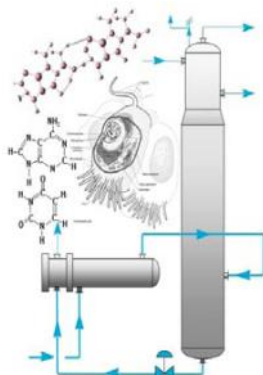


AIChE Chicago Section March Newsletter

Chicago Section

www.aiche.org/Chicago

March 2022



Midwest Regional Conference (MRC)

March 1-2, 2022

Organized by Chicago Local Section of AIChE, with support from AIChE Global



KEYNOTE SPEAKERS

Inside this issue:

MRC 2022	1
Chair's Corner	2
MRC Keynote Profiles, Program, & Sponsors	3
Engineering Career Day	18
March Highlights	19
Officer Nomination	21
Thiele Award Nomination	21
2021-2022 AIChE Chicago Meeting Schedule	22
Scholarship Information	22
Volunteer Opportunities	23
Upcoming AIChE Events	24



Stephen Klejst

Executive Director

U.S. Chemical Safety Board



Simona Rollinson

Chief Operating Officer

ISACA



Henrik Rasmussen

Vice President and Managing Director

Haldor Topsoe



Manos Mavrikakis

Professor and Chair

University of Wisconsin-Madison



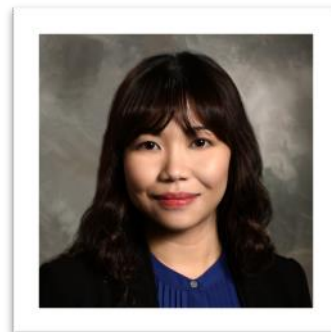
Fouad Teymour

Professor and Director

Illinois Institute of Technology



Chair's Corner



March is the most exciting time of the year for AIChE Chicago Section, when we host the Midwest Regional Conference (MRC) on March 1-2. This marks the 14th MRC, starting from 2008. I would like to start with acknowledging the effort that our conference volunteers have been contributing in setting up this event. This conference is entirely organized by the Chicago Section independent from the national AIChE activities. Preparation has started since summer last year and the organizing committee puts in countless hours of their personal time to push the conference to the finish line. I would like to thank Dr. Matthew Walters (Conference Chair), Dr. Jessica Morris (Conference Co-Chair), Dr. Hakim Iddir (Program Chair), Dr. Belma Demirel (Program Co-Chair), Prof. Don Chmielewski (HSO Chair), Linh Quach (HSO Co-Chair), and several members of both the Section and the organizing committee for putting together an impressive program for this year.

The conference features two full days of keynote speakers, technical presentations, networking activities, a poster section, and Engineering Career Day for local high school students in concurrent to MRC. I encourage our members to participate in High School Outreach (HSO) activity “Networking with the Professionals” ([registration separately](#)) and the March Monthly Meeting ([sign-up link](#)) both on March 1st as much as possible. We would also like to express gratitude toward our sponsors, as their generous support helps us planning the conference every year and keeping the HSO program an essential component of MRC.

Another great news to share is our participation in the 38th Annual DuPage Area STEM Expo, taking place online February 21 - 26, 2022, hosted by Illinois Institute of Technology. The event focuses in online family fun and interactive exploration into science, technology, engineering, and math for school age children, grades K-12. The Outreach committee partnered with Young Professionals Committee to create and deliver 100 “What Makes Candy Sour?” kits with instructions for students to do at-home pH experiments.

March also brings us to a point of nominating volunteers to serve on the Chicago Section’s Board of Directors for the next programming year. AIChE Chicago Section members may nominate one candidate for each open officer and director position. Nomination deadline is March 31st.

I’m looking forward to meeting our members at MRC and other events in March. Take care and stay healthy.

Ha Dinh

AIChE Chicago Section Chair

AIChE Senior Member

2022 MIDWEST REGIONAL CONFERENCE

KEYNOTE SPEAKERS



Lessons Learned from the AB Specialty Silicones Explosion and Fire Incident

Stephen Klejst

Executive Director of Investigations & Recommendations

U.S. Chemical Safety and Hazard Investigation Board (CSB)

Speaker's Bio:

Stephen Klejst, the Executive Director of Investigations and Recommendations, joined the U.S. Chemical Safety Board (CSB) in February 2018. He is responsible for leading the agency's investigation and recommendations programs including the Drivers of Critical Chemical Safety Change advocacy program. Stephen Klejst, the Executive Director of Investigations and Recommendations, joined the U.S. Chemical Safety Board (CSB) in February 2018. He is responsible for leading the agency's investigation and recommendations programs including the Drivers of Critical Chemical Safety Change advocacy program.



Mr. Klejst comes to the CSB after nearly ten years of experience with the National Transportation Safety Board where he was deputy managing director and director of the agency's Office of Railroad, Pipeline and Hazardous Materials Investigations. During his tenure with the NTSB, Mr. Klejst led the agency's investigation of several major pipeline and railroad accidents including the explosion of a natural gas transmission line in San Bruno, California, the rupture of a hazardous liquid transmission line in Marshall, Michigan and several significant freight railroad and transit rail accidents. Prior to joining the NTSB, Mr. Klejst had a distinguished executive career in the railroad industry with responsibilities in the areas of safety, accident

investigation, regulatory compliance and technical training.

Mr. Klejst received his bachelor's degree in chemistry from the University of Pennsylvania and a master of science degree in management from the Stevens Institute of Technology. Mr. Klejst is a Certified Safety and Security Director.

Abstract:

The presentation will focus on the explosion and fire incident that occurred at the AB Specialty Silicones facility on May 3, 2019 in Waukegan, Illinois.

The incident occurred while performing a batch operation that involved manually adding and mixing chemicals in a tank inside the production building. During the operation, an operator pumped an incorrect chemical into the tank, which was incompatible with another chemical that was added to the tank. After the incompatible chemicals were mixed, the tank contents underwent a chemical reaction causing a process upset in which the tank contents foamed and overflowed from the tank's top opening. During the process upset, hydrogen gas was produced and ignited causing a massive explosion and fire. The explosion fatally injured four employees and caused significant property damage.

The presentation will include the cause of the incident and a discussion of the significant safety issues identified during CSB's investigation:

- Mixing of Incompatible Materials
- Effectiveness of the ABSS Hazard Analysis Program
- Storage and Handling of Incompatible Materials
- Batch Equipment and Ventilation System Design
- Gas Detection and Alarm System
- Double Initial Procedure Program
- Process Safety Culture
- Safety Management System that Addresses Process Safety

2022 MIDWEST REGIONAL CONFERENCE

KEYNOTE SPEAKERS



Cyber Risks in an Ever-Changing Landscape

Simona Rollinson

Chief Operating Officer

ISACA

Speaker's Bio:

Simona Rollinson is ISACA's Chief Operating Officer (COO), leading ISACA's technology team, driving the organization's continuing digital transformation, and exploring new opportunities for harnessing technology to elevate the educational and professional development experiences for ISACA's members and enterprise customers. She plays a key role in transforming ISACA's learning technology platform to support the professional community at all levels and stages, from individual development to enterprise solutions.



Simona brings a wealth of technology leadership and strategy experience to ISACA, from her earlier roles as software engineer and developer, to president of Follett Software Company and later as CIO for Cook County Government in Chicago, Illinois—a role for which she was named CIO of the Year. Most recently, she served as CIO for Clayco, a real estate development, architecture, engineering and construction firm. Throughout her executive career, Simona has led successful complex digital transformational change and evolution. The hallmarks of her recent tenure are establishing an enterprise architecture capability, modernizing many foundational systems and legacy platforms and a focus on improved vendor and project management. She holds ISACA's

CISM, CRISC and CDPSE certifications.

Abstract:

IT risks loom larger than ever, especially amidst a global pandemic. High-profile cyberattacks are alarmingly frequent and affect organizations of every size and in every sector. Enterprises must worry about cyber risks – including ransomware attacks, malware intrusions, software and supply chain problems – as well as concerns brought by rapidly evolving technologies. Competing technology risks can make prioritizing difficult. Simona Rollinson, COO of ISACA and past Cook County CIO, will discuss cyber implications for adopting tech like the Internet of Things, cloud and artificial intelligence, as well as the future of cyber risk. Learn the steps you can take to ensure your enterprise is prepared, the questions you should ask to ensure proper oversight and governance, and what practices you can adopt to manage current cyber risk and challenges ahead.

2022 MIDWEST REGIONAL CONFERENCE

KEYNOTE SPEAKERS



The Blue and Green Energy Translation

Henrik Rasmussen

*Vice President of Catalyst and Technology and
Managing Director for the Americas*

Haldor Topsoe

nol for the new energy transition from fossil to blue and green energy sources. We will also discuss the production technology options for each product. The presentation will also discuss the advantages of Solid Oxide Electrical Cell technology (SOEC) over Alkaline electrolysis for the production of green H₂.

Speaker's Bio:

Henrik Rasmussen graduated from the University of Copenhagen in 1989 with a degree in chemical engineering before relocating to the United States in 1991. He has worked at Haldor Topsoe for over 32 years and has held many technical and management positions for all Topsoe's business units. His technical expertise covers the Ammonia, MeOH and Hydrogen plant industry and specifically the refining industry for both catalyst and technology. In the last few years, Henrik has been heavily involved with Topsoe's green and blue process technologies for the production of renewable fuels, green and blue Ammonia, MeOH and hydrogen.



Since 2007, Mr. Rasmussen has been the Vice President of Catalyst and Technology with responsibility of Topsoe's catalyst and license technology business for the U.S., Canada, and the Caribbean. In early 2021, Henrik assumed the role as Managing Director for the Americas responsible for Topsoe business in North and South America with offices in Houston, Los Angeles, Mexico, Brazil and Argentina.

Abstract:

The presentation will detail the current trends in green and blue Hydrogen, ammonia and metha-

2022 MIDWEST REGIONAL CONFERENCE

KEYNOTE SPEAKERS



An atomic-scale perspective on catalyst's stability and on the nature of the active site when the reaction is taking place

Manos Mavrikakis

Ernest Micek Distinguished Chair, James A. Dumesic Professor, and Vilas Distinguished Achievement Professor

University of Wisconsin-Madison

Speaker's Bio:

Manos Mavrikakis is the Ernest Micek Distinguished Chair, the James A. Dumesic Professor, and the Vilas Distinguished Achievement Professor of Chemical Engineering at the University of Wisconsin-Madison. He received a Diploma in Chemical Engineering from NTUA in Greece, and a PhD in Chemical Engineering & Scientific Computing from the University of Michigan, Ann Arbor. Following postdocs at the University of Delaware and the Technical University of Denmark, he joined the faculty of Chemical Engineering at UW-Madison in 1999. His main research interests include the elucidation of detailed reaction mechanisms for thermal heterogeneously catalyzed and electrocatalyzed reactions and the identification of improved catalytic materials from first-principles-based microkinetic modeling. Bridging the pressure gap between UHV experiments and atmospheric/higher pressure experiments in catalysis has been at the heart of his work.

Mavrikakis has been elected Fellow of APS (2013), AAAS (2014), and AVS (2016). He served as his Department Chair (2015-2018) and was a



Visiting Miller Research Professor at UC Berkeley – Chemistry in 2019. He received the 2009 Paul H. Emmett award from the North American Catalysis Society, the 2014 R. H. Wilhelm award from AIChE, the 2019 Gabor A. Somorjai award from ACS, and the 2021 Robert Burwell Lectureship from the North American Catalysis Society. He served as editor-in-chief of Surface Science between 2012 and 2020.

Abstract:

Addressing the question of the nature of the active site has been a central challenge in various types of catalysis (thermal heterogeneous, electrocatalysis, etc.) for a long time. With the advent of modern instrumentation providing atomic-scale information about catalytic surfaces, including under reaction conditions, and powerful spectroscopies combined with ever-increasing computational speed enabling extensive electronic structure calculations, addressing the question on the nature of the active site has become more viable. In this talk, we will discuss examples of catalytic reactions, whereby a combination of reaction kinetics and characterization experiments with microkinetic modeling, informed by first-principles calculations, allows the derivation of insights on: (i) reaction mechanism at the elementary step level and (ii) the nature of the active site when the reaction is taking place. The role of spectator species versus active intermediates turning reactants over to products will be elucidated.

The second objective of this talk is to discuss catalyst's stability, a property equally important to its activity and selectivity, and which often determines whether a catalytic process becomes financially viable or not.

AIChE CHICAGO MARCH DINNER MEETING

Registration (**SEPARATE FROM MRC**): <https://cvent.me/dKZWbG>

Diversity, Perfect Mixing, Symmetry, and Autocatalysis: Random thoughts on celebrating differences



Fouad Teymour

S.C. Johnson Professor of Chemical Engineering and Director of the Center for Complex Systems and Dynamics

Illinois Institute of Technology

Speaker's Bio:

Fouad Teymour is Johnson Polymer Professor in the department of Chemical and Biological Engineering, and the Director of the Center for Complex Systems and Dynamics, at the Illinois Institute of Technology. He is a researcher and award-winning educator. His research focuses in the areas of polymer reaction engineering, nonlinear dynamics, complexity, biofuels, and drug delivery. He is also a Chicago-based Egyptian American playwright whose plays have been produced on Chicago theater stages (Silk Road Rising 2019, Three Cat Productions 2017).

Abstract:

An informal tour of the personal and professional observations of a chemical engineer and theater artist about diversity in nature, society, and engineering, told through stories, anecdotes, video clips, and research article results.

2022 MIDWEST REGIONAL CONFERENCE
TECHNICAL PROGRAM



DAY 1 - TUESDAY MARCH 1ST - Track 1 - AM

8:15 AM	8:30 AM	Conference Introduction: Matt Walters, Jessica Morris AIChE Chicago Introduction: Ha Dinh
8:30 AM	9:30 AM	Keynote Introduction: Matt Walters Morning Keynote: Stephen Klejst & Vonzella Vincent, U.S. Chemical Safety Board <i>Lessons Learned from the AB Specialty Silicones Explosion and Fire Incident</i>
9:30 AM	9:40 AM	Break
		Session I: Process Safety I Session Chair: Ashok Dastidar (Fauske) Session Co-Chair: Neal Muller (Stepan)
9:40 AM	10:00 AM	Talk #1- Hope Luebeck (Chemours) - The Next Chapter in Global Compliance Auditing
10:00 AM	10:20 AM	Talk #2 - Nancy Fulk & Camila Costa da Fonseca (Siemens Energy) - MOC 101 – Fundamentals for Effective Change Management
10:20 AM	10:40 AM	Talk #3 - Trevor Lardinois (Exponent) - Learnings in Material Flash Point Characterization from the Lac-Mégantic Rail Disaster
10:40 AM	10:50 AM	Break
		Session II: Process Safety II Session Chair: Neal Muller (Stepan) Session Co-Chair: Ashok Dastidar (Fauske)
10:50 AM	11:10 AM	Talk #1- Sopuruchukwu Ezenwa (Purdue)- Towards Safer Practices in Academic and Industrial Chemical Laboratories
11:10 AM	11:30 AM	Talk #2- David Hietala (Exponent) - Mechanics of Hot Caustic Solution Eruptions
11:30 AM	11:50 AM	Talk #3– Ashok Dastidar (Fauske) - The Long Road to a Unified Com-
11:50 PM	12:45 PM	Lunch Break

2022 MIDWEST REGIONAL CONFERENCE
TECHNICAL PROGRAM



DAY 1 - TUESDAY MARCH 1ST - Track 1 - PM

12:45 PM	1:45 PM	Keynote Introduction: Jessica Morris Afternoon Keynote: Simona Rollinson, ISACA <i>Cyber Risks in an Ever-Changing Landscape</i>
1:45 PM	2:00 PM	Break
		Session III: Environmental Compliance & Remediation I Session Chair: Shri Dawande (Honeywell) Session Co-Chair: Aditya Prajapati (LLNL), Yechan Won (Geosyntec) Talk #1 - Saurabh Misal (UIC) - Electrochemical Treatment of Perfluoroalkyl Substances in Aqueous Film Forming Foams Using Reactive Electrochemical Membranes
2:00 PM	2:20 PM	Talk #2- Hossein Dallalzadeh Atoufi (IIT) - Utilizing Capping Methods and Sorbent Amendments As a Remediation Strategy for Pfas-Contaminated Sediments
2:20 PM	2:40 PM	Talk #3- Shirin Saffar Avval (UIC) - Pfas Electro-Exidation in Tubular Ti4O7 Membranes : Effect of Concentration and Background Matrix
2:40 PM	3:00 PM	Talk #4- Suzane Carneiro (UIC) - Investigation of the Use of Magnéli-Phase Titanium Oxide Membranes for Ex-Situ Electrochemical Treatment of Pfas-Contaminated Groundwater
3:00 PM	3:20 PM	
3:20 PM	3:30 PM	Break
		Session IV: Environmental Compliance & Remediation II Session Chair: Aditya Prajapati (LLNL) Session Co-Chair: Shri Dawande (Honeywell), Yechan Won (Geosyntec) Talk #1 - Hossein Dallalzadeh Atoufi (IIT) - A Membrane-Based Desalination Technology for Reuse and Recovery of Produced Water
3:30 PM	3:50 PM	Talk #2 - Seyed Javad Amirfakhri (UW - Stevens Point) - Simulation of Pollutants Distribution for an Impulse Input in Free Streams
3:50 PM	4:10 PM	Talk #3- Kiana Modaresahmadi (UIC) - Defluoridation of Water Using Aluminum Coated Sand Sorbent
4:10 PM	4:30 PM	Talk #4- Rohan Sartape (UIC) - Design of an Electric Field-Assisted Water-Gradient System for CO2 Capture
4:30 PM	4:50 PM	
4:50 PM	5:00 PM	Break

2022 MIDWEST REGIONAL CONFERENCE

TECHNICAL PROGRAM



DAY 1 - TUESDAY MARCH 1ST - Track 2 - AM

8:15 AM	8:30 AM	Conference Introduction: Matt Walters, Jessica Morris AIChE Chicago Introduction: Ha Dinh
8:30 AM	9:30 AM	Keynote Introduction: Matt Walters Morning Keynote: Stephen Klejst, U.S. Chemical Safety Board <i>Lessons Learned from the AB Specialty Silicones Explosion and Fire Incident</i>
9:30 AM	9:40 AM	Break
9:40 AM	10:00 AM	Session I: Polymer Science Session Chair: Karthika Suresh (UIC) Session Co-Chair: Carina Martinez (UIC) Talk #1 - Shu Xu (ANL) - Effects of Additives on Properties of Chitosan Composite Films
10:00 AM	10:20 AM	Talk #2- Karthika Suresh (UIC)- Extensional Rheology and Pinching Dynamics of Polysaccharide Food Thickener
10:20 AM	10:40 AM	Talk #3- Cheryl Slykas (UIC) - Mapping the Spinnability of PEO Fibers Via Centrifugal Force Spinning Using Rheology and Evaporation
10:40 AM	10:50 AM	Break
10:50 AM	11:10 AM	Session II: Bioengineering & Nanotechnologies I Session Chair: Wujie Zhang (MSOE) Session Co-Chair: Meltem Demirtas (ANL) Talk #1- Noah Hutchinson (MSOE) - Biochemical Characterization and Applications of Upland Cress Biosynthesized Gold Nanoparticles
11:10 AM	11:30 AM	Talk #2- Samuel Stealey (Saint Louis U) - Development of Nanosilicate-Hydrogel Composites for Sustained Delivery of Charged Biopharmaceuticals
11:30 AM	11:50 AM	Talk #3- Sal Hussaini (Colorado) - Microfluidic Chips: Introduction, Production and Application in Chemical Engineering or Bioengineering
11:50 PM	12:45 PM	Lunch Break

2022 MIDWEST REGIONAL CONFERENCE
TECHNICAL PROGRAM



DAY 1 - TUESDAY MARCH 1ST - Track 2 - PM

12:45 PM	1:45 PM	Keynote Introduction: Jessica Morris Afternoon Keynote: Simona Rollinson, ISACA <i>Cyber Risks in an Ever-Changing Landscape</i>
1:45 PM	2:00 PM	Break
		Session III: Bioengineering & Nanotechnologies II Session Chair: Wujie Zhang (MSOE) Session Co-Chair: Meltem Demirtas (ANL)
2:00 PM	2:20 PM	Talk #1- Muskan Kanungo (MSOE) - Design of Novel Bioink Containing Gelatin-Coated Microspheres for Bioprinting
2:20 PM	2:40 PM	Talk #2- Ruth Negru (IIT)- Biocompatible Peg Diacrylate Hydrogel Nanocomposite Emulsion Scale Down for siRNA Drug Delivery Platforms
2:40 PM	3:00 PM	Talk #3- Abigail Hartzell (UIC) - Controlled Release of Cytokines By Biodegradable Toroidal Spiral Particles for Enhancement of Localized CAR-T Cell Therapy
3:00 PM	3:20 PM	Talk #4- Brittany Rupp (Michigan) - Development of the Cellmag-Carwash System for Isolation of Pure Single Cell Populations
3:20 PM	3:30 PM	Networking Break
		Session IV: Machine Learning & Optimization Session Chair: Noah Paulson (ANL) Session Co-Chair: Hakim Iddir (ANL)
3:30 PM	3:50 PM	Talk #1- Weiguo Xie (UMN-Duluth) - Machine Learning for Large Scale Dynamic Systems Based on Model Reduction Technique and Orthogonal Experimental Design Method
3:50 PM	4:10 PM	Talk #2- Shiam Kannan (Vishwamitra Research Institute) - An Efficient Reinforcement Algorithm Approach to Stochastic Optimal Control with Application to Biodiesel Production
4:10 PM	4:30 PM	Talk #3- Hieu Doan (ANL) - Accelerated Discovery of Energy Storage Materials Via Multiobjective Bayesian Optimization
4:30 PM	4:50 PM	Talk #4- Apoorva Nisal (UIC) - Generalized Global Sustainability Model (GGSM) to Study Food-Energy-Water (FEW) Nexus
4:50 PM	5:00 PM	Break

2022 MIDWEST REGIONAL CONFERENCE
TECHNICAL PROGRAM



DAY 1 - TUESDAY MARCH 1ST - EVENING

5:00 PM	6:00 PM	Poster Session Chair: Karthika Suresh (UIC)
6:00 PM	6:30 PM	Break
6:30 PM	8:30 PM	Chicago Section Monthly Technical Dinner Dinner Keynote: Fouad Teymour, IIT <i>Keynote Introduction: Hadjira Iddir</i>

Tuesday dinner meeting Registration

(**SEPARATE FROM MRC**):

<https://cvent.me/dKZWbG>

MRC Registration and Information:

<https://www.aiche.org/conferences/midwest-regional-conference/2022>

2022 MIDWEST REGIONAL CONFERENCE

TECHNICAL PROGRAM



DAY 2 - WEDNESDAY MARCH 2nd - Track 1 - AM

8:25 AM	8:30 AM	Conference Introduction: Matt Walters
8:30 AM	9:30 AM	Keynote Introduction: Belma Demirel Morning Keynote: Henrik Rasmussen, Haldor Topsoe <i>The Blue and Green Energy Translation</i>
9:30 AM	9:40 AM	Break
9:40 AM	10:00 AM	Session I: Refining & Renewables Session Chair: Belma Demirel (bp) Session Co-Chair: Hadjira Iddir (Becht), Meltem Demirtas (Argonne National Laboratory)
9:40 AM	10:00 AM	Talk #1- Peter Nymann (Haldor Topsoe) - Why and How Refineries Will Drive the Transition from Fossil to Renewable Fuels
10:00 AM	10:20 AM	Talk #2- Aline Bueno (Albemarle) - Unlocking the Potential of Existing Hydrotreaters for Processing Renewable Feedstocks
10:20 AM	10:40 AM	Talk #3- Troy Hawkins (ANL) - Life Cycle Greenhouse Gas Implications of Blending Performance-Enhancing Bioblendstocks at Refineries: Integrated Refinery Optimization and Life Cycle Analysis
10:40 AM	11:00 AM	Talk #4- Ulises R. Gracida-Alvarez (ANL) - Life Cycle Analysis of Plastic to Fuel and Plastic Circular Economy
11:00 AM	11:10 AM	Break
11:10 AM	11:30 AM	Session II: Catalysis & Reaction Engineering I Session Chair: Trevor Lardinois (Exponent) Session Co-Chair: Belma Demirel (bp)
11:10 AM	11:30 AM	Talk #1- Ryan Hackler (ANL) - Catalytic Hydrogenolysis of Polyolefin Waste to Higher Value Liquid Products
11:30 AM	11:50 AM	Talk #2- Ranjan Behera (Iowa State) - Non-Oxidative Dehydroaromatization of Long-Chain Alkanes on Intermetallic Surface
11:50 AM	12:10 PM	Talk #3- Jordy Ramos-Yataco (Northwestern) - Assessment of Catalysts for Oxidative Coupling of Methane and Ethylene
12:10 PM	1:00 PM	Lunch Break

2022 MIDWEST REGIONAL CONFERENCE

TECHNICAL PROGRAM



DAY 2 - WEDNESDAY MARCH 2nd - Track 1 - PM

1:00 PM	2:00 PM	<p>Keynote Introduction: Hakim Iddir</p> <p>Afternoon Keynote: Manos Mavrikakis, University of Wisconsin- Madison</p> <p><i>An atomic-scale perspective on catalyst's stability and on the nature of the active site when the reaction is taking place</i></p>
2:00 PM	2:10 PM	Break
		<p>Session III: Catalysis & Reaction Engineering II</p> <p>Session Chair: Trevor Lardinois (Exponent)</p> <p>Session Co-Chair: Belma Dermirel (bp)</p>
2:10 PM	2:30 PM	<p>Talk #1- Haiping Xu (ANL) - Highly Selective Atomically Dispersed Copper Electrocatalyst for CO₂ Reduction to Ethanol</p>
2:30 PM	2:50 PM	<p>Talk #2 - Feiyang Geng (Notre Dame) - Bimetallic Ru-Based Alloy Nanoparticles: Unravelling the Effects of in Addition on Methanol Synthesis from CO₂</p>
2:50 PM	3:10 PM	<p>Talk #3 - Zuhail Cakir (Purdue)- First-Principles Analysis of the Ammonia Decomposition Reaction on High Entropy Alloy Catalysts</p>
3:10 PM	3:30 PM	<p>Talk #4- Rohan Sartape (UIC) - Development of an Integrated System for Electrochemical CO₂ Capture and Conversion</p>
3:30 PM	3:40 PM	Networking Break
		<p>Session IV: Fluid Properties, Fluid Dynamics, & Transport Phenomena</p> <p>Session Chair: Bob Tsai (Honeywell)</p> <p>Session Co-Chair: Karthika Suresh (UIC)</p>
3:40 PM	4:00 PM	<p>Talk #1- Weiguo Xie (UMN-Duluth) - Development on Measurement Technology for Studying Mixing and Reaction State Using Online Electrical Resistance Tomography</p>
4:00 PM	4:20 PM	<p>Talk #2- Bandar Bashmakh (IIT) - Using Molecular Dynamics to Study Separation Mechanisms of Monoatomic Gases Via DD3R Zeolite Membrane</p>
4:20 PM	4:40 PM	<p>Talk #3- Lena Hassan (UIC) - Foam Film Drainage of Milk Protein Derivative Nacas Vs Micellar Surfactant SDS</p>
4:40 PM	5:00 PM	<p>Talk #4- Nadia Nikolova (UIC) - Rheology and Texture of Animal and Plant-Based Mayo Emulsions</p>

2022 MIDWEST REGIONAL CONFERENCE
TECHNICAL PROGRAM



DAY 2 - WEDNESDAY MARCH 2nd - Track 2 - AM

8:25 AM	8:30 AM	Conference Introduction: Matt Walters
8:30 AM	9:30 AM	Keynote Introduction: Belma Demirel Morning Keynote: Henrik Rasmussen, Haldor Topsoe <i>The Blue and Green Energy Translation</i>
9:30 AM	9:40 AM	Break
		Session I: Climate Solution: Action I Session Chair: Dennis O'Brien (Advisian)
9:40 AM	10:00 AM	Talk #1- Joseph Kozak & Jonathan Grabowy (Metropolitan Water Reclamation District of Greater Chicago)- Greenhouse Gas Emissions at the Metropolitan Water Reclamation District of Greater Chicago
10:00 AM	10:20 AM	Talk #2- Blake Davis (Illinois Institute of Technology)- Improved Biochemical Utilization of Indoor, Aquaponic Growing Systems
10:20 AM	10:40 AM	Talk #3- George Crabtree (University of Illinois Chicago) - The Changing Energy Storage Landscape
10:40 AM	11:00 AM	Talk #4- George Crabtree (University of Illinois Chicago) - The Changing Energy Storage Landscape
11:00 AM	11:10 AM	Break
		Session II: Climate Solution: Action II Session Chair: Dennis O'Brien (Advisian)
11:10 AM	11:30 AM	Talk #1- Chao "Chloe" Liang (Northwestern)- Material Flow Analysis of Polyurethane
11:30 AM	11:50 AM	Talk #2- Pavel Tsvetkov (Texas A&M) - Nuclear Energy and Energy Sustainability: Resources, Environment and Climate
11:50 PM	1:00 PM	Lunch Break

2022 MIDWEST REGIONAL CONFERENCE
TECHNICAL PROGRAM



DAY 2 - WEDNESDAY MARCH 2nd - Track 2 - PM

1:00 PM	2:00 PM	<p>Keynote Introduction: Hakim Iddir</p> <p>Afternoon Keynote: Manos Mavrikakis, University of Wisconsin- Madison</p> <p><i>An atomic-scale perspective on catalyst's stability and on the nature of the active site when the reaction is taking place</i></p>
2:00 PM	2:10 PM	Break
		<p>Session III: Energy Storage I</p> <p>Session Chair: Hakim Iddir (Argonne National Laboratory)</p> <p>Session Co-Chair: Juan Garcia (Argonne National Laboratory)</p>
2:10 PM	2:30 PM	<p>Talk #1- Boyu Shi (ANL) - LT-LiMn0.5Ni0.5O2: A Unique Co-Free Cathode for High Energy Li-Ion Cells</p>
2:30 PM	2:50 PM	<p>Talk #2- Juan Garcia (ANL) - Insights from Computational Studies on the Anisotropic Volume Change of Li_xNiO₂ at High State of Charge (x < 0.25)</p>
2:50 PM	3:10 PM	<p>Talk #3- Arturo Gutierrez (ANL) - Probing the Impedance at Low States of Charge in Li- and Mn-Rich Oxides</p>
3:10 PM	3:30 PM	<p>Talk #4- Jehsee Park (ANL) - Electrolyte Engineering to Stabilize Cathode-Electrolyte Interface of Na_{1-x}FeO₂ Cathode for Na-Ion Batteries</p>
3:30 PM	3:40 PM	Break
		<p>Session IV: Energy Storage II</p> <p>Session Chair: Juan Garcia (Argonne National Laboratory)</p> <p>Session Co-Chair: Hakim Iddir (Argonne National Laboratory)</p>
3:40 PM	4:00 PM	<p>Talk #1- Daniel Pert (Michigan) - V₂⁺/V₃⁺ Reaction Intermediate By Surface Enhanced Raman Spectroscopy</p>
4:00 PM	4:20 PM	<p>Talk #2- Sebastiano Giardinella (UIUC) - Compressed Gas Energy Storage Integrated with Combined Heat and Power Plant</p>
4:20 PM	4:40 PM	<p>Talk #3- Akash Jain (ANL) - Active Learning for the Design of Naturally Occurring Organic Redox-Active Materials for Non-Aqueous Redox Flow Batteries</p>
4:40 PM	5:00 PM	<p>Talk #4. - Kamal Nayan (RGIPT) - Development of Eco-Friendly Phase Change Material for Low Temperature Energy Storage Applications</p>

2022 MRC Conference Sponsors

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

GOLD SPONSORS



SILVER SPONSORS



BRONZE SPONSORS



Thank you to our generous sponsors for supporting the 2022 MRC!

**2022 MIDWEST REGIONAL CONFERENCE
HIGH SCHOOL OUTREACH PROGRAM**



Engineering Career Day

The American Institute of Chemical Engineers (AIChE) is proud to host Engineering Career Day for local high school students in concurrent to the AIChE 14th Annual Midwest Regional Conference. This event is a great opportunity for students to explore the exciting profession of a chemical engineer as well as other engineering disciplines. In partnership with Illinois Institute of Technology and University of Illinois at Chicago, this high school outreach program will be hosted virtually with interactive sessions including engineering expos, lab tours, networking with the professionals, and Q&A with the engineering panel! We invite you to discover the world of engineering with us, be inquisitive, and of course, have fun along the way!

If you have any questions, please contact the AIChE High School Outreach Committee at aiche.outreach.chicago@gmail.com.

Event Schedule

- 8:30 am **Welcome Session**
- 8:50 am **Engineering Expo**
Meet current engineering students and learn about engineering clubs!
- 9:50 am **10 Minute Break**
- 10:00 am **Keynote Speaker – Kimberly D. Moore**
Founder and President, KDM Engineering
- 11:00 am **30 Minute Lunch Break**
- 11:30 am **Engineering Panel**
Learn about the day-to-day activities of practicing engineers and engineering students.
Time to ask your most burning questions.
- 12:30 pm **Networking with the Professionals**
Join us for three 20-minute networking sessions and learn about engineering from practicing engineers.
- 1:50 pm **10 Minute Break**
- 2:00 pm **Lab Tours**
Learn about the tools and equipment engineers use to change the world!
- 3:00 pm **Closing Remarks**

HS Outreach Organizing Committee Chairs: Donald Chmielewski (IIT), Linh Quach (bp)

2022 MIDWEST REGIONAL CONFERENCE HIGH SCHOOL OUTREACH PROGRAM



Engineering Career Day Keynote



Growing up, Kimberly Moore was always good at math and science, but didn't know about engineering until she got to college. Now, as president of an engineering consulting firm that specializes in utilities, Moore is passionate about bringing women and minorities into the industry and letting them know there are options available to them in the field.

Check out <https://hopin.com/events/aiche-engineering-career-day-2022> for more information about the event or email us at aiche.outreach.chicago@gmail.com.

Calling All Professional Engineers!

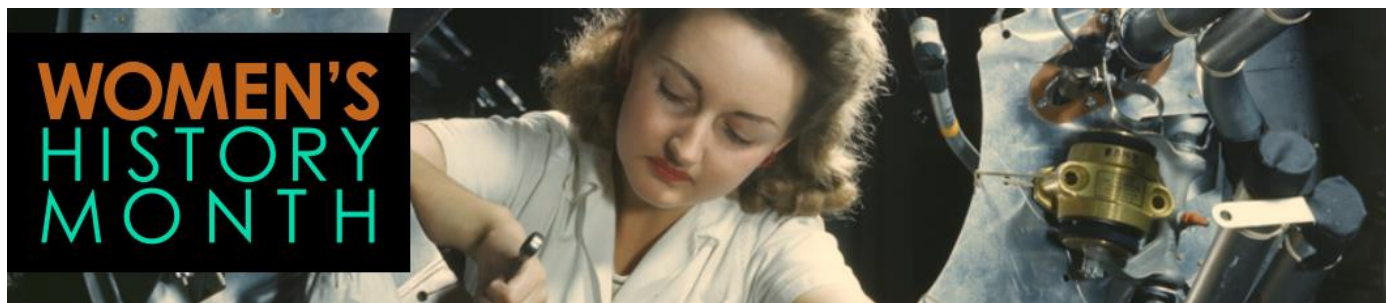
The American Institute of Chemical Engineers (AIChE) is hosting Engineering Career Day for Chicago local high school students to explore a career in engineering. As part of the event, we have a Networking with the Professionals session where high school students have an opportunity to learn more about engineering and ask questions in a small interactive group setting. Each group of high school students will be paired with one professional engineer and one university engineering student to discuss a career in engineering. Please be prepared to share about your career path and what you love about engineering! If you are interested in participating in the Networking with the Professionals, please fill out this [form](#) to express your interest. If you have any questions, please contact us at aiche.outreach.chicago@gmail.com.

Professor Hammack Elected to National Academy of Engineering

Hammack, William S., William H. and Janet G. Lycan Professor, Chemical and Biomolecular Engineering, University of Illinois, Urbana-Champaign. For innovations in multidisciplinary engineering education, outreach, and service to the profession through development and communication of internet-delivered content.

Check out for more information about the nomination [HERE](#)





March is Women's History Month The Library of Congress, National Archives and Records Administration, National Endowment for the Humanities, National Gallery of Art, National Park Service, Smithsonian Institution and United States Holocaust Memorial Museum join in commemorating and encouraging the study, observance and celebration of the vital role of women in American history.

[Read More »](#)

[Women in Chemical Engineering: An AIChE Community](#)

The Women's Initiatives Committee was chartered in 1998, with Joan Brennecke (then at the University of Notre Dame, and today at University of Texas at Austin) as its first chair.

Today, WIC is one of AIChE's most active communities, and the committee continues to expand its activities. In addition to AIChE meeting workshops for undergraduates, grad students, and women in academia, recent programming has been dedicated to women in the petrochemicals industries, women in process safety, workplace retention and reentry for women in the profession, and many other topics pertinent to the community.

In a move to better reflect WIC's contributions and leadership role in AIChE and the chemical engineering profession at large, in 2019 the leaders of the Women's Initiative Committee relaunched the group under a new name — Women in Chemical Engineering, an AIChE Community — emphasizing the inclusivity and community aspect of WIC.

The group's mission remains much the same as it was when WIC was first established:

Women in Chemical Engineering, an AIChE Community will lead in promoting the entry, development, and full participation of women in the Institute and the profession through the following strategies:

- ◆ Develop/distribute resources on subjects pertaining to women in the profession.
- ◆ Mobilize AIChE to meet the needs of existing and potential female members of AIChE and the profession.
- ◆ Provide networking means for women in AIChE.
- ◆ Increase the visibility of women within AIChE and the profession.

[Read Complete Article and More on AIChE ChEnected »](#)



NOMINATIONS FOR 2022-23 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 2022-23 Fiscal year.

Please submit nominations either online:

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

or send an email to:

Ha Dinh at:

hadinh@aiचेchicago.org

The nomination deadline is **March 31**.



Final Month

NOMINATIONS REQUESTED FOR THE 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 \$1,000 honorarium presented at a monthly section 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 01, 2022**.

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

To nominate, please contact:

Jeffrey Zalc

bp Solutions, P&O

phone: 630.881.5478

email: jeffrey.zalc@bp.com

More information about this award and the past winners:

<https://www.aiche.org/community/sites/chicago-local-section/ernest-w-thiele-award>

<https://www.aiche.org/community/sites/local-sections/chicago/thiele-award-past-winners>

2021-2022 Meeting Schedule and Speakers

Month	Date	Speaker	Affiliation	Topic
March	Tues 1st	Prof. Fouad Teymour	IIT	Diversity, Perfect Mixing, Symmetry, and Autocatalysis: Random thoughts on celebrating differences
April	Thurs 21st	Chris Nicholas	Lakril Technologies	
May	Thurs 19th	Martin Gonzalez	bp	

Attention Students and Parents!

If you are an undergraduate chemical engineering student or have a son or daughter that plans to study chemical engineering you may be interested in the Chicago Section's scholarship program.

Applications are due **March 1st**.

Please [click here](#) to read rules and eligibility.

For a Link to the Electronic Version of the AIChE Chicago Scholarship Application Form, Click on the Link Below:

<http://form.jotform.us/form/42814483647159>



[Connect with members & participate in discussions on Engage!](#)

Check out AIChE's member benefit, AIChE Engage. Use the robust directory search to find and connect with members. Participate in technical, career, and academic discussions about chemical engineering.

Thread Subject	Replies	Last Post
Improving Soft Skills Through Mentorship article- Aiche/CEP December 2020 CEP	0	9 hours ago by Chris
PhD Thesis		
Pressure setting for manway cover for tank emergency		by Anil Ramdeo
Digitalization in the process industry		yesterday by John Braccili Original post by Rohit Korde
Slow Progress of New-Age Tools in Chemical Eng	6	3 days ago by Jacob Albrecht Original post by Kushal Sinha



Volunteers Needed for Chicago Local Section

How many opportunities can you find to learn project management, delegation and leadership skills for free? Volunteering with the Chicago Section of AIChE is such an opportunity. While you're learning new skills, your professional 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.

Volunteers are needed to help with:

- Programming – arrange speakers for monthly meetings, and arrange catering and venues
- Logistics – arrange catering and venues
- Newsletter Editor – prepare and publish ten monthly newsletters
- Newsletter Contributions – write meeting summaries, contribute photos, and more
- Engineering Outreach – coordinate three annual K-12 outreach events with high schools and colleges
- Professional Development and Sponsorship – arrange companies to sponsor pre-meeting talks to help fund student dinners
- Awards and Scholarship Committees – Review applications for local Section award and scholarships
- Midwest Regional Conference – many opportunities including programming, logistics, website, advertising, sponsorship, high school outreach, poster session and more!
- Young Professionals – plan socials and programming for young professionals (under 35)



If you are interested in any of these positions, please contact us aichechicago@gmail.com.

Why Renew Your AIChE Membership?

Renew your membership now to keep learning and growing.

Renew Membership



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

- Subscription to AIChE's flagship publication: CEP*
- Education—Access to e-learning courses and instructor-led training, offering Continuing Education Units and PDHs
- Access to CareerEngineer—a comprehensive job site tailored to chemical engineers
- Access to the AIChE eLibrary—a wealth of information from Knovel Life Sciences and the McGraw-Hill AccessEngineering Library collections

[View COMPLETE benefits](#)

Upcoming AIChE Conferences, Meetings and Webinars

AIChE Conferences

Mar 21, 2022	PD2M Singapore Conference , Singapore City, Singapore
Apr 1-3, 2022	Quantum Computing Applications in Chemical and Biochemical Engineering Workshop , Copenhagen, Denmark
Apr 10-14, 2022	2022 Spring Meeting and 18th Global Congress on Process Safety , Henry B. González Convention Center, Hyatt Riverwalk, San Antonio, TX

AIChE Webinars

Mar 23, 2022	Engineering for Bankability
Mar 24, 2022	Detect and Prevent Costly Spills with Double Contained Piping Systems

AIChE Volunteer and Meeting Attendee Conduct Guidelines

AIChE's volunteers are the core of the Institute and make all of its programs, conferences and educational efforts possible. These offerings provide excellent opportunities for AIChE members and meeting attendees to gain greater technical expertise, grow their networks, and enhance their careers. AIChE events provide engineers, scientists, and students a platform to present, discuss, publish and exhibit their discoveries and technical advances.

At all times, volunteers and meeting attendees should act in accordance with AIChE's Code of Ethics, upholding and advancing the integrity, honor and dignity of the chemical engineering profession. AIChE's Board of Directors has developed these guidelines to foster a positive environment of trust, respect, open communications, and ethical behavior. These guidelines apply to meetings, conferences, workshops, courses and other events organized by AIChE or any of its entities and also to volunteers who conduct other business and affairs on behalf of AIChE.

Specifically

1. Volunteers and meeting attendees should understand and support AIChE's Code of Ethics.
2. Volunteers and meeting attendees should contribute to a collegial, inclusive, positive and respectful environment for fellow volunteers and attendees, and other stakeholders,

including AIChE staff.

3. Volunteers and meeting attendees should avoid making inappropriate statements or taking inappropriate action based on race, gender, age, religion, ethnicity, nationality, sexual orientation, gender expression, gender identity, marital status, political affiliation, presence of disabilities, or educational background. We should show consistent respect for colleagues, regardless of discipline, employment status, and organizations for which they work, whether industry, academia, or government.
4. Disruptive, harassing or other inappropriate statements or behavior toward other volunteers, members, and other stakeholders, including AIChE staff, is unacceptable.
5. Volunteers and meeting attendees should obey all applicable laws and regulations of the relevant governmental authorities while volunteering or attending meetings. Volunteers and meeting attendees taking part in any AIChE event, including the ChemECar Competition™, should also comply with all applicable safety guidelines.

Violations of this conduct policy should be reported promptly to the AIChE President or Executive Director.

[**Read AIChE's Code of Ethics**](#)

AIChE CHICAGO SECTION

AIChE Chicago Section
13964 Doral Lane
Homer Glen, IL 60491
aichechicago@gmail.com

<https://www.facebook.com/AIChEChicagoSection>

<https://www.linkedin.com/groups/4538581>

<https://www.aiche.org/community/sites/local-sections/chicago>

**Follow
AIChE
Chicago
Online**

Officers and Contact Information

Chair	<i>Ha Dinh</i>
Chair Elect	<i>Sarika Goel</i>
Past-Chair	<i>Jeffrey Zalc</i>
Programming	<i>Belma Demirel</i>
	<i>David Hietala</i>
Social Media	<i>Sanaz Taghvaii</i>
Treasurer	<i>McKay Rytting</i>
Directors at Large	<i>Jarad Champion</i>
	<i>Pat Shannon</i>
	<i>Robert Tsai</i>
House Committee	<i>Lance Baird</i>
	<i>Seetha Manickam</i>
	<i>Kashif Uddin</i>
	<i>Yechan Won</i>
Newsletter Editors	<i>Yechan Won</i>
	<i>Robert Tsai</i>

We want you for AIChE-Chicago!

AIChE is committed to promoting a fair, just, and equitable profession and society. AIChE believes that all who wish to be a part of the chemical engineering community should have equal opportunity to pursue and achieve success. We work toward a better future for all —through our technical expertise; through how we inspire, engage, retain, and advance future talent; and through how we treat each other within and beyond the profession.

[AIChE Equity, Diversity, and Inclusion Statement | AIChE](#)

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

<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 with "newsletter article" as a subject line.

