THE PARTICLE TECHNOLOGY FORUM (PTF) NEWSLETTER

An American Institute of Chemical Engineers (AIChE) Forum

Message From The Chair

Greetings!

Let's celebrate advancements in particle technologies

The fall season is here, and so is the AIChE Annual Meeting in San Diego, CA. We are having the PTF Awards Dinner on Wednesday evening at San Diego Wine & Culinary Center, social interactions during our poster session and planning meetings, and invited talks by some of our awards winners. A hearty congratulations to all of our award winners! You can read about them in this issue and hear about their research at the conference. I will have much more to say about this year's winners at our PTF Awards Dinner. Let's celebrate the diversity and achievements!

My gratitude to this newsletter's editor, Dr. Shrikant Dhodapkar, for creating informative newsletters, Dr. Ben Freireich for planning all PTF sessions, and all members of the executive committee who keep programming and events running smoothly. We have one special session with invited speakers. Thanks to Prof. Maria Tomassone, Vice-Chair, who took care of the PTF awards.

You are all invited to the PTF General Business meeting. In addition, all past PTF Chairs and past PTF Executive Committee members are invited to attend the PTF Executive Committee (EC) meeting. Please let me know if you plan to attend the EC meeting or if you have questions.

I strongly encourage you to attend the PTF programming meetings for Areas 3a, 3b, 3c, 3d and 3e. The details of these meetings can be found here. Please reach out to the area chairs and co-chairs ahead of time if you want to volunteer for the 2024 programming or plan to attend these meetings.

Lastly, please join us for the PTF Awards Session [#548] that will include three major award lectures. It is scheduled on Wednesday, October 30, 2024, 12:30PM *Sapphire Ballroom M (Level 4 Hilton Bayfront)*. You can learn from outstanding people in our field and congratulate these winners.

Hope to see you in person at AIChE Annual Meeting – October 27-31, 2024, San Diego Convention Center, CA, USA. Remember to purchase PTF dinner tickets as part of the registration. Tickets are almost sold out.

S.B. Reddy Karri, PhD, President &. CEO, PSRI
Chair, The Particle Technology Forum of AIChE
reddy.kari@psri.org

A Peek At The Contents

2024 AIChE ANNUAL MEETING

October 27, 2024
to October 31, 2024

San Diego Convention Center, Hilton San Diego Bayfront

Registration

Technical Program

FROM THE EDITOR'S DESK

To avert the climate crisis resulting from global warming, it is the consensus of the scientific community that anthropogenic emissions of various Green House Gases (GHGs), such as carbon dioxide, methane, and nitrous oxide from all human activity will have to be net-zero by the middle of this century. Climate scientists have projected that temperature increase above 1.5 °C may trigger feedback loops, which can result in irreversible climate changes. Avoidance of such situations will require decarbonization of power, industry, mobility (transportation), buildings, agriculture, and waste processing while restoring natural carbon sinks (i.e., diatoms, dissolution, limestone, forestry) and direct capture technology (DCT). Additional measures to reverse the emissions (negative emissions) may be necessary to reverse the changes we see today. The inability to do so will result in more frequent and more devastating extreme climate events. Indeed, the recent spate of powerful and frequent hurricanes, devastating forest fires, crippling droughts, life-threatening heat waves, and catastrophic floods should be a call for action for all.

According to the U.S. Department of Energy (USDOE) report (Industrial Decarbonization Roadmap, 2022), the industrial sector in the U.S. contributes about 30% of energy-related CO2 emissions, and about 20% of those industrial emissions can be attributed to the chemical industries. They have identified four key approaches to reduce emissions through innovations—namely, CCUS, Process Electrification, Low-Carbon Fuels & Feedstocks and Energy Efficiency. The merit of cross-cutting technologies, spanning various domains, has been highlighted. The interdisciplinary nature of particle technology lends itself perfectly to this aspect. However, innovation does not always come easy. It needs nurturing and promoting. In essence, there is a need for a common platform, where creative and dedicated researchers such as yourselves, can share their knowledge and accelerate future advancements in decarbonization, sustainability, and circularity.

In the upcoming PTF Executive Committee meeting in San Diego, I would like to propose the formation of a NEW sub-group in PTF focused on "Decarbonization, Sustainability and Circularity" – as it relates to particle technology. The following technical areas would be a good starting point for inclusion -

- Carbon Capture Utilization and Sequestration (CCUS)
- Advanced materials for CO_2 capture and processing, such as nano-particle, metal-organic frame-based catalyst
- Low-carbon energy generation, storage, and recovery (e.g. battery, solar, thermal capture) technologies
- Methane pyrolysis for decarbonization
- Process intensification and energy reduction
- Gasification and Pyrolysis: Low-carbon feedstocks and hydrogen production
- Chemical looping technology
- Pathways for recovery of energy critical elements and minerals from electronic waste
- Development of next generation battery materials and manufacturing processes (particles, processing, properties)
- Low-carbon feedstock alternatives for sustainable processes
- Plastics Circularity: waste feedstock handling and processing
- Waste sampling, characterization, and analysis
- Hydrogen Economy: Generation, storage, transport and utilization
- Green Chemistry: Role of Particle Technology
- Additives and safer materials – powder handling and processing including emission reduction
- Bio-processes: Feedstocks, processing and purification
- Handling and processing of bio-feedstocks
- Role of particle technology for sustainable construction materials
- Water treatment, purification and usage economization
- Environmental remediation and cleanup technologies

This new programming area would serve as a conduit for researchers in emerging and transformative technologies for decarbonization, sustainability, and circularity while providing the connectivity between all other groups in the PTF. Joint sessions, tutorials, and workshops will enhance industry, academia and government collaboration.

If you are interested in participating in this effort, please contact me at sdhodapkar@dow.com.

Shrikant Dhodapkar, PhD
Senior R&D Fellow, AIChE Fellow
The Dow Chemical Company, TX

PTF Award Winners 2024

Elsevier PTF Lifetime Achievement Award

Dr. Hamid Arastoopour

Interim Dean, Armour College of Engineering
Henry R. Linden Professor of Engineering
Director of the Wanger Institute for Sustainable Energy Research (WISER)
Illinois Institute of Technology, Chicago
Email: arastoopour@iit.edu

Citation: **Arastoopour is a pioneer in the development of CFD-based models for fluid-particle systems for scale-up and design of energy and sustainability related processes.**

Hamid Arastoopour is currently Henry R. Linden Professor of Engineering and Director of the Wanger Institute for Sustainable Energy Research (WISER) at Illinois Institute of Technology (IIT). Before that, he served as Dean of Armour College of Engineering and as Chairman of the Chemical and Biological Engineering Department at IIT.

Dr. Arastoopour has made significant contributions to research and education in particle technology, fluidization, and computational fluid dynamics (CFD), motivated by energy and sustainability applications. He holds 15 U.S. patents and has published three books, seven book chapters, and about 150 papers.

He is the recipient of the Sustainable Engineering Forum (SEF) Research Award, the Thomas Baron Award in Fluid/Particle Systems, the Donald Q. Kern Award in Heat Transfer and Energy Conversion, the PTF Lectureship Award in Fluidization and Fluid/Particle Systems, the Ernest W. Thiele Award, and the PTF Fluidization Process Recognition Award from the American Institute of Chemical Engineers (AIChE). He is a Fellow of the National Academy of Inventors (NAI) and AIChE. He is also the recipient of the University Excellence in Teaching Award. He has served on the editorial boards of *Powder Technology*, *Sustainability*, and *Fluids* journals.

PTF Award Winners 2024

PSRI Fluidization and Fluid-Particle Systems Award

Dr. James Gilchrist

Ruth H. and Sam Madrid Professor
Chemical & Biomolecular Engineering
Lehigh University, Bethlehem, PA 18015
Email: gilchrist@lehigh.edu

Citation: For his research on granular mixing and segregation, rheology and microstructure of dense suspensions of complex particles, particle-based coatings, and scalable synthesis of janus particles

Dr. James Gilchrist is the Ruth H. and Sam Madrid Professor of Chemical and Biomolecular Engineering at Lehigh University. He directs the Laboratory for Particle Mixing and Self-Organization, focusing on research areas such as particle technology, rheology, transport phenomena, and interfacial science. His work has applications in active and nanostructured particle-based coatings for energy, optoelectronics, environmental engineering, and bioengineering. Dr. Gilchrist earned his B.S. in Chemical Engineering from Washington University in St. Louis and his Ph.D. from Northwestern University, where he studied chaotic mixing and segregation in granular materials under Julio M. Ottino. Before joining Lehigh University in 2004, he was a postdoctoral research associate in the Department of Materials Science and Engineering at the University of Illinois with Jennifer Lewis (now at Harvard University). Dr. Gilchrist served as chair of AIChE's Fluid Mechanics and Particle Technology Forum, and he is currently chair of AIChE's EBPC and sits on the executive committees of the International Society of Coating Science and Technology and the International Polymer Colloids Group. He was a visiting professor in the Department of Chemical Engineering at the California Institute of Technology for the 2011-2012 academic year and a Visiting Professorial Fellow at the University of New South Wales in 2016. His research group has published over 60 peer-reviewed articles and patents and has delivered more than 70 invited talks. His work has received continuous funding from the NSF since 2006, as well as support from the DOE, DoD, NASA, ACS PRF, and various state and local sources. Dr. Gilchrist has been honored with the North American Mixing Forum Young Faculty Award, the ACS PRF Doctoral New Investigator Award, and multiple Lehigh University accolades, including the 2024 P.C. Rossin College of Engineering Experiential Learning Excellence Award. In 2022, he was named a Fellow of the AIChE.

PSRI
Particulate Solid Research, Inc.

Sponsor of the Lectureship in Fluidization Award

PTF Award Winners 2024

Shell Thomas Baron Award In Fluid-Particle Systems

Dr. Carlos M. Rinaldi-Ramos

Department of Chemical Engineering and J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville, FL 32611

E-Mail: carlos.rinaldi@ufl.edu

Citation: For outstanding contributions in ferrohydrodynamics, nanoparticle characterization, thermal cancer therapy using magnetic nanoparticles, and magnetic particle imaging, advancing particle technology with groundbreaking research and mentoring.

Dr. Carlos M. Rinaldi-Ramos is the Chair and Dean's Leadership Professor in the Department of Chemical Engineering and a Professor in the J. Crayton Pruitt Family Department of Biomedical Engineering at the University of Florida. He was born and raised in Puerto Rico, receiving his Bachelor of Science degree in Chemical Engineering from the University of Puerto Rico, Mayagüez in 1998. He completed degrees in Master of Science in Chemical Engineering (2001), Master of Science in Chemical Engineering Practice (2001), and Doctor of Philosophy (2002) in Chemical Engineering at the Massachusetts Institute of Technology. Prior to the University of Florida, Dr. Rinaldi-Ramos was a Professor in the Department of Chemical Engineering at the University of Puerto Rico, Mayagüez from 2002 to 2012.

Dr. Rinaldi-Ramos is a leading scientist in the areas of fluid dynamics and colloidal hydrodynamics of magnetic nanoparticle suspensions (ferrofluids) and biomedical applications of magnetic nanoparticles. His research spans theory and simulation of magnetic nanoparticle response to dynamic magnetic fields, nanoparticle synthesis, and surface modification, characterization of nanoparticle interactions with biological environments, and studies to advance their biomedical applications. In the field of ferrofluids, Dr. Rinaldi-Ramos has made fundamental contributions to the understanding of suspension-scale flows of magnetic nanoparticles in time-varying and rotating magnetic fields. Through a combination of theoretical and experimental work, his group demonstrated that the description of ferrofluid flows in rotating magnetic fields requires consideration of internal angular momentum transport through the so-called couple stress and spin viscosity which are unique features in the description of flows of structured continua. In the field of nanomedicine, Dr. Rinaldi-Ramos has made outstanding contributions to harnessing localized nanoscale heating for magnetic nanoparticle thermal cancer therapy. Dr. Rinaldi-Ramos has pioneered the development and application of new methods to evaluate nanoparticle stability and diffusion in complex and biological fluids. Based on non-invasive monitoring of nanoparticle response to oscillating magnetic fields, these methods permit quantitative measurements of nanoparticle aggregation state, hydrodynamic size, and diffusion in complex environments such as polymer melts, polymer solutions, highly concentrated protein solutions, whole blood, and tissues. More recently, Dr. Rinaldi-Ramos has contributed to understanding the physics of magnetic nanoparticle response to alternating magnetic fields, enabling rational design of high-sensitivity and high-resolution tracers for magnetic particle imaging, an emerging biomedical imaging technology.

PTF Award Winners 2024

SABIC Young Professional Award

Dr. Erini Goudeli

Group Leader and Senior Lecturer
Laboratory of Aerosol Particle Technology
Department of Chemical Engineering
The University of Melbourne, Australia
Email: eirini.goudeli@unimelb.edu.au

Citation: Aerosol reactor design and nanoparticle multiscale simulation, for optimization of particle synthesis and scale-up for applications in catalysis, and energy storage.

Dr. Eirini Goudeli is a Senior Lecturer (Assistant Professor) in the Department of Chemical Engineering and leads the Laboratory of Aerosol and Particle Technology at The University of Melbourne. She received her PhD from ETH Zurich, Switzerland (2016) and carried out postdoctoral research at The University of Minnesota (2017-2018) before joining The University of Melbourne.

Her research program focuses on the design of nanoparticles during aerosol synthesis for catalysis and energy applications integrating detailed multiscale modeling of particle formation and growth in aerosol reactors. She has published 38 papers in leading scientific journals and has received funding from both government and industry. Her contribution in aerosol science and nanoparticle technology has been recognized by numerous prestigious awards, including the 2020 Selby Research Award, the 2018 Inaugural GAeF (German Association for Aerosol Research) Award for Outstanding PhD in Aerosol Science and the 2016 ETH Medal for Outstanding PhD Thesis.

She currently serves as Chair of the Nanoparticle Division (Area 3D) of the Particle Technology Forum. She is Executive Editor of the *Aerosol Research* journal and an early-career editorial board member of the *Journal of Aerosol Science*.

PTF Award Winners 2024

George Klinzing Best PhD Award

Dr. Anuj Joshi

Senior Research Specialist
Dow Industrial Solutions Process & Catalysis R&D
Dow Chemical Company, Freeport TX
Email: ajoshi23@dow.com

Citation: The dissertation explores various particle design strategies, considering the reactor configuration and overall process, with the aim of establishing technologies through valorization of diverse feedstocks.

Anuj Joshi received his Bachelor in Chemical Engineering from the Institute of Chemical Technology India in 2018 and his Ph.D. in Chemical Engineering from The Ohio State University in 2023 under the supervision of Prof. Liang-Shih Fan. Anuj's research involved developing processes for valorizing different feedstocks such as stranded natural gas, waste biomass, and hydrogen sulfide. Specifically, he synthesized an iron-based catalyst for high-pressure dry and mixed methane reforming. He also devised a new moving bed chemical looping configuration for improved syngas yield from biomass and developed a chemical looping process for converting hydrogen sulfide to hydrogen using a nickel sulfide-based carrier. Anuj's knowledge of engineering particles to achieve enhanced reaction rates is also evident from his work on producing hydrogen from hydrogen sulfide. He synthesized a novel metal sulfide chemical looping carrier supported on another metal dioxide for this process. This metal dioxide support boasts a "bifunctional" role: it enhances the carrier's textural properties and it acts as a catalyst for hydrogen sulfide decomposition, significantly accelerating reaction rates. This support-material interaction offers valuable insights for researchers exploring diverse chemical processes. He has authored over 12 research articles, 3 book chapters, and holds 3 patents with over 150 citations.

Anuj is currently a Senior Research Specialist at The Dow Chemical Company in Texas working in their Industrial Solutions' Process and Catalyst R&D.

PTF Award Lectures 2024

548 Particle Technology Forum Award Presentations (Invited Talks)

Wednesday, October 30, 2024

Sapphire Ballroom M (Level 4, Hilton San Diego Bayfront Hotel)

S. B. Reddy Karri, Particulate Solid Research, Inc. (PSRI), Chicago, IL

Maria Tomassone, Department of Chemical and Biochemical Engineering, Rutgers, Piscataway, NJ

Thomas Baron Award (Sponsored by Shell)	Prof. Carlos M. Rinaldi-Ramos	12:30 - 1:20 PM
PSRI Fluidization and Fluid-Particle Systems Award	Prof. James Gilchrist	1:20 - 2:10 PM
Elsevier PTF Lifetime Achievement Award	Prof. Hamid Arastoopour	2:10 -3:00 PM

Magnetic nanoparticle suspensions in time varying magnetic fields – from colloidal hydrodynamics to biomedical applications

Dr. Carlos M. Rinaldi-Ramos

Department of Chemical Engineering and J. Crayton Pruitt Family Department of Biomedical Engineering

University of Florida, Gainesville, FL 32611

Magnetic nanoparticles respond to time varying magnetic fields via a combination of internal dipole and whole-particle rotation, depending on factors such as thermal motion, hydrodynamic drag, magnetic torques, and internal barriers to dipole rotation. Depending on the amplitude and frequency of the time varying magnetic field, the nanoparticle's response can give rise to the conversion of magnetic field energy into heat or to a signal which can be used to monitor nanoparticle rotational diffusion or quantify nanoparticle distribution in a subject. This multitude of magnetic responses, coupled with their biocompatibility, make iron oxide nanoparticles of great interest in sensing, biomedical imaging, drug delivery, and thermal therapy. In this talk I will provide an overview of the theory of magnetic nanoparticle response to time varying magnetic fields and my group's work advancing several of these applications, including monitoring nanoparticle mobility in complex and biological fluids, cancer thermal therapy, rewarming of cryopreserved organs, and non-invasive, unambiguous, and quantitative tracking of nanoparticles and cells using magnetic particle imaging.

Dynamics of fluid-particle systems of magnetically responsive Janus particles

Dr. James Gilchrist

Ruth H. and Sam Madrid Professor, Chemical & Biomolecular Engineering

Lehigh University, Bethlehem, PA 18015

This talk will highlight two recent areas of our research on magnetically-responsive Janus particle systems. Fabricated through continuous roll-to-roll deposition and subsequent physical vapor deposition, these silica or polymeric microspheres are half coated in iron oxide. At the colloidal scale, suspensions of magnetoresponsive Janus colloids form chains and undergo alignment under the influence of a magnetic field. When the magnetic field is aligned with a light path, light transmission through the sample increases as compared to randomly or orthogonally oriented chains. This study investigates the emissivity response of this suspension using visible and infrared light as a function of particle concentration and magnetic field strength. At the granular scale, a magnetic force can be used to tune both the torque and interparticle attraction to tune the motion and friction of dense granular systems. These responsive microroller robotic Janus particles flow with quintessential granular behavior, such as surface layer flow, but against gravity, giving

rise to a negative angle of repose and a negative coefficient of friction. These systems also readily segregate and demonstrate creep as granular materials, suggesting granular physics can be used to optimize how to manipulate microroller systems over obstacles and through complex geometries. Rather than studying how robots can navigate granular media, the granular media itself is the responsive material that is manipulated as an amorphous particle-based soft-robot.

A Pathway to a Sustainable Net-Zero Carbon Economy
Examples of the Critical Role of Particle Technology Research

Dr. Hamid Arastoopour

Interim Dean, Armour College of Engineering, Henry R. Linden Professor of Engineering, Director of the Wanger Institute for Sustainable Energy Research (WISER), Illinois Institute of Technology, Chicago

A pathway to a sustainable net-zero economy is both multi-faceted and complex, and requires abundant supplies of renewable energy and water. An effective pathway aims to improve the reliability, security, and affordability of energy and water by utilizing a least-cost strategy to reduce the negative impact of energy consumption on climate change and water availability; emphasizing the gradual decarbonization of the global energy system; increasing energy efficiency and conservation and preserving natural resources and the environment.

This presentation will discuss examples of the critical role of particle technology research in the creation of a pathway to a sustainable society. Specifically, the presentation will focus on my research group contributions in the areas of computational fluid dynamics (CFD) simulation of CO_2 capture in circulating fluidized bed (CFB) systems; CO_2 conversion to useful products using an electrolyzer; CFD research in the design of thermal energy storage for concentrated solar energy (CSE) using packed and fluidized bed systems; numerical simulation of the production of natural gas from unconsolidated hydrate reservoirs and particle pulverization as a recycling tool for polymeric and elastomeric materials

PTF Membership

To continue receiving the PTF newsletters (3 issues per year) and stay current with particle technology events and news, please make sure to renew/ start your membership by either:

- Checking Particle Technology Forum when renewing your AIChE membership annually,
- Becoming a PTF lifetime member so that you don't have to your renew membership every year

Become a PTF only member (Annually $15, Lifetime $150)

If you don't see the PT membership in your renewal screen, you can choose "Update Membership Options" and add PTF to your order.

You can also contact AIChE customer service at 800-242-4363 (US); 203-702-7660 (Outside the US); or email customerservice@aiche.org for membership questions and help.

PTF Membership Committee

Honorary PTF Session in Memory of Reg Davies

Dr. Reg Davies, 1936-2022

Reg Davies's life, career and accomplishments will be honored during a special session at the 2024 AICHE annual meeting. The session will be on October 30, from 8:00 a.m. to 10:30 a.m. in the Sapphire Ballroom (M) at the Hilton San Diego Bayfront Hotel.

Reg Davies will be remembered as an extraordinarily effective advocate for particle technology and the institutions and people who worked to advance the field. He was born in England in 1936 and started to work as a technician for the British Coal Board at age 18. He completed his B.S. (Chemistry and Physics, Univ. of London) and PhD (Particle Science, Loughborough) while working part time. Reg's research field was particle characterization, but he quickly developed a broad knowledge of the entire field of particle technology and the scientists within it. He moved to the Illinois Institute of Technology in 1967 and then to DuPont's Engineering Department in 1975. He initially worked as an internal consultant at DuPont. Later, having recognized the potential power of an integrated particle technology organization, he was able to form a Particle Science and Technology Group (PARSAT) consisting of staff from DuPont Engineering and DuPont Central Research and Development. Reg managed the new group from 1991 until his retirement in 1999. During this time, Reg helped organize the AICHE Particle Technology Forum and served a term as its chair. Immediately after retirement, Reg became President of IFPRI, an organization he had helped found soon after joining DuPont. He led that organization for 4 years. During his time at IFPRI and long afterward, Reg served as a valued advisor to particle technology activities and centers at the University of Florida, the University of Leeds, and Rutgers.

While at DuPont, Reg was promoted to DuPont Fellow and received the Lavoisier Award for technical accomplishment, DuPont's highest technical recognitions. In 1999 he was elected to the National Academy of Engineering. Throughout his career Reg was very much in demand as a keynote speaker. His vision of the role of particle science in research and industry inspired many others, and his humility, warmth, and sense of humor made him very approachable. Reg sought out talent wherever it could be found and was known for building highly productive networks of people and institutions. He was a valued mentor to dozens of people, most of whom became lifelong friends.

The special AICHE session will consist of 8 lectures from people who knew Reg. Their names and lecture titles are listed below. See the AICHE web site for more details. **The session will be chaired by Tim Bell (DuPont (retired)) and Willie Hendrickson (Aveka, IFPRI President).**

Wolfgang Peukert – Univ. Erlangen-Nuremberg – Fine Particles - Multi-dimensional Characterization
Daniel Green (et al.) – GSK - Particle Formation as the Foundation of Particulate Product Processes
Richard Grenville - RKGMixes LLC - 70 Years of Research and Application in Solid-Liquid Mixing
Karsten Keller – Ingredion - Solid-Liquid Separation – An Overview and the Challenges
Erik Gommeren – Relevance of Particle Technology in Bio-based Manufacturing
Joerg Theuerkauf (et al.) – Dow Chemical Co. – Solids Processing Expertise in Chemical Industry
Keisha Wilson McDowell (et al.) – IFF – The Effect of Particle Attributes on Moisture Sorption
Hamid Arastoopour (et al.) – IIT - Solar Energy Storage Using Packed and Fluidized Bed Systems

From Programming Chair's Desk

Dr. Ben Freireich
Vice President (R&D), Origin Materials, Inc.

This year the AIChE Annual meeting will be held at the Hilton Bayfront Hotel in San Diego, CA. The meeting goes from Sunday, October 27 to Friday, November 1, 2024; however, our PTF technical program is scheduled for Sunday–Thursday. A majority of our technical talks will run in three parallel sessions in three rooms (400A, 400B, and Ballroom M) on the fourth floor (Sapphire) of the hotel. We have 28 technical sessions with over 180 talks scheduled. At 3:30 PM Monday morning, Area 3A celebrates the life of Professor Leonard G. Austin with an honorary session on Particle Breakage in Sapphire 400B. Wednesday morning at 8:00 AM Area 3C hosts an honorary session for Reg Davies in Sapphire Ballroom M. The PTF Awards session is scheduled for Wednesday afternoon in the same room as the following talks:

- 12:30 PM - 1:20 PM, **Prof. Carlos M. Rinaldi-Ramos**, Thomas Baron Award (Sponsored by Shell)
- 1:20 PM - 2:10 PM, **Prof. James Gilchrist**, PSRI Lectureship Award in Fluidization
- 2:10 PM - 3:00 PM, **Prof. Hamid Arastoopour**, Elsevier PTF Lifetime Achievement Award

Immediately after the awards session we host the PTF poster session at 3:30 PM in Exhibition Hall GH on the ground floor of the San Diego Convention Center, immediately north of the Hilton.

The general business meeting will be held on Monday at 6:00PM after the last technical session of the evening. Please make an effort to attend this meeting for important announcements and voting.

Programming meetings will be held Tuesday at 10:50 AM, after the morning sessions are complete. Meetings for areas A–E will be held in Sapphire Ballroom A, 400A, 400B, Ballroom M, and Ballroom D, respectively. Please attend if you have any ideas for future sessions or PTF programming changes. Oftentimes session chairs for the following year are appointed during these programming meetings. Consider volunteering to chair a session. Chairing is a great way to get involved with AIChE, learn more about the ongoing research, and network with our PTF colleagues.

Following a new practice with the broader AIChE, we will also be hosting a separate "**Meet the Industry Candidates**" poster session at 1:00 PM Tuesday, in the same room as the PTF Poster Session. This session is meant to provide an opportunity for the presenters explicitly seeking employment in the industry to showcase their work to prospective employers looking to hire new employees.

Lastly, I would like to highlight the special session in the memory of Prof. Leonard Austin.

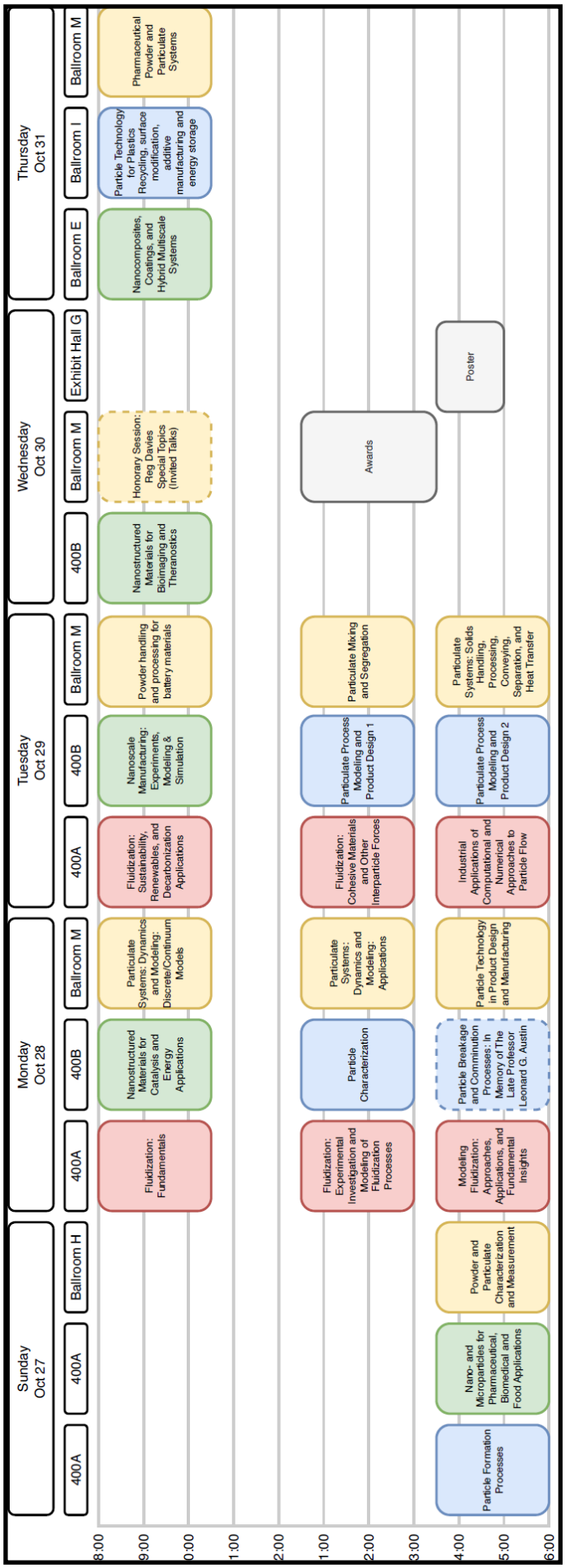
Session 216: Particle Breakage and Comminution Processes: In Memory of The Late Professor Leonard G. Austin

This session is dedicated to the Memory of the Late Professor Leonard G. Austin, who contributed profoundly to our understanding of various milling processes especially ball milling as well as their population balance modeling. The session includes papers on all aspects of particle size reduction, breakage and/or fragmentation*, either in milling, grinding, processing or transport.*

Leonard G. Austin, 93, born October 5, 1929, in London, England peacefully passed away on November 21, 2022. He graduated with a BS in Physics, Chemistry and Pure Maths from London University in 1950, and a PhD in Fuel Technology in 1961 from the Pennsylvania State University.

Amongst his many accomplishments in life, Leonard was an Emeritus Professor in Fuel and Mineral Engineering in the Pennsylvania State University until he retired in 1996, and was passionate about affecting the most positive change in people. After retirement from PSU, Leonard became a visiting Professor in the United Kingdom, Holland, Chile, Canada, South Africa and Australia. Len was honored with several awards including: the Antoine M. Gauding Award of the Society of Mining Engineers in 1983, and the Percy W. Nicholls Award of the AIME-ASME in 1987.

Particle Technology Forum Program Overview
AIChE Annual Meeting 2024



Meetings and Events

Event	Location	Date / Time
PTF Executive Committee Meeting	Sapphire 400A (Lv. 4, Hilton Bayfront)	October 27, 2024 Sunday 6:00PM – 7:00PM
PTF General Business Meeting	Sapphire 400A (Lv. 4, Hilton Bayfront)	October 28, 2024 Monday 6:00PM – 7:00PM
Group 3a – Programming	Sapphire Ballroom, A (Lv. 4, Hilton Bayfront)	October 29, 2024 Tuesday 10:30AM – 11:50AM
Group 3b – Programming	Sapphire 400A (Lv. 4, Hilton Bayfront)	October 30, 2024 Wednesday 10:30AM – 11:50AM
Group 3c – Programming	Sapphire Ballroom, B (Lv. 4, Hilton Bayfront)	October 29, 2024 Tuesday 10:30AM – 11:50AM
Group 3d – Programming	Sapphire Ballroom, M (Lv. 4, Hilton Bayfront)	October 29, 2024 Tuesday 10:30AM – 11:50AM
Group 3e – Programming	Sapphire Ballroom, D (Lv. 4, Hilton Bayfront)	October 29, 2024 Tuesday 10:30AM – 11:50AM

PTF Awards Dinner - Ticket Event

Wednesday – October 30th, 2024

6:30 PM – 10:00 PM

San Diego Wine and Culinary Center

200 West Harbor Drive #120, San Diego, CA 92101

Located in Harbor Club—East Tower

Need to purchase a dinner ticket when you register for the

AIChE Annual Meeting in San Diego

Cost: $125 (almost sold out)

If you need help to purchase the ticket, please contact bradb@aiche.org

Job Posting

Solids Processing Research Scientist

Dow's Plastics & Hydrocarbons R&D organization has an exciting opportunity for a talented & motivated **Research Scientist** with expertise in Solids Processing and Handling (particle technology) in our New Process Technology Development organization. This organization is responsible for process research & development, technology implementation, and troubleshooting across all technology platforms and global assets aligned to our Plastics & Hydrocarbons businesses. As a member of this team, you will work closely with capital project & engineering teams as well as our technology centers to conceptualize, innovate, and design new processes. While the group has a global presence, the current position will be located in **Lake Jackson, TX** at our Texas Innovation Center – a premier work environment with modern offices & laboratories equipped with the latest technology.

The key responsibilities for this role will be to provide technical expertise in the areas of solid particle conveying (pneumatic and mechanical), silo storage, fluidization & fluidized bed processes, drying, coating, feeding/dosing, classification, separation technologies (solid-solid, gas-solid, solid-liquid), mixing/blending, particle engineering, sustainability, and plastics circularity. The ideal candidate will bring in-depth expertise and practical knowledge across a breadth of these solids processing technology areas, and apply scientific principles for innovation, troubleshooting and problem solving.

Key Responsibilities / Duties:

- As the subject matter expert (SME) on solids handling & processing, support R&D and manufacturing organizations for product development, process innovation and troubleshooting.
- Support solids processing aspects of sustainability project in plastics & hydrocarbons.

Coach and mentor junior scientists and technologists.

Required Qualifications:

A minimum of a Master's degree in Chemical Engineering, Mechanical Engineering, or Process Engineering is required; emphasis on solids processing & handling (particle technology) strongly preferred

Minimum of 5 years of relevant experience specifically in the field of solids processing after graduation with the highest degree

Preferred Qualifications:

- PhD with emphasis in solids processing / particle technology
- Prior industrial experience in pilot plant or manufacturing plant operations, ideally involving design and trouble-shooting real world problems and developing innovative & practical solutions
- Proven track record of high performance and ability to convert complex technical issues into straight-forward value propositions
- Ability to generate and interpret data to make statistically relevant conclusions that will be used for process development and design

Note: Domestic relocation assistance is available for this role and may be provided based on eligibility.

Dow Offers:

- A robust total rewards program, including: competitive base pay, variable pay that rewards individual, team, and Company performance, and comprehensive benefits
- On-going learning opportunities within a diverse, inclusive and rewarding work environment
- Career experiences that can span different Dow businesses and functions with opportunities for personal and professional growth
- The chance to work within a global company and interact with colleagues from around the world
- Opportunities that spark your imagination and ignite your passion to help others

Please contact Dr. Shrikant Dhodapkar (sdhodapkar@dow.com / (979)-373-6530) for further information.

PTF Awards and Dinner Sponsors

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Statement on Diversity

The AIChE Particle Technology Forum is committed to maintaining a diverse and inclusive community of highly skilled chemical engineering professionals within the environment of the Institute and profession in which all members, regardless of characteristics such as gender identity and expression, race, religion, age, physical condition, disability, sexual orientation, educational level, socioeconomic class, nationality or ethnicity, are valued and respected."

As a global scientific and engineering society, we affirm the international principles that the responsible practice of science, free from discrimination in all of its forms, is fundamental to scientific advancement and human wellbeing, as outlined by the International Council for Science's (ICSU) Statute 51. We also affirm our commitment to an engineering and scientific environment that facilitates the planning, execution, review and communication of engineering and scientific work with integrity, fairness, and transparency at all organizational levels. This extends to our general scientific endeavors—including our professional interactions and engagement with other engineers, scientists, students, trainees, and the general public. We recognize that harm to our profession, our scientific credibility, individual wellbeing, and society at large is caused by not doing so.

To this end, the PTF will implement the principles of diversity, inclusivity, and equity within PTF leadership and membership to build a community across the chemical enterprise. We are committed to quantifying and monitoring our diversity at least annually at the Executive Committee and reported at the general business meeting.