

I&EC

CME
NASA STEM
SYMPOSIUM

PRES

I&EC 005: Fifth CME NASA Symposium – W190a

Chemistry for Sustainable Human Space Exploration

AGFD	CHED	MEDI
AGRO	CINF	NUCL
ANYL	COLL	ORGN
BIOL	COMP	PHYS
BIOT	ENFL	PMSE
BMGT	ENVR	POLY
CARB	FLUO	PROF
CATL	GEOC	SCHB
CELL	HIST	TOXI
CHAL	I&EC	RUBB
CHAS	INOR	

AIR PRODUCTS



BLAVATNIK FAMILY FOUNDATION



BASF
We create chemistry

Keynote

CME Lecturers

8/22 PMSE ACS
Outstanding Student & Mentor Awards

8/23 Panel
on Sustainability & Climate Chemistry



Katherine Calvin
NASA



Fraser Stoddart
Northwestern



Chad Mirkin
Northwestern



James Green
NASA



scan me

8/22-23/2022 | Symposium Registration: www.CME-STEM.org



9th Event with NASA's Chief Scientist Office



August 22 - 23, 2022 | Chicago, Illinois

CME Lectures by Nobel Laureates
PMSE CME Student & Mentor Awards
Climate Chemistry Talks by Thought Leaders
Sustainability Conference at UChicago

Organizations Supporting this ACS President Recommended Event

I&EC



NASA

PRES



Chemical Marketing & Economics, Inc.

I&EC: Chemistry for Sustainable Human Space Exploration

Presidential Recommended Event (PRES) of the 2022 ACS President Dr. Angela Wilson sponsored by the Division of Industrial & Engineering Chemistry (I&EC) co-organized with CME and NASA brings together industry, academia and government to enhance the diverse STEM talent pool. Two days packed with inspirational cutting-edge developments in the chemical sciences to advance human space travel and translate them into new knowledge to make personal dreams a reality.

August 22, 2022 - DAY 1

NASA Day

AM, PM: **Speakers:** NASA (Langley, Glenn, Goddard Institute for Space Studies), U Virginia, UTEP, U Iowa, U Michigan, U Illinois. PM: NASA Talks, UChicago, PMSE and CME present the Student & Mentor Awards

August 23, 2022 - DAY 2

Industry, Government & Academia

AM: Panel 1 with speakers from government on energy efficiency and climate change. Panel 2 with speakers from industry including Beckton Dickinson, Northrop Grumman and Blue Origin.

AM: Keynote: NASA Chief Scientist Kate Calvin. CME Lectures Nobel Laureate Sir Fraser Stoddard, Professor Chad Mirkin and former NASA Chief Scientist James Green.

PM: Separate CME NASA Sustainability Conference at the Rubenstein Forum. Keynote: Paul Alivisatos, Chemist and UChicago President

Get Schedule Changes, Updates, Speaker Bios

Register for Symposium & Conference: www.CME-STEM.org



August 22: McCormick

NASA Day: Langley, Glenn, GISS

PMSE CME Student & Mentor Awards

Chemistry for Sustainable Human Space Exploration

8/22 - I&EC005A - NASA Day One - Morning Session at McCormick Place W190a

8:00 AM	Sally Pusede	U Virginia Environmental Science	Observing Air Pollution Inequality from Space
8:25 AM	Rosa Fitzgerald	UTEP Physics	Air Pollution in Desert and Nearby Metropolitan Areas
8:50 AM	Jun Wang	U Iowa Biochemical Engineering	Satellite observations of atmospheric composition and wildfires for air quality and climate change
9:15 AM	Eric Kort	U Michigan Climate and Space Science	Using aircraft and satellite observations to study human influences on greenhouse gases
9:40 AM	Steve Barnett	CME Co-Chair	Intermission
9:55 AM	Jack Kaye	NASA HQ Earth Science Division	Chemistry, Space, and Earth's Future: How NASA Help us Understand Today's Changing Earth and Anticipate its Future
10:25 AM	Jennifer Gustetic	NASA Early Stage Innovations Partnering	Innovation in Sustainability through Early-Stage Partnerships at NASA
10:55 AM	Ioannis Chasiotis	U Illinois Urbana-Champ. Engineering	Durability Studies of Advanced Materials for deployment to Low Earth Orbit (LEO)
11:25 AM	Emilie Siochi	NASA Langley Advanced Materials	Accelerating the Maturation and Adoption of New Technologies
11:55 AM	Shah Karim	CME Program Chair	Session Adjourns

8/22 - I&EC005B - NASA Day One, PMSE CME Student & Mentor Awards at McCormick Place W190a

2:00 PM	Stephanie Vivod	NASA Glenn Research Chemical Engineering	Polymer Aerogels for Lunar Applications and Beyond
2:25 PM	Stuart Rowan	U Chicago PME Molecular Engineering	Toward Pluripotent Materials
2:50 PM	Matthew Tirrell	U Chicago PME Molecular Engineering	Hetero-charged polymer systems with applications from marine biology to biomedicine
3:15 PM	Nuno Almeida	Michigan State University Chemistry	Transition metal oxide catalysts and routes towards accurate thermochemistry processes
3:40 PM	George Rodriguez	CME Programming	CME PMSE Student & Mentor Award Presentation
3:55 PM	Vivian Feig	MIT Material Science and Engineering	Conductive hydrogels for next-generation bio-electronic interfaces: stiffness, stretchability, and dimensionality
4:25 PM	Zhenan Bao	Stanford U Material Science & Engineering	Engineering Soft Polymer Electronics for Bio Interfaces
4:55 PM	Spyridon Varlas	U Sheffield Polymer Science	Tuning the Membrane Properties of Functional Polymersomes Developed by Aqueous Polymerization-Induced Self-Assembly (PISA)
5:25 PM	Rachel O'Reilly	U Birmingham Chemistry	Getting into shape: Precision polymer nanoparticles
5:55 PM	Ksenia Takhistova	CME Co-Chair	Session Adjourns

August 23 AM: McCormick Fifth CME NASA Symposium Lecture by Nobel Laureate

Chemistry for Sustainable Human Space Exploration

8/23 - I&EC005C - Advanced Materials - Industry Panel at McCormick Place W190a

8:00 AM	James Green	NASA Advisor, Former Chief Scientist	Introduction to Panel on Sustainability and the Chemistries of Climate
8:01 AM	Sunita Satyapal	DOE Hydrogen Fuel Cell Technologies	U.S. Department of Energy's Hydrogen and Fuel Cell Perspectives
8:10 AM	Susanne Bauer	NASA GISS Aerosol Research	Chemistry and the Climate's Backseat Drivers
8:15 AM	Patrick Taylor	NASA Langley Climate Research	Arctic Climate Change, Clouds, and Chemistry
8:20 AM	James Green	NASA Advisor, Former Chief Scientist	Panel Discussion on Sustainability and the Chemistries of Climate
8:49 AM	Tara Ruttley	Blue Origin Orbital Reef	Introduction to Panel on Advanced Materials and Living in Space
8:50 AM	Anne Shim	BD CCMD Research and Development	Advanced Materials for a Sustainable Future in Life Sciences
8:55 AM	Tara Ruttley	Blue Origin Orbital Reef	Accelerating the Future Living in the Low Earth Orbit (LEO) Economy
9:00 AM	Jon Arenberg	Northrop Grumman Robotic Missions	Chemistry and the Next Great Leap in Sustainable Space Living
9:05 AM	Tara Ruttley	Blue Origin Orbital Reef	Panel Discussion on Advanced Materials and Living in Space
9:40 AM	Shah Karim	CME Program Chair	End of Session Remarks - Intermission
9:55 AM	George Rodriguez	CME Programming	Introduction to CME NASA Lectures Session
10:00 AM	Kate Calvin	NASA Chief Scientist	Keynote: Chemistry, Climate, Sustainability, and Space
10:30 AM	Fraser Stoddart	Northwestern U Nobel Laureate in Chemistry	Sustainability Through Chemistry Away-from-Equilibrium
11:00 AM	Chad Mirkin	Northwestern U Chemistry, Nanotech	Exploring the "Matterverse" with Nanomaterial Megalibraries
11:30 AM	James Green	NASA Advisor, Former Chief Scientist	Shaping a Sustainable Era of Space Exploration with Perseverance and Ingenuity
12:00 AM	George Rodriguez	CME Programming	Closing Remarks

8/23 CME Lectures

For the Annals of Civilization



Katherine Calvin
NASA

Chief Scientist, Sr. Climate Adv.



Sir Fraser Stoddard
Northwestern University

2016 Nobel Prize in Chemistry



Chad Mirkin
Northwestern University

Professor

Symposium Remarks



James Green
NASA

Former Chief Scientist



Angela Wilson
American Chemical Society

2022 President



Judy Giordan
American Chemical Society

2023 President

8/22 Speakers

Partial list of distinguished thought leaders



Stuart Rowan

UChicago

Barry L. MacLean Professor of
Molecular Engineering



Jennifer Gustetic

NASA

Director, Early-Stage Innovations
and Partnerships



Matthew Tirrell

UChicago

Dean, Pritzker School of
Molecular Engineering



Jack Kaye

NASA

Associate Director for Research
Earth Science Division



Stephanie Vivod

NASA Glenn

Research Chemical Engineer
Advanced Polymeric Materials



Ioannis Chasiotis

University of Illinois, U-C

Professor, Associate Head of
Materials, Interfaces Mechanics

8/23 Speakers & Panelists

Partial list of distinguished thought leaders



Jon Arenberg
Northrop Grumman

Chief Mission Architect
Science and Robotic Missions



Tara Ruttley
Blue Origin

Orbital Reef
Chief Scientist



Anne Shim
BD Corporation

Senior Director, CCMD
Research & Development



Sunita Satyapal
U.S. Department of Energy

Director, Hydrogen & Fuel Cell
Technologies Office



Susanne Bauer
NASA GISS Columbia

Physical Scientist

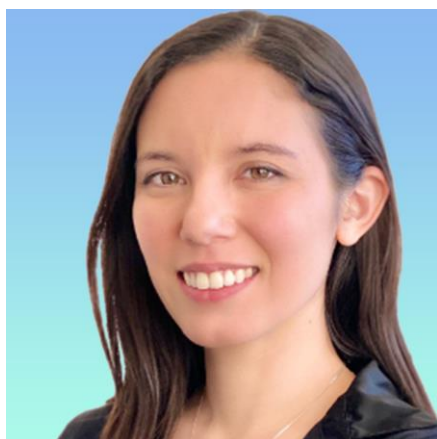


Patrick Taylor
NASA GISS Columbia

Climate Research Scientist

2022 CME PMSE Student & Mentor Awards

ACS Global Outstanding Student & in Polymer Science & Engineering



Vivian Feig
Stanford University
USA Graduate Student



Spyridonos Varlas
University of Birmingham
International Graduate Student

Mentors



Zhenang Bao
Stanford University
Mentor



Rachel O'Reilley
University of Birmingham
Mentor



2021 CME PMSE Student & Mentor Awards

ACS Global Outstanding Student & in Polymer Science & Engineering



Austin Evans
Northwestern University
USA Graduate Student



Qi Zhang
East China University S&T
International Graduate Student

Mentors



William Dichtel
Northwestern University
Mentor



He Tian
East China University S&T
Mentor



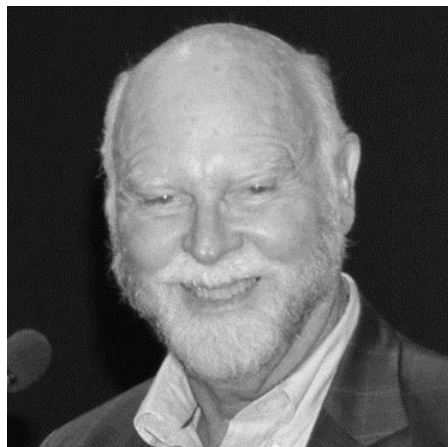
Ben Feringa
Un Groningen, Nobel Laureate
Co-Mentor

2017-2019 Speakers

Partial list of distinguished thought leaders



Janet Kavandi
 NASA Glenn Research Center
 Director (Former Astronaut)

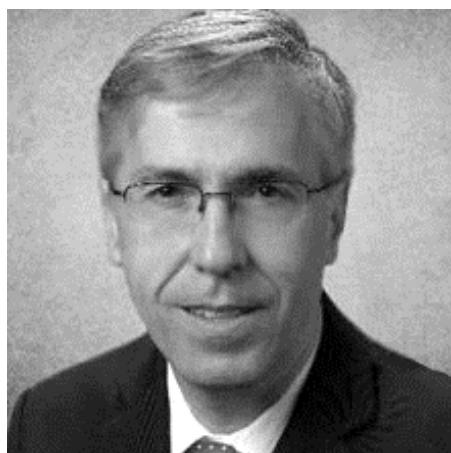


Craig Venter
 Human Genome Project
 Visionary Industry Scientist

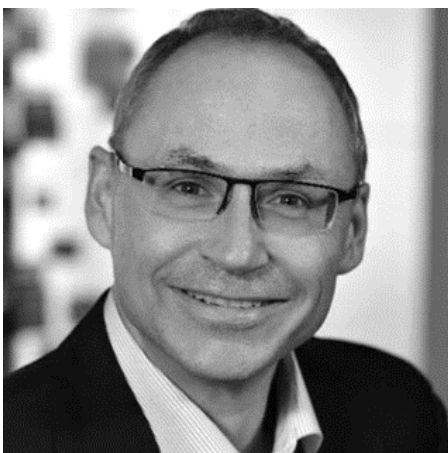


Frances Arnold
 Caltech
 2018 Nobel Prize in Chemistry

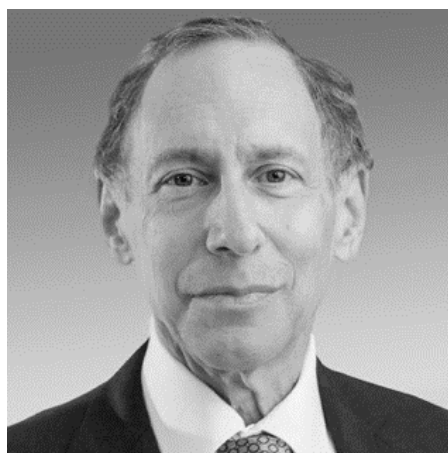
Sustainable Innovation



Rich Tillyer
 Johnson & Johnson, Janssen
 Global Head of Discovery



Peter Eckes
 BASF Bioscience Research
 President



Robert Langer
 MIT
 Koch Institute Professor; most cited engineer, 1400 patents

2022 Event Collaborators

Organizing Exciting STEM Events



Steve Barnett
CME Co-Chair

Partner at Connell Foley LLP
Aeronautical Eng., PE, JD



Tara Ruttley
Blue Origin

Chief Scientist Orbital Reef
Space Station



Matthew Tirrell
UChicago

Dean, Pritzker School of
Molecular Engineering (PME)



Shah Karim
CME Program Chair

SafeRock CEO
PME Advisory Board Member



Ksenia Takhistova
CME Co-Chair

Technology IP Attorney;
Mechanical & Chemical Engineer



George Rodriguez
CME Programming

Chemical Engineer, American
2020 Chemical Society Fellow



Award-winning Space Age STEM & ESG Programs



Advancing Diversity and Environmental Social Governance

CME STEM Symposiums with NASA

CME STEM Leadership Awards

CME STEM Talks by Thought Leaders

CME STEM Festivals



PME

CME
NASA STEM
SUSTAINABILITY

UChicago

Earth and Space Sustainable Living

AIR PRODUCTS



BLAVATNIK
FAMILY FOUNDATION



BASF
We create chemistry

Sustainability
and Climate
Perspectives

Creating the
Future WET
Space (Work,
Exploration
and Tourism)

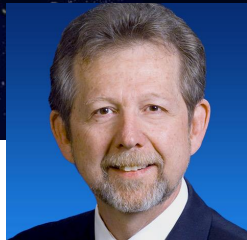
Life Science
Sustainable
Innovation

Keynote

Speakers



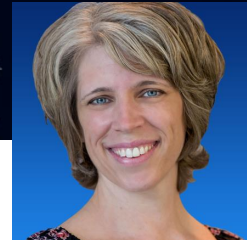
Paul Alisivatos
UChicago



James Green
NASA



Shirin O'Connor
Air Products



Tara Ruttley
Blue Origin

8/23/2022 | Conference at UChicago | Registration: www.CME-STEM.org

August 23 PM: UChicago CME NASA Sustainability Conference

Separate Event from ACS Fall 2022 | Free Registration: cme-stem.org

Sustainable Living: Earth and Space

Register for Schedule Updates, Speaker Bios, Room Assignments: www.CME-STEM.org

8/23 - Afternoon Session at the UChicago Rubenstein Forum

1:30 PM	George Rodriguez	CME Programming	Introduction
1:32 PM	Matthew Tirrell	UChicago PME Molecular Engineering	Remarks
1:35 PM	Paul Alisivatos	UChicago President	Sustainability at the University of Chicago
2:00 PM	Steve Barnett	CME Co-Chair	Introduction
2:02 PM	James Green	NASA Advisor, Former Chief Scientist	Panel on Sustainability and Climate
2:04 PM	Jack Kaye	NASA HQ Earth Science Division	Climate: An Earth Sciences Perspective
2:12 PM	Shirin O'Connor	Air Products Global Engineering	Energy Decarbonization, The Hydrogen Economy and NEOM the City of the Future
2:20 PM	Benjamin Knudsen	BASF Research	Net Zero 2050, White Biotechnology and Curiosity Super Computer
2:28 PM	James Green	NASA Advisor, Former Chief Scientist	Panel Discussion on Sustainability and Climate
3:00 PM	Sam Samdani	McKinsey	Introduction to Life Sciences Panel on Sustainability
3:05 PM	Sinem Hostetter	McKinsey Chicago	Life Sciences Sustainability Overview
3:15 PM	Michael Waslin	Merck Sustainability Center of Excellence	Establishing a Culture of Environmental Stewardship
3:30 PM	Jenny Obligacion	Merck Labs Process Chemistry	Pharmaceutical Process Innovation
3:45 PM	Sam Samdani	McKinsey	Panel Discussion
4:15 PM	Shah Karim	CME Program Chair	End of Session. Intermission
4:30 PM	James Green	NASA	Managing Sustainability Threats: Catastrophic Blackout Risks
5:00 PM	Ksenia Takhistova	CME Co-Chair	Introduction of Panel Moderator
5:02 PM	Tara Ruttley	Blue Origin Orbital Reef	Creating the Future WET Space (Work, Exploration and Tourism)
5:09 PM	John Arenberg	Northrop Grumman Robotic Missions	The Next Great Leap in Sustainable Space Living
5:16 PM	Jana Stoudemire	Axiom Space	Taking the LEO Economy to the Next Phase
5:23 PM	Tara Ruttley	Blue Origin Orbital Reef	Panel Discussion on Sustainable Space Living
6:00 PM	Shah Karim	CME Program Chair	Closing Remarks

Speakers

Advancing Diverse STEM Talent



James Green
NASA
Senior Advisor
Former Chief Scientist



Paul Alisivatos
University of Chicago
President (and Chemist)



Shirin O'Connor
Air Products
Vice President
Global Engineering



Jack Kaye
NASA
Associate Director for Research
Earth Science Division



Tara Ruttley
Blue Origin
Chief Scientist Orbital Reef
Space Station



Benjamin Knudsen
BASF
Vice President of Research in
North America

Speakers

Advancing Diverse STEM Talent



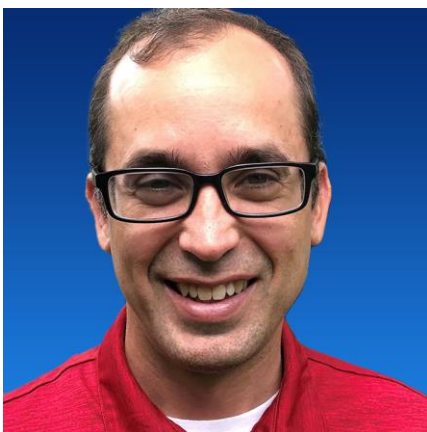
Sam Samdani
McKinsey
Senior Knowledge Expert



Jana Stoudemire
Axiom Space
Director, In-Space
Manufacturing



Jon Arenberg
Northrop Grumman
Chief Mission Architect
Science and Robotic Missions



Michael Waslin
Merck
Assoc. Director, Sustainability
Center of Excellence



Jenny Obligacion
Merck
Associate Principal Scientist,
Process Chemistry



Sinem Hoffstetter
McKinsey
Partner, Chicago
Transformation & Sustainability

NASA: Forward to the Moon with Commercial Partners

2020.12.08 • Webinar 11 am – 12 pm ET



By 2024 NASA's Artemis program will land the first woman and the next man on the south pole of the Moon. NASA will be using innovative technologies to explore more of the lunar surface than ever before. Learn about opportunities in sustainable innovation for commercial partners to exploit the resources and propel a new dynamic in the Space Age as we write a new chapter in the history of civilization.

Speakers

CME Awardee



James Green
NASA

Chief Scientist



Doug Terrier
NASA

Chief Technologist



Cicely Shilligford
Ro

STEM Young Leader

International Space Station: In-Space Production Opportunities

2021.04.15 • Webinar 11 am - 12 pm ET



Access to the microgravity environment of low Earth orbit offers industry production opportunities not possible terrestrially. This presentation will focus on ISS National Lab efforts around in-space production, manufacturing processes, and intellectual-property generation that enable new business growth and represent markets that could generate revenue from access to space.

Speaker



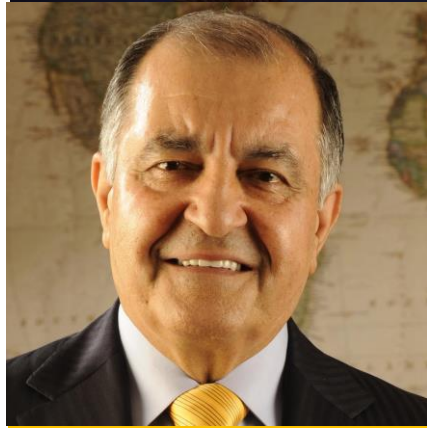
Ken Savin

International Space Station

Director, US National Lab
Scientific Partnering



2022 Honorees



Lifetime Achievement

Seifi Ghasemi
Air Products

Chairman, President and CEO



Diversity & Inclusion

Jim Fitterling
Dow

Chairman and CEO

Keynote

Event Co-Chairs



James Green
NASA

Senior Advisor, Former
Chief Scientist



Daniel Krude
thyssenkrupp nucera

Deputy CEO and COO



Kenneth West
Honeywell

President, Advanced
Materials



A Heritage of Leadership

10

High-Impact Awards
For CME Pioneering Events

A record in its class

500 +

CME STEM Talks
Meeting Leaders for Lunch

Free Student Registrations

30,000

K-12 Children & Parents
Celebrating STEM Festivals

Free to the Public

Accelerating Diverse STEM Talent

2,600

CME STEM NASA
Symposiums Attendees

At ACS National Meetings

68

Years Driving STEM
For Sustainable Innovation

Industry Academia
Government

150,000

Students & Professionals
Reached by Ad Campaigns

Chemical & Engineering News




STEM Festivals &
LUNCHEONS

Inspiration Powers Diverse STEM Talent Leadership



Since 2014 over 30,000 schoolchildren have experienced the magic of CME chemistry festivals



Since 2011 CME has helped over 3,000 STEM students develop leadership, business and networking skills.



Thank You



Diverse STEM Talent Leadership for
Sustainable Innovation since 1954

