

# FLASHPOINT

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**SPRING24+20<sup>TH</sup> GCPS**  
A Joint AIChE and CCPS Meeting

**March 24–28, 2024**  
New Orleans Hilton Riverside  
New Orleans Convention Center

## 20th GCPS Tracks

*58th Annual Loss Prevention Symposium (LPS)*

*39th Center for Chemical Process Safety (CCPS)*

*International Conference*

*26th Process Plant Safety Symposium (PPSS)*

*13th Process Safety Management Mentoring (PSMM) Symposium*

*Perspectives on Process Safety from Around the World*

## FEATURED TOPICAL CONFERENCES

- **Leadership Development- Professional Skills to Catalyze your Career**
- **Petrochemicals**
- **Process Intensification**
- **Industry 4.0 Topical Conference**
- **Global Congress on Process Safety**
- **36th Ethylene Producers' Conference**
- **24th Topical Conference on Gas Utilization**
- **27th Topical Conference on Refinery Processing**
- **3rd Topical Conference on Heat Exchangers**
- **Hydrogen Safety Topical Conference**
- **Waste Plastics Topical Conference**
- **Industrial Wastewater Management and Water Reuse Topical Conference**
- **The Energy Transition**

## Chair Corner

Hello everyone,

It is my pleasure to serve as the Division Chair for the Fuel & Petrochemicals Division of AIChE. Our F&PD members help society's energy transition to a low-carbon future and sustainability by making a positive impact on society through sharing knowledge, expertise and encouraging volunteers.



The message I would pass on to any member of the F&PD, whether in industry or academia, is to be accountable and adaptable. I wish to focus on making an impact by working together, continuously learning, and sharing sustainability solutions and lessons learned to ensure chemical engineers' voices are heard.

We successfully held the AIChE Spring Meeting March 12 - 16, 2023 in Houston, TX, and the AIChE Annual Meeting November 5 - 10, 2023 in Orlando, FL.

We expect 2024 to be a great year for the F&PD AIChE Spring Meeting. Our Programming Committee team has worked hard and made so much this year toward achieving our ambition. And next year, I believe will be more exciting than ever. The number of accepted papers has significantly increased and well-organized keynote talks. We have included 141 accepted papers and technical presentations submitted through organized various technical sessions:

- The Energy Transition,
- 24th Topical Conference on Gas Utilization,
- 27th Topical Conference on Refinery Processing,
- Petrochemicals,
- 3rd Topical Conference on Heat Exchangers.

These papers and presentations were supported at the conference by exciting keynote talks:

- Industry 4.0 / Fuels and Petrochemicals Division Joint Plenary: Getting Real about Net Zero, **Prof. Niall Mac Dowell**, Imperial College London
- Gas Utilization Keynote: CO<sub>2</sub> Utilization Technologies to Support Decarbonization Journey, **Dr. Lina Rueda**; Qatar Shell Research & Technology Center (QSRTC)

- Topical Conference on Heat Exchangers Keynote: Electrification of Cracking Furnaces, **Robert Broekhuis** SABIC

I thank you for the support you give me and each other, and your continued dedication to drive positive impact in the world of chemical engineering. I appreciate the support of the AIChE Staff for the completion and migration of the new F&PD website and their accountabilities. I look forward to seeing you at the AIChE Spring Meeting in New Orleans, LA.

Be safe and be well.

Let's connect, share, and learn together.

Mahdi Nouri, CEng FIChemE

F&PD Chair

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## ***NOMINATION FOR AIChE FUEL & PETROCHEMICAL DEVISION OFFICERS***

F&PD members may nominate only one candidate for the following positions:

1. 2nd vice-chair
2. Secretary
3. Three for Directors

Please submit nominations by **February 9, 2024** via email to:

Frank Del Nogal

Past-Chair

[frank.delnogal@bp.com](mailto:frank.delnogal@bp.com)

## **3<sup>rd</sup> Topical on Heat Exchangers - AIChE Spring Meeting**

***March 24, 2024 to March 28, 2024***

New Orleans Hilton Riverside, New Orleans Convention Center

Chair: Francesco Coletti, Hexxcell Ltd.

Co-Chair: Nicholas Urbanski, XTO Energy, Inc.

[www.aiche.org/conferences/aiche-spring-meeting-and-global-congress-on-process-safety/2024](http://www.aiche.org/conferences/aiche-spring-meeting-and-global-congress-on-process-safety/2024)

### **Description:**

Heat exchangers remain the workhorse of the process industries, both traditional and emerging, and their proper design and operation are keys to the profitability of any plant. The Topical on Heat Exchangers, at its third edition since 2020, will provide a forum for heat transfer specialists from manufacturing, engineering, consulting, procurement, and operating companies to exchange knowledge and ideas related to heat exchanger design, monitoring and operations.

As in previous years, the Topical is expected to feature engaging discussions on the latest advancements in heat exchanger technology and provide unique opportunities to network with other professionals in the field, learning about innovative solutions to common challenges in heat exchanger design and operation.

### ***Keynote: Electrification of Cracking Furnaces***

Robert Broekhuis, Chief Scientist - Engineering Science, SABIC

Chair: Francesco Coletti , Co-chair: Nicholas Urbanski

### ***Special Session in Honor of Professor Kenneth Bell***

Chair: C.B. Panchal, E3Tec Service, LLC

Co-chair: Francesco Coletti, Hexxcell Ltd.

### **Description:**

Professor Kenneth J Bell (1930-2023) has had a long and illustrious career in the area of heat transfer, He was the 10th Chairman of the Heat Transfer and Energy Conversion Division of AIChE in 1967. Prof. Bell received the Kern Award in 1978, and the Max Jacob award in 2003. He cofounded the Journal of Heat Transfer Engineering in 1979 and was the Editor-in-Chief from 1979 to 1997. Based on his distinguished record as researcher, educator, and practicing engineer as well as exemplary service to the Heat Transfer and Energy Conversion and AIChE, this session is dedicated to Prof. Kenneth Bell. Papers are invited to present on Prof. Bell himself and on his pioneering work of Heat Transfer and Energy Conversion with noticeable impact on design methods. Furthermore, Prof. Bell's work provides a basis for enhanced energy efficiency in the process industry, including Process Intensification, with direct impact on decarbonization.

## ***Modeling, Simulation, Design, and Optimization of Heat Exchangers***

Chair: Andrew Sloley

Co-Chair: Naomi Jabbar, S&B Engineers and Constructors

### **Description:**

This session is dedicated to the design, simulation and optimisation of heat exchangers. Heat exchanger manufactures, engineering and procurement companies as well as operating companies will share the latest advances in heat exchanger design. The Session will also provide an opportunity to share information on the best practices and case studies related to numerical simulations of heat exchangers (e.g. CFD) and design optimisation.

## ***Heat Exchanger Fouling Mitigation***

Chair: C.B. Panchal, E3Tec Service, LLC, Co-Chair: Himanshu Joshi, Hexxcell Ltd

### **Description:**

Fouling is a ubiquitous and a long-standing problem in the process industry. Fouling related issues negatively impact production and operations, reduce energy efficiency, increase costs and greenhouse gas emissions. Papers in this Session cover various aspects of fouling including, but not limited to, modelling, characterisation and mitigating technologies such as chemicals, coatings tube inserts and other solutions that enable fouling mitigation.

## ***Heat Exchanger Cleaning***

Chair: Hans Borgt, Dow, Co-Chair: Roberto Tomotaki, Clean As New

### **Description:**

When heat exchangers are heavily fouled, they need to be taken off-line and cleaned. However, choosing the right method for cleaning (e.g. mechanical, chemical, thermal, ultrasound) is not a simple task. This Session is dedicated to cleaning technologies and improved maintenance practices and will be exploring key aspects in heat exchanger cleaning via the traditional hydro-blasting methodology and alternative to technologies that enable faster, better and cheaper cleaning.

## ***New Heat Exchangers and Heat Transfer Enhancement Technologies***

Chair: Marco Fazzini, SABIC, Co-Chair: Robin Steininger, Tranter

### **Description:**

Papers in this Session will discuss new and innovative technologies related to heat transfer equipment being developed or recently deployed in the field. These include new/unconventional heat exchangers types, manufacturing technologies (e.g. additive manufacturing, 3D printing), applications and design methods. Enhanced heat transfer technologies, particularly where case studies are available, are of specific interest for this session.

## ***Digital Transformation, AI and IoT Technology Applications to Heat Exchangers***

Chair: Jose Loyola-Fuentes, Hexxcell Ltd.

### **Description:**

How can heat exchangers benefit from the application of digital and IoT technologies? This Session explores the latest development in the field of digitalisation for improving the design, operation and maintenance of heat exchangers. In particular, the Session will focus on how to gather process data and leverage on them through digital technologies such as distributed systems, edge computing, artificial Intelligence, and digital-twins, and what are the main challenges associated. Submission of case-studies and practical applications are particularly welcome.

## ***Coating for Heat Transfer Applications***

Chair: Simone Mancin, University of Padova

Co-Chair: Krishnan Chunangad, ExxonMobil

### **Description:**

This Session will focus on the development of new coatings for heat transfer applications including anti-fouling and corrosion protection as well as performance enhancement focused ones for boiling and condensation.

## ***Electrical Heaters***

Chair: Richard Jibb, Lummus Technology

Co-Chair: John Savage

### **Description:**

Electrical heaters have become increasingly popular due to the push towards decarbonisation. During this Session, we will hear from experts in the field who will be sharing their knowledge and experience on topics such as the design and optimization of electrical heaters, the use of advanced materials in their construction, and applications to the process industry, including refining and petrochemicals. We will also discuss the challenges associated with electrical heaters, such as temperature control and safety during operation, and explore innovative solutions to these challenges.



Hello WIC Community,

The elections for the 2024 Women in Chemical Engineering Executive Committee positions have been determined. Thank you to all who voted and sent in nominations. Please see your 2024 WIC leadership below.

- **Chair:** Caroline Szczepanski
- **Vice Chair:** Soumya Srivastava
- **Past Chair:** Maryam Raeeszadeh-Sarmazdeh
- **Secretary:** Amanda Koh
- **Treasurer:** Lisa Volpatti
- **Communications Chair:** Hannah Zierden
- **Awards Chairs:** Anne Grillet, Anuja Tripathi, Ida Chen
- **Fall Programming Chairs:** Elizabeth Haughton, Rose Cersonsky
- **Spring Programming Chair:** Sudipta Bishop
- **Members at Large:** Marina Tsianou, Mahshid Mokhtarnejad, Ni Yan

We hope you have enjoyed all of the great programming, events, and resources, that were available throughout the 2023 year, and we hope you stay tuned to even more exciting things to come in 2024!

If you have questions about getting more involved in WIC, do not hesitate to reach out to us at [membership@aiiche.org](mailto:membership@aiiche.org).

Thank you again,  
WIC 2023 Executive Committee

## ***Topical 6: 24<sup>th</sup> Topical Conference on Gas Utilization highlights industry and academia collaboration***

The 24<sup>th</sup> Topical Conference on Gas Utilization of the 2024<sup>th</sup> AIChE Spring meeting is sponsored by Qatar Shell Research & Technology Center (QSRTC), where Shell will present their joint R&D activities in their center in Qatar by Dr. Lina Rueda, the Director of QSRTC, delivering the keynote of the conference titled “CO<sub>2</sub> Collaboration Technologies to Support Decarbonization Journey”. This paper highlights QSTRC collaboration with academia and their efforts to advance the technology. Nimir Elbashir, Texas A&M University Gas & Fuels Research Center Director and the conference chair will follow this talk by sharing the path to scale up decarbonization technology from lab scale to bench scale and how the industry could speed up this process. The conference also organizes the LNG & Hydrogen Safety, which will be chaired by Zhe Cui (Shell Houston), where the first talk will focus on the evaluation of control for vapor evaluation models, and the second talk on defining trench fire modeling with FDS to be delivered by Drs. F. Gavelli and T. Butts from the Blue Engineering and Consulting, respectively. The third talk in this session will be on the risk assessment of hydrogen for use in hazardous processes by Dr. Naveen Kumar and **Abhineet Raj** from Tata Steel Ltd, India.

The conference is hosting two sessions titled “Decarbonization of Gas Processing.” The first morning session of March 26<sup>th</sup> has three talks: the first one is titled “Inclusion of Green Hydrogen in Power Production from Natural Gas – a Decarbonization Study” by Dr. Fadwa Eljack and H. MKacher from Qatar University. The second talk will focus on the design of DMC catalysts and dehydrogenation agents by Dr. Gasim Ibrahim at Texas A&M University from Dr. Elbashir’s research team (currently MIT-Energy Initiative). The third paper will highlight a novel technique for accounting for carbon fixation of CO<sub>2</sub> utilization technologies, titled “Application of Greenhouse Gas Abatement, Sustainability, and Economic Framework (GASEF) Tool for the Combined Evaluation of Economic and CO<sub>2</sub> Fixation Potential of CCU Reactions” to be delivered as well by Gasim Ibrahim. The second session on Decarbonization hosted three papers: the first one is focused on the decarbonization of the ammonia plants by Nada Mahmoud from Texas A&M University at Qatar, and the second one is titled “A Data-Driven Approach to Optimize the Pre-Combustion CO<sub>2</sub> Capture Process Using Novel Ionic Liquids for Blue H<sub>2</sub> Production” from Qatar University to be delivered by S. Mohammed. The last paper, titled “Affordable “Green-ish” Production of Hydrogen from Methane” by Eric McFarland from the University of California, Santa Barbara, highlights the potential of green hydrogen.



The conference is also hosting two sessions on Gas Utilization on March 26<sup>th</sup>: in the first section Eloy Flores III from the Southwest Research Institute in San Antonio will deliver a talk titled “Enhanced Gas Utilization at Pilot Scales”. The second talk, titled “Catalytic Conversion of CO<sub>2</sub> to Syngas through Methane Dry Reforming and Reverse Water Gas Shift Reactions,” will be delivered by Parisa Ebrahimi from Qatar University. Noor Yusuf from Hamad bin Khalifa University in collaboration with QatarEnergy-LNG will talk titled “Data-Driven Decision-Making for Flexible Natural Gas Allocation Under Uncertainties”. The last paper in that session will be on catalytic bubble column reactors, C-H bond activation, C-O activation, and solid carbon production and separation by Chester Upham, Chemical and Biological Engineering, University of British Columbia.

In the second session of the Gas Utilization will be titled “Engineering Experimental Approach to Study Methane Dehydroaromatization Stability to CO<sub>2</sub> in the Feed Stream” by Maria Hakki from Texas A&M University at Qatar. This talk is followed by a talk from Yokohama, Japan, by Yoshitsugi Kikkawa titled “Green Hydrogen from Green LNG.” The final talk in this session is by Clinton Duewall from the Artie McFerrin Chemical Engineering Department of Texas A&M University titled “Multi-Objective Bayesian Optimization of NGL Fractionators Using Process Simulation”.

Selected papers from the Topical 6: 24th Topical Conference on Gas Utilization will be published in 2024 in a Special Issue of the *Gas Science and Engineering* journal of Elsevier. Also, the best paper/presentation of the conference will receive a \$500 dollars award from Qatar Shell Research & Technology Center.

## Best Paper @ Spring Meeting 2023: **Gasim Ibrahim**



## ***Topical 15: Topical Conference in Energy Transition***

The Fuels and Petrochemicals Division started the Topical conference in Energy Transition (Topical 15) at the AIChE Spring Meeting 2023 in Houston, TX with 6 initial session offerings and a roundtable panel style discussion with Energy Leaders. In its second year, the Topical has already garnered significant attention, growing in size to 11 sessions and the roundtable discussion. This year, the panel discussions will kickoff the Topical on Monday evening at 3:30 PM at 203-204 (New Orleans Ernest N. Morial Convention Center -2024). For more information on sessions and location, see the full program below.

### **Monday, March 25, 2024**

**3:30 PM - 5:00 PM**

#### ***19 INVITED: Energy Transition Roundtable with Energy Leaders***

**Debalina Sengupta**, Texas Sea Grant, Texas A&M University, College Station, TX,

**Saadet Ulas Acikgoz**, Optimization, Honeywell UOP, Des Plaines, IL,

**Shyamal Bej**, Shell, Houston, TX, **Iftekar Karimi**, Department of Chemical and Biomolecular Engineering, National University of Singapore, Singapore and **Felicia Lucci**, Department of Energy  
203-204 (New Orleans Ernest N. Morial Convention Center -2024)

### **Tuesday, March 26, 2024**

**8:00 AM - 9:30 AM**

#### ***Management of Change and Technology Implementation in Energy Transition***

**Kirtan Trivedi**, Global Projects Company, Exxonmobil, Conroe, TX and **Debalina Sengupta**, Texas Sea Grant, Texas A&M University, College Station, TX

203-204 (New Orleans Ernest N. Morial Convention Center -2024)

**10:15 AM - 11:45 AM**

***Management of Change and Technology Implementation in Energy Transition II***

**Kirtan Trivedi**, Global Projects Company, Exxonmobil, Conroe, TX and

**Debalina Sengupta**, NA, TX

**1:30 PM - 3:00 PM**

***22 Meeting Net Zero Targets: Developments in Sustainability & Emission Reduction***

**Jayce Mathews**, SABIC, Houston, TX, **Achim Wechsung**, Exponent, Inc., **Natick, MA** and **Sanjiv Ratan**, ZoneFlow Reactor Technologies LLC, Windsor, CT

202 (New Orleans Ernest N. Morial Convention Center -2024)

**1:30 PM - 3:00 PM**

***106 New Technologies in Energy Transition***

**Karthikeyan Ramasamy**, Pacific Northwest National Laboratory, **Richland, WA** and **Calvin Mukarakate**, Catalytic Carbon Transformation & Scaleup Center, National Renewable Energy Laboratory (NREL), Golden, CO

203-204 (New Orleans Ernest N. Morial Convention Center -2024)

**3:30 PM - 5:00 PM**

***New Technologies in Energy Transition II***

**Karthikeyan Ramasamy**, Pacific Northwest National Laboratory, **Richland, WA** and **Calvin Mukarakate**, Catalytic Carbon Transformation & Scaleup Center, National Renewable Energy Laboratory (NREL), Golden, CO

203-204 (New Orleans Ernest N. Morial Convention Center -2024)

## Wednesday, March 27, 2024

**8:00 AM - 9:30 AM**

### *120 Design for Energy Transition*

**Debalina Sengupta**, Texas Sea Grant, Texas A&M University, College Station, TX and **Fadhil Al-Aboosi**, RAPID Manufacturing Institute, AIChE, New York, NY

203-204 (New Orleans Ernest N. Morial Convention Center -2024)

**8:00 AM - 9:30 AM**

### *135 Modeling for Energy Transition*

**Ivan Castillo**, Chemometrics, AI and Statistics, The Dow Chemical Company, **Lake Jackson**, TX and **Saadet Ulas Acikgoz**, Optimization, Honeywell UOP, Des Plaines, IL

207 (New Orleans Ernest N. Morial Convention Center -2024)

**10:15 AM - 11:45 AM**

### *Modeling for Energy Transition II*

**Ivan Castillo**, Chemometrics, AI and Statistics, The Dow Chemical Company, **Lake Jackson**, TX and **Saadet Ulas Acikgoz**, Optimization, Honeywell UOP, Des Plaines, IL

207 (New Orleans Ernest N. Morial Convention Center -2024)

**10:15 AM - 11:45 AM**

### *142 Analysis for Energy Transition*

**Eric Tan**, Catalytic Carbon Transformation & Scaleup Center, National Renewable Energy Laboratory (NREL), Golden, CO and **Ignasi Palou Rivera**, RAPID/AIChE, New York, NY

203-204 (New Orleans Ernest N. Morial Convention Center -2024)

**1:30 PM - 3:00 PM**

### *151 Transportation Considerations in Energy Transition*

**Tekin Kunt**, PSRG Inc., Houston, TX and **Birol Dindoruk**, Petroleum Engineering, University of Houston, Houston, TX

203-204 (New Orleans Ernest N. Morial Convention Center-2024)

**3:30 PM - 5:00 PM**

### *90 Feedstock Expansion for Energy Transition*

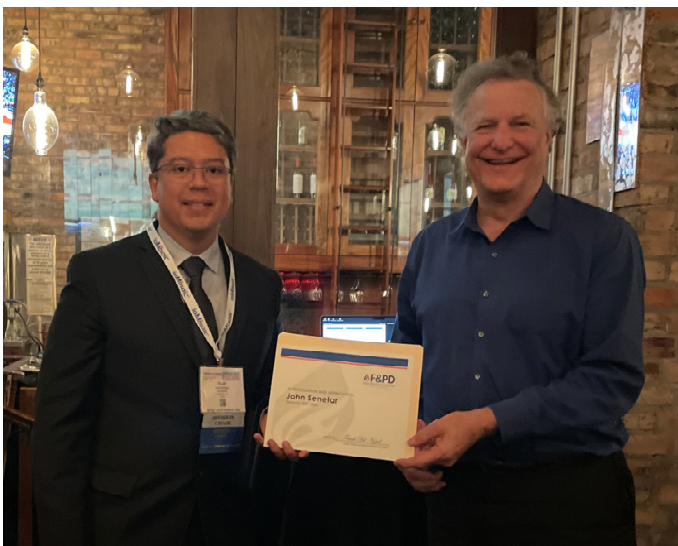
**Shyamal Bej**, Shell, Houston, TX and **David Mannel**, LyondellBasell, TX



## **F&PD Service Award winner 2023: *Virginia Sommer***



## **F&PD Recognition 2023**



### ***F&PD Officers Contact Information***

POSITION	Name	POSITION	Name
Chair	Mahdi Nouri	Programming Chair	Saadet Acikgoz
1 <sup>st</sup> Vice Chair	Francesco Coletti	Director	Taylor Sulmonetti
2 <sup>nd</sup> Vice Chair	Andrew Sloley	Director	Robert Sigal
Past Chair	Frank Del Nogal	Director	Michael Stern
Secretary	Chris Buehler	Director	Sarika Goel
Treasurer	John Senetar	Director	Azita Ahmadzadeh
Communications Director	Open	Director	Attilio Praderio
Webmaster	Open	Director	Ivan Castillo
Newsletter Editor	Azita Ahmadzadeh	Director	Nimir Elbashir
Director – YP Liaison		Director	Babak Rafi

### ***F&PD Recognition 2023***

