AIChE Chicago Section September 2021 Newsletter



Inside this issue:

Monthly Meeting	1
Chair's Corner	2
Scholarship Information	3
Thiele Award	
AIChE Elections	6
2021-22 Chicago Section	11





Linked in

September 2021 Meeting Information

Professor Elbashir holds a

Biography: joint appointment as a professor in the Chemical Engineering Program and the Petroleum Engineering Program at Texas A&M University at Qatar. He is the director of Texas A&M's Engineering Experiment Station Gas and Fuels Research Center, a major research center that involves 30 faculty members from both the Qatar and College

members from both the Qatar and College Station campuses of Texas A&M University (<u>http://gfrc.tamu.edu/</u>).

Cont. on Page

He has extensive research and teaching experience from four different countries around the

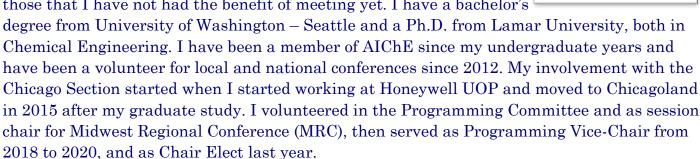
Meeting Summary

Speaker:	Professor Nimir O. Elbashir Director TEES Gas & Fuels Research Cen- ter – College Station, TX and Doha, Qatar Texas A&M University at Qatar		
Торіс:	CARGEN™: A Novel Technology for Boosting Natural Gas Pro- cessing		
Event Date			
Registration Deadline:	Tuesday 9/28/2021		
	5:30 PM Zoom Meeting Opens		
Program:	5:45 PM Section Announcements		
	6:00 PM Technical Presentation, Q&A		
Where:	Zoom Meeting		
Click to	View Event Summary and Register		
Cost:	FREE		
(To donate or learn ab	bout the local section student's scholarship program, please go to this page.)		

Chair's Corner Welcome to a new programming year 2021-2022 of the AIChE Chicago Section!

I would like to start the year by expressing gratitude to Jeff Zalc, our 2020-2021 Chair, for his leadership in an unprecedented year that we learn to organize all the activities virtually and how Jeff has kept the Section operating smoothly from well-attended monthly meetings to his effort to increase membership and volunteers.

My name is Ha Dinh and I am honored to be serving as Chair of the AIChE Chicago Section this year. I would like to introduce myself to those that I have not had the benefit of meeting yet. I have a bachelor's



In the last three years, the previous chairs and the Board of Directors (BOD) have developed the core mission for our Section, which is shown below:

- Promote excellence in chemical engineering education and local practice
- Advance the development and exchange of relevant knowledge
- Uphold and advance the profession's standards, ethics and diversity
- Enhance the lifelong career development and financial security of chemical engineers through networking
- Stimulate collaborative efforts among industry, universities, and professional societies
- Achieve excellence in operations of the Chicago Section

I would like to continue advancing these objectives to foster a collaborative environment for our members to meet, network, and develop their talents and careers, with an emphasis on the role digital technologies to maintain and grow the section's performance. My other goal of this year is to provide more support to the Young Professional Committee (YPC) to increase membership and YP involvement with the Section activities, and provide leadership opportunities to the next generation of chemical engineers in the area. I am requesting the support of our Chicago Section members to comment to <u>aichechicago@gmail.com</u> on our mission and welcoming ideas for execution.

I am excited about this year program and happy to announce that the 2022 Midwest Regional Conference (MRC-14) has been scheduled for March 1 & 2. Please look forward to more details on the event in the upcoming Newsletters and Section email announcements. Before I close, I would like to thank all of our members and volunteers for your resilience in keeping the Section active in the pandemic years. The BOD is constantly monitoring the COVID-19 situation, and we look forward to meeting you at an in-person event soon.

Ha Dinh

AIChE Chicago Section Chair AIChE Senior Member



September Meeting information Cont. from Page 1

world, including his previous position as a researcher at BASF R&D Catalysts Center in Iselin, New Jersey. The focus of his research activities is the design of advanced reactors, catalysts, and conversion processes for natural gas, coal, and CO2 to ultraclean fuels and valueadded chemicals. He has established several unique global research collaboration models between academia and industry with research funds exceeding twelve million dollars during the past six years. He holds several U.S. and European patents and many scientific publications in the form of peer-reviewed journals, books conference papers, and technical industry reports as well as invited talks and conference presentations. The scholarship of his research activities has been recognized by awards from Qatar Foundation (Distinguished Inventor (2020) and Distinguished Energy & Environment Research Team (2012), BASF Corp. (Environmental Catalysis - 2007), Texas A&M University Engineering Experiment Station (Distinguished Research Team building collaboration with the industry-2015), Texas A&M University Qatar (Distinguished Teaching Award, Leadership Award, Faculty Excellence Award), the American Institute of Chemical Engineers (several awards for papers and posters), Shell (Research Excellence Collaboration award in Synthetic Aviation Fuels and other), ORYX GTL Co. (Research Excellence Collaboration in Synthetic Diesel Fuel) and others.

Abstract:

The global shift towards natural and shale gas as a cleaner fuel has inducted a rapid development in natural gas production and exploration activities. One of the essential steps in processing natural gas into products is the midstream plant that removes gases mainly comprising of sulfur compounds and CO2 and the separation of NGLs and others. These treatments have a serious impact on the carbon footprint of natural gas processing products. Dry reforming of methane (DRM) presents an attractive pathway for converting CO2 and CH4 into syngas, a valuable precursor used to produce ultra-clean fuels and value-added chemicals. However, due to process challenges like high-endothermicity, catalyst deactivation, and low-quality syngas, the DRM process is a topic of research and development and far from commercial implementation. A mega project sponsored by the Qatar National Research Funds awarded to Professor Elbashir led to the invention and scale-up of the novel CARGEN[™] technology, which addresses all the challenges of the DRM and provides significant value-addition. The novel CARGEN[™] technology is a combination of two integrated reactors that are designed to leverage thermodynamics benefits of reforming operational conditions to selectively convert GHGs comprising of CO2 and CH4 into solid carbon nanotubes (CNTs) and syngas of high quality. The CARGEN™ technology enables at least 65% CO2 conversion per pass at 50% less energy than the DRM process. The life cycle assessment (LCA) studies also revealed at least a 40% (un-optimized) reduction in carbon footprint and operational costs compared to benchmark reforming processes like Autothermal (ATR) and Partial oxidation (POX) technologies. A complete GTL plant-wide comparison of the CARGEN[™] technology with the ATR process also revealed a net 72% reduction in the overall carbon footprint. Moreover, the syngas produced from the CARGEN[™] technology could be tuned and tailored in -situ in the process for downstream processes like Fischer Tropsch (FT) and methanol synthesis, and many others in the petroleum and petro-Cont. on Page 5 chemical industry. The CARGEN[™] technology addresses DRM chal-

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:



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? Volunteering with the Chicago Section of AIChE is VOLUNTEE 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 sum-

maries, 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.

http://www.aiche.org/community/sites/localsections/chicago/announcements/volunteerism



From Page 3

lenges and produces high-quality carbon nanotubes (CNTs), which are materials of high economic value and demand in the manufacturing of tires, batteries, cement, asphalt, polymers, reinforced plastics, etc. The

CARGEN[™] technology, since its invention in 2018, went through several stages of development, from conceptualization using thermodynamics to experimental proof of concept, catalyst development, scale-up from milligram to multi-gram scale, and technoeconomics. Moreover, the CNTs produced from CARGEN[™] technology have already been validated for quality and applicability in enforced rubber manufacturing for the tire industry, radio-frequency material heating, and electrochemical applications by various reputable companies and academic labs worldwide. This presentation will highlight the unique development journey of the novel CARGEN[™] technology and provide insights into future development plans.

What AIChE Means to Me?

Some 10 years ago, AIChE Chicago section decided to publish a series of personal notes from some of our esteemed members of the community regarding their AIChE journey. We are thinking that it might be a good time to restart that series and thought it might be good to provide the links to those prior ones as some of you may have not been members at that time. At the same time, this might also inspire some of you to send us your own AIChE story (local, international, ..., short, long, ...) to be shared with others. Enjoy!

Annette Johnston	<u>May, 2010</u>
Jeff Perl	<u>August, 2010</u>
J. Peter Clark	September, 2010
Shannon Brown	<u>October, 2010</u>
Urmila Diwekar	<u>December, 2010</u>
Alan Zagoria	<u>February, 2011</u>
Dennis O'Brien	<u>March, 2011</u>
Don Chmielewski	<u>April, 2011</u>

<u>NOMINATIONS REQUESTED FOR</u> <u>THE ERNEST W. THIELE AWARD</u>

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*.

To nominate, please contact: Jeffrey Zalc bp Solutions, P&O phone: 630.881.5478

email: jeffrey.zalc@bp.com

PAGE 5

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.



For President-Elect Billy B. Bardin

Billy B. Bardin, PE, is the Global Digitalization Director for Dow. He joined Union Carbide/Dow in 2000 and has held global leadership roles in research, development, and manufacturing. He

developed and commercialized technologies including catalytic processes for feedstocks/derivatives, processes for olefins production, and digital manufacturing. Bardin created new approaches for promoting technical excellence and fostering career development.

Bardin served on AIChE's Board of Directors (2017– 2019) and chaired the Audit Committee. He also served on the Career and Education Operating Council (CEOC) and the managing board of the Center for Chemical Process Safety (CCPS). He is a Trustee of the AIChE Foundation, a leader of the Catalysis and Reaction Engineering Div., and a member of the South Texas and Eastern North Carolina sections. He is a leader in the Licensing and Professional Development Committee and the Disabilities Outreach and Inclusion Community. Bardin was the founding Chair of AIChE's RAPID Manufacturing Institute. He is a Fellow and Life Member of AIChE.

AICh	Ballot
President-Elect	(Please vote for one)
Billy B. Bardin	
John Cirucci	
Secretary	(Please vote for one)
Dan Lambert	
🗌 MaryKathryn (K	athy) Lee
Director	(Please vote for four)
James R. (Jim)	Beilstein
lan M. Glasgow	
Paulette Clancy	
Emmanuel Dad	a
David J. Dixon	
Anne O'Neal	
Amos A. Avidar	ı
Daryl Roberts	
To be counted valid, received by October	Contract of the second s

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To use an electronic proxy instead of this

paper ballot, please visit:

AIChE.SocietyElection.com

on or after September 7, 2021.

Thank you for voting.



For President-Elect John Cirucci

John Cirucci is the Chief Engineer of the Center for Negative Carbon Emissions and a Research Professor in the Global Futures Laboratory at Arizona State Univ. Prior to joining Arizona State, he had a long industry career in various engineering and R&D leadership roles at Air Products and in private practice. He holds a BS and MS in chemical engineering from Penn State and Lehigh Univ., respectively, but has learned the most from working with many remarkable people.

John has served AIChE in numerous roles. He is a Trustee of the AIChE Foundation, and served as a Board Director (2012–2014) and as a member of the Fellows Council. He has chaired AIChE entities including the Societal Impact Operating Council (SIOC), the Foundation Grants Committee, the Center for Sustainable Technology Practices, and the Global Societal Initiatives Committee. He has also dedicated many years to humanitarian engineering projects in Africa and Central America as a leader in Engineers Without Borders.

 $\underline{https://www.aiche.org/about/governance/elections/2021-board-directors-election}$



For Secretary Dan Lambert

Dan Lambert is a Fellow Engineer at the Savannah River National Laboratory (SRNL) near Aiken, SC, where he specializes in process development for stabilizing radioactive waste generated from nuclear weapons production. He received his BS in chemical engineering from Ohio State Univ. and began his career with the U.S. Air Force's Space Division. He has spent 34 years at SRNL, where he leads research for the only active nuclear waste vitrification facility in the United States. Dan is a 39-year mem-

ber of AIChE; an AIChE Fellow; founding chair of AIChE's Virtual Local Section; former chair of the Career and Education Operating Council (CEOC), the Central Savannah River Local Section, and the Nuclear Engineering Div.; and a Webinar Advisory Editor. He also served on AIChE's Board of Directors (2014–2016). He is a recipient of the Nuclear Engineering Div.'s Robert E. Wilson Award, the Local Section Shining Star Award, and two Gary Leach Recognition awards for service to the Virtual Local Section and the Blue-Ribbon Task Force on Local Sections.



For Secretary Mary Kathryn (Kathy) Lee

Mary Kathyrn (Kathy) Lee has been a researcher at ExxonMobil Corporate Strategic Research for 30 years. She has been an active AIChE member for more than 10 years and was recently elected Fellow. She has served AIChE as a director (2017–2019) and as a member of the Finance Committee. She also served as chair of the Minority Affairs Committee twice and as a member of the Societal Impact Operating Council. She currently serves on the Membership Committee. Kathy received her BS from

the Massachusetts Institute of Technology and her MS from North Carolina State Univ., both in chemical engineering She is currently engaged on the external advisory board at North Carolina A&T Univ. — an HBCU (Historical Black College and University) in her hometown — and on a Partnerships for Research in Education and Materials (PREM) program review board at Hampton Univ. In 2020, Kathy received AIChE's Award for Service to Society in recognition of her dedication to addressing issues of diversity and inclusion in the profession.

2021 Election Timeline

- May 17 Petition Candidate Due
- August 23 Ballot Mail Date
- September 7 Election Commences
- October 12 Ballot Receipt Deadline
- November 8 Results Officially Announced at Annual Business Meeting

For Director Amos A. Avidan

Amos Avidan is a consultant and a retired energy and construction executive. He served as Senior Vice President and corporate manager of engineering and technology at Bechtel Corp., where for 16 years he led people, technology, engineering, and capital projects teams. Prior to Bechtel, he spent 20 years at Mobil Corp.

Amos has an interest in established and emerging energy systems and technologies, sustainable economic growth and its impact on society and

the planet, and addressing global challenges. He has authored and co-authored numerous technical publications and patents. He holds a BS degree from the Technion, and a PhD from the City University of New York, both in chemical engineering. Amos taught the AIChE course in fluidization in the late 1980s and early 1990s, and served on the AIChE Board of Directors from 2006– 2009. He was elected to the National Academy of Engineering in 2009.

For Director

James R. (Jim) Beilstein

Jim Beilstein is Vice President of Advanced Manufacturing at Owens Corning. In this role, he has responsibility for the technology of manufacturing operations, process innovation, capital engineering, and equipment purchasing. In addition to these responsibilities, Jim is the chair of the Science and Technology Leadership Council of Owens Corning and is a member of several enterprise-level senior leadership teams focused on the strategy and execution of operations, organic growth, and capital deployment.

Overall, Jim has more than 26 years of experience in manufacturing, information technology, and research and development in increasing leadership roles. Twenty of Jim's 26 years in industry have been with Owens Corning, where he has established a reputation for building strong links between business leaders, manufacturing, information technology, and R&D. Jim earned BS and PhD degrees in chemical engineering from Lehigh Univ. and the Univ. of Massachusetts, respectively, and he serves on advisory councils for both institutions. Jim is also married to a Lehigh ChemE!

https://www.aiche.org/about/governance/elections/2021-board-directors-election

For Director Paulette Clancy

Paulette Clancy is a professor and the inaugural Head of the Dept. of Chemical and Biomolecular Engineering at Johns Hopkins Univ. She also serves as the Samuel and Diane Bodman Professor Emerita of Chemical Engineering at Cornell Univ. and as Chair of the faculty oversight team for Advanced Research Computing at Johns Hopkins' High-Performance Computing facility.

Her research group is recognized as one of the leading computational groups in atomic-scale mod-







eling of materials and algorithm development. Her current work aims to develop machine learning algorithms to accelerate the search for optimal materials processing protocols. Her research group has always been focused on electronic materials, but it also includes more esoteric projects include xenobiology (Life on Titan) and a screening of therapeutic oligomers to maximize antibacterial ability. She has won numerous awards for mentoring, service learning, civic engagement, and promoting the careers of those from under-represented groups.

For Director

Emmanuel Dada

Emmanuel A. Dada is an Assistant Professor of Chemical Engineering at Prairie View A&M Univ. (PVAMU) and the President and CEO of ChemProcess Technologies, LLC — responsible for process intensification and innovative technologies for reactive distillation, microreactors, and energy efficient processes. He was previously an Associate Research Fellow at FMC, and began his career at Rohm and Haas. Emmanuel received his BSChE from Obafemi Awolowo Univ., Nigeria; and his MS and PhD ChE from Lehigh Univ.

An AIChE Fellow, Emmanuel is a member of the Separations Div., the International Committee, Student Chapter Advisor at PVAMU, a former member of the Admissions Committee, and served as chair of Societal Impact Operating Council (SIOC; 2006–2007). He was active in the Delaware Valley Section before he relocated to Houston in 2009, and is now active in the South Texas Section. He chaired the centennial General Arrangement Committee at the 2008 AIChE Annual Meeting in Philadelphia. He also served as Chair of the Minority Affairs Committee (MAC; 2000–2002) and since 1999 has chaired its Student Awards Committee, overseeing the awarding of more than 500 MAC scholarships.

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For Director David J. Dixon

David Dixon joined AIChE as a student and recently became an AIChE Fellow. He served for four years in the military, primarily overseas, and worked for Dow Corning in process development before earning his PhD in chemical engineering from UT Austin. He then began his academic career at South Dakota School of Mines and Technology. Over his career, he has been Principal Investigator for an NSF-I/UCRC BioEnergy Center; a department chair; helped start a PhD program; and was a Fulbright

Scholar. He has also developed university-level partnerships with German and Mongolian universities, and is extending these efforts into Mexico and South America. His research has been funded by DOD, NSF, EPA, and industry — in diverse areas such as protective membranes, water remediation, and applied solar energy. David received his university's 2019 Presidential Award for Outstanding Professor.





For Director

Ian M. Glasgow

Ian Glasgow is the Director of Project Development at International Alliance Group (IAG), with nearly 20 years of process engineering and process integration experience for the refining, syngas, and chemical industries. He is responsible for project feasibility analysis, process scope development, and owner's engineering support executed at IAG. Ian has a broad understanding of various process technologies, which allows him to support clients' business, economic, and operational objectives. Prior to

IAG, Ian was a senior process engineer at Wood Group Mustang, and a research associate and the Process Integration in the Pulp and Paper Industry Research Chair at École Polytechnique de Montréal.

Ian serves on the Advisory Board for Lamar Univ.'s Midstream Research Center and the Texas Industry Energy Efficiency Program. He holds a BS from the Univ. of Cincinnati and an MS from Auburn Univ., both in chemical engineering.

For Director

Anne O'Neal

Anne O'Neal is Manager of Process Safety Culture and Competency at Chevron, and an AIChE Fellow. Her 40-year career includes senior positions in process safety, as well as health, environment and safety. She founded Chevron's early technical career development program after assignments in process engineering, operations, maintenance, and strategic planning. She also created Chevron's first management system approach to process safety.

She earned her BSChE from the Univ. of California, Davis, where she was a founding member of the Center for Women in Engineering. An early participant in AIChE's Center for Chemical Process Safety (CCPS) and an advisory board member since 2005, she and colleagues pioneered Process Safety Faculty Workshops. She also co-led the API/IPECA sustainability reporting guidelines development.

For Director Daryl Roberts

Daryl Roberts is Chief Operations and Engineering Officer at DuPont. He has 32 years of experience in chemical engineering in a number of leadership positions with companies including Arkema, Inc. and Eastman Kodak. He serves several industry organizations including AIChE, the American Chemistry Council, and the National Action Committee for Minorities in Engineering. He is also a member of the Board of Directors of American Electric Power.

https://www.aiche.org/about/governance/elections/2021-board-directors-election







2021 – 22 Chicago Section Officers

Chair: Ha Dinh



Chair-Elect: Sarika Goel



Past-Chair: Jeff Zalc



Secretary: Nick Marinov



Programing: Belma Demirel David Hietala



Treasurer: McKay Rytting



Jarad Champion



Directors at Large: Pat Shannon



Robert Tsai

2021 AIChE Annual Meeting

In-Person Boston (Nov. 7-11)

&

Virtual (Nov. 15-19)



The Global Home of Chemical Engineers

https://www.aiche.org/conferences/aiche-annual-meeting/2021

PAGE 11

In honor of Hispanic Heritage Month

<u>Helen Rodríguez -Trías</u> (July 7, 1929 – December 27, 2001) was a Puerto Rican pediatrician, educator and activist.

A mother of four, Dr. Rodríguez-Trías fought for abortion rights and to end forced sterilization. She worked tirelessly to provide neonatal care to low-income families and to minority women in the U.S., Central and South America, Africa, Asia and the Middle East.



HELEN RODRÍGUEZ-TRÍAS

(July 7, 1929 - December 27, 2001)

Dr. Rodríguez-Trías was a Puerto Rican pediatrician, educator and activist. In 1993, she became the first Latina to be elected the president of the American Health Association.

HISPANICHERITAGEMONTH

Dr. Rodríguez-Trías was a founding member of the Women's Caucus of the American Public Health Association, a co-founder of the Committee to End Sterilization Abuse and, in 1993, the first Latina to be elected the president of the American Health Association.

AICHE CHICAGO SECTION INFORMATION

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

https://www.facebook.com/AIChEChicagoSection https://www.linkedin.com/groups/4538581 https://www.aiche.org/community/sites/local-sections/chicago



AIChE Chicago Section Officers

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Chair Elect	Sarika Goel	House Committee	Lance Braid
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Secretary	Nick Marinov		Robert Tsai
Treasurer	McKay Rytting	Newsletter Editor	

Why Renew Your AIChE Membership?

Renew your membership now to keep learning and growing.

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 Educations 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

Renew Membership

View COMPLETE benefits