged to manipulate living plants, in efforts to reconcile the benefits of crop genetic engineering with the demand for non-GMO foods [4]. Our work in the agricultural space provides a promising tool for species-independent, targeted, and passive delivery of genetic material, without transgene integration, into plant cells for rapid and parallelizable testing of plant genotype-phenotype relationships.

#### **Biography:**

Markita Landry is an assistant professor in the department of Chemical and Biomolecular Engineering at the University of California, Berkeley. She received a B.S. in Chemistry, and a B.A. in Physics from the University of North Carolina at Chapel Hill, a Ph.D. in Chemical Physics from the University of Illinois at Urbana-Champaign, and completed a postdoctoral fellowship in Chemical Engineering at the Massachusetts Institute of Technology. Landry started her research lab at UC Berkeley in 2016 and has since focused on making nanosensors to measure neurotransmitters in the living brain, to study the underlying mechanisms of psychiatric disorders. She is the recipient of 10 early-career research awards for her work, and has authored over 30 publications and 4 technical patents. Her current research centers on the development of synthetic nanoparticle-polymer conjugates for imaging neuromodulation in the brain, and for the delivery of functional biomolecules and nutrients into plants. The Landry lab exploits the highly tunable chemical and physical properties of nanomaterials for the creation of biomimetic structures, molecular imaging, and gene editing. She is a recent recipient of early career awards from the Brain and Behavior Research Foundation, the Burroughs Wellcome Fund, The Parkinson's Disease Foundation, the Beckman Young Investigator program, is a Sloan Foundation Fellow, and is a FFAR New Innovator and also a Chan-Zuckerberg Biohub Investigator.



**If you are registered for the conference, check your registration if you already paid for the Dinner Meeting!**

**For Registration and Information:**

<http://www.cvent.com/d/96q2sq>

# 2019 AIChE Midwest Regional Conference

## Workshop on Job Search for Chemical Engineers

Based on the author's long career in industrial management including twenty years as a campus recruiter and extensive work with students seeking jobs, this workshop will share best practices suitable for undergraduate and graduate students as well as AIChE

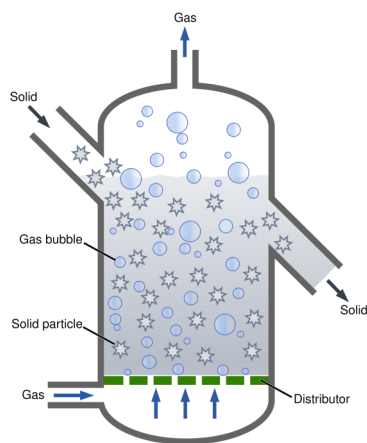


members from the Chicago area. The job market is changing and company expectations are expanding. A strong technical background may be necessary but is not nearly sufficient in today's market. Consider that a half hour campus interview will open or close doors for you. Your campaign to persuade the recruiter to allow you past the first hurdle should be viewed as a \$5,000,000 marketing campaign when you consider expected salary over a work life of 50 years. That should provide perspective as to why you must prepare an excellent story.

After an overview of the job search process, do's and don'ts will be discussed. Participants are encouraged to bring their questions and be prepared to participate.

Plan to attend the 11th Midwest Regional Conference and learn some new soft skills for your career and also find out why particles are so important in the chemical processing. Check the program grid for time and location and register today to attend this 2 day conference. <http://www.cvent.com/d/8bqtj2>

## What's a Particle: Intro to Particle Technology



In the US, when a chemical engineering student graduates to work in the chemical process industry, there is an 80% chance their first project will involve particle technology. On average, students in the US have a cumulative 18 minutes of particle technology in their chemical engineering undergraduate curriculum. This discrepancy is particularly insidious as many concepts of solids processing are counter intuitive, and engineers feel as though they must guess. The result is significantly delayed startup times and capacities for operations involving processing of solids. In this talk we will outline several of the most important concepts of solids processing, and show that



good science in the area does exist.

We will show these concepts with anecdotes from industry and some demonstrations that will probably make a mess. In the end, hopefully you'll be less likely to guess.

# 2019 AIChE Midwest Regional Conference

Register Today!

Online Registration Ends March 10<sup>th</sup>

<http://www.cvent.com/d/8bqtj2>

Onsite registration will be available on both conference days

**Chicago, IL**

**March 18-19, 2019**

Hosted by

University of Illinois at Chicago

Organized by

Chicago Local Section of AIChE

The AIChE Chicago Local Section and the Department of Chemical Engineering at the University of Illinois at Chicago (UIC) are holding AIChE's 11<sup>th</sup> Midwest Regional Conference (MRC) on March 18-19, 2019.

The conference features invited speakers by leading industrial and academic professionals and focus on many aspects of our profession. Please find the complete list of **speakers and papers**, elsewhere in this issue of the newsletter.

Another featured aspect of the MRC is the *high school student outreach program* for local schools. This is a great chance for all professionals to have lunch with the students and spark their curiosity about the engineering profession.

Other highlights include sessions designed for *young professionals (YP)*. Chicago's YP also has planned a **networking social** on Tuesday evening.

This conference provides a great opportunity for networking and to earn Professional Development Hours, which may be used to satisfy continuing professional competency for P.E. and other licenses.

Registration includes light breakfast, lunch and coffee.

## **11<sup>th</sup> Midwest Regional Conference Keynote Speaker**

### **Erin Kane**

**Erin Kane** is president and CEO of **AdvanSix Inc.**, a fully-integrated manufacturer of nylon 6 resin, chemical intermediates and ammonium sulfate. She took on this role in 2016 as AdvanSix was spun out from Honeywell and became an independent company. AdvanSix (NYSE: ASIX) has more than 1500 employees, four U.S.-based manufacturing sites and provides global customers nylon materials used in carpet, engineering plastics, films, fibers and filaments; fertilizer used to grow high-value crops; and chemicals that serve as building blocks for paints, adhesives, and other formulations.



Prior to being named president of AdvanSix, Kane was vice president and general manager of Honeywell's Resins and Chemicals unit, responsible for all sales, marketing and manufacturing for the multi-billion dollar business. She joined Honeywell in 2002 and held positions of increasing responsibility in marketing and business management across the organization. Among her accomplishments were leading the cross-functional team charged with integrating Honeywell Process Solutions with company's Performance Materials and Technologies business and overseeing the turnaround of the Chemical Intermediates (part of the Resins and Chemical business) group following the acquisition of the Frankford (PA) phenol plant.

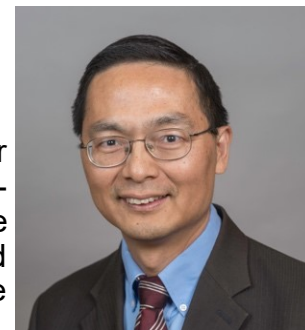
Kane began her career with Six Sigma and process engineering positions at Elementis Specialties and Kvaerner Process. She is a certified Six Sigma Black Belt.

Kane serves on the Boards of Directors of the American Chemistry Council, AIChE and AdvanSix Inc. She earned a bachelor's degree in chemical engineering from Bucknell University and lives in New Jersey with her husband and two children. Kane is based at AdvanSix's headquarters in Parsippany, N.J.

## 11<sup>th</sup> Midwest Regional Conference Keynote Speaker

### Dr. Huimin Zhao

Dr. Huimin Zhao is the Steven L. Miller Chair of chemical and biomolecular engineering, and professor of chemistry, biochemistry, biophysics, and bio-engineering at the University of Illinois at Urbana-Champaign (UIUC). He received his B.S. degree in Biology from the University of Science and Technology of China in 1992 and his Ph.D. degree in Chemistry from the California Institute of Technology in 1998 under the guidance of Dr. Frances Arnold. Prior to joining UIUC in 2000, he was a project leader at the Industrial Biotechnology Laboratory of the Dow Chemical Company. He was promoted to full professor in 2008. Dr. Zhao has authored and co-authored over 300 research articles and over 25 issued and pending patent applications with several being licensed by industry. In addition, he has given plenary, keynote or invited lectures in over 360 international meetings, universities, industries, and research institutes. Twenty-three (23) of his former graduate students and postdocs became professors in the United States (8), China (Mainland 10, Taiwan 1), Korea (2), Singapore (1), and Egypt (1).



Dr. Zhao received numerous research and teaching awards and honors, including Marvin Johnson Award (2018), Biotechnology Progress Award for Excellence in Biological Engineering Publication (2017), Charles Thom Award (2016), Elmer Gaden Award (2014), Guggenheim Fellowship (2012), Fellow of the American Association for the Advancement of Science (AAAS) (2010), Fellow of the American Institute of Medical and Biological Engineering (AIMBE) (2009), American Institute of Chemical Engineers (AIChE) Food, Pharmaceutical, and Bioengineering Division Plenary Award Lecturer (2009), the American Chemical Society (ACS) Division of Biochemical Technology Young Investigator Award (2008), Outstanding Overseas Young Chinese Scholars Award (2007), DuPont Young Professor Award (2005), National Science Foundation CAREER Award (2004), Dow Chemical Special Recognition Award (1999), University Scholar from UIUC (2007), Petit Scholar from UIUC College of Liberal Arts and Sciences (2006), and Xerox Award for Faculty Research from UIUC College of Engineering (2005).

Dr. Zhao served as a consultant for over 10 companies such as Pfizer, Maxygen, BP, Gevo, and zuChem, and a Scientific Advisory Board member of Gevo, Myriant Technologies, Toulouse White Biotechnology (TWB), and AgriMetis. He was a member of National Academies' study group on *Industrialization of Biology: A Roadmap to Accelerate Advanced Manufacturing of Chemicals*. He is currently an advisor to the Department of Energy's Biological and Environmental Research program and the visiting principal investigator of the metabolic engineering research laboratory (MERL) in the Agency for Science, Technology and Research (A\*STAR) of Singapore, Qiushi visiting chair professor in Zhejiang University in China, visiting professor at Beijing University of Chemical Technologies, and visiting professor at Nanyang Technological University in Singapore. In addition, he is the theme leader of the Biosystems Design theme in the Carl R. Woese Institute for Genomic Biology at UIUC. Dr. Zhao is an Associate Editor of *ACS Catalysis* and an editor of *ACS Synthetic Biology*, *Journal of Industrial Microbiology and Biotechnology*, *the CRISPR Journal*, *Scientific Reports*, *Biocatalysis*, and *Engineering in Life Sciences*. His primary research interests are in the development and applications of synthetic biology tools to address society's most daunting challenges in health, energy, and sustainability, and in the fundamental aspects of enzyme catalysis, cell metabolism, gene regulation, and cell differentiation.

For details, visit <http://scs.illinois.edu/~zhaogrp/> and <https://www.a-star.edu.sg/merl/>

## ***11<sup>th</sup> Midwest Regional Conference Keynote Speaker***

### ***Dr. Asha Oroskar***

**Dr. Asha Oroskar** co-founded Orochem Technologies Inc. in 1996. She is recognized in the chemical industry for her expertise in high throughput sample preparation and purification products. Today Orochem is one of the companies that modifies silica and synthesizes polymer in-house for all their separation and purification needs. Utilizing her expertise in the analytical chem-



istry consumable products, Dr. Asha collaborated with her co-founder, Dr. Anil Oroskar, globally recognized for large scale separation to establishing Orochem as a world leader in establishing plants for production of pure ingredients. Orochem has the unique expertise to embed processes into plants installed worldwide for ton scale purification units for nutraceuticals, and food ingredients markets.

She has co-authored about twenty patents and has led Orochem to be recognized as a global leader for commercial scale purification using simulated moving bed chromatography.

She is recognized as serial entrepreneur. Following the success of Orochem, Dr. Asha Oroskar has co-founded with Dr. Anil Oroskar entities around the globe. Including Orochem India, based in Mumbai India; Kazmira, LLC, in Colorado, and Sirona Naturals, based in Naperville, Illinois.

Dr. Asha Oroskar is the recipient of several awards, including Women of M2M, and most recently been recognized as one of the 100 most impactful healthcare leaders globally.



## 11<sup>th</sup> Midwest Regional Conference Keynote Speaker

### Dr. Randy Snurr



Randy Snurr is the John G. Searle Professor and Department Chair of Chemical and Biological Engineering at Northwestern University. He holds BSE and PhD degrees in chemical engineering from the University of Pennsylvania and the University of California, Berkeley, respectively. He performed post-doctoral research at the University of Leipzig in Germany supported by a fellowship from the Alexander von Humboldt Foundation. Other honors include a CAREER award from the National Science Foundation, the Institute Award for Excellence in Industrial Gases Technology from the American Institute of Chemical Engineers, and the Ernest W. Thiele Award from the Chicago Section of AIChE. He has been named a Highly Cited Researcher by Thomson Reuters/Clarivate Analytics. He served as a Senior Editor for the *Journal of Physical Chemistry* and is currently on the advisory boards of the journals *Adsorption*, *Adsorption Science & Technology*, *Current Opinion in Chemical Engineering*, and *Molecular Systems Design & Engineering*. His research interests include development of new nanoporous materials for energy and environmental applications, molecular simulation, adsorption separations, diffusion in nanoporous materials, and catalysis.

### “What’s a Particle: Intro to Particle Technology”

A Workshop presented by **Dr. Ben Freireich**, Technical Director of Particulate Solid Research, Inc. (PSRI)

Don't miss this opportunity to learn (more) about this branch of chemical engineering

Process control

CO2 capture

Environmental

Process safety

CFD Modeling

Refining & Petrochemicals

Electrocatalysis for Energy and Environmental Applications

Protein Engineering and Production



# Conference Sponsors

The Chicago Section of the AIChE is grateful for the generous support of our Conference Sponsors!

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March 18 - 19, 2019

UIC, IL

2019 Midwest Regional Conference

Start Time	End Time	
<b>Day 1 - Monday March 18, Track 1, White Oak</b>		
7:45	8:30	Registration (Open all day) & Breakfast
8:30	8:45	Chairman's Introduction
<b>8:45</b>	<b>9:45</b>	<b>Keynote "AdvanSix Spin: Challenges and Opportunities for our 90 yr old "New" Company", <i>Cardinal Room</i> Erin Kane, President &amp; CEO of AdvanSix</b>
9:45	10:00	Coffee Break
<b>10:00</b>	<b>11:30</b>	<b>Session I: Process Safety Session Chair, <i>Peter Herena, Baker Risk</i></b>
10:00	10:22	<b>Common Hazards Identified During Dust Hazard Analysis (DHA)</b> Adam Connor, <i>Baker Risk</i>
10:22	10:44	<b>Correct Use of Pressure Relief Systems as Independent Protection Layers</b> Todd W. Drennen, P.E., <i>Baker Risk</i>
10:44	11:08	<b>Building Siting Evaluations: Who put that there?</b> Jessica M. Morris, Ph.D., Exponent
11:08	11:30	<b>Balancing Protective Safety and Spurious Trips on Safety Instrumented Systems</b> Peter G. Herena, <i>Baker Risk</i>
11:30	12:30	Lunch
<b>12:30</b>	<b>1:30</b>	<b>Keynote: "Biosystems Design by Directed Evolution", <i>Cardinal Room</i> Dr. Huimin Zhao, Chemical Engineering Professor at UIUC</b>
1:30	1:40	Coffee Break
<b>1:40</b>	<b>3:20</b>	<b>Session II: Energy &amp; Sustainability Hakim Iddir, <i>Argonne National Laboratory</i></b>
1:40	2:05	<b>Safety and Thermal Management Challenges for Li-ion Batteries in Autonomous Vehicles Applications</b> Said Al-Hallaj, <i>AllCell Technologies. LLC</i>
2:05	2:30	<b>Techno-Economic Analysis of Li-ion Battery Manufacturing to Reduce Cost and Energy</b> □ Naresh Suserla & Shabdir Ahmed, Argonne National Laboratory
2:30	2:55	<b>Facet dependent cation segregation in layered lithium transition-metal oxide cathode MATERIALS</b> □ Juan C. Garcia, Javier Bareño, Guoying Chen, Jason R. Croy, Hakim Iddir, Argonne National Laboratory
2:55	3:20	<b>Enabling High-Energy Lithium- and Manganese-Rich Cathodes</b> □ Arturo Gutierrez, Devika Choudhury, Soroosh Sharifi-Asl, Reza Shahbazian-Yassar, Anil Mane, Jason Croy, □Argonne National Laboratory
3:20	3:30	Coffee Break
<b>3:30</b>	<b>5:00</b>	<b>Session III, Bio-Medical &amp; Nano-Engineering Session Chair, <i>Seok Hoon Hong, IIT</i></b>
3:30	4:00	<b>Improving colicin production via optimizing cell-free protein synthesis</b> Xing Jin, IIT
4:00	4:30	<b>A new platform for noninvasively of the differentiation stage of individual living</b> Isamar pastrana-Otero, <i>UIUC</i>
4:30	5:00	<b>Soft Lithography based on photolithography &amp; two-photon polymerization</b> Yang Lin, UIC
5:15	6:30	<b>Poster Reception</b> Session Chair: Adam Kanyuh, UOP
6:30	7:30	Local Section Dinner, <i>Cardinal room</i>
7:30	8:30	Chicago Section Monthly Technical Dinner Markita Landry - UC Berkeley

March 18 - 19, 2019

UIC, IL

2019 Midwest Regional Conference

Start Time	End Time	
<b>Day 1 - Monday March 18, Track 2, Illinois C</b>		
7:45	8:30	Registration (Open all day) & Breakfast
8:30	8:45	Chairman's Introduction
<b>8:45</b>	<b>9:45</b>	<b>Keynote "AdvanSix Spin: Challenges and Opportunities for our 90 yr old "New" Company", <i>Cardinal Room</i></b> <b>Erin Kane, President &amp; CEO of AdvanSix</b>
9:45	10:00	Coffee Break
<b>10:00</b>	<b>11:30</b>	<b>Session I: Refining &amp; Petrochemicals</b> <b>Session Chair, Hadjira Iddir, UOP</b>
10:00	10:30	<b>Reduce your stack emissions for a better environment</b> Rich Johnson, <i>UOP</i>
10:30	11:00	<b>On-Purpose Propylene from Propane</b> Mike Vetter, <i>UOP</i>
11:00	11:30	<b>Complex-wide Perspectives on Enhanced Naphtha Upgrading</b> Bryon Egolf, <i>UOP</i>
11:30	12:30	Lunch
<b>12:30</b>	<b>1:30</b>	<b>Keynote: "Biosystems Design by Directed Evolution", <i>Cardinal Room</i></b> <b>Dr. Huimin Zhao, Chemical Engineering Professor at UIUC</b>
1:30	1:40	Coffee Break
<b>1:40</b>	<b>3:20</b>	<b>Session II: Process Simulation, Optimization &amp; Control</b> <b>Session Chair: <i>Ha Dinh, Norah Ghazinoor UOP</i></b>
1:40	2:05	<b>Mathematical Optimization of Membrane-free Desalination Systems that Utilize Low-grade Heat.</b> Alejandro Garciadiego, <i>UND</i>
2:05	2:30	<b>Performance Assessment and Modification of an Adaptive Learning Model Predictive Control.</b> Iman Hajizadeh, <i>IIT</i>
2:30	2:55	<b>How to make money in dynamic energy markets: uncertainty modeling and optimization frameworks</b> Xian Gao, <i>UND</i>
2:55	3:20	<b>Optimizing novel membrane systems and materials discovery: mathematical frameworks</b> Elvis Eugene, <i>UND</i>
3:20	3:30	Coffee Break
<b>3:30</b>	<b>5:00</b>	<b>Session III, Purification of Petrochemical Streams</b> <b>Session Chair, <i>Jay Gorawara, Stephen Caskey UOP</i></b>
3:30	4:00	<b>Purification of Olefinic Streams Part I - Adsorbent Selection Criteria and Fundamentals</b> Stephen Caskey, <i>UOP</i>
4:00	4:30	<b>Purification of Olefinic Streams Part II - Applications and Process Flow Schemes</b> Stephen Caskey, <i>UOP</i>
4:30	5:00	<b>Options for CS<sub>2</sub> removal for Naphtha fed Ethylene Crackers</b> Jay Gorawara, <i>UOP</i>
5:00	7:00	<b>Poster Reception</b> Session Chair: Adam Kanyuh, <i>UOP</i>

**March 18-19, 2019**  
**UIC, IL**  
**2019 Midwest Regional Conference**

Start Time	End Time	
<b>Day 2 - Tuesday March 19, Track 1, <i>White Oak</i></b>		
7:45	8:30	Registration (Open all day) & Breakfast
8:30	8:45	Chairman's Introduction
<b>8:45</b>	<b>9:45</b>	<b>Keynote, "Natural vs Synthetic molecules for Health &amp; wellbeing: Why does Nature always win in the end??" <i>Cardinal Room</i></b>  Dr. Asha Oroskar, President & CEO of Orochem
9:45	10:00	Coffee Break
<b>10:00</b>	<b>11:30</b>	<b>Session I: Solutions to CO2 Problems</b> <b>Session Chair, David Bahr, Carbon Clean Solutions USA, INC.</b>
10:00	10:30	<b>Reduce Operating Costs in Biogas Upgrading to Renewable Natural Gas</b>  David Bahr, <i>Carbon Clean Solutions USA, INC.</i>
10:30	11:00	<b>No Carbon Left Behind</b> Speaker, Matt Hagen, <i>LanzaTech</i>
11:00	11:30	<b>Integration of CO2 Capture Into an Existing Power Plant</b> Danielle Koren, <i>Sargent and Lundy LLC</i>
11:30	12:30	Lunch
<b>12:30</b>	<b>1:15</b>	<b>Keynote: "Metal-Organic Frameworks at Tunable Platforms for Gas Storage, Chemical Separations and Catalysis", <i>Cardinal Room</i></b>  Dr. Randy Snurr, John G. Searle Professor and Department Chair, Northwestern University
1:15	1:30	Coffee Break
<b>1:30</b>	<b>3:10</b>	<b>Session II: Modeling and Simulation for Chemical and Bio-Pharma Industry</b> <b>Session Chair, Jaydeep Kulkarni, ANSYS</b>
1:30	1:55	<b>Advanced Residue Fluid Catalytic Cracking (RFCC) Regenerator Analysis</b> Lev Davydov, Azita Ahmadzadeh, Reza Mostofi, <i>UOP</i>
1:55	2:20	<b>Simulation-based digital twins to improve asset operation and maintenance management</b>  Anchal Jatale and Jaydeep Kulkarni, <i>ANSYS, Inc.</i>
2:20	2:45	<b>Lyophilizer/freeze-dryer equipment qualification using computational fluid dynamics</b> Tong Zhu, <i>AbbVie</i>
2:45	3:10	<b>A 4-Phase Model and Simulation of Methane Production from a Gas Hydrate Reservoir</b> Deniz Hinz, Hamid Arastoopour and Javad Abbasian, <i>IIT</i>
3:10	3:20	Coffee Break
<b>3:20</b>	<b>5:00</b>	<b>Session III: Water &amp; Wastewater Systems</b> <b>Session Chair, Jarad Champion, Tat Ebihara</b>
3:20	3:40	<b>Evaluation of water treatment technologies for scale reduction</b>  Elliot Lewis, Geosyntec consultant
3:40	4:00	<b>Industrial Wastewater Treatability Studies – The Importance of Designing the Right System</b>  Mike Hickey, Geosyntec Consultants
4:00	4:20	<b>Stormwater and Process Wastewater Treatment Technology Selection for a Fuel Terminal Facility</b> Tat Ebihara, Jacobs Consultancy
4:20	4:40	<b>Boiler Feedwater Treatment Technology Selection for an Industrial Complex</b>  Tat Ebihara, Jacobs Consultancy
4:40	5:00	<b>Engineers Without Borders - El Salvador Drinking Water Project</b>  Lianne Estrella, Donohue & Associates

**March 18-19, 2019**  
**UIC, IL**  
**2019 Midwest Regional Conference**

Start Time	End Time	
<b>Day 2 - Tuesday March 19, Track 2, Illinois C</b>		
7:45	8:30	Registration (Open all day) & Breakfast
8:30	8:45	Chairman's Introduction
<b>8:45</b>	<b>9:45</b>	<b>Keynote, "Natural vs Synthetic molecules for Health &amp; wellbeing: Why does Nature always win in the end??" <i>Cardinal Room</i></b>  Dr. Asha Oroskar, President & CEO of Orochem
9:45	10:00	Coffee Break
<b>10:00</b>	<b>11:30</b>	<b>Session I: Process and System Modeling of Hydrocarbon Systems</b> <b>Session Chair, Adam Kanyuh, UOP</b>
10:00	10:30	<b>Prediction of temperature profile of Sensative material during transportation during extreme weather</b>  Klaus R. Menschig, <i>Stephen</i>
10:30	11:00	<b>Gas-Solid Fluidized Bed Stripper - A Review</b> Allan Issangya, <i>PSRI</i>
11:00	11:30	<b>Dampening Regeneration Peak Profiles of Temperature Swing Adsorption</b> Xiaoming Wen, <i>UOP</i>
11:30	12:30	Lunch
<b>12:30</b>	<b>1:15</b>	<b>Keynote: "Metal-Organic Frameworks at Tunable Platforms for Gas Storage, Chemical Separations and Catalysis", <i>Cardinal Room</i></b>  Dr. Randy Snurr, John G. Searle Professor and Department Chair, Northwestern University
1:15	1:30	Coffee Break
<b>1:30</b>	<b>3:10</b>	<b>Session II, YP session</b> <b>Session Chair, Larry Avtzis &amp; Kim Douglas</b>
1:30	2:20	<b>Job search for chemical Engineers</b> Robert Anderson, <i>IIT</i>
2:20	3:10	<b>Intro to Partcicle Technolgy</b> Ben Freireich, <i>PSRI</i>
3:10	3:20	Coffee Break
<b>3:20</b>	<b>5:00</b>	<b>Session III, Bio-Medical &amp; Material Engineering</b> <b>Session Chair, Meenesh Singh (UIC) &amp; Satish J. Parulekar (IIT)</b>
3:20	3:40	<b>Synergistic effect of fatty acids and nisin on inhibiting biofilm and persister formation of Listeria monocytogenes</b> Jiacheng Zhou, <i>IIT</i>
3:40	4:00	<b>Quantum Capacitance Based Amplified Graphene Phononics for Studying Neurodegenerative Diseases</b> Bijentimala Keisham, <i>UIC</i>
4:00	4:20	<b>Probiotic Leuconostoc mesenteroides inhibits biofilm formation of Listeria monocytogenes</b>  Kuili Fang, <i>IIT</i>
4:20	4:40	<b>A bottom-up proteomic approach to identify substrate specificity of outer membrane proteases OmpT and PgtE</b> Sarah Wood, Northwestern University
4:40	5:00	<b>Sub-Diffraction-Limit Temperature Mapping in Heterogeneous Material Systems</b>  Poya Yasaei, <i>Exponent</i>

# Volunteers Needed for MRC 2019



**2019 AIChE Midwest Regional Conference  
Chicago, IL March 18-19, 2019**

**Hosted by University of Illinois at Chicago  
Organized by AIChE Chicago Local Section**

The AIChE Midwest Regional Conference 2019 organization is well underway. We are still looking for volunteers:

**Onsite Registration** – responsible for checking in attendees and handing out the name badges for all preregistered attendees and distribution of program books. Also, help with signing in&out for PDH (continuing education) certificates. Occasional help with other aspects such as helping attendees with conference information.

If you have an interest, please contact Dennis O'Brien at [dennisobr@gmail.com](mailto:dennisobr@gmail.com). The MRC 2019 will be held March 18-19th 2019 at UIC.

Join us in sharing your photos of the conference on our facebook page with #AIChEMRC!



# Young Professionals Social

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**Come and join your fellow YP's in celebrating a successful conference by relaxing at the YP Social for networking, drinks, and great conversation! Feel free to join us even if you weren't able to make it to the conference!**

**What: YP Social after the 11<sup>th</sup> Annual Midwest Regional Conference @ UIC**

**When: Tues, March 11, 5:30PM – 8:30PM**

**Where: La Taberna Tapas on Halsted  
1301 S. Halsted St  
Chicago, IL**

Hosted by AIChE Chicago Young Professionals Committee (YPC)



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## Young Professionals News

Fellow YPs,

The AIChE 2019 Midwest Regional Conference (MRC) is just around the corner and, if free to do so, all YPs are strongly encouraged to attend. February was a busy month for us YPs as we had our most popular event, Whirlyball, and volunteering at the DuPage Area STEM Expo. More about Whirlyball from Ruben Barajas on the next page. I'll take this opportunity to thank Ruben for his hard work in organizing the event. The DuPage Area STEM Expo was a resounding success packed with families and curious children from opening till closing making for a fun event. We now look forward to our next event, a YP Social open to all after the closing of the 2019 MRC. Whether you're able to attend the MRC or not, we hope you could join us at La Taberna Tapas on Halsted just down the street from the conference. The social is tentatively scheduled for 5:30 PM and we plan to provide free appetizers, courtesy of our sponsor Reactor Resources!

Best regards,  
Eleftherios (Larry) Avtzis  
2018-2019 AIChE-Chicago YP Chair

## 2019 DuPage STEM Expo Photos



## *Young Professionals Whirlyball Summary*

Who said that ChemEs can't drive? 14 young professionals came out to show off their motor skills as they drove bumper cars with one hand and brandished short lacrosse sticks in the other at Whirlyball of Lombard. The objective: to fling a wiffle ball and hit a basketball-like backboard while fending off the opposing team who would try to take possession of the ball and score themselves.

Despite our common educational background - all of us having spent time in the crucible of a Chemical Engineering curriculum - the participants were diverse in their approaches to Whirlyball. Some were aggressive, others timid. Some seasoned Whirlyball veterans played like true field generals, providing instructions to others, and taking their calculated shots unflinchingly. Others focused on precision passing and a few gravitated primarily towards playing defense in the backcourt, a perhaps unglamorous though vital role. We were very happy to have a few newcomers to the game who came out to try something new. Such a mentality will take them far!

As it turns out, the ChemEs in attendance possess fairly strong stomachs and took to the court after consuming the better part of 4 large pizzas. We thank everyone who came out to play and for bringing an appetite for the fun and getting to know each other. We hope all of you YPs out there will join us for future socials.

By Ruben Barajas



## NOMINATIONS FOR 2019-2020 AIChE Chicago SECTION OFFICERS

Members may nominate only one candidate for each office (Chair-Elect, Vice-Chair Program, Treasurer, Secretary) and one Director-at-Large for 2019-2020 Fiscal year.

You must fill out a letter of intent form:

<https://form.jotform.com/50354560774154>

Please submit nominations either on line or download the form and send it to Robert Tsai (Robert.Tsai@honeywell.com). The nomination deadline is on **March 18**.



### ERNEST W. THIELE AWARD

The Ernest W. Thiele award is sponsored by BP and recognizes the outstanding contributions to our profession by a Midwest region chemical engineer. This award was established by the AIChE Chicago Section and is presented annually to a Midwest region AIChE member. This internationally recognized award consists of an engraved plaque and \$1000 honorarium presented at our sectional meeting.

**Nomination forms and additional information can be obtained from the Thiele Committee Chair. Completed nominations are due to the committee chair no later than April 1, 2019**

One of the highest honors a distinguished chemical engineer can receive is our Chicago Section Thiele award. Please consider nominating a deserving engineer for this prestigious award.

### Jim Simnick

BP Amoco Complex, J-8  
150 W. Warrenville Road, Naperville, IL 60566  
Ph 630-420-5936, fax 630-420-4832  
email: [james.simnick@bp.com](mailto:james.simnick@bp.com)

[Link to Memorial Tributes \(National Academy of Engineering\) about Ernest W. Thiele](#)



*Ernest W. Thiele*


## February Meeting Summary

This month, we met at the Greek Island restaurant in Lombard. The venue was just as comfortable as it was last year, with a tasty Greek menu served family style and a chance to drink some Retsina – for those of us who enjoy the refreshing taste of pine tar! About 40 members attended the meeting including the regulars, a group of students from IIT, a group from BP, and a group from BakerRisk. A big thank you to BakerRisk for sponsoring the meeting and for the safety message presented by Bindi Patel regarding lessons learned from two air compressor explosion events.


Dr. Donald J. Chmielewski, Chemical Engineering Professor at the Illinois Institute of Technology, was our invited speaker. Dr. Chmielewski is the 2018 winner of the Ernest W. Thiele award sponsored by BP and prior to his technical talk it was our pleasure to recognize him for the award as Jim Simnick presented him with the Thiele award plaque. In the technical program that followed, Dr. Chmielewski gave us an overview of the interesting work that his group has accomplished on profit-optimizing process control, mercifully skipping over the slides covering the mathematic details of the algorithms for Economic Linear Optimal Control (ELOC), Economic Model Predictive Control, and constrained ELOC. He illustrated the advantages of constrained ELOC with two examples showing how the algorithms can select the optimum process limit to control against based on how the parameters controlled by the process controller are actually varying in the plant. If you want to learn more, Dr. Chmielewski is authoring a book on the subject to be published later this year.

*By Lance Baird*

Thank you to our February Meeting Sponsor,  
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# February Meeting Photos



# Call for Volunteers at the AIChE North Central Regional Student Conference

<http://www.2019utaicheconference.com/>



The University of Toledo Student Chapter of the American Institute of Chemical Engineers (AIChE) will host the 2019 North Central Regional Student Conference on April 12th and 13th. We are excited to showcase local industry and our chemical engineering department. The conference will likely draw about 500 student attendees from over twenty universities in the region. In order to host a successful conference, we will need volunteers and judges for the various conference events. We would love to welcome chemical engineering professionals like yourself to be engaged in the conference through offering your expertise as a volunteer at the event. Volunteer opportunities include:

## Student Paper Competition:

Judge undergraduate research papers. Each student will present their research on any topic in a 15 minute time limit to a panel of judges. The first place winner is invited to present their paper at the national AIChE conference.

## Student Poster Competition:

Judge undergraduate research posters, separate from the paper competition. Each student will present a poster of their research in a brief 3-5 minute presentation to a panel of judges.

## ChemE Car Competition:

Poster: Evaluate Chem-E-Car team poster boards detailing aspects of the competing vehicle, including power source, stopping mechanism, testing results, and safety features

Safety Inspection: Inspect team vehicles to ensure all safety requirements have been met and that the vehicle will operate without risk to operators, contest staff, and spectators

Note: All individuals are encouraged to volunteer for this position, however, individuals with Chem-E-Car competition experience and/or process safety are preferred

## Call for Workshops:

Submit a proposal for the opportunity to host a workshop on a chemical engineering topic in your area of expertise, new and developing technologies, or professionalism. Workshops last 55 minutes.

If you are interested in volunteering at one of these events during the conference, please contact McKenna Wirebaugh, Kayla Piezer, or Professor Liberatore.

McKenna Wirebaugh

[McKenna.Wirebaugh@rockets.utoledo.edu](mailto:McKenna.Wirebaugh@rockets.utoledo.edu)

Corporate Communications Chair

Kayla Piezer

[Kayla.Piezer@rockets.utoledo.edu](mailto:Kayla.Piezer@rockets.utoledo.edu)

Conference Chair

Matthew Liberatore

[Matthew.Liberatore@utoledo.edu](mailto:Matthew.Liberatore@utoledo.edu)

Professor and Advisor to the UT student chapter of AIChE

## Volunteers Needed for Chicago Local Section

The AIChE Chicago Section needs volunteers to help with:

- **Newsletter Contributions** - write meeting summaries, contribute photos, interview members, or write newsletter pieces
- **Outreach Coordination** - serve as contact for outreach activities, investigate new initiatives, organize volunteers for only 3 events in one year.

If you have an interest in any of these positions or if you want to volunteer for any other committee, please contact email [aichechicago@gmail.com](mailto:aichechicago@gmail.com).

## Why Renew Your AIChE Membership?

Renew your membership now to keep learning and growing.

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Stay Connected to 40,000+ international members who take advantage of:

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**[AIChE Chicago is now on Facebook and LinkedIn!](#)**



Like us on Facebook [www.facebook.com/AIChEChicagoSection](http://www.facebook.com/AIChEChicagoSection)



Join our group on [LinkedIn!](#)

## **Upcoming AIChE Conferences, Meetings and Webinars**

### **Chicago Local Meetings**

Mar 18, 2019	Speaker: Markita Landry, UC Berkeley - UIC, Chicago, IL <i>In Conjunction with the Midwest Regional Conference</i>
Apr 2019	Annual Poster Session and April Monthly Meeting—IIT, Chicago
May 22, 2019	Speaker: Jennifer Holgren, CEO of Lanzatech - Skokie, IL

### **AIChE Conferences**

Mar 18-19, 2019	<a href="#">AIChE Midwest Regional Conference</a> , Chicago, IL
Mar 31-Apr 4, 2019	<a href="#">2019 Spring Meeting and 15th Global Congress on Process Safety</a> , New Orleans, LA
April 23-24, 2019	<a href="#">Chemical Ventures Conference 2019</a> , Delaware
May 28-31, 2019	<a href="#">8th International Conference on Bioengineering and Nanotechnology</a> , Baltimore, MD
June 11-13, 2019	<a href="#">2019 Process Development Symposium</a> , Houston, TX

### **AIChE Webinars**

April 3, 2019	Modeling & Simulation in Food Engineering <a href="https://www.aiche.org/academy/webinars/modeling-and-simulation-food-">https://www.aiche.org/academy/webinars/modeling-and-simulation-food-</a>
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## AICHE CHICAGO SECTION

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[aichechicago@gmail.com](mailto:aichechicago@gmail.com)

We are on the web  
[www.aiche.org/Chicago](http://www.aiche.org/Chicago)

**We want you for AIChE-Chicago!**

**We need your help!**

How many opportunities can you find to learn project management, delegation and leadership skills for free? Becoming an officer in the Chicago Section of AIChE is such an opportunity. While you're learning new skills, your local network grows. Just about all of us are either undergoing a career change, contemplating a career change, or are wondering if our career will be changed for us. Volunteering with AIChE is a way to add skills and accomplishments to your resume.

[aichechicago@gmail.com](mailto:aichechicago@gmail.com)

<http://www.aiche.org/community/sites/local-sections/chicago/announcements/volunteerism>

## Submitting Articles to AIChE Columns

We welcome email submissions for our monthly newsletter. Commercial announcements are subject to the fee schedule below. News stories, editorials, technical or career related non-commercial contributions are always welcome with no charge. We consider job postings, announcements of for-fee training courses, expositions, conferences as commercial. Categorization of announcements is at the sole discretion of the Chicago AIChE Board of Directors. Chicago AIChE may publicize activities of interest to our members by cooperating professional societies and other non-profits without charge.

Please submit your material to [aichechicago@gmail.com](mailto:aichechicago@gmail.com) with "newsletter article" as a subject line.

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