



# FREQUENT FLYER

American Institute of Aeronautics and Astronautics  
Northern Ohio Section

Newsletter - November 2018

## AIAA Northern Ohio Section Sponsors NASA Glenn Research Center's Evening with the Stars

AIAA Northern Ohio Section was pleased to once again sponsor NASA Glenn Research Center's annual "An Evening with the Stars" event, which took place on September 18<sup>th</sup> at the Rock and Roll Hall of Fame in beautiful downtown Cleveland. Over 220 guests were in attendance and more than 24 companies and organizations participated as sponsors. The event consisted of a formal reception followed by an evening of presentations. The main program began with opening remarks by Ohio Aerospace Institute Board of Trustees Chairman Dr. Dennis Irwin and Glenn Center Director Dr. Janet Kavandi. Then, attendees were treated to enthusiastic remarks and anecdotes from recently appointed NASA Administrator Jim Bridenstine.

Following the opening remarks, three of Glenn's brightest rising "stars" gave illuminating presentations focusing on some of the Center's latest technological developments. The first talk was given by Dr. Erin Reed, a test engineer in the testing group at NASA's Plum Brook Station's Space Power Facility. Dr. Reed gave an overview of the testing capabilities of the unique, world-class facilities at Plum Brook. Next, Mr. Carl Sandifer, who serves as the Radioisotope Power Systems (RPS) Nuclear Fuels and Fundamental Research Manager, discussed Glenn's research and development of RPS systems for application to NASA



NASA Administrator Jim Bridenstine providing opening remarks.

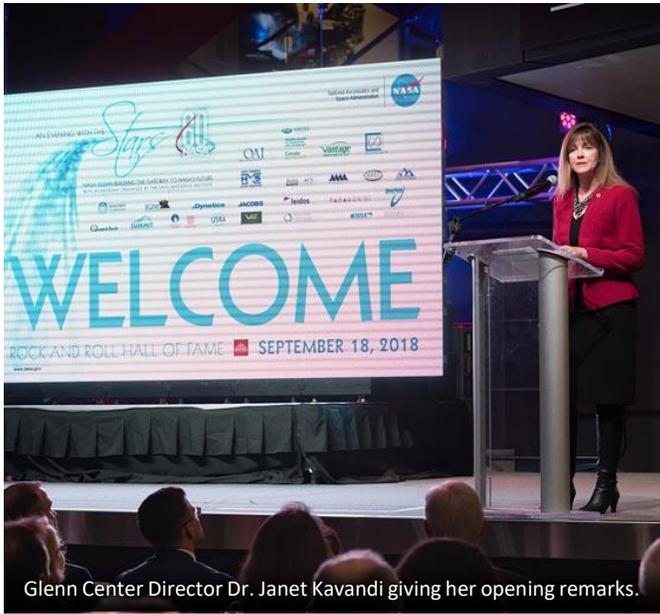
planetary exploration missions. Finally, Ms. Ashlie Flegel, a researcher in the Icing Branch and the Engine Icing Technical Lead in the Advance Air Transport Technology Project, described the work being done in the NASA Propulsion Systems Laboratory to improve understanding of the ice crystal icing phenomenon in turbofan engines, so as to enable the development of computational prediction and risk mitigation tools.

In attendance to represent the AIAA NOS Council was Edmond Wong, NOS Communications Officer.

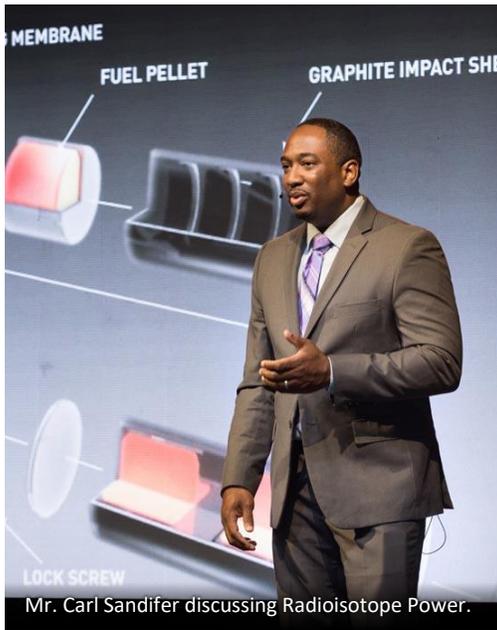
*(Photos courtesy of NASA GRC, unless otherwise noted)*



NASA Administrator Jim Bridenstine and Glenn Center Director Janet Kavandi at the Rock and Roll Hall of Fame for Glenn's "An Evening With the Stars" event.



Glenn Center Director Dr. Janet Kavandi giving her opening remarks.



Mr. Carl Sandifer discussing Radioisotope Power.



Ms. Ashlie Flegel explaining Icing Research.



Dr. Erin Reed describes Plum Brook Testing.



NOS sponsorship on display. (Photo courtesy of Edmond Wong)



Jim Bridenstine and Janet Kavandi joined by Glenn Research Center luminaries.

### AIAA NOS 2018 Honors and Awards Picnic

On August 8, 2018, the AIAA Northern Ohio Section (NOS) gathered at the NASA Glenn Research Center (GRC) Picnic Grounds to recognize award recipients and celebrate the accomplishments of the past year. As the event commenced, approximately 43 members and guests had the opportunity to spend some time socializing, renewing acquaintances, and enjoying a wonderful picnic dinner catered by [Famous Dave's Bar-B-Que](#). We were honored that two distinguished guests were able to join our event this year: Rachel Dowdy, AIAA Coordinator for Student and Regional Communities, and our Region III Director, Dan Jensen. Following the meal, honorees were recognized and membership awards were given out. The event concluded with more socializing and some games.

One particular award, the Associate Fellow grade of membership, recognizes those members who have accomplished or been in charge of important engineering or scientific work, or have done original work of outstanding merit, or have otherwise made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics. Members must be recommended by three members of the Associate Fellow grade or higher, and have at least 12 years of professional experience. We were fortunate to have 3 members from the Northern Ohio Section honored with this recognition this year, and they were formally presented at the Associate Fellows dinner in January. They were Jonathan Litt and Dexter Johnson of NASA GRC, and Peter Peterson of Vantage Partners, LLC.

#### AIAA NOS Honorees Listing:

##### AIAA 2018 Associate Fellows

- Jonathan Litt (NASA Glenn Research Center)
- Dexter Johnson (NASA Glenn Research Center)
- Peter Peterson (Vantage Partners, LLC)

##### AIAA Membership Awards

###### *25 Years of Membership*

- Elizabeth Dabrowski†
- Dr. James D Heidmann
- Louis R Ignaczak
- Dr. Chunhua Sheng
- Dr. Dennis A Yoder

###### *60 Years and Over*

- Robert Friedman (60 years)
- Dr. Charles A Martin (60 years)
- Leonard Tower (63 years)
- John H Dalton (70+ years)
- Leonard E Stitt (70+ years)

###### *50 Years of Membership*

- Dr. Gary Harloff

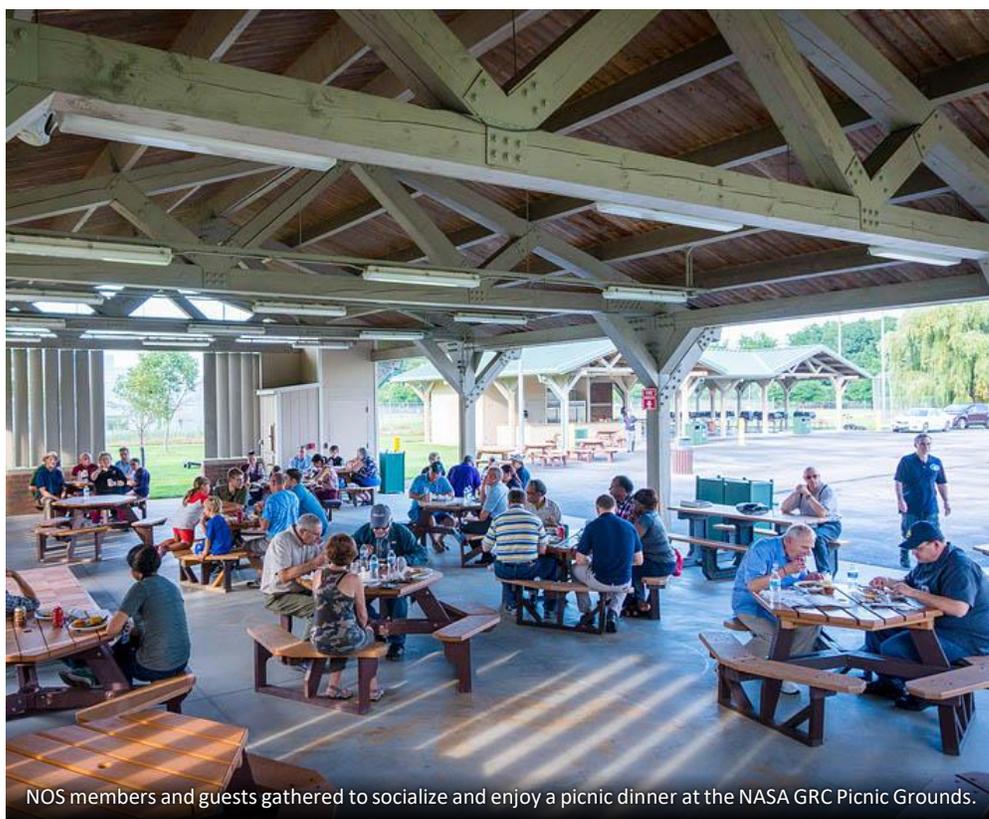
##### AIAA Outstanding Section Award

- James Gilland – Northern Ohio Section

##### Best Paper – Propulsion & Energy Group:

- Mr. James L. Felder, NASA Glenn Research Center, Co-recipient with Chana Goldberg, Devaiah Nalianda, Pericles Pilidis, and David MacManus of Cranfield University; for the paper “Installed Performance Assessment of a Boundary Layer Ingesting Distributed Propulsion System at Design Point”, presented at the AIAA Propulsion and Energy Forum in 2016 at Salt Lake City.

†Ms. Dabrowski sadly passed away in May 2018



NOS members and guests gathered to socialize and enjoy a picnic dinner at the NASA GRC Picnic Grounds.

Congratulations again to the section's 2018 Associate Fellows on this noteworthy accomplishment!

For more information about Membership grades and how to advance your membership, please visit the AIAA membership website:

<https://www.aiaa.org/Honors/>

View additional photos taken during the festivities at:

[AIAA Northern Ohio Section - Honors & Awards Picnic 2018](#)

Finally, the NOS Council is seeking input to make next year's event even more special. Members with comments, feedback should or suggestions for next year's picnic, contact Bill Marshall, Honors & Awards Chair at:

[william.m.marshall@nasa.gov](mailto:william.m.marshall@nasa.gov).



AIAA Associate Fellow Jonathan Litt and wife Maria.



Associate Fellow Dexter Johnson & wife Philomena.



50-year Member Dr. Gary Harloff (right).



AIAA 60-year Member Dr. Charles A. Martin (right).



AIAA 63-year Member Leonard Tower (center).



Left to right: Edmond Wong (Communications), Geoff Landis (Former Honors & Awards), Chris Pestak (Former Honors & Awards), Joe Connolly (University), Bill Marshall (Honors & Awards), Peggy Cornell (Chair), Roger Tokars (Young Professionals), Rachel Dowdy (AIAA Coordinator for Student and Regional Communities), Jim Gilland (Past Chair), Dan Jensen (AIAA Region III Director), Christie Pastor-Barsi (Vice Chair), and Jonathan Litt (Secretary).

### NASA's Kleinhenz Talks In-Situ Resource Utilization

AIAA Northern Ohio Section's very own STEM K-12 Outreach Chair, Dr. Julie Kleinhenz, provided an illuminating presentation on September 13<sup>th</sup>, entitled "In-Situ Resource Utilization (ISRU) - Living off the Land on the Moon and Mars". Dr. Kleinhenz, a researcher in NASA Glenn Research Center's Chemical and Thermal Propulsion Systems Branch, gave a comprehensive overview of ISRU, including the resources available on Earth's moon and Mars, which may enable future exploration missions, construction of early outposts and eventual human colonies.

The talk included details of locating, extracting and processing these valuable resources for human survival, habitat construction, and propellant production for return to Earth as well as other Solar System destinations. The preference of northern or southern latitudes, rather than equatorial locations for ISRU exploitation activities was emphasized, due to the higher probability of the soil (regolith) containing water ice. Such non-equatorial locations would also be advantageous for the construction of the required electric power production plants, especially nuclear plants utilizing "fission-reactor" heat sources.

Dr. Kleinhenz closed her presentation with descriptions of current NASA activities in ISRU research and development, including efforts led by NASA GRC. After the talk, a large and enthusiastic audience engaged in an insightful question and answer session lasting almost 15 minutes. A record audience size of 40 persons, attended this AIAA event.



Dr. Julie Kleinhenz providing an overview of In-Situ Resource Utilization.



Dr. Kleinhenz's talk was attended by a large and enthusiastic audience.

### NOS Members Serve on Diversity Panel at 2018 AVIATION Forum

AIAA Northeast Ohio Section (NOS) members, Cynthia Calhoun, Ashlie Flegel, and Christie Pastor-Barsi, served on the “Moving Us Forward: Growing Diversity in the Aerospace Sector” luncheon panel held during the 2018 AIAA AVIATION Forum in Atlanta, Georgia on June 27, 2018. Three other panel members were from NASA Marshall Space Flight Center, Airbus, and the Civil Engineering Jackson-Davis Foundation.



Flegel and Pastor-Barsi provided their perspectives on the role of diversity in STEM fields and how creating a diverse workforce can propel technological innovation, while Calhoun served as the panel organizer and moderator. Panel members also discussed efforts and best practices for closing the gap in STEM fields for minorities and women, and shared their personal commitment, experiences, and activities related to growing diversity in the workforce. Over 150 AIAA Young Professionals were in attendance.



### AIAA Northern Ohio Section Wins 2017-2018 AIAA Section Awards

Congratulations to the Northern Ohio Section for their wins in the recently announced American Institute of Aeronautics and Astronautics (AIAA) Section Awards for the 2017-2018 operating year. The Section Awards honor particularly notable achievements made by member sections that help fulfill the Institute’s mission. The Institute believes that vital, active sections are essential to its success.

In the Outstanding Section Award category, NOS received Second Place (Peggy Cornell, Section Chair). This award is presented based upon overall activities and contributions through the year.

In the Communication Award category, NOS received First Place (Edmond Wong, Communications Officer). This award is presented to sections that have developed and implemented an outstanding communications outreach program.

In the Public Policy Award category, NOS received First Place (Victor Canacci, Public Policy Officer). This award is presented for stimulating public awareness of the needs and benefits of aerospace research and development, particularly on the part of government representatives, and for educating section members about the value of public policy activities.

For the Membership Award, NOS received Third Place (Erin Tesny, Membership Officer). This award is presented to sections that have increased their membership by planning and implementing effective recruitment and retention campaigns.

For the STEM K–12 Award, NOS received Third Place (Julie Kleinhenz, STEM K-12 Outreach Officer). This award is presented to sections that have developed and implemented an outstanding STEM K–12 outreach program that provides quality education resources for K–12 teachers in the STEM subject areas.

For the Young Professionals Activity Award, NOS received Second Place (Roger Tokars, Young Professionals Officer). This award is presented for excellence in planning and executing events that encourage the participation of the Institute’s young professional members, and provide opportunities for leadership at the section, regional, or national level.

Section awards are made in five membership size categories: Very Small, Small, Medium, Large and Very Large. NOS received its honors in the Large Section category.

### Distinguished Lecture with Dr. Robert Q. Fugate

On June 7<sup>th</sup>, over seventy members of AIAA Northern Ohio Section were treated to a lecture by one of the key developers of advanced optics for astronomical and beaming applications, Dr. Robert Fugate. The results of his work have not only led to new advances and discoveries in astronomy, but also resulted in having a mountain and an asteroid being named after him.

Dr. Fugate gave an overview of his work in adaptive optics and atmospheric compensation, and of the advances in ground based telescope capability. He also described his work in developing the “laser guide star” technique, which uses a laser illuminated point in the atmosphere to determine the effects of the atmosphere on light. To illustrate his progress, Dr. Fugate showed some of his own stunning astronomical photos of stars, nebulae, and other phenomena.

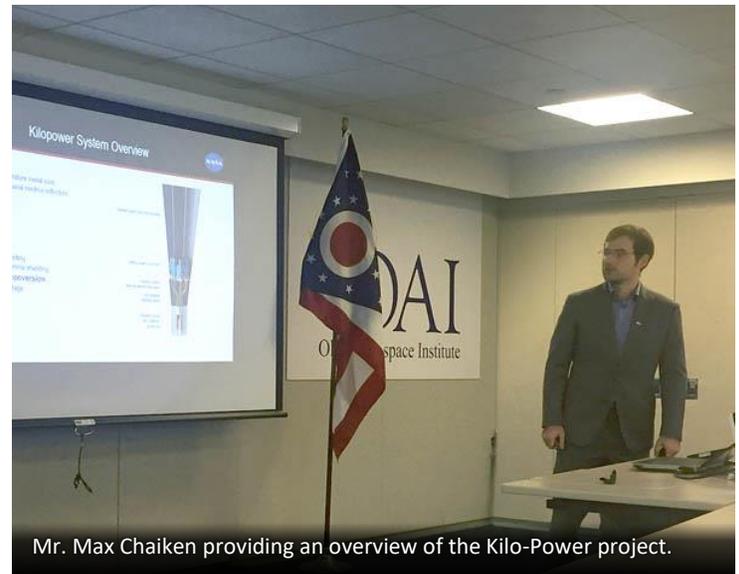
Finally, Dr. Fugate described some of his current work, on the Breakthrough Starshot Project, aimed at using a Gigawatt laser array to accelerate a chip-sized spacecraft to relativistic speeds in order to reach the stars within decades, rather than centuries. He described the power challenges and tradeoffs between different spacecraft designs and lasers, and laid out the project’s future areas of interest.



Dr. Robert Fugate discusses the breakthroughs in advanced optics that are enabling extremely large telescopes and laser-based propulsion concepts.

### Lunch Hour Lecture on NASA’s Kilo-Power Project

On Wednesday, June 20<sup>th</sup>, Mr. Max Chaiken of NASA Glenn Research Center’s Thermal Energy Conversion Branch gave a very informative and interesting presentation entitled “Overview of the Kilo-Power System Development and Testing at the Nevada Security Site.” The talk described the recent, successfully completed performance validation testing of a nuclear reactor power system with Free Piston Stirling Engine (FPSE) thermal-to-electric energy conversion.



Mr. Max Chaiken providing an overview of the Kilo-Power project.

During the talk, Mr. Chaiken described the three-and-a-half-year development program called Kilo-Power Reactor Using Stirling Technology (KRUSTY), which concluded with a successful nuclear fission reactor test in March 2018. KRUSTY was a collaborative program between NASA’s Glenn Research Center and Marshall Space Flight Center, and the Department of Energy’s Los Alamos Nuclear Laboratory. This test was the first nuclear hardware test for a “space power system” since the Systems for Nuclear Auxiliary Power (SNAP) 10A test of 1965, over 53 years ago.

After describing the detailed reactor and Stirling power system assembly and test procedures at the Nevada site, Mr. Chaiken also covered the basics of nuclear chain reactions. He particularly, stressed that “delayed neutrons” are needed for safe and stable reactor operation, while avoiding “prompt neutrons” with a time-frame of  $10^{-14}$  seconds, which would result in runaway chain reactions.

It is hoped that the successful KRUSTY test results will open the door to U.S. adoption of higher power “fission reactor power systems” for deep space missions, culminating in multi-megawatt power plants for lunar or planetary surface (i.e. Mars or Titan) space colonies in the future.

### AIAA Group Baseball Outing - Cleveland Indians vs. Detroit Tigers

On Friday June 22<sup>nd</sup>, AIAA NOS members, families, and friends joined a near sellout crowd at Progressive Field to cheer on the Indians led by brilliant rookie pitcher Shane Bieber in a matchup against Central Division foe, the Detroit Tigers. Rain delayed the first pitch by an hour and 41 minutes, but it was worth the wait to see the Indians crush the Tigers 10-0.

In addition to feasting on Dollar Dogs, the fans were treated to plenty of metaphorical fireworks in a game that produced three home runs, including a seventh inning grand slam by first baseman Yonder Alonso. Fittingly, the evening concluded with a magnificent display of actual fireworks, which were set to the music of Women of Rock. A great time was had by all.



### Litt Speaks on the Importance of Professional Societies

AIAA NOS Secretary Jonathan Litt made a presentation entitled, "Professional Societies—Importance to Your Career and Professional Life," to over 50 Glenn Summer Interns as part of Conference Day on July 19th. The purpose of the presentation was to introduce the interns to the benefits of participating in Professional Societies, including publishing, career development, and networking, among other things. The presentation was made under the auspices of the American Institute of Aeronautics and Astronautics (AIAA) Northern Ohio Section (NOS). Helping out with the presentation were Peggy Cornell, current Chair of the NOS, and Erin Tesny, NOS Membership Chair. Audience members were encouraged to describe their Professional Society involvement, which resulted in a broad range of positive experiences being related. Afterward, several students stayed to ask questions and pick up AIAA membership literature.



NOS Secretary Jonathan Litt speaking to interns on the importance and benefits of participating in Professional Societies.

### Young Professionals Social Meetup at the 100th Bomb Group Restaurant

Young Professionals from the AIAA Northern Ohio Section (NOS) were invited to a social meetup at "The 100<sup>th</sup> Bomb Group" restaurant in Brookpark, Ohio on August 17<sup>th</sup>. The 100<sup>th</sup> Bomb Group is an aviation-themed restaurant located across from Cleveland Hopkins International Airport with great views of the airport's runways.



About 16 attendees gathered in the restaurant's lounge room for an evening of socializing and networking. Appetizers were provided courtesy of the Northern Ohio Section.

Additional Young Professionals events are being planned for the future, so look for upcoming notices. For more info about joining AIAA, check out: <https://www.aiaa.org/student/>



## Northern Ohio Section Officers and Council Members

## Officers

Peggy Cornell	Chair	peggy.a.cornell@nasa.gov
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Jonathan Litt	Secretary	jonathan.s.litt@nasa.gov
Kevin Eliason	Treasurer	kevin.p.eliason@nasa.gov
James Gilland	Past Chair	james.h.gilland@nasa.gov

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