



# ACS Fall 2025

8/18-19 · JOINT 068 (POLY, COMSCI) · Washington DC

## CME NASA Program



Elevating Polymer Chemistry to New Heights:  
Polymers for Future Space Missions

8/18 AM · Academia & NASA Talks

8/18 PM · CME PMSE Student & Mentor Awards

8/19 AM · CME Lectures: Ind., Gov. & Academia

8/19 PM · CME NASA Sustainability: Earth & Space



JOINT 068  
(POLY-COMSCI)

CME  
NASA STEM  
SYMPOSIUM

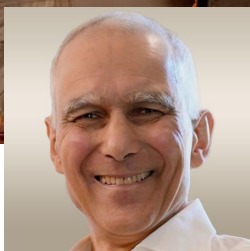
PRES

# Fall 2025: Elevating Polymer Chemistry to New Heights

Polymers for Future Space Missions



Speakers



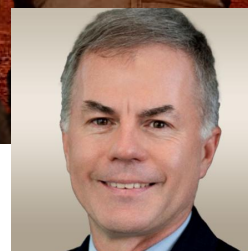
Mounqi Bawendi  
Nobel Laureate



Paul Kearns  
Argonne Director



Donna Roberts  
ISS NL Dep CSO



David Bem  
PPG CTO



2025.08.18-19 · Washington Convention Center · Info: [www.CME-STEM.org](http://www.CME-STEM.org)

# 8/18 · NASA, Student & Mentor Awards

Academia and Government

## Elevating Polymer Chemistry to New Heights

### 8/18 AM - JOINT068A - NASA and Academia (Hall D, Room 10)

|          |                          |                                        |                                                                                                                                       |
|----------|--------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 8:00 AM  | Stiers, Cristi           | CME                                    | Opening Remarks                                                                                                                       |
| 8:02 AM  | Mueller-Buschbaum, Peter | Technische Universitat Munchen         | Organic solar cells for space applications                                                                                            |
| 8:27 AM  | Luther, Joseph           | National Renewable Energy Laboratory   | Readying new materials for space: case in point, the launch of perovskite photovoltaics                                               |
| 8:57 AM  | Orlando, Thomas          | Georgia Institute of Technology        | Mitigating dust and radiation risks during human exploration with two-dimensional metamaterials                                       |
| 9:27 AM  | Schanze, Kirk            | The University of Texas at San Antonio | Conjugated polyelectrolytes: Bridging the gap between fundamental properties and applications to biosensing and antimicrobial defense |
| 9:57 AM  |                          |                                        | Intermission                                                                                                                          |
| 10:07 AM | Park, Cheol              | NASA                                   | NASA advanced materials and processing: Sustainable multifunctional structural materials                                              |
| 10:37 AM | Liang, Richard           | Florida State University               | Scaled-up continuous carbon nanotube yarn unidirectional composite laminates for high tensile properties                              |
| 11:07 AM | Narayanan, Shankar       | Rensselaer Polytechnic Institute       | Redefining multilayer insulation: electrospun nanofibers for lightweight thermal insulation in space                                  |
| 11:37 PM | Karim, Shah              | CME                                    | Closing Remarks                                                                                                                       |

### 8/18 PM - JOINT068B - CME PMSE Students & Mentor Awards (Hall D, Room 10)

|         |                    |                         |                                                                                                                       |
|---------|--------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 2:00 PM | Takhistova, Ksenia | CME                     | Introductory Remarks                                                                                                  |
| 2:02 PM | Horst, Maggie      | Stanford University     | Designing and understanding force-coupled reactions in polymers                                                       |
| 2:27 PM | Xia, Yan           | Stanford University     | Designing polymers with high mechanical performance and circular lifecycle                                            |
| 2:52 PM | Rodriguez, George  | CME                     | CME PMSE Awards Presentation to the ACS Outstanding Student & Mentor Awardees from Stanford University and ETH Zurich |
| 3:07 PM | Wang, Hyun Suk     | ETH Zurich              | Depolymerizing polymethacrylates synthesized by controlled and free radical polymerization                            |
| 3:32 PM | Choi, Tae          | ETH Zurich              | Depolymerization of commercial polymethacrylates triggered by visible light                                           |
| 3:57 PM |                    |                         | Intermission                                                                                                          |
| 4:05 PM | Meador, Michael    | NASA                    | Introduction                                                                                                          |
| 4:07 PM | Kaye, Jack         | NASA                    | Chemistry, polymers, and space: 40 years of NASA research                                                             |
| 4:37 PM | Dichtel, William   | Northwestern University | Mechanically Interlocked Two-Dimensional Polymers                                                                     |
| 5:07 PM | Karim, Shah        | CME                     | Economic impact of AI in the chemical sciences                                                                        |
| 5:37 PM | Meador, Michael    |                         | Closing Remarks                                                                                                       |



# 8/19 AM · CME Lectures & Leadership Awards

Industry, Academia and Government

## Elevating Polymer Chemistry to New Heights

### 8/19 AM - JOINT068C - CME Lectures (Ballroom C)

|          |                   |                                       |                                                                                |
|----------|-------------------|---------------------------------------|--------------------------------------------------------------------------------|
| 8:00 AM  | Karim, Shah       | CME                                   | Introductory Remarks                                                           |
| 8:02 AM  | Takhistova Ksenia | CME                                   | Chemistry: The legal and ethical aspects of AI                                 |
| 8:25 AM  | Feig, Vivian      | Stanford University                   | In situ forming devices: Reimaging medical interventions for spaceflight       |
| 8:50 AM  | Artzi, Natalie    | Harvard University                    | Supercharging Immunotherapy Through Nanotechnology: Chemical Structure Matters |
| 9:20 AM  | Love, Corey       | U.S. Naval Research Laboratory        | Opportunities for polymers in advanced space batteries                         |
| 9:50 AM  |                   |                                       | Intermission                                                                   |
| 9:58 AM  | Karim, Shah       | CME                                   | Introduction                                                                   |
| 10:00 AM | Green, James      | NASA                                  | Polymer Structures for use in Space                                            |
| 10:25 AM | Bem, David        | PPG                                   | PPG: The future of sustainable coatings innovation                             |
| 10:50 AM | Bawendi, Moungi   | Massachusetts Institute of Technology | MIT Bawendi Group research                                                     |
| 11:20 AM | Kearns, Paul      | Argonne National Laboratory           | Pushing the Limits: Advanced Materials for Extreme Environments                |
| 11:50 AM | Rodriguez, George | CME                                   | CME STEM Leadership Awards Presentation to Bawendi and Kearns                  |
| 12:00 PM |                   |                                       | Meeting Adjourned                                                              |

**CME**  
**STEM Leadership**  
**AWARDS**

**Propelling  
Science**

**Moungi Bawendi**  
2023 Nobel Laureate

**Science &  
Technology**

**Paul Kearns**  
Argonne National Lab Director



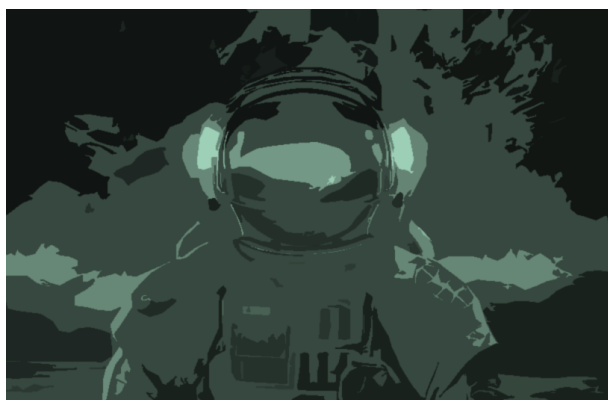
# 8/19 PM · Earth & Space Sustainability

Industry, Academia and Government

## Elevating Polymer Chemistry to New Heights

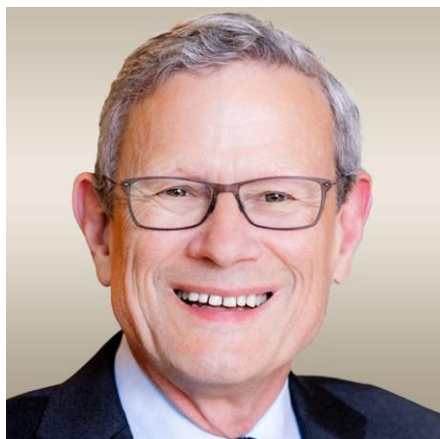
8/19 PM - JOINT068D - Day 2 - Earth & Space Sustainability: Industry, Government, Academia (Hall D, Room 10)

|         |                    |                                      |                                                                                                                   |
|---------|--------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 2:00 PM | Takhistova, Ksenia | CME                                  | Intro - Space Sustainability: Reimagining Chemistry for the Space Age                                             |
| 2:02 PM | Roberts, Donna     | ISS US National Lab                  | Fundamental and applied polymer research on the International Space Station National Laboratory                   |
| 2:17 PM | Clements, Jill     | Dupont Specialty Products            | Innovations in polymer science and chemistry enabling weight reduction and improved thermal performance for space |
| 2:32 PM | Arenberg, Jon      | Northrop Grumman                     | NGC advanced materials for solid rocket motors                                                                    |
| 2:47 PM | Maruyama, Benji    | US Air Force                         | Overview on the Materials Genome Initiative and the Autonomous Materials Innovation Infrastructure                |
| 3:02 PM | Takhistova, Ksenia | CME                                  | Panel on space sustainability: Industry, academia, NASA and ISS US National Laboratory                            |
| 3:50 PM |                    |                                      | Intermission                                                                                                      |
| 3:58 PM | Karim, Shah        | CME                                  | Intro - Earth Sustainability: Reimagining Chemistry for the Space Age                                             |
| 4:00 PM | Kumpf, Bob         | Deloitte LLP                         | Pathways Toward Sustainability: A Road Map for the Global Chemicals Industry                                      |
| 4:15 PM | Knauer, Katrina    | National Renewable Energy Laboratory | Recyclable-by-design, high performance polymers for long term space exploration                                   |
| 4:30 PM | Meropali, Franco   | Versalis SpA                         | Versalis Polymer Innovations: Developing Solutions for a more sustainable future                                  |
| 4:45 PM | Douglas, Anna      | SkyNano                              | Economically driven approaches to carbon management to enable resilient manufacturing                             |
| 5:00 PM | Schild, Peter      | Proman                               | Large-scale pathways: Sustainability and chemical sciences to meet Net-Zero goals                                 |
| 5:15 PM | Michael, McDermott | S&P Global                           | Beyond the molecule: Chemistry to industry                                                                        |
| 5:30 PM | Karim, Shah        | CME                                  | Panel on Earth sustainability: Industry, academia and government                                                  |
| 5:58 PM | Karim, Shah        | CME                                  | Closing Remarks                                                                                                   |



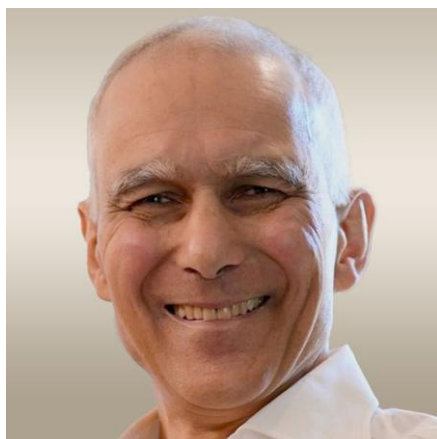
## CME Lectures and STEM Talks

For the Annals of Civilization



**Paul Kearns**  
Argonne National Laboratory

Director



**Moungi Bawendi**  
MIT

2023 Nobel Prize in Chemistry



**David Bem**  
PPG

Chief Technology Officer

Recommended by



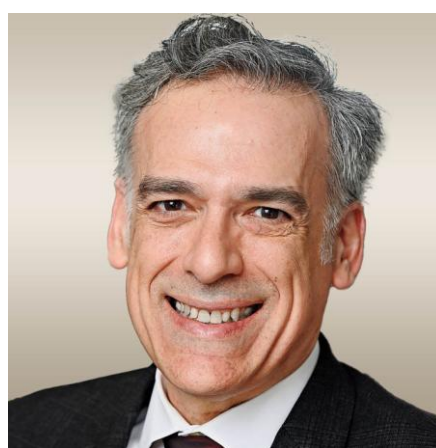
**Mary Carroll**  
American Chemical Society

2024 President



**Dorothy Phillips**  
American Chemical Society

2025 President



**Rigoberto Hernandez**  
American Chemical Society

2025 President-Elect



PRES

## 2025 CME PMSE Student & Mentor Awards

ACS Global Outstanding Student & in Polymer Science & Engineering



**Maggie Horst**  
Stanford University

USA Graduate Student



**Hyun-Suk Wang**  
ETH Zurich

International Graduate Student

Celebrating the fundamental human innovation unit



**Yan Xia**  
Stanford University

USA Mentor



**Athina Anastasaki**  
ETH Zurich.

International Mentor



JOINT 068  
(POLY-COMSCI)

CME  
NASA STEM  
SUSTAINABILITY

PRES

# 8/19 PM · Space Sustainability

$$U = -\frac{W_{\infty}}{m} = -\frac{1}{m} \int_{\infty}^r \mathbf{F} \cdot d\mathbf{r} = -\int_{\infty}^r \mathbf{g} \cdot d\mathbf{r}$$
$$\mathbf{r}_{\text{cog}} = \frac{1}{M |\mathbf{g}(\mathbf{r}_i)|} \sum_i m_i |\mathbf{g}(\mathbf{r}_i)|$$
$$\frac{1}{M |\mathbf{g}(\mathbf{r}_{\text{cog}})|} \sum_i \mathbf{r}_i m_i |\mathbf{g}(\mathbf{r}_i)|$$


## Speakers



Donna Roberts  
ISS National Lab



Jon Arenberg  
NGC



Jill Clements  
DuPont



Benji Maruyama  
US Air Force



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NASA STEM  
SUSTAINABILITY

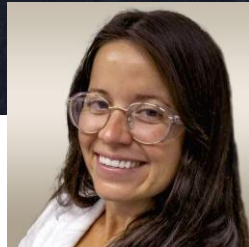
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# 8/19 PM · Earth Sustainability

## Speakers



Robert Kumpf  
Deloitte



Katrina Knauer  
NREL



Franco Meropiali  
Versalis



Peter Schild  
Proman



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## 2025 Event Organizers

Creating STEM Events for the Space Age



**Ksenia Takhistova**  
CME Co-Chair, General Counsel  
Technology IP Attorney;  
Mechanical & Chemical Engineer



**James Green**  
NASA  
fmr. Chief Scientist



**George Rodriguez**  
STEM Programming  
Chemical Engineer, American  
Chemical Society Fellow



**Shah Karim**  
CME Co-Chair  
SafeRock CEO  
PME Advisory Board Member



**Cristi Stiers**  
CME Treasurer  
CEO at LeafGrow



**Michael Meador**  
NASA Glenn  
Former Game Changing Manager

## 2017-2024 CME Nobel Lectures

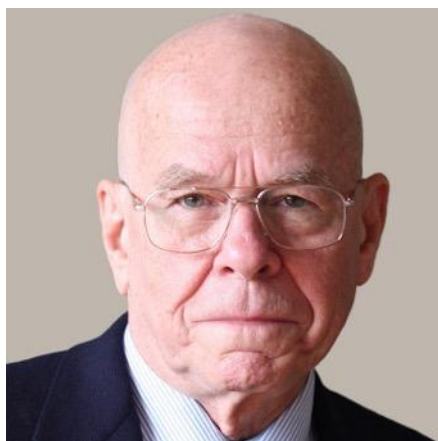
Partial List of Eminent Thought Leaders



**Sir Fraser Stoddart**

Northwestern University

2016 Nobel Prize in Chemistry



**Barry Sharpless**

Scripps Research Institute

2001 and 2022 Nobel Prize in Chemistry



**Frances Arnold**

Caltech

2018 Nobel Prize in Chemistry



**Ben Feringa**

University of Groningen

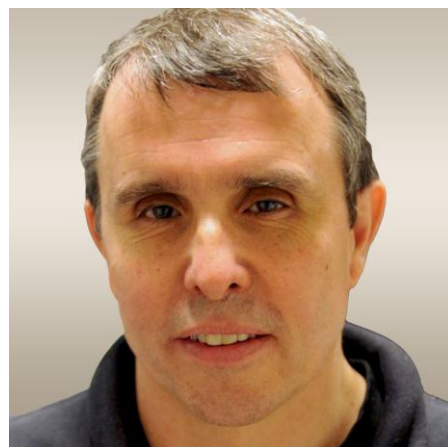
2016 Nobel Prize in Chemistry



**Carolyn Bertozzi**

Stanford

2022 Nobel Prize in Chemistry



**Eric Betzig**

University of California Berkeley

2014 Nobel Prize in Chemistry



# Award-Winning AI & Space Age STEM Programs



Pioneering STEM Leadership in the AI & Space Age

CME STEM Symposiums with NASA

CME STEM Leadership Awards

CME STEM Talks by Thought Leaders

CME STEM Festivals



Chemical Marketing & Economics, Inc.

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