

## MIT Industrial Liaison Program Faculty Knowledgebase Report

---

2022 MIT Sustainability Conference

---

---

September 20, 2022 - September  
21, 2022

---

Day 1: September 20 (Tuesday)

---

8:00 AM

Registration with Light Breakfast

8:45 AM

## Welcome and Introduction

John Roberts

Executive Director (Interim), [MIT Corporate Relations](#)



John Roberts

Executive Director (Interim)

[MIT Corporate Relations](#)

John Roberts has been Executive Director of MIT Corporate Relations (Interim) since February 2022. He obtained his Ph.D. in organic chemistry at MIT and returned to the university after a 20-year career in the pharmaceutical industry, joining the MIT Industrial Liaison Program (ILP) in 2013. Prior to his return, John worked at small, medium, and large companies, holding positions that allowed him to exploit his passions in synthetic chemistry, project leadership, and alliance management while growing his responsibilities for managing others, ultimately as a department head. As a program director at MIT, John built a portfolio of ILP member companies, mostly in the pharmaceutical industry and headquartered in Japan, connecting them to engagement opportunities in the MIT community. Soon after returning to MIT, John began to lead a group of program directors with a combined portfolio of 60-80 global companies. In his current role, John oversees MIT Corporate Relations which houses ILP and MIT Startup Exchange.

J.J. Laukaitis

Program Director, [MIT Corporate Relations](#)



J.J. Laukaitis

Program Director

[MIT Corporate Relations](#)

J.J. Laukaitis joined the Industrial Liaison Program in 2012 and is a strong believer in the amplifying power that comes from building enduring relationships between industry leaders and MIT researchers and innovators.

J.J. has over 25 years of experience in engineering, product management and commercial sales management across multiple industries including mechanical design and manufacturing, electronics, semiconductor equipment, health care IT and renewable energy.

In his work for PTC, Continuum, Teradyne, DFT Microsystems and GE, J.J. has managed programs to conceive, design and launch new products and services and has led major initiatives to transform customer information into insight for revenue growth.

Ron Spangler

Director, [MIT Corporate Relations](#)



Ron Spangler

Director

[MIT Corporate Relations](#)

Ron Spangler serves as the Director of Corporate Relations, managing a diverse portfolio of companies in the mining, energy, aerospace, and defense sectors. Before joining MIT Corporate Relations, Ron dedicated two decades to an industry career, primarily focusing on various MIT-connected startup companies. In 1994, he earned his doctorate in Aeronautics and Astronautics from MIT, and his extensive contributions include numerous publications and patents. Notably, Ron is also an FAA-licensed pilot with a glider rating.

CJ (Changjie) Guo

Program Director, [MIT Corporate Relations](#)

8:55 AM

## Fireside Chat: Perspectives on Investing and Nurturing Tough Tech Enterprises

Milo Werner  
General Partner  
[The Engine](#)

J.J. Laukaitis  
Program Director, [MIT Corporate Relations](#)



J.J. Laukaitis  
Program Director  
[MIT Corporate Relations](#)

J.J. Laukaitis joined the Industrial Liaison Program in 2012 and is a strong believer in the amplifying power that comes from building enduring relationships between industry leaders and MIT researchers and innovators.

J.J. has over 25 years of experience in engineering, product management and commercial sales management across multiple industries including mechanical design and manufacturing, electronics, semiconductor equipment, health care IT and renewable energy.

In his work for PTC, Continuum, Teradyne, DFT Microsystems and GE, J.J. has managed programs to conceive, design and launch new products and services and has led major initiatives to transform customer information into insight for revenue growth.

9:25 AM

## Sustainability Resources and Opportunities at MIT; Overviews of Leading Programs and Centers

- [MIT Climate and Sustainability Consortium](#)
- [MIT Environmental Solutions Initiative](#)
- [MIT Laboratory for Aviation and the Environment](#)
- [MIT Abdul Latif Jameel Water & Food Systems Lab](#)

9:45 AM

## Disruptive Developments in CO2 Capture, Water Recovery and Consumer Packaging

Kripa Varanasi  
Professor of Mechanical Engineering  
Kripa Varanasi  
Professor of Mechanical Engineering

Kripa K. Varanasi is a Professor of Mechanical Engineering at MIT. He received his B.Tech from IIT Madras, India and his SM (ME and EECS) and Ph.D from MIT. Prior to joining MIT as a faculty member, Prof. Varanasi was a lead researcher and project leader at the GE Global Research Center. At GE he received many awards for his work including Best Patent, Best Technology Project and Leadership Award. At MIT, the focus of his work is in understanding the physico-chemical phenomena at interfaces and developing novel materials, devices, and products that can dramatically enhance performance in energy, water, agriculture, transportation, medical, and consumer devices. He is passionate about entrepreneurship and translating technologies from lab to market. He has co-founded multiple companies including LiquiGlide, Infinite Cooling, AgZen, and Everon24. Time and Forbes Magazines have named LiquiGlide to their "Best Inventions of the Year". His Infinite Cooling project has won first prize at DOE's National Cleantech University Prize, MIT 100K, Harvard Business School Energy & Environment Start-up, and MassChallenge. Prof. Varanasi has received numerous awards for his work NSF Career Award, DARPA Young Faculty Award, SME Outstanding Young Manufacturing Engineer Award, ASME Bergles-Rohsenow Heat Transfer Award, Boston Business Journal's 40 under 40, ASME Gustus L. Larson Memorial Award for outstanding achievements in mechanical engineering, APS Milton van Dyke award, and MIT Graduate Student Council's Frank E. Perkins Award for Excellence in Graduate Advising.

[View full bio](#)

10:15 AM

## Networking Break

10:40 AM

## CREWSnet: Cutting-edge Forecasting Technology that Boosts Climate Resilience

John C. Aldridge

Assistant Leader, Humanitarian Assistance and Disaster Relief Systems Group

[MIT Lincoln Laboratory](#)

11:10 AM

## Decarbonizing Metallurgical Processes

Antoine Allanore

Associate Professor of Metallurgy, MIT Department of Materials Science and Engineering

Antoine Allanore

Associate Professor of Metallurgy, MIT Department of Materials Science and Engineering

Prof. Antoine Allanore has more than a decade of experience in the field of chemical metallurgy. Since 2004, as R&D engineer at ArcelorMittal in France, then at MIT since 2010, he has developed several alternative processes for metal extraction that adopt green chemistry principles. He co-founded Boston Electrometallurgical Corporation (BEMC) to engineer the large-scale development of such approaches. In 2012, he was appointed the T.B. King Assistant Professor of Metallurgy in the Department of Materials Science & Engineering at MIT, where his research group aims at developing sustainable materials extraction and manufacturing processes. His group has proposed a novel approach to investigate and control water/mineral interactions in soils using microfluidics (Word Congress on Soils Science, Korea, 2014, PLOSOne, 2015). Focusing on mining and processing of unconventional resources (Journal of the Total Environment, 2015, Green Chemistry 2015), he invented a waste-free process to produce a potassium fertilizer from earth-abundant raw materials. The product has been designed to suit tropical soils and has succeeded crop-tests. It is now under field evaluation in Brazil (16th World Fertilizer Congress, Rio, 2014). He teaches thermodynamics and sustainable chemical metallurgy at both the undergraduate and graduate level. He was awarded the DeNora Prize in 2012 and the Early Career Faculty Fellow award in 2015, both from TMS (The Minerals, Metals & Materials Society).

[View full bio](#)

11:40 AM

MIT Startup Exchange Lightning Talks  
Ariadna Rodenstein  
Program Manager, [MIT Startup Exchange](#)



Ariadna Rodenstein  
Program Manager  
[MIT Startup Exchange](#)

Ariadna Rodenstein is a Program Manager at MIT Startup Exchange. She joined MIT Corporate Relations as an Events Leader in September 2019 and is responsible for designing and executing startup events, including content development, coaching and hosting, and logistics. Ms. Rodenstein works closely with the Industrial Liaison Program (ILP) in promoting collaboration and partnerships between MIT-connected startups and industry, as well as with other areas around the MIT innovation ecosystem and beyond.

Prior to working for MIT Corporate Relations, she worked for over a decade at Credit Suisse Group in New York and London, in a few different roles in event management and as Director of Client Strategy. Ms. Rodenstein has combined her experience in the private sector with work at non-profits as a Consultant and Development Director at New York Immigration Coalition, Immigrant Defense Project, and Americas Society/Council of the Americas. She also served as an Officer on the Board of Directors of the Riverside Clay Tennis Association in New York for several years. Additionally, she earned her B.A. in Political Science and Communications from New York University, with coursework at the Instituto Tecnológico y de Estudios Superiores de Monterrey in Mexico City, and her M.A. in Sociology from the City University of New York.

David Heller  
Co-founder & Head of Operations  
[C16 Biosciences](#)

Supply Chain Transparency  
[Leonardo Bonanni](#)  
Founder and CEO, [Sourcemap](#)



Leonardo Bonanni  
Founder and CEO  
[Sourcemap](#)

Dr. Leonardo Bonanni is the founder and CEO of Sourcemap, the supply chain transparency platform. Leading brands and manufacturers use Sourcemap software to trace their products to the source and ensure that corporate standards are met every step of the way, including zero-deforestation, zero-child labor, and the highest standards for raw materials such as recycled, fair trade and organic. You can see Timberland and The North Face, Mars and Hershey, all publishing their Sourcemap-verified supply chains on [open.sourcemap.com](https://open.sourcemap.com), the world's largest supply chain disclosure website. Leo developed Sourcemap as part of his PhD at the MIT Media Lab and has been named among America's 100 Most Influential People in Business Ethics and America's Most Promising Social Entrepreneurs.

[View full bio](#)

Yuval Pearl  
Head, Environmental Policy  
[Metha.ai](#)

Dan Nguyen  
Strategic Partnerships Manager for Stationary Power  
[Amogy](#)

Stephen Conant  
Vice President for Commercial

12:20 PM

Lunch with Startup Exhibit

1:15 PM

Panel: The Challenges and Opportunities of Advancing Sustainable Technologies in Industry  
Jason Jay

Senior Lecturer, [MIT Sloan School of Management](#)  
Director, [Sustainability Initiative at MIT Sloan](#)



Jason Jay

Senior Lecturer, [MIT Sloan School of Management](#)  
Director, [Sustainability Initiative at MIT Sloan](#)

Jason Jay is a Senior Lecturer and Director of the MIT Sloan Sustainability Initiative. He teaches executive and masters-level courses on strategy, innovation, and leadership for sustainable business. He has helped secure MIT Sloan's position as a leader in the field of sustainability through teaching, research, and industry engagement. Dr. Jay's publications have appeared in the Academy of Management Journal, California Management Review, MIT Sloan Management Review, Stanford Social Innovation Review, Greenbiz, and World Economic Forum. With Gabriel Grant, he is the author of the international bestseller Breaking Through Gridlock: The Power of Conversation in a Polarized World. Dr. Jay also works as a facilitator for companies, organizations, and business families, supporting high quality conversation and shared commitment to ambitious sustainability goals. His clients have included EFG Asset Management, Novartis, Bose, Environmental Defense Fund, BP and the World Bank.

Wei Cai  
Chief Technology Officer  
[Technip Energies](#)

Jerry Gupta  
P&C Research Lead  
[Swiss Re Institute](#)

Mike Witt  
Vice President and Chief Sustainability Officer  
[Northrop Grumman](#)

MIT Climate Grand Challenges  
Richard Lester

Interim Vice President for Climate, [MIT](#)  
Japan Steel Industry Professor, and Professor of [Nuclear Science and Engineering \(NSE\)](#)



Richard Lester

Interim Vice President for Climate, [MIT](#)  
Japan Steel Industry Professor, and Professor of [Nuclear Science and Engineering \(NSE\)](#)

**Richard Lester** is vice president for climate *pro tem*, Japan Steel Industry Professor, and professor of nuclear science and engineering at the Massachusetts Institute of Technology.

From 2015 through August 2024 Lester served as MIT's inaugural vice provost (formerly associate provost) for international activities, responsible for providing intellectual leadership, guidance, and oversight of the Institute's international policies and engagements. In that role, he led the development of the Institute's first global strategy; championed new MIT research and educational activities, especially in Africa and Asia; worked to enhance the international educational experiences available to MIT students; and served as President of MIT International.

Lester also served as the architect of MIT's [global geopolitical risk management processes](#) and chaired the Institute's Senior Risk Group, helping to introduce critical assessments and guidance for faculty, research staff, and administrators to identify and manage risk and ensure successful collaborations with international parties.

As convenor and co-chair of the [MIT China Strategy Group](#), Richard crafted an influential 2022 report to develop principles and recommendations for how MIT should approach its academic interactions and collaborations with China. The report outlines approaches that uphold MIT's core values and advance knowledge for the benefit of the nation and the world, without endangering human rights or damaging US interests in security or the economy.

Lester has also been active in advancing MIT's efforts on climate research and innovation. Most recently, he served as the architect of the [Climate Project at MIT](#) and he previously spearheaded [MIT's Climate Grand Challenges](#).

From 2009 to 2015, Lester headed MIT's Department of Nuclear Science and Engineering, leading the department successfully through a period of rapid rebuilding and strategic renewal. He is also the founder and faculty chair of the MIT Industrial Performance Center.

Lester's research focuses on innovation, productivity, and industrial strategy, and under his leadership the MIT Industrial Performance Center conducted multiple major studies of local, regional and national innovation and industry performance.

Lester is also well known for his teaching and research on energy and climate policy and nuclear technology innovation, management, and control. He has been a longtime advocate of advanced nuclear reactor and fuel cycle technologies to improve the safety and economic performance of nuclear power, and his studies in the field of nuclear waste management helped provide the foundation for new institutional and technological strategies to deal with this long-standing problem.

Lester's most recent book, *Unlocking Energy Innovation: How America Can Build a Low-Cost, Low-Carbon Energy System*, written with David Hart, outlined a strategy for mobilizing America's innovation resources in support of a decades-long transition to an affordable and reliable low-carbon global energy system. Lester is also the author or co-author of seven other books, including *The Productive Edge: A New Strategy for Economic Growth*; *Innovation —The Missing Dimension* (with Michael Piore); *Making Technology Work: Applications in Energy and the Environment* (with John Deutch); *Made in America: Regaining the Productive Edge* (with Michael Dertouzos and Robert Solow), and *Radioactive Waste: Management and Regulation* (with Mason Willrich).

Lester obtained his undergraduate degree in chemical engineering from Imperial College and earned his PhD in nuclear engineering from MIT. He has been a member of the MIT faculty since 1979. He served as chair of the National Academies' Board on Science, Technology, and Economic Policy, and more recently served as founding chair of the OECD Nuclear Energy Agency's Global Nuclear Forum. He has been an advisor to governments, corporations, foundations, and nonprofit groups.

2:20 PM

Networking Break

2:45 PM

Materials Advancements in Membrane Separations

Jeffrey Grossman

Professor of Materials Science and Engineering

MacVicar Fellow, [MIT Department of Materials Science and Engineering](#)



Jeffrey Grossman

Professor of Materials Science and Engineering

MacVicar Fellow

[MIT Department of Materials Science and Engineering](#)

Professor Grossman received his Ph.D. in theoretical physics from the University of Illinois and performed postdoctoral work at the University of California at Berkeley. In 2009, he joined MIT, where he developed a research program known for its contributions to energy conversion, energy storage, membranes, and clean-water technologies. He served as the Head of the Department of Materials Science and Engineering from 2020-2023, and in 2021 he helped create and became the founding co-director of the MIT Climate and Sustainability Consortium, a new type of academia-industry partnership. In recognition of his contributions to engineering education, Grossman was named an MIT MacVicar Faculty Fellow and received the Bose Award for Excellence in Teaching. He has published more than 200 scientific papers, holds 17 current or pending U.S. patents, and co-founded two Massachusetts companies to commercialize novel membranes materials for efficient industrial separations: ViaSeparations, a company that commercializes graphene-oxide membranes to separate chemicals for manufacturing, and SiTration, a company that commercializes silicon membranes for chemical-free, energy-efficient extraction and recycling of critical materials.

[View full bio](#)



## Bringing Computation to the Climate Challenge: Evaluating Sustainability with State-of-the-Art Models

Noelle Eckley Selin

Director, MIT Technology and Policy Program (TPP) and Professor, [MIT Institute for Data, Systems & Society \(IDSS\)](#)



Noelle Eckley Selin

Director, MIT Technology and Policy Program (TPP) and Professor  
[MIT Institute for Data, Systems & Society \(IDSS\)](#)

Noelle Eckley Selin is a Professor in the [Institute for Data, Systems and Society](#) and the [Department of Earth, Atmospheric and Planetary Sciences](#). Her research uses atmospheric chemistry modeling to inform decision-making on air pollution, climate change and hazardous substances such as mercury and persistent organic pollutants (POPs). Professor Selin received her PhD from Harvard University in Earth and Planetary Sciences as part of the Atmospheric Chemistry Modeling Group, where she developed and evaluated a global, 3D model of mercury pollution. Prior to joining the MIT faculty, she was a research scientist with the MIT Joint Program on the Science and Policy of Global Change. In addition to her scientific work, she has published articles and book chapters on the interactions between science and policy in international environmental negotiations, in particular focusing on global efforts to regulate hazardous substances. Professor Selin is also affiliated with the [MIT Joint Program on the Science and Policy of Global Change](#) and the [MIT Center for Environmental Health Sciences](#), and she also serves as the Director of MIT's [Technology and Policy Program](#).

Climate and sustainability challenges are reshaping our world, but we lack sufficiently accurate and useful models to inform decision-making that capture these issues in their full complexity. Noelle Eckley Selin will present research efforts, including her recently-launched MIT Climate Grand Challenge project, which aims to provide accurate and actionable scientific information to decision-makers to inform the most effective mitigation and adaptation strategies. One component of this Grand Challenge project is the development of a novel platform that leapfrogs existing climate decision support tools by leveraging advances in computational and data sciences to improve the accuracy of climate models, quantify their uncertainty, and addresses the trade-off between performance and computation time with attention to industry and government stakeholder needs. Another aspect will be associated “emulators” — fast-running, efficient models that are more usable by stakeholders, but that maintain the highest possible accuracy in predicting specific variables relevant to sustainability. Professor Selin will give specific examples drawn from the area of health impacts of air quality.

## Engineering Nitrogen Delivery to Cereals

Christopher Voigt

Daniel I.C. Wang Professor of Advanced Biotechnology, [MIT Department of Biological Engineering](#)



Christopher Voigt

Daniel I.C. Wang Professor of Advanced Biotechnology

[MIT Department of Biological Engineering](#)

Christopher Voigt is the Daniel I.C. Wang Professor of Advanced Biotechnology in the Biological Engineering Department at the Massachusetts Institute of Technology. Dr. Voigt is an expert in Synthetic Biology and has led research programs across medicine, agriculture, chemistry/materials and defense. He is the co-Director of the Center for Synthetic Biology and the Editor-and-Chief of ACS Synthetic Biology. He is a Founder of Pivot Bio and Asimov IO and has served on the SABs of DSM, Synlogic, Amyris, Bolt Threads, Zymergen, Design Therapeutics, Axcella, Aanika, Senti, DeepBiome, Empress Biotechnologies, and Twist Bioscience. He is an Vannevar Bush Faculty Fellow (VBFF) for the Office of the Secretary of Defense (OSD), a member of the Bush Fellows Research Study Team (BFRST) and a Newton Award Recipient. He was a founding member of the Engineering Biology Research Consortium (EBRC) (formally SynBERC). He is a founder of the Synthetic Biology, Evolution, Engineering and Design (SEED) conference series.

[View full bio](#)

Nitrogenous fertilizer is critical to obtain high crop yields, but its production and use consumes 3% of the global energy supply and 2-6% of greenhouse gases, including potent  $\text{N}_2\text{O}$ . Biological nitrogen fixation offers an alternative, but the nitrogenase is a complex enzyme that requires dozens of genes and tight regulation to function and symbiotic relationships with crops are difficult to control. Here, I will present several approaches we are taking to engineer corn or corn-associated microbes to fix their own nitrogen. First, I will discuss approaches to engineer bacteria that associate with maize roots to break and replace their regulatory pathways so that they turn on nitrogen fixation even in the presence of applied nitrogen fertilizer. Second, I will describe efforts to engineer plants themselves to carry the microbial pathways. Collectively, approaches from Synthetic Biology are facilitating new approaches to this long-standing problem to produce self-fertilizing crop systems.

4:15 PM

MIT Office of Sustainability  
Julie Newman  
Director, [MIT Office of Sustainability](#)



Julie Newman  
Director  
[MIT Office of Sustainability](#)

Julie Newman, Ph.D. joined the Massachusetts Institute of Technology in 2013 as the first Director of Sustainability for the institute, where she was charged with launching the Office of Sustainability. She also holds a lecturer appointment with the Department of Urban Studies and Planning and co-teaches a course entitled “Solving for Carbon Neutrality at MIT.” In 2004, Julie founded the Office of Sustainability at Yale University, where she held a lecturer appointment with the Yale School of Forestry and Environmental Studies. Prior to that, she assisted with the launch of the University of New Hampshire Sustainability Institute in 1997. In 2004 Julie founded the *Northeast Campus Sustainability Consortium*, the longest-standing active network of university sustainability professionals in the United States, to advance education and action for sustainable development on university campuses in the northeast and maritime region.

Julie lectures and consults for universities both nationally and internationally and has contributed to a series of edited books and peer-reviewed journals. Julie holds a BS in Natural Resource Policy and Management from the University of Michigan, an MS in Environmental Policy and Biology from Tufts University, and a Ph.D. in Natural Resources and Environmental Studies from the University of New Hampshire.

MIT’s commitment to climate and sustainability is grounded in leveraging the campus as a test bed. This methodology, as applied by the Office of Sustainability with campus partners, leads to an evaluation and research process that seeks to inform and reimagine campus systems to advance a comprehensive commitment to sustainability and climate solution development. At MIT, this approach manifests in the form of courses, class projects, lab research, data collection, and applied research. Ultimately, we seek to transform MIT into a model organization that generates and demonstrates new and proven ways to respond to the challenge of our changing planet.

4:45 PM

Day 1 Wrap-up with Networking Reception

## Day 2: September 21 (Wednesday) Sustainability Workshops

---

### Sustainability Workshops

Sustainability is fast becoming an imperative across numerous industrial domains. The companies that get ahead of the curve will both do good and do well in the coming sustainable economy.

Building on the lessons learned from Day 1 of the 2022 MIT Sustainability Conference, these focused, structured, topical workshops will give you the opportunity to interact with MIT and your peers in the Industrial Liaison Program, to define common challenges in industrial sustainability, and to understand how your engagement with MIT can help shape your company’s responses. There will be homework!

We have arranged these workshops in two sessions, to allow you to engage on more than one topic:

8:30 AM - 9:00 AM

Registration with Light Breakfast

9:00 AM - 10:30 AM (Salon 1-3) Session 1: Designing Plastics for End-of-Life to Enable Circularity

Desirée Plata  
Associate Professor, [MIT Department of Civil and Environmental Engineering](#)



Desirée Plata  
Associate Professor  
[MIT Department of Civil and Environmental Engineering](#)

Desirée Plata's research seeks to maximize technology's benefit to society while minimizing environmental impacts in industrially important practices through the use of geochemical tools and chemical mechanistic insights. Plata earned her doctoral degree in Chemical Oceanography and Environmental Chemistry from the Massachusetts Institute of Technology and the Woods Hole Oceanographic Institution's Joint Program in Oceanography (2009) and her bachelor's degree in Chemistry from Union College in Schenectady, NY (2003). Plata is an NSF CAREER Awardee (2016), an Odebrecht-Braskem Sustainable Innovation Awardee (2015), a two-time National Academy of Engineers Frontiers of Engineering Fellow (2012, 2020), a two-time National Academy of Sciences Kavli Frontiers of Science Fellow (2011, 2013), a Caltech Resnick Sustainability Fellow (2017), and winner of MIT's Junior Bose Teaching Award (2019), Edgerton Faculty Achievement Award (2021), and Perkins Graduate Advising Award (2021). Having previously served as John J. Lee Assistant Professor of Chemical and Environmental Engineering at Yale University and Associate Director for Research at the Center for Green Chemistry and Green Engineering at Yale, Plata is now Associate Professor of Civil and Environmental Engineering at MIT, co-director of the MIT Climate and Sustainability Consortium, and Faculty Lead of Belonging, Achievement, and Composition in the MIT School of Engineering. Plata directs MIT's Methane Network, serves on the Scientific Advisory Board of Spark Climate, and served on the National Academy of Science Engineering and Medicine's Atmospheric Methane Removal study (recused). Plata is co-founder of N<sup>th</sup> Cycle ([nthcycle.com](#)), co-founder and President of Sustainable Chemical Resource Advisors LLC, and co-founder and President of Moxair Inc.

[View full bio](#)

Dr. Thomas Holcombe  
Head of BASF's Northeast Research Alliance

Dr. Yelena Kann  
Founder and CEO of Radical Plastics Inc.

Vance Merolla  
Worldwide Director, Global Sustainability, Colgate-Palmolive

Elsa Olivetti

Co-Director, [MIT Climate and Sustainability Consortium](#)  
Jerry McAfee (1940) Professor, [Department of Materials Science and Engineering](#)  
Associate Dean, [MIT School of Engineering](#)



Elsa Olivetti  
Co-Director, [MIT Climate and Sustainability Consortium](#)  
Jerry McAfee (1940) Professor, [Department of Materials Science and Engineering](#)  
Associate Dean, [MIT School of Engineering](#)

Professor Olivetti received a BS in engineering science from the University of Virginia in 2000, and a PhD in materials science and engineering from MIT in 2007. She spent her PhD program studying the electrochemistry of polymer and inorganic materials for electrodes in lithium-ion batteries. In 2014, she joined DMSE as an assistant professor. As an educator, Olivetti overhauled DMSE's undergraduate curriculum and developed new courses, including one for the MIT Climate and Sustainability Consortium Climate Scholars. She's a member of the MIT Climate Nucleus and co-director of the MIT Climate & Sustainability Consortium.

9:00 AM - 10:30 AM (Salon 4-7)  
Session1: Sustainable Aviation – An Economy-Wide Challenge

Florian Allroggen  
Executive Director Aerospace Climate & Sustainability  
[MIT Aeronautics and Astronautics](#)

Ian Waitz  
Vice Chancellor for Undergraduate and Graduate Education and Jerome C. Hunsaker  
Professor  
[MIT Aeronautics and Astronautics](#)

Ellen Ebner  
Director Sustainable Technologies  
[Boeing](#)

Sean Bradshaw  
Fellow, Sustainable Propulsion  
[Pratt & Whitney](#)

Gene Gebolys  
President & CEO  
[World Energy](#)

Flavio Leo  
Director Aviation Planning and Strategy  
[Massachusetts Port Authority](#)

Zoltán Spakovszky  
Director MIT Gas Turbine Lab and T. A. Wilson Professor  
[MIT Aeronautics and Astronautics](#)

Edward Greitzer  
H.N. Slater Professor  
[MIT Aeronautics and Astronautics](#)

Ray Speth  
Principal Research Scientist and Associate Director  
[Laboratory for Aviation and the Environment](#)

Jayant Sabnis  
Senior Lecturer  
[MIT Aeronautics and Astronautics](#)

#### **[MIT Aeronautics and Astronautics](#)**

Aviation is considered a tough-to-decarbonize mode of transportation because volume and weight challenges render many decarbonization pathways infeasible (e.g. large battery-electric airliners). In fact, it is likely that aviation's value chain will have to be re-designed to meet ambitious environmental goals. This has economy-wide implications: not only will the world need new aircraft, but operational patterns will have to be adjusted, and infrastructure as well as a supporting energy system will have to be built. As such, this decarbonization challenge provides a prime example for tackling complex decarbonization challenges which are interlinked with the future shape of our global economy.

This workshop takes a holistic approach towards the problem. It brings together academics and industry to identify guiding sustainability metrics and gain insights into approaches for achieving system-level change.

Moderated discussion for this workshop will explore:

- What are the goals and guiding metrics for key players of the aviation value chain?
- Which coordinated activities by value chain partners are needed to meet ambitious sustainability goals?
- Which technological breakthroughs will enable the path towards a sustainable aviation sector?

10:30 AM - 11:00 AM

Networking Break

11:00 AM - 12:30 PM (Salon 1-3) Session 2: Setting and Adopting Net Zero Greenhouse Gas Targets

Dr. Jeremy Gregory  
Executive Director  
[MIT Climate and Sustainability Consortium](#)

Gretchen Govoni  
Global Head of Environmental Sustainability  
[Takeda Pharmaceuticals](#)

Jerry Griffin  
General Manager for Global Sustainability  
[Delta Airlines](#)

Dr. Kate Isaacs  
Lecturer  
[MIT Sloan Leadership Center](#)

Dr. Randolph Kirchain  
Principal Research Scientist  
[MIT Materials Systems Laboratory](#)

#### **[MIT Climate and Sustainability Consortium](#)**

Corporate commitments to net zero greenhouse gas (GHG) emission targets have increased dramatically in recent years. This has primarily been motivated by corporate social responsibility factors, but regulatory pressure is mounting. The process for setting these targets generally involves three steps: measuring corporate GHG emissions, setting targets, and developing pathways to achieve the targets. There is significant variation across these targets on the scope of operations included (scope 1, scope 2, and scope 3) and the timing.

This workshop will explore the process of setting and adopting net zero greenhouse gas targets. This includes the technical aspects of measuring GHG emissions and evaluating the potential for pathways to achieve targets, as well as the organizational aspects associated with setting targets, obtaining resources for achieving them, and adjusting implementation based on organizational and societal factors.

Moderated discussion for this workshop will explore:

- What are the most significant challenges associated with setting and adopting net zero greenhouse gas targets?
- What organizational practices will help address these challenges?
- What regulatory pressure is expected in the coming years and how will that affect GHG measurement and reporting?

11:00 AM - 1:00 PM (Salon 4-7) Session 2: Managing Industrial Wastewater Through Research and Innovation

John Lienhard  
Professor and Founding Director  
[Abdul Latif Jameel Water & Food Systems Lab \( J-WAFS\)](#)

Longzhen (Longy) Han  
Director of External Relations  
[Abdul Latif Jameel Water and Food Systems Lab](#)

Dan Perlman  
Professor of Biology and Environmental Studies & Chair of Environmental Studies  
[Brandeis University](#)

Timothy M Swager  
John D. MacArthur Professor  
[MIT Department of Chemistry](#)

Zachary P Smith  
Robert N. Noyce Career Development Professor  
[Department of Chemical Engineering](#)

Shuwen Yue  
Postdoctoral Associate  
[MIT Department of Chemical Engineering](#)

Lenan Zhang  
Graduate Student at Device Research Lab (DRL)  
[Department of Mechanical Engineering](#)

Rohit N Karnik  
Professor of Mechanical Engineering; Associate Department Head for Education; Tata Professor  
[MIT Department of Mechanical Engineering](#)

**[MIT Abdul Latif Jameel Water and Food Systems Laboratory](#)**

In this workshop, you will have the opportunity to discuss your companies' hard-to-solve industrial water-related challenges. You will hear directly from professors across MIT to learn about the latest research and inventions in this space. We will also help you explore the topic of industrial process water in an unpressured, creative way that can catalyze meaningful, actionable research projects.

Stay after our session to meet J-WAFS professors from across MIT over a networking lunch.

MIT J-WAFS is an Institute-wide, cross-disciplinary research program with international reach. J-WAFS mobilizes MIT resources to bring scientific, technical, and business solutions to urgent global water and food challenges across the world.

*\*You are encouraged to share a few thoughts on your specific water challenges prior to the workshop via email to [lhnan@mit.edu](mailto:lhnan@mit.edu)*

12:30 PM - 1:00 PM

Adjournment with Bagged Lunch