

THE ACTION & REACTION

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

Volume 25 Issue 3 November 2022

Mid-Michigan
AIChE[®]
American Institute of
Chemical Engineers

ENGINEERING EXPLORATION SCHOLARSHIP

What

Full scholarship covering tuition, room, and board plus a \$100 travel allotment to explore science and engineering through hands-on laboratory, classroom, and field experiences

Where

Summer Youth Program at Michigan Technological University (MTU) in Houghton, MI



Deadline

November 21, 2022

For Students in grades 9-11

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For More Information :

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Apply online at <https://www.aiche.org/community/sites/local-sections/mid-michigan/engineering-exploration-scholarship>

Words from the Chair

BY MIAO WANG, CHAIR

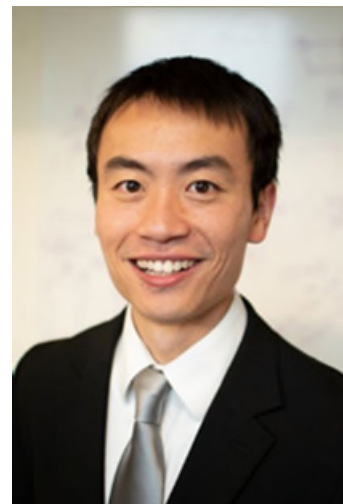
Hello members of the MM AICHE! I hope you had a fruitful summer and is ready to welcome the winter elements. We had our first fall meeting at Mi element grains & ground, on September 20 to kick off our 2022-2023 season. The evening started with a networking session with our chemical engineering peers. We were accompanied by delicious baked goods (Nutella pretzel, focaccia bread, and croissant) made with the leftover grains from the brewing process. The group was entertained with a dozen of trivia questions tying to chemical engineering topics. If you missed the event, you may challenge yourself with the trivia attached to the end of this issue. As part of the kickoff, we provided an overview of this year's programs starting with the seminar series covering a diverse group of guest speakers from all over the U.S. You should find a list of invited speakers for the rest of this season in this issue.

We presented two EDI opportunities for our member to get involved: (1) a day in the life of an industrial scientist – A collaboration between MM AICHE and Midland ACS sections featuring a one-day STEM outreach event with local undergraduate students; (2) a virtual seminar series featuring chemical engineers with diverse career paths. These are great events initiated with our EDI committee that showcase our commitment to creating an inclusive environ-

ment for our members. Please consider volunteering for these events as we work towards engaging with the greater community of central Michigan. If you have connections to area universities, please do let students know these opportunities to connect with practicing scientist and engineers.

The section hosted our first seminar on the Oct. 13th. Professor Oishi Sanyal talked about her exciting research using carbon molecular membranes to recycle ammonia from spend liquid fertilizer. We are having Dr. Nicole Shriner, a lecturer at MSU and a Master Brewer, talking about how much engineering aspects from fluid flow, heat transfer, reactions etc. can be applied to the brewing process in Mid Nov. The plan was to host this seminar in person so members can try out the Porters brewed by this year's brewing team. Our brewing team is also considering a separate event for members to sample the beers. Three beers brewed by our team will also be entered into AICHE beer brewing competition this year. Please take advantage of the event to learn about our young professional outreach and connect with our brewing team members.

Our section has dedicated to engaging our members while making impact across the region. We continued to be an exemplary local chapter with a dedicated Executive Committee that plans the section programming for the season. I had the pleasure to introduce our best practices for STEM



outreach at our local section meeting. With more in-person interaction, I have no doubt we will meeting again in one of the upcoming events. If you have interests in any of the committee, our members of the Executive Committee will help you to get started. We are always welcoming new members to the sections so don't hesitate to reach out to us if you have interests. I look forward to meeting you again. .

Sincerely,
Miao Wang

New IDEAL principal that is included in our section bylaw

BY MIAO WANG, CHAIR

Our executive committee has recently updated our section's bylaw. You may find a copy on our website. In this update, Article XV was incorporated to demonstrate our commitment to the IDEAL principal (Inclusion, Diversity, Equity, Anti-racism, and Learning). This statement articulates our belief that all who wish to become part of this community should have equal opportunity to pursue and achieve success. This article also provides the groundwork for our section to formulate a path forward for promoting EDI actives and efforts. Please reach out to our EDI committee if you would like to be involve

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ARTICLE XV COMMITMENT TO IDEAL PRINCIPLES (INCLUSION, DIVERSITY, EQUITY, ANTI-RACISM, AND LEARNING)

The SECTION is committed to upholding the INSTITUTE's vision for a more fair, just, and equitable chemical engineering profession and society. To that end, the SECTION will support and celebrate advancement along an IDEAL path: (I) Inclusion, (D) Diversity, (E) Equity, (A) Anti-Racism, L (Learning).

To reach this IDEAL, the SECTION is committed to creating, nurturing, and expanding an inclusive, respectful, and welcoming environment where people of all backgrounds and identities are valued and respected and can achieve their full potential. The Mid-Michigan Local Section of AIChE does not discriminate, in any of its activities or operations, on the basis of race, ethnicity, or national origin (ancestry); religious or spiritual practice, or absence thereof (creed); sex, gender, gender identity and expression, or sexual orientation; family or relationship structure; age; disability; marital status; or military status.

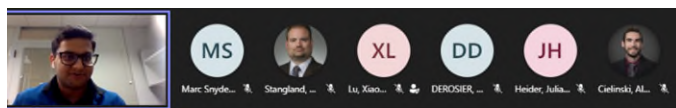
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2022-2023 MMAIChE Fall Kick-Off Event

The kickoff meeting is the first in-person event at the beginning of our season. This event, accompanied by entertainment and catering, features opportunities for our members to connect in a casual format. The section chair hosts the event and showcases the programs (e.g., seminar, outreach and EDI actives, etc.) planned for the season. This is a great opportunity to meet with your fellow members, officers, and committee members. We hosted our 2022-2023 kickoff at the local brewery, Mi element grains & ground, on September 20. We enjoyed delicious baked goods (Nutella pretzel, focaccia bread, and croissant) made using the leftover grains from the brewing process while learning about the upcoming seminars series and EDI activities. We resumed our in-person spring banquet this year so scholarship and section awards will be presented next spring.



October 2022 Seminar Series



Acknowledgement

ADVANCED MEMBRANES FOR SUSTAINABLE SEPARATIONS

Dr. Oishi Sanyal
Assistant Professor, Chemical and Biomedical Engineering



2022/2023 Mid-Michigan AIChE Seminar Series
October 13, 2022

 West Virginia University
BENJAMIN M. STATLER COLLEGE OF
ENGINEERING AND MINERAL RESOURCES

 West Virginia University

 West Virginia University

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October seminar by Oishi Sanyal, assistant professor from West Virginia University on utilizing advanced membranes for sustainable separation processes.

Abstract:

Membranes provide a sustainable alternative to traditional thermal-based separation processes, and as the success of the reverse osmosis technology has shown, the use of membranes could bring down the energy cost of separation by ~ a factor of 10. At WVU, our research group aims to develop membranes as the preferred tools for separations for applications beyond desalination and to that end, I will describe two specific areas that we envision membranes to play a significant role. The first of these areas is that of nutrient recovery (nitrogen and phosphorus) from concentrated wastewater. In combination with a precipitation technique, we have shown that modified nanofiltration membranes enable the recovery of phosphorus and nitrogen (primarily ammonia) in two separate streams. Thus, this technology serves a dual purpose – it could reduce the nutrient discharge load and the problem of “eutrophication”, and at the same, provide an alternate pathway to fertilizer raw material production which traditionally has relied on energy-intensive technologies.

The second area where membranes are poised for growth is that of gas separations. While compared to desalination, membranes only occupy a fraction of the overall gas separation market, it is envisioned that the development of advanced membrane materials would be transformative for this area. Compared to liquid separations, designing gas separation membranes requires an order of magnitude higher precision due to the need to differentiate between penetrants which differ by $<1 \text{ \AA}$. While polymer membranes represent the state-of-the-art for liquid-based applications, gas separation requires scalable rigid, inorganic sieves for adequate performance. Carbon molecular sieve membranes represent a unique class of nanoporous sieves which combine exceptional separation performance with scalable processability. In my talk, I will describe a new feature in these membranes, viz. the slit bypass pores which can enable tuning the membrane properties and maintaining the long-term stability of these membranes. Lastly, I will briefly cover some advanced manufacturing strategies that my group is pursuing to create novel membrane materials for emerging applications.

Day in the Life of an Industrial Scientist

Spend a day learning about STEM careers in industry!
Activities include a problem solving challenge, poster session, and networking with current industrial scientists

When: 9 am – 3 pm, Saturday, January 28, 2023

Where: Gilbertson Hall GS 202, Saginaw Valley State University, University Center, MI 48604

Cost: Free

Breakfast, lunch and snacks provided
Transportation to be subsidized or provided



RSVP by January 5, 2023: <https://forms.gle/17TYtsuxgm2xJAFU7>

Questions? Email Kim Dinh at kdinh@dow.com



Donating to Support a Future Engineer through Mid-Michigan AIChE is Easy!

The Mid-Michigan Section of AIChE is involved in STEM educational outreach. We provide classroom demonstrations and support aspiring engineers through scholarships for summer camps and chemical engineering degrees. Your donation will be used to help Mid-Michigan AIChE sustain the scholarship fund that sends high school students to the Michigan Technological University Summer Youth Program or to an accredited university or college for a degree in chemical engineering.



You can choose to donate using a PayPal account or with a Debit or Credit card.

The PayPal link is:

https://www.paypal.com/donate/?cmd=_donations&business=eestangland%40char-ter.net&item_name=Scholarships+donations+to+Mid-Michigan+AIChE¤cy_code=USD

OR scan the QR Code on your smartphone – it takes seconds!

Donations are tax-deductible and our secretary can provide you with a receipt.
We sincerely thank you for financially supporting aspiring chemical engineers.



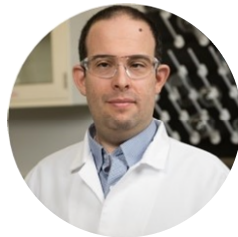
MMAIChE 2021-2022 Executive Committee


Chair

Miao Wang
mwang35@dow.com


Chair-elect

Jyo Lyn Hor
jhor@dow.com


Past Chair

Victor Sussman
Vsussman@dow.com


Secretary

Mark Sullivan
msullivan6@dow.com


Treasurer

Eric Stangland
cestangland@dow.com


Director

Laura Dietsche
ljdietche@dow.com


Director

Shawn Feist
sfeist@dow.com


Director

Bruce Holden
bsh0@hotmail.com


Equity, Diversity and Inclusion

Kimberly Dinh
kdinh@dow.com


Programming

Pranav Karanjkar
pranav.karanjkar@dow.com


**Archivist and
Continuing Education**

Rich Helling
rhelling@dow.com


Awards Committee

Michael Molnar
michael.molnar@dow.com


Programming

Preetam Giri
pgiri@dow.com


Young Professionals

Patrick Heider
plheider@dow.com


**K-12 STEM
Education Outreach**

Carlos Escobar
escobarmarin@dow.com


Scholarships

Ted Calverley
Tcalverley@charter.net


Publicity

Laura Basgall
laura.basgall@dow.com


Webmaster

Bala Sreedhar
bsreedhar@dow.com


Newsletter Editor

Seshasayee Mahadevan
smahadevan@dow.com


Membership

Greg Theunick
greg.theunick@dow.com

The Mid-Michigan Section of AIChE gratefully acknowledges the support provided by the following sponsors.



2022–2023 Seminar announcement – Stay tuned for more details!

Event	Date & Time	Speaker Name
October	October 13 th , 2022 1:00-2:00 PM	Dr. Oishi Sanyal Assistant Professor - West Virginia University
November	November 17 th , 2022 12:00-1:00 PM	Nicole Shriner Teaching Specialist - Department of Chemical Engineering at Michigan State University (Link to meeting)
January		LeRoy Smith President - Optimal Value Energy LLC
February		Sahag Voskian CTO - Verdox
March		Nicholas Thornburg Research Engineer - NREL



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