

... on August 22-23 we go to Mars!



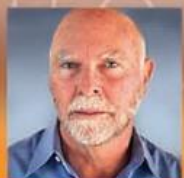
IMAGE: JAMES VAUGHAN

## ACS President Recommends POLY "Journey to Mars" Symposium

8/22-23 Marriott Marquis DC info: [www.CMEACS.org](http://www.CMEACS.org)

Cutting-Edge Chemistry, Industry Technology and Jobs

CME Lectures 8/22 4:00-5:30PM\*



Dr. Craig Venter



Dr. Janet Kavandi



Dr. Harry Gray



CME Leadership Awards Reception 8/22: Smithsonian's Air & Space Museum

\*limited free reception tickets and ACS Earth & Space Chemistry T-shirts



254<sup>th</sup> ACS National Meeting & Exposition



# Journey to Mars

ACS President recommends POLY CME NASA Symposium  
August 22-23, 2017 • Marriott Marquis, Washington, DC



In association with  
**NASA**



## Bringing together Industry, Academia, Government and the Public

Cutting-edge developments in the chemical sciences to advance human space travel to Mars and translate them into new knowledge for the benefit of Earth and its people.

### Day 1: Technology, Industry, Jobs

8:30 am – 11:50 am

Advanced Materials, Computational Materials Research, HP 3-D Printing, Carbon Nanotubes composites and Multi-Responsive Polymers.

1:00 pm – 3:45 pm

Industry Panel: Challenges and Jobs in Energy, Materials and Life Science for space travel. Lockheed, Orbital, Aerojet, NASA, Aerospace...

4:00 pm – 5:45 pm

**CME Lectures:** featuring leaders visionary Craig Venter, chemist astronaut Janet Kavandi and distinguished professor Harry Gray.

6:30 pm – 10:30 pm

**CME Leadership Awards** honoring Lecturers. Smithsonian's National Air and Space Museum.



### Day 2: Advanced Research & Development

8:30 am – 12:00 pm

Sensors, Energy Storage, Solid-State energy conversion, 3-D Printed Nanosensors.

1:00 pm – 4:30 pm

Mars Environment, Aerogels, Metal-Organic Frameworks, In-situ Research Utilization

**Organizers:** Michael Meador, George Rodriguez, Charles Brumlik

**ACS Primary Sponsoring Division:** Polymer Chemistry (POLY)

**Co-Sponsors:** 2017 ACS President Allison Campbell, 2016 ACS President Donna Nelson, 2018 ACS President Peter Dorhout, the Chemical Marketing & Economics Group of the ACS New York Local Section (CME), NASA, Smithsonian Institution, ACS Space Chemistry division candidate, the ACS Technical Divisions ANYL, BIOT, BMGT, CATL, CHAS, CHED, CINF, COLL, COMP, ENVR, FLUO, GEOC, INOR, NUCL, PHYS, PMSE, SCHB. and the MPPG Multidisciplinary Program Planning Group.

Please send inquiries to [info@cmeacs.org](mailto:info@cmeacs.org)



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# Journey to Mars



Tue 8/22 Program – Morning & Early Afternoon



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## Morning Technical Session (8:30 - 11:50), Marriott Marquis, Shaw

8:30	Rigoberto Hernandez	ACS Board Member	Opening Remarks
	Michael Meador	Session Chair	NASA Glenn, Game Changing Dev. Program, Materials and Mfg. Past Director of the National Nanotechnology Coordination Office
8:40	Emilie Siochi	NASA Langley	Dev. of Carbon Nanotube Composites for Aerospace Applications
9:10	Kristopher Wise	NASA Langley	Role of Computational Materials Research in the Dev. of Light-Weight, High-Strength CNT Composites for Space Exploration
9:40	Matteo Pasquali	Rice University	What yields high-performance CNT materials?
10:10			Intermission
10:30	S. J. Rowan	U Chicago	Multi-responsive and Multi-use Polymeric Materials. Deputy Editor for ACS Macroletters
11:00	Timothy Long	Virginia Tech	Towards higher-performance materials for 3D printing with SLA; Accessing 3D structures of highly aromatic polyimides
11:30	Rocco Viggiano	NASA Glenn	Novel Polyimide Battery Separator Imbibed with Room-Temperature Ionic Liquids

## Afternoon Industry Session (1:00 - 3:45), Marriott Marquis, Shaw

1:00	Peter Dorhout	Opening Remarks	2018 ACS President
	Charles Brumlik	Session Chair	Introduction of speakers
	David Bearden	Moderator S1	Subsession 1 (S1) moderator
1:10	John Logsdon	G Washington U	Professor Emeritus of Political Science and International Affairs
1:25	Robyn Gatens	NASA HQ	Deputy Director, International Space Station Division, Human Exploration & Operations Mission Directorate
1:40	David Bearden	Aerospace Crp	General Manager, NASA and Civil Space Division
1:55			Panel Discussion & Q&A
2:15			Intermission
2:30	Bibi Campos-Seijo	Moderator S2	Editor-in-Chief, Chemical & Engineering News (C&EN)
2:35	Mike Fuller	Orbital ATK	Senior Manager, Propulsion Systems
2:50	Joe Cassidy	Aerojet Rocketdyne	Executive Director, Space; Explore Mars Board Member
3:05	Danielle Richey	Lockheed Martin	Systems Engineer and Space Exploration Architect
3:20			Panel Discussion & Q&A
3:45			Go to Lectures at Independence D/E Rooms



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Tue 8/22 Program – Lectures & Awards Reception



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<b>Afternoon CME Lectures (4:00 - 5:45), Marriott Marquis (*), Independence D/E</b>			
4:00	Tom Connelly	ACS CEO	Opening Remarks
4:05	George Rodriguez	CME Past Chair	Introduction
4:10	J. Craig Venter	Human Longevity In	The Power of Genomic Solutions & Data-Driven Health Intelligence
4:40	Janet Kavandi	NASA Glenn	Human Exploration of Mars: Challenges, Opportunities, Progress
5:10	Harry Gray	Caltech	Making Oxygen for Space Missions
* Limited free ACS <i>Earth &amp; Space Chemistry</i> T-shirts			

<b>Evening CME Reception (6:30 - 10:30), National Air and Space Museum</b>			
Recommendations: (1) Taxi/Uber; (2) Subway from NE corner of Convention Center Mount Vernon Square/7th Street. Go to L'Enfant Plaza Metro Station. Take Maryland Ave exit. (3) Shuttle buses from the Marriott Marquis to the museum every 10-15 minutes (6:10 pm until 10:45 pm).			
6:30	Registration at the Museum's Welcome Center -- 600 Independence Avenue entrance		
	Reception in Milestones Hall (100). 1st and 2nd floors are open for viewing.		
7:15	Registrants move to the Museum's IMAX Theater for CME Leadership Awards Presentation		
7:30	Bruce Campbell	Welcome Remarks	Chair, Center Earth & Planetary Studies, National Air & Space M.
	George Rodriguez	CME Past Chair	Opening Remarks. Award presentation at museum IMAX theater.
	Donna Nelson	2016 ACS President	Introduction of Craig Venter
7:35	Craig Venter	Honoree	Historic Scientific Advancement Leadership Award
7:40	Introduction of Dr. Kavandi		
7:45	Janet Kavandi	Honoree	Aerospace Innovation Leadership Award
7:50	Introduction of Dr. Gray		
7:55	Harry Gray	Honoree	Propelling Science Leadership Award
8:00	George Rodriguez	Closing Remarks	Closing Remarks
8:02	End of Presentation -- Exit theatre. Enjoy the food, music, lighting and the exhibits of the museum		
9:00	Journey to Space	IMAX Theater	Optional complimentary 3D film on giant museum screen. 25 min.
10:00	2nd Floor Closes. Bars and entertainment end. Attendees begin departing.		
10:30	Museum closes.		

The CME Reception includes complimentary IMAX 3D film *Journey to Space* narrated by *Star Trek* and *X-Men* actor Patrick Stewart.



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# Journey to Mars



Wed 8/23 Program



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## Morning Technical Session (8:30 - 12:00), Marriott Marquis, Shaw

8:30	Timothy Swager	MIT	Chemical Sensors: The Light Weight Low Power Option for Chemical Analytics Associate Editor for ACS Macromolecules Journal
9:00	Jodie Lutkenhaus	Texas A&M	Multifunctional energy storage materials for extreme environments and stresses
9:30	Eric Wachsman	U Maryland	Solid-State electrochemical energy conversion and storage for exploration of Mars
10:00			Intermission
10:20	Emily Westbrook	U Cincinnati	Post-modified copolymers with controlled inter-chromophore spacing for triplet-triplet annihilation upconversion
10:40	Roberto Vadrucchi	U Cambridge UK	Low-power light upconversion in polymeric one-dimensional photonic crystals
11:00	Mahmooda Sultana	NASA Goddard	3D-Printed Nanosensors for Space Applications
11:30	Kirk Schanze	UT Austin	Applications of Conjugated Polyelectrolytes in Biosensing and Disinfection Editor-in-Chief (EIC) of ACS Applied Materials and Interfaces

## Afternoon Technical Session (1:00 - 4:50), Marriott Marquis, Shaw

1:00	James Green	NASA HQ	A future mars environment for science and exploration
1:30	Mary Ann Meador	NASA Glenn	Use of polyimide and polyamide aerogels as lightweight, multifunctional materials for aerospace applications Executive Editor for ACS Applied Materials and Interfaces
2:00	Omar Farha	Northwestern	Metal-Organic Frameworks (MOFs): Design, Preparation and Gas Storage
2:30			Intermission
2:50	Mark Blenner	Clemson	Biosynthesis of Materials and Nutraceuticals from Astronaut Waste: Towards Closing the Loop
3:20	Fuzhong Zhang	Washington U	Towards bioproduction of advanced fuels and lightweight materials
3:50	Richard Laine	Michigan	Possible Process Chemistry for Turning Martian Soil into Value Added Chemicals for Multiple Purposes
4:20			Concluding remarks

To attend the CME Reception register [HERE](#). Early birds will get free tickets while supplies last. Complimentary IMAX 3D film *Journey to Space* narrated by *Star Trek* and *X-Men* actor Patrick Stewart.



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## CME Lectures

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**4:00 POLY Opening Remarks.** T. Connelly, ACS CEO.

**4:05 POLY Introduction.** G. Rodriguez, Past CME Chair.

**4:10 POLY The Power of Genomic Solutions and Data-Driven Health Intelligence.** J. C. Venter

Abstract: This talk will discuss how the combination of state-of-the-art DNA sequencing and expert analysis with machine learning, will help change medicine to a more data-driven science and empower efficient solutions for human health.

**4:40 POLY Human Exploration of Mars: Challenges, Opportunities & Progress.** J. Kavandi

Abstract: Long duration human exploration missions to Mars will require significant advances in propulsion systems, lightweight structures (including radiation shielding), power generation and storage, astronaut health and performance management, as well as capabilities to live and work on the surface of Mars. Chemistry is central to developing these needed advances by enabling the development technologies such as ultra-lightweight, multifunctional materials; high power density batteries and fuel cells; high selectivity and specificity low power demand sensors for the detection of chemical and biological species; and processes to convert the Martian soil and atmosphere to oxygen, fuel, and advanced materials. Other applications include thermal insulators, shape memory alloys, cryogenic storage and transfer of fuels, detrimental effects on materials due to atmosphere, temperature, and radiation, and the physical chemistry effects of fluids and combustion. This presentation will provide an overview of the technical challenges and opportunities for future human exploration of Mars as well as provide a few examples of technologies that are currently under development.

**5:10 POLY Making Oxygen for Space Missions.** H. Gray

Abstract: Generating oxygen is at the top of the space exploration agenda. This talk will cover how new developments in inorganic chemistry can help to harness the potential of carbon dioxide to sustain long space missions.

**5:40 Final remarks** and adjournment.

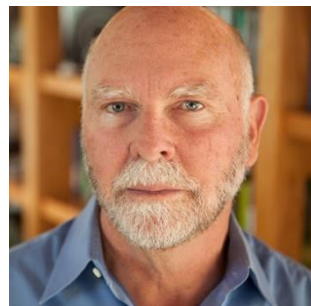
**5:45 Go to NASM.** Start bus transportation to CME Awards Reception at 5:45 pm from the Marriott Marquis Hotel. The return trip from the museum will stop at the JW Marriott (7:30-9:00) after that buses will go directly to the Marquis.

**6:30 – 10:30 CME Leadership Awards Reception** Honoring Dr. Craig Venter, Dr. Janet Kavandi and Dr. Harry Gray at the National Air and Space Museum.



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8/22 • 6:30 – 10:30 pm • Smithsonian's National Air and Space Museum, DC

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A DIVISION OF THE  
AMERICAN CHEMICAL SOCIETY**Award for Historic Scientific Achievement****J. Craig Venter, PhD, Co-Founder, Executive Chairman, Head of Scientific Strategy of Human Longevity Inc.**

Founder of Celera Genomics, key contributor to the 2001 Science publication of the human genome.

BS in Biochemistry and PhD in Physiology and Pharmacology .

Dr. Venter is a biologist renowned for his contributions in genomics including sequencing the first draft human genome, the first complete diploid human genome and construction of the first synthetic bacterial cell and first minimal synthetic cell.

He is Co-Founder, Executive Chairman, Head of Scientific Strategy of Human Longevity Inc (HLI), a privately held genomics-based, technology company creating the world's largest and most comprehensive database of whole genome, phenotype and clinical data to revolutionize healthcare. He is Founder, Chairman and CEO of the J. Craig Venter Institute (JCVI), a not for profit basic science research institute and Co-Founder, co-Chief Scientific Officer and Chairman of Synthetic Genomics Inc (SGI), a privately held company focused on developing synthetic biology-based products and solutions.

Dr. Venter is a recipient of the 2008 National Medal of Science and is a member of the National Academy of Sciences. He is the author of *Life at the Speed of Light: From the Double Helix to the Dawn of Digital Life* (Viking, 2013) and *A Life Decoded: My Genome: My Life* (Viking, 2007).

**Award for Aerospace Innovation****Janet L. Kavandi, PhD, Director of NASA's Glenn Research Center.**

Manages one of NASA's four research centers focused on materials development and aeronautical propulsion. Astronaut. 535 Earth Orbits. 13.1 million miles around the Earth. Presidential Rank Award. 3 NASA Space Flight Medals. PhD in Analytical Chemistry.

Dr. Kavandi is responsible for research, technology, and systems development in support of the nation's space propulsion, space power, space communications, aeronautical propulsion, microgravity sciences, and materials development programs. The Glenn staff consists of more than 3,200 people and has an annual budget of approximately \$625 million.

She worked at the NASA Johnson Space Center in Houston and served as the Deputy Director of the Health and Human Performance Directorate, responsible for human research investigations on the International Space Station (ISS). As a NASA astronaut she is a veteran of 3 space flights and supported ISS payload integration, capsule communications, robotics, and served as Deputy Chief of the Astronaut Office.

Born in Springfield, MO, she earned her doctorate in Analytical Chemistry from the University of Washington in Seattle.

## CME Leadership Awards Reception

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### Award for Propelling Science

**Harry B. Gray, PhD**, Arnold O. Beckman Professor of Chemistry; Founding Director, Beckman Institute.

After graduate work in inorganic chemistry at Northwestern University and postdoctoral research at the University of Copenhagen, he joined the chemistry faculty at Columbia University, where he developed ligand field theory to interpret the electronic structures and reactions of transition metal complexes.

After moving to Caltech in 1966, he began work in biological inorganic chemistry and inorganic photochemistry that led to molecular systems for the storage of solar energy. In the 1980s, he and coworkers demonstrated that electrons can tunnel rapidly over long molecular distances through folded polypeptide structures. This discovery shed new light on the mechanisms of electron flow through proteins that function in respiration and photosynthesis.

Gray has published over 900 research papers and 18 books. For his leadership in science he has received many prestigious awards including the National Medal of Science from President Ronald Reagan (1986); the Pauling Medal (1986); the Waterford Award of the Scripps Research Institute (1991); the Linderstrøm-Lang Prize from Denmark (1992); the Harvey Prize from the Technion (2000); the ACS New York Nichols Medal (2003); the Dwyer Medal from Australia (2003); the National Academy of Sciences Award in Chemical Sciences (2003); the Benjamin Franklin Medal in Chemistry (2004); the City of Florence (Italy) Prize in Molecular Sciences (2006); the IC Chemistry Award from Japan (2010); the Othmer Gold Medal (2013); six national awards from the American Chemical Society and 19 honorary doctorates.

He is a member of the National Academy of Sciences; the Royal Swedish Academy of Sciences; the Royal Society of Great Britain; and other societies. He was Chairman of the Board of Trustees of the Gordon Research Conferences. He is Principal Investigator of the NSF CCI Solar Fuels Program and a Director of University Science Books.

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**Industry Session: Technology & Jobs**

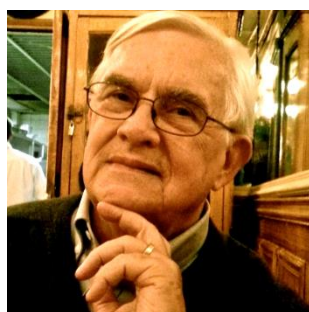
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December 5, 2017[www.cmeacs.org](http://www.cmeacs.org)**David A. Bearden**, General Manager, NASA and Civil Space Division, The Aerospace Corporation.

He has supported many NASA interplanetary and Earth-science programs. In 2006, he shared The Aerospace Corporation's President's Achievement Award for leading the Hubble Space Telescope Servicing Analysis of Alternatives.

He was also the recipient of the Aviation Week & Space Technology Annual Aerospace Laurels in 2000.

Bearden joined Aerospace in 1991, and has a PhD in Aerospace Engineering from the University of Southern California.

**John Logsdon**, PhD, Professor Emeritus of Political Science and International Affairs at George Washington University's Elliott School of International Affairs.

He was on the faculty of GW for 38 years. He was the founder in 1987 and long-time Director of GW's Space Policy Institute. He is also a faculty member of the International Space University. He holds a BS in Physics from Xavier University (1960) and a

PhD in Political Science from NYU (1970). His interests focus on the policy and historical aspects of U.S. and international space events. He is author of numerous articles on space policy and books such as the award-winning *John F. Kennedy and the Race to the Moon* (2010). He is a member of the Board of Directors of the Planetary Society. He held the Charles A. Lindbergh Chair in Aerospace History at the Smithsonian's National Air and Space Museum. He is a recipient of public service medals from NASA and the International Astronautical Federation. He is a Fellow of AIAA, AAS, and the AAAS.

**Ms. Robyn Gatens**, Deputy Director, International Space Station Division at NASA's Human Exploration and Operations Mission Directorate.

Ms. Gatens began her NASA career in 1985 at the Marshall Space Flight Center, and has 32 years of experience in development and management of Environmental Control and Life Support Systems for human spaceflight missions. Ms. Gatens held various leadership positions at the NASA Marshall Space Flight Center and served as Manager for the Orion

Crew Support and Thermal Systems. At NASA Headquarters, she has focused agency plans to utilize the International Space Station as a testbed to mature technologies needed for NASA's Journey to Mars, especially long duration habitation systems such as life support. She is spearheading NASA's strategic planning for enabling a Low Earth Orbit commercial economy leveraging the ISS. She is the recipient of NASA's Outstanding Leadership and Exceptional Achievement Medals, and holds a BS in Chemical Engineering from the Georgia Tech.



## Industry Session: Technology & Jobs



August 22, 2017 • 2:30 – 3:45 pm • Marriott Marquis, Washington, DC



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**Joseph Cassady**, Executive Director, Space Programs, Washington DC Operations, Aerojet Rocketdyne

He helps oversee strategy development and architectures for future space and launch systems. He obtained his BS (1981) and MS (1983) in Aeronautics and Astronautics from Purdue University as well as a Graduate Certificate in Systems Engineering at the George Washington University in 2005. He has 33 years experience in propulsion and mission and systems analysis and has authored more than 50 technical papers

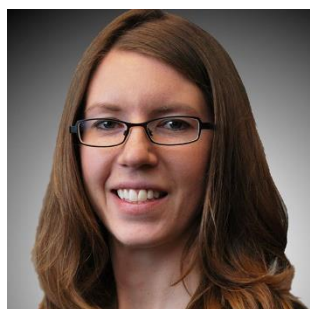
dealing with electric propulsion, power and attitude control systems and mission analysis. His experience includes flight projects for both the Air Force and NASA. Mr. Cassady led flight project teams for the 26 kWe ESEX arcjet system (which still holds the record as the highest power electric propulsion system flown) and the EO-1 Pulsed Plasma Thruster system. Both systems were accomplished within program cost and schedule constraints and were successful flight demonstrations. In addition, he has served on a number of advisory groups for NASA and the DoD. He is an Associate Fellow of the AIAA, is vice-president of the Electric Rocket Propulsion Society and serves on the Board of Directors for ExploreMars, a 501c(3) non-profit dedicated to STEM and human Mars exploration.



**Michael Fuller**, Business Development Sr. Manager, Propulsion Systems, Orbital ATK

Mike Fuller has been with Orbital ATK for 11 years. He is currently working in Business Development and is responsible for NASA programs. Mike's responsibilities include NASA's Space Launch System booster, NASA Evolvable Mars Campaign along with Deep Space Habitats, and other SLS-related activities. Previously, Mike spent seven years in Research and Development working thermal protection and ultra-high

temperature materials before becoming the thermal protection systems lead for Ares I First Stage. Prior to coming to Orbital ATK, Mike spent 10 years with a Materials development company working on ceramic metal composite materials. Mike received a BS in Ceramic Engineering and a MS in Materials Science and Engineering from Ohio State University.



**Danielle Richey**, Systems Engineer and Space Exploration Architect, Lockheed Martin

Danielle focuses on defining and enabling the future path of human exploration of our solar system. She joined Lockheed Martin in 2008 and has worked on multiple projects in Defense and Civil Space, including Orion and the NextSTEP Habitat program. Danielle has a BS and MS in Aerospace Engineering from the University of Colorado, with an emphasis in Bioastronautics.



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# Journey to Mars

ACS and Smithsonian Leadership

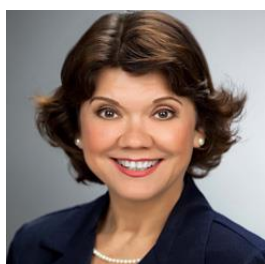


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## Lectures Introduction – ACS CEO

**Thomas M. Connelly, Jr.** – Executive Director and CEO of the American Chemical Society since February 2015. Former DuPont Executive VP, Chief Innovation Officer. Joined DuPont in 1977 and played key roles in Delrin®, Kevlar®, Sorona® and Teflon®. B.S. and Ph.D. in Chemical Engineering.



## Reception Remarks – 2016 ACS President

**Donna Nelson** – A professor of chemistry at the University of Oklahoma, Dr. Nelson was the scientific advisor in the award-winning TV series *Breaking Bad*. She holds a B.S. in Chemistry and a Ph.D. in Chemistry from the University of Texas at Austin. She has been a member of the ACS since 1975.



## Symposium Co-Sponsor – 2017 ACS President

**Allison Campbell** - American chemist who is known in the areas of biomineralization, biomimetics and biomaterials for her innovative work on bioactive coatings for medical implants. She was director for the Earth and Biological Sciences Directorate at the Pacific Northwest National Laboratory (PNNL) of the Department of Energy.



## Industry Session Remarks – 2018 ACS President

**Peter Dorhout** – Kansas State University, Vice President for Research. He worked at Colorado State University-Pueblo, DuPont and Los Alamos. Fellow at ACS and Alfred P. Sloan. ACS member since 1985. Member of Divisions: I&EC, INOR and NUCL. Holds a PhD in Chemistry.



## Reception – Center for Earth and Planetary Studies Chair

**Bruce Campbell** – Welcoming remarks at NASM on 8/22. Since 1992 he has been at the National Air and Space Museum, and is currently department chair. His research focuses on the surface and subsurface geology of the Moon, Mars, Venus, and the icy moons of the outer planets, resulting in more than 100 scientific publications. B.S. in Geophysics and a Ph.D. in Geology and Geophysics.



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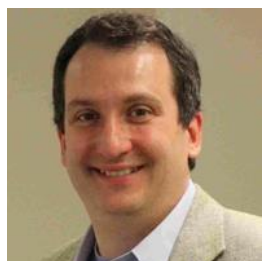


# Journey to Mars

Symposium Organizers & Moderator



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## Industry Session Organizer

**Charles Brumlik** – CME Chair. Managing Director at Nano-Biz LLC in Branchburg, NJ. Advises multinational corporations, investors, startups, and governments on technology assessment and commercialization. Has 20+ nanotechnology publications and patents on materials. Holds a PhD in Chemistry and a JD.



## Lectures & Awards Organizer

**George Rodriguez** – CME Past Chair. Management advisor on business strategy and technology partnering. Served at Asahi Glass, Nagase, Pfizer, U. Carbide. Has led original programs, such as the Leadership Awards, that positioned CME as a premier ACS topical group. B.S. Chemical Engineering, M.S. Industrial Management.



## Technical Sessions Organizer

**Michael Meador** – Program Element Manager, Lightweight Materials and Mfg, NASA Game Changing Development Program. Former Director of the National Nanotechnology Coordination Office and was the Chief of the NASA Glenn Polymers Branch. Fellow of ACS. BA in Chemistry. PhD in Organic Chemistry.



## Industry Session Moderator – C&EN Editor-in-Chief

**Bibiana Campos-Seijo** – Editor-in-Chief and VP of C&EN Media Group at ACS Publications. Previously worked as Magazines Publisher and Editor at Royal Society of Chemistry, Author - What's Inside? Column at Wired Magazine and Editor in Chief of Advanstar Communications. BS and PhD in Chemistry.



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7. Chemical Information (CINF)
8. Colloid & Surface Chemistry (COLL)
9. Computers in Chemistry (COMP)
10. Environmental Chemistry (ENVR)
11. Fluorine Chemistry (FLUO)
12. Geochemistry (GEOC)
13. Inorganic Chemistry (INOR)
14. Nuclear Chemistry & Technology (NUCL)
15. Physical Chemistry (PHYS)
16. Polymer Chemistry (POLY)
17. Polymeric Materials: Science & Engineering (PMSE)
18. Small Chemical Businesses (SCHB)

### About ACS

A nonprofit organization established in 1876 and chartered by the U. S. Congress, the American Chemical Society (ACS) is the world's largest scientific society with over 150,000 members. The ACS has the CAS registry of over 100 million substances and publishes over 50 leading scientific journals as well as a weekly magazine C&EN.

### About ACS Earth & Space Chemistry Journal

The scope of *ACS Earth and Space Chemistry* includes the application of analytical, experimental and theoretical chemistry to investigate interdisciplinary research questions relevant to the Earth and Space. It publishes broadly in the domains of geochemistry, atmospheric chemistry, marine chemistry, planetary chemistry and astrochemistry.

### About POLY

The Polymer Chemistry Technical Division of ACS (POLY) is dedicated to advancing the broader polymer enterprise to meet the grand challenges of the 21st century. With a robust, diverse, global organization of academic, industrial and government polymer scientists, POLY develops valuable resources to thrive in the global polymer enterprise.

### About CME

Established in 1954, the award-winning Chemical Marketing and Economics (CME) group of the American Chemical Society's New York Section, Inc. (ACS NY) is a pioneer in original programming including the Journey to Mars, the Leadership Awards, over 500 monthly luncheons in New York City and webcasts where business, investment and technology leaders share their insights on energy, materials and life science.



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ACS Enables Academia, Industry and Government

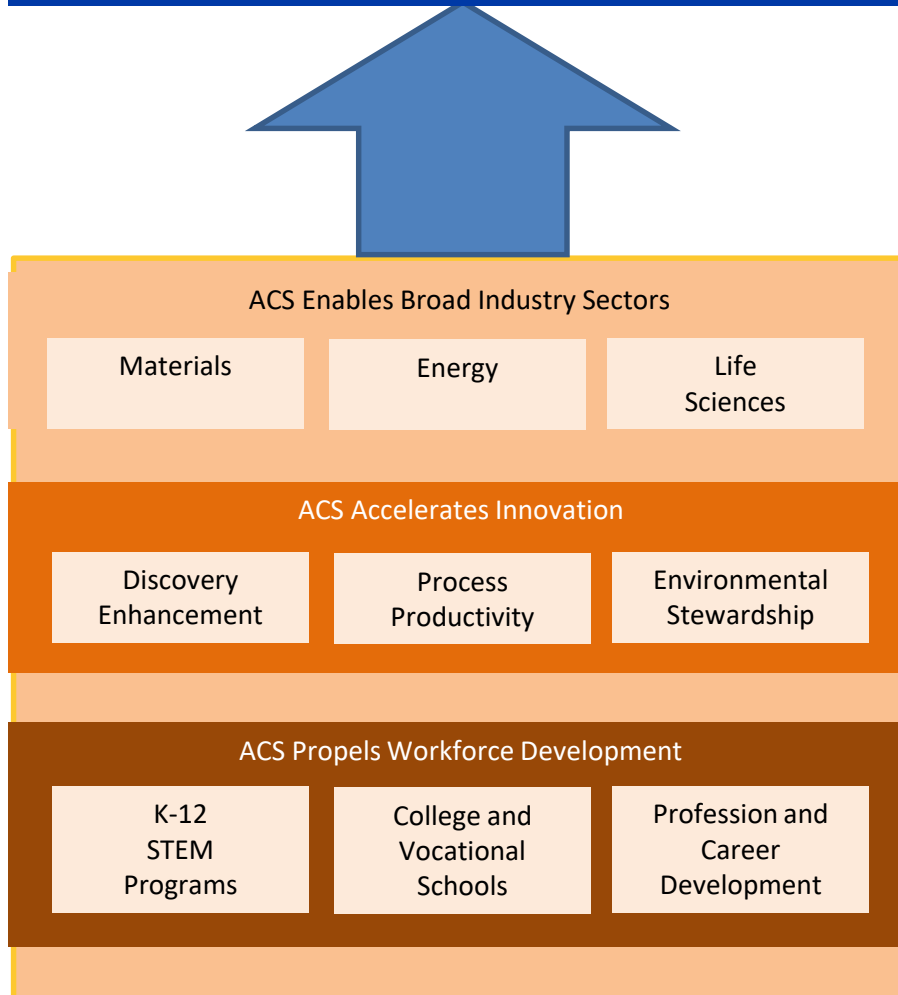


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*"We choose to go to the Moon in this decade and do the other things, not because they are easy, but because they are hard; because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one we intend to win."*

John F. Kennedy  
May 25, 1961.



**LEADERSHIP**  
*Awards*<sup>TM</sup>  
December 5, 2017

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