AIAA Bulletin

For Engineers Week, AIAA staff gathered at AIAA Headquarters to offer thanks to AIAA members and all engineers for their remarkable contributions.

MARCH 2016

AIAA Directory

AIAA HEADQUARTERS
12700 Sunrise Valley Drive, Suite 200
Reston, VA 20191-5807
www.aiaa.org

To join AIAA; to submit address changes, member inquiries, or renewals; to request journal fulfillment; or to register for an AIAA conference.
Customer Service: 800/639-AIAA†

Other Important Numbers: ***Aerospace America*** / Greg Wilson, ext. **7596** • ***AIAA Bulletin*** / Christine Williams, ext. **7575** • **AIAA Foundation** / Karen Thomas, ext. **7520** • **Book Sales** / **800.682.AIAA** or **703.661.1595**, Dept. 415 • **Communications** / John Blacksten, ext. **7532** • **Continuing Education** / Megan Scheidt, ext. **7511** • **Corporate Members** / Tobey Jackson, ext. **7570** • **Editorial, Books and Journals** / Heather Brennan, ext. **7568** • **Exhibits and Sponsorship** / Tobey Jackson, ext. **7570** • **Honors and Awards** / Carol Stewart, ext. **7538** • **International Affairs** / Betty Guillie, ext. **7573**; Emily Springer, ext. **7533** • **Journal Subscriptions, Member** / **800.639.AIAA** • **Journal Subscriptions, Institutional / Online Archive Subscriptions** / Michele Dominiak, ext. **7531** • **Media Relations** / Duane Hyland, ext. **7558** • **Public Policy** / Steve Sidorek, ext. **7541** • **Section Activities** / Chris Jessee, ext. **7517** • **Standards, Domestic** / Hilary Woehrle, ext. **7546** • **Standards, International** / Nick Tongson, ext. **7515** • **Student Programs** / Rachel Dowdy, ext. **7577** • **Technical Committees** / Betty Guillie, ext. **7573**

† U.S. only. International callers should use 703/264-7500.

All AIAA staff can be reached by email. Use the formula first name last initial@aiaa.org. Example: megans@aiaa.org.

Addresses for Technical Committees and Section Chairs can be found on the AIAA Web site at **http://www.aiaa.org**.

We are frequently asked how to submit articles about section events, member awards, and other special interest items in the *AIAA Bulletin*. Please contact the staff liaison listed above with Section, Committee, Honors and Awards, Event, or Education information. They will review and forward the information to the *AIAA Bulletin* Editor.

Event & Course Schedule

DATE	MEETING (Issue of *AIAA Bulletin* in which program appears)	LOCATION	ABSTRACT DEADLINE
2016			
5–12 Mar†	**2016 IEEE Aerospace Conference**	Big Sky, MT (Contact: Erik Nilsen, 818.354.4441, Erik.n.nilsen@jpl.nasa.gov, www.aeroconf.org)	
8–10 Mar	**AIAA DEFENSE 2016** **(AIAA Defense and Security Forum)** **Featuring:** **AIAA Missile Sciences Conference** **AIAA National Forum on Weapon System Effectivenss** **AIAA Strategic and Tactical Missile Systems Conference**	Laurel, MD	**8 Oct 15**
16 Mar	**AIAA Congressional Visits Day**	Washington, DC	
4–6 Apr†	**51st 3AF Conference on Applied Aerodynamics: "Thermal Effects and Aerodynamic"**	Strasbourg, France (Contact: Anne Venables, secr.exec@aaaf.asso.fr; http://3af-aerodynamics2016.com)	
19–21 Apr†	**16th Integrated Communications and Surveillance (ICNS) Conference**	Herndon, VA (Contact: Denise Ponchak, 216.433.3465, denise.s.ponchak@nasa.gov, http://i-cns.org)	
16–20 May†	**SpaceOps 2016:** **14th International Conference on Space Operations**	Daejeon, Korea	**30 Jul 15**
24–26 May†	**The Fifth International Conference on Tethers in Space**	Ann Arbor, MI (http://tethersinspace2016.com/	
30 May–1 Jun†	**22nd AIAA/CEAS Aeroacoustics Conference**	Lyon, France	**9 Nov 15**
30 May–1 Jun†	**23rd Saint Petersburg International Conference on Integrated Navigation Systems**	Saint Petersburg, Russia (Contact: Ms. M. V. Grishina, +7 812 499 8181, icins@eprib.ru, www.elektropribor.spb.ru)	
13–17 Jun	**AIAA AVIATION 2016** **(AIAA Aviation and Aeronautics Forum and Exposition)** **Featuring:** **32nd AIAA Aerodynamic Measurement Technology and Ground Testing Conference** **34th AIAA Applied Aerodynamics Conference** **AIAA Atmospheric Flight Mechanics Conference** **8th AIAA Atmospheric and Space Environments Conference** **16th AIAA Aviation Technology, Integration, and Operations Conference** **AIAA Flight Testing Conference** **8th AIAA Flow Control Conference** **46th AIAA Fluid Dynamics Conference** **17th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference** **AIAA Modeling and Simulation Technologies Conference** **47th AIAA Plasmadynamics and Lasers Conference** **46th AIAA Thermophysics Conference**	Washington, DC	**5 Nov 15**
15 Jun	**Aerospace Spotlight Awards Gala**	Washington, DC	
16–17 Jun	**6th AIAA CFD Drag Prediction Workshop**	Washington, DC	
5–8 Jul†	**ICNPAA 2016 Mathematical Problems in Engineering, Aerospace and Sciences**	University of La Rochelle, France (Contact: Prof. Seenith Sivasundaram, 386.761.9829, seenithi@gmail.com, www.icnpaa.com)	
23–24 Jul	**3rd Propulsion Aerodynamics Workshop**	Salt Lake City, UT	
23–24 Jul	**Advanced High-Speed Air-Breathing Propulsion**	Salt Lake City, UT	
23–24 Jul	**Electric Propulsion for Space Systems**	Salt Lake City, UT	
24 Jul	**Detonation-Based Combustors Tutorial**	Salt Lake City, UT	
25–27 Jul	**AIAA Propulsion and Energy 2016** **(AIAA Propulsion and Energy Forum and Exposition)** **Featuring:** **52nd AIAA/SAE/ASEE Joint Propulsion Conference** **14th International Energy Conversion Engineering Conference**	Salt Lake City, UT	**12 Jan 16**
5–7 Sep†	**Advanced Satellite Multimedia Systems Conference**	Palma de Mallorca, Spain (Contact: www.asmsconference.org)	
11–12 Sep	**Introduction to Space Systems**	Long Beach, CA	
11–12 Sep	**Systems Engineering Fundamentals**	Long Beach, CA	

DATE	MEETING (Issue of *AIAA Bulletin* in which program appears)	LOCATION	ABSTRACT DEADLINE
13–16 Sep	**AIAA SPACE 2016** **(AIAA Space and Astronautics Forum and Exposition)** **Featuring:** **AIAA SPACE Conference** **AIAA/AAS Astrodynamics Specialist Conference** **AIAA Complex Aerospace Systems Exchange**	Long Beach, CA	**25 Feb 16**
25–30 Sep†	**30th Congress of the International Council of the Aeronautical Sciences (ICAS 2016)**	Daejeon, South Korea (Contact: www.icas.org)	**15 Jul 15**
25–30 Sep†	**35th Digital Avionics Systems Conference**	Sacramento, CA (Contact: Denise Ponchak, 216.433.3465, denise.s.ponchak@nasa.gov, www.dasconline.org)	
26–30 Sep†	**67th International Astronautical Congress**	Guadalajara, Mexico (Contact: www.iac2016.org)	
27–29 Sep†	**SAE/AIAA/RAeS/AHS International Powered Lift Conference**	Hartford, CT	**26 Feb 16**
17–20 Oct†	**22nd KA and Broadband Communications Conference and the 34th AIAA International Communications Satellite Systems Conference**	Cleveland, OH (Contact: Chuck Cynamon, 301.820.0002, chuck.cynamon@gmail.com)	
2017			
9–13 Jan	**AIAA SciTech 2017** **(AIAA Science and Technology Forum and Exposition)** **Featuring:** **25th AIAA/AHS Adaptive Structures Conference** **55th AIAA Aerospace Sciences Meeting** **AIAA Atmospheric Flight Mechanics Conference** **AIAA Information Systems — Infotech@Aerospace Conference** **AIAA Guidance, Navigation, and Control Conference** **AIAA Modeling and Simulation Technologies Conference** **19th AIAA Non-Deterministic Approaches Conference** **58th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference** **10th Symposium on Space Resource Utilization** **4th AIAA Spacecraft Structures Conference** **35th Wind Energy Symposium**	Grapevine, TX	
4–10 Mar†	**IEEE Aerospace Conference**	Big Sky, MT (Contact: www.aeroconf.org)	
18–20 Apr	**17th Integrated Communications and Surveillance (ICNS) Conference**	Herndon, VA (Contact: Denise Ponchak, 216.433.3465, denise.s.ponchak@nasa.gov, http://i-cns.org)	

For more information on meetings listed above, visit our website at www.aiaa.org/calendar or call 800.639.AIAA or 703.264.7500 (outside U.S.).
†Meetings cosponsored by AIAA. Cosponsorship forms can be found at https://www.aiaa.org/Co-SponsorshipOpportunities/.
AIAA Continuing Education courses.

All AIAA Fellows and Honorary Fellows are cordially invited to the

AIAA *Fellows Dinner*

Tuesday, 14 June 2016, at the Washington Hilton, Washington, D.C.

Honorary Fellow is the highest distinction conferred by AIAA, and recognizes preeminent individuals who have had long and highly contributory careers in aerospace and who embody the highest possible standards in aeronautics and astronautics. The 2016 Honorary Fellows are:

Dennis Bushnell, *NASA Langley Research Center*

Mark Lewis, *Institute for Defense Analyses*

John Tracy, *The Boeing Company*

AIAA confers the distinction of **Fellow** upon individuals in recognition of their notable and valuable contributions to the arts, sciences or technology of aeronautics and astronautics. The 2016 Fellows are:

Richard Ambrose, *Lockheed Martin Corporation*

Brian Argrow, *University of Colorado Boulder*

Daniel Baker, *University of Colorado Boulder*

Kyung Choi, *The University of Iowa*

John-Paul Clarke, *Georgia Institute of Technology*

Steve Cook, *Dynetics, Inc.*

James Crocker, *Lockheed Martin Corporation*

Mary Cummings, *Duke University*

Russell M. Cummings, *U.S. Air Force Academy*

Jean-Jacques Dordain, *European Space Agency (retired)*

James Gord, *U.S. Air Force Research Laboratory*

Je-Chin Han, *Texas A&M University*

Jonathan How, *Massachusetts Institute of Technology*

C. Russell Joyner, *Aerojet Rocketdyne*

Konstantinos Kontis, *University of Glasgow*

Ping Lu, *Iowa State University*

Walter O'Brien, *Virginia Polytechnic Institute and State University*

T. Kent Pugmire, *Standex Engineering Technology*

Ganesh Raman, *Illinois Institute of Technology*

Ajit Roy, *U.S. Air Force Research Laboratory*

Brian Smith, *Lockheed Martin Corporation*

Marilyn Smith, *Georgia Institute of Technology*

Robert Strain, *Ball Aerospace and Technologies Corporation*

Mark Whorton, *Teledyne Brown Engineering*

- **Ticket Price: $130**
- **Reception: 6:30 pm**
- **Dinner: 7:30 pm**
- **Attire: Business**

Please register online and more information can be found at:
https://www.aiaa.org/FellowsDinner2016/

Or mail your check to:
AIAA/Fellows Dinner
12700 Sunrise Valley Dr. Suite 200
Reston, VA 20191

AIAA
Shaping the Future of Aerospace

16-1018

From the Corner Office

SECURING OUR FUTURE – THE NEXT 50 YEARS

Ben Marchionna, AIAA Director-At-Large / Young Professional

This isn't your typical "From the Corner Office" column. And I'm not your typical Corner Office author either. In fact, this is the first time that a young professional has written this column in at least 15 years of collective AIAA staff memory, if not the 50-year history of our Institute. As such, I'm honored to represent the future — of both our Institute and our industry.

A monumentally important decision lies ahead for each and every AIAA member as we prepare to vote on proposed changes to our Constitution starting on 21 March. As a young professional, an elected member of the Board, and a member of the Governance Working Group, I'd like to offer you a unique perspective on the critical importance of voting in favor of the proposed Constitution changes and also the careful consideration and methodical process that has led us to this momentous occasion.

First, let's step back for just a moment to frame our predicament. Over the past decade, it's no secret that our Institute has faced numerous challenges: declining membership; demographics misaligned with those of the modern aerospace industry, let alone the modern high-tech workforce; the advent of several huge and fast-emerging technologies, industry sectors, and trends (e.g., commercial space, unmanned aerial systems, additive manufacturing, cyber, complex systems management, etc.); and especially the recruitment and retention of students and young professionals to maintain the excellent legacy of our most experienced colleagues.

AIAA has more members who are over 60 than under 40. Let that soak in. That's a scary statistic considering that the large majority of student members today elect to forgo AIAA membership a few years after graduation. Our long-standing, outdated structure and practices have gradually created an organization less relevant to the aerospace workforce of the future. Certainly AIAA provides tangible value to some young professionals, but the numbers don't lie – the path that we're on now is not sustainable. Students and young professionals want to engage with a vibrant, *relevant* organization. This cannot be "your father's AIAA" going forward. If we don't change with the times, there may not be an AIAA for young professionals like me to engage with in the future. As the adage goes: adapt or die.

AIAA was formed more than 50 years ago when two organizations merged. Our current governance structure was shaped by the external environment that existed at the time, and it has changed very little since then. Not surprisingly, we have done very well executing activities centered around technologies and topics of interest to the traditional aerospace community, but we struggle with integrating new communities and technologies that have grown to be important to the aerospace industry of the present – and those that will be important to the aerospace industry of the future. With proposed changes to our Constitution on the table, we have a rare opportunity to put in place the tools and governance structure necessary to allow AIAA to evolve into the Institute of the next 50 years.

The proposed Constitution changes and governance modernization steps are the result of an exceptionally disciplined, multi-year investigation. The Governance Project was ideated several years ago under Mike Griffin's leadership, with a Blue Ribbon Panel commissioned by the Board of Directors and the Institute Development Committee (IDC) to review the state of AIAA governance. Under Jim Albaugh's leadership, the Board and IDC then commissioned a Governance Working Group (GWG) to propose a governance model that would meet the strategic, operational, and tactical needs of the Institute going forward. Along the way, Sandy Magnus has tirelessly championed the thoughtful execution of the Governance Project.

Over the past 18 months, the eight GWG members, including myself, have met 125 times in twice-weekly sessions, racking up well over 1,500 total volunteer hours in deep study over the AIAA Governance Project. Options have been exhaustively debated, pros and cons considered, and all possible angles analyzed by a diverse, representative group of AIAA volunteer leaders from multiple levels of experience. An external consultant with special expertise in nonprofit, professional society governance best practices has helped guide us through the process, with AIAA staff providing support as requested by the working group.

Each Governance Project milestone has been reviewed, debated, and endorsed by both the Board and IDC. Nearly every one of our many forum-attending Technical Committees has been visited in the past year by a GWG volunteer or supporting AIAA staff member to discuss and answer questions on the Governance Project. Finally, the general membership has been briefed along the way at AIAA SciTech 2016 and through the *AIAA Bulletin*'s From the Corner Office articles and eNewsletters like Momentum, From Sandy's Desk, Mindjogger, TAC, RAC, Public Policy, etc.

At the direction of the GWG, the Institute has launched a newly updated section of its website containing all the details of the AIAA Governance Project (**http://www.aiaa.org/governance**). Please take a few minutes to check it out! It includes a wealth of information.

Because of the way AIAA was created, much of our current structure and practices are ill-advisedly hardwired directly into the Constitution. This creates a static, inefficient organization that is difficult to tweak. For example, the current Constitution explicitly states which member representatives are allowed on the Board. As such, our newer Program Committees, Corporate Member Committee, Young Professionals, and students have no Group Director representation. This creates a dichotomy of member communities with unequal bottom-up input. To align our governance documents with best practices, the Constitution needs to change. *The only way to change the Constitution is with a vote by 15% or more of the Institute membership, of which 2/3 must vote "Yes"* – and historically, achieving voter turnout of just 10% has been difficult for us.

A "Yes" vote on the proposed Constitution changes is the only way to modernize our governance structure. Without it, our hands are tied and we cannot evolve. Just because we've found a way to Frankenstein certain Institute processes doesn't mean it's the right way to do it. These changes will provide the elected volunteer leadership with the tools and flexibility needed to adjust our strategy and tactics in accordance with a changing world. It's time for us to align our form, fit, and function – just as the system architect of any other complex system would do!

We have to build on our role as the premier technical society of the aerospace professional and profession, but we need to be more than that. In a Corner Office column from a couple years back, Mike Griffin pondered, "How are we going to change so that membership in AIAA, and participation in Institute activities, remains just as attractive to a young woman today who is working in commercial space or on an unmanned aerial system, and to the young entrepreneurs who run those companies, as it was to the Apollo veterans and Cold Warriors of forty years ago?" I believe that the answer to that question, and the very existence of AIAA as a professional society, depends on making this governance evolution.

AIAA should celebrate our storied past, but we must now be laser focused on securing our future! We've been struggling. We need to move forward. I'll be voting in favor of the changes to our Constitution; and I hope you will too. For today, for tomorrow, and for the future of our beloved Institute and industry.

2016 INTERNATIONAL STUDENT CONFERENCE WINNERS

The AIAA Foundation International Student Conference is an opportunity for those students who have won first place in the Regional Student Conferences to present their papers at a professional technical conference. This event is funded through the AIAA Foundation and offers the students a chance to showcase their research while networking with potential employers or colleagues. The 2016 International Student Conference was held on 4 January in conjunction with AIAA SciTech 2016 in San Diego, CA. Awards were given in four categories on 5 January.

Graduate Division

Jan Schneiders, Delft University of Technology, The Netherlands was awarded the prize for best overall student paper in the Graduate Category for his paper entitled "Beyond Nyquist by Pouring Space into Time."

Undergraduate Division

Joshua Castagnetta and **Robert Larson, U.S. Air Force Academy,** were awarded the prize for best overall student paper in the Undergraduate Category for their paper entitled "Aerodynamic Evaluation of the NASA Microgravity Unmanned Aerial Vehicle."

Undergraduate Team Division

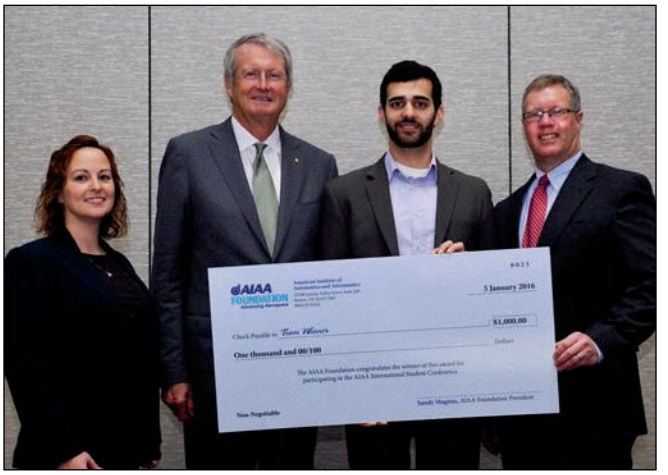
Jason Wolf, Erick Shelley, and **Daniel Stralka, Cleveland State University, Cleveland, OH,** were awarded the prize for best overall in the Undergraduate Team Category for their team paper entitled "Design of an Engine Air Particle Separator for Unmanned Aerial Vehicle Applications."

Community Outreach Division

Lauren Brunacini, Arizona State University, Tempe, AZ, was awarded the prize for best overall in the Community Outreach Category for her presentation entitled "Daedalus Astronautics @ ASU: Outreach Program."

For more information on the AIAA Foundation International Student Conference, please contact Rachel Dowdy at 703.264.7577 or at racheld@aiaa.org.

Shelly Corbets, Chair Student Paper Competition; Jim Albaugh, AIAA President; Jan Schneiders, Graduate winner; and Steve Gorrell, AIAA Vice President–Education.



Shelly Corbets, Chair Student Paper Competition; Jim Albaugh, AIAA President; Jason Wolf, one of the Team winners; Steve Gorrell, AIAA Vice President–Education.

Shelly Corbets, Chair Student Paper Competition; Jim Albaugh, AIAA President; Joshua Castagnetta, Undergraduate winner; Robert Larson, Undergraduate winner; and Steve Gorrell, AIAA Vice President–Education.

Shelly Corbets, Chair Student Paper Competition; Jim Albaugh, AIAA President; Lauren Brunacini, Community Outreach winner; Steve Gorrell, AIAA Vice President–Education.

Sydney Section Chair Evan Smith welcomed South Australia Senator David Fawcett in November.

AIAA SYDNEY SECTION HOSTED LECTURE ON "MAINTAINING AUSTRALIAN INDUSTRY & DEFENCE ENGINEERING TECHNICAL MASTERY" IN NOVEMBER

On 12 November, AIAA Sydney Section hosted a networking evening followed by a lecture by Senator David Fawcett. Over 30 people from defense, industry, and academia were in attendance. Senator Fawcett, a former Army test pilot; member of the Joint Standing Committee on Foreign Affairs, Defence and Trade; and current chair of the Defence subcommittee, spoke about the challenges of maintaining technical mastery in defense and industry. Senator Fawcett noted the sovereign need for technical mastery, and proposed methods through which it could be maintained and grown in Australia.

CLASS OF 2016 AIAA ASSOCIATE FELLOWS HONORED

The Class of 2016 AIAA Associate Fellows were honored at the AIAA Associate Fellows Recognition Ceremony and Dinner on 4 January at the Manchester Grand Hyatt, San Diego, CA, in conjunction with AIAA SciTech 2016.

Top: Class of 2016 Associate Fellows.

Left: Region I Class of 2016 Associate Fellows.

Bottom left: Region II Class of 2016 Associate Fellows.

Top left: Region III Class of 2016 Associate Fellows.

Top right: Region IV Class of 2016 Associate Fellows.

Middle left: Region V Class of 2016 Associate Fellows.

Middle right: Region VII Class of 2016 Associate Fellows

Bottom left: Region VI Class of 2016 Associate Fellows.

AIAA K–12 STEM ACTIVITIES

Supriya Banerjee and Angela Diggs, AIAA K-12 STEM Section Engagement and Best Practices Committee

Our role is to maintain awareness of K–12 STEM activities in the sections and communicate those activities to sections/regions to promote strong K–12 STEM programming across AIAA. Each month we will highlight an outstanding K–12 STEM activity; if your section would like to be featured, please contact us directly.

AIAA Delaware Section and Cecil County STEM Academy Partnership

Breanne Sutton, AIAA Delaware Section Chair, AIAA K-12 STEM Section Engagement Committee, and Elishabet Lato, AIAA Delaware Section STEM Officer

The AIAA Delaware Section is a strong supporter of the Cecil County STEM Academy in Maryland. The Cecil County STEM Academy is an educational program at all five county high schools with a rigorous curriculum designed for students planning to attend college to pursue a math, science, or engineering degree. In addition to accelerated courses, the students are required to complete a capstone project. The AIAA Delaware section supports the STEM Academy program by encouraging their professional membership to volunteer at topic defense presentations, attending the final poster sessions to talk with the students about what their completed project, and most importantly, the AIAA Delaware section provides volunteers to mentor the students throughout the school year. The AIAA Delaware section, in partnership with Orbital ATK, also hosts the students for a day on site at Orbital ATK's Elkton, MD, facility.

The summer after their freshman year, the STEM Academy participants can attend a three-day summer day camp to visit various STEM companies in the area. AIAA Delaware and Orbital ATK host an Introduction to Rockets and Engineering for the students. Last year, the camp was so popular that AIAA Delaware offered two sessions. A typical schedule starts the students off with an introduction to engineering, design, rockets and Orbital ATK. The students also go on a tour of the manufacturing area of the plant and participate in an engineering design challenge. Past design challenges have included building and landing a straw rocket on a target, and creating a transportation system to move a space shuttle (toy) out to the launch pad – across the room. In 2015, the challenge was to design, build, and test a system for safely landing an "eggstronaut" on "Mars." The students were split into teams and given restrictions designed to

mimic a real engineering problem: time constraints, material constraints, and schedule. After splitting into three teams, the students could only brainstorm with paper and pencil for the first 10 minutes. After brainstorming, they retrieved materials and started building. After working on their own, the students interacted with AIAA and Orbital ATK Young Professionals and received advice on the design. Lastly, the students tested their designs. The designs were scored based on weight, decent time, eggstronaut survivability, and eggstronaut orientation. After the design competition, the AIAA Delaware Section led a recap discussion on the lessons the students learned and how the activity related to an engineer's job.

Each year the AIAA Delaware Section tries to improve on the previous year's STEM Academy visit. In addition to giving the students feedback on their design, the organizers ask the students and educators candidly to give them advice on what to improve for future students. With this advice, the presentations and design challenge morphs and grows each year – keeping it fresh and exciting for the volunteers and engaging the students better every time. After the event the students typically send thank you notes to AIAA or Orbital ATK. Below are some quotes from the 2015 letters:

"I loved the STEM Activity we did at this camp. What you guys do is so cool!"

"I had a lot of fun and learned a lot about rockets, which was something I didn't know about before."

"I look forward to considering you as a possible employer"

CREATIVE SPACE TOURISM THINKING FROM MIDDLE SCHOOL STUDENTS IN AIAA SPACE SYSTEMS TECHNICAL COMMITTEE ESSAY CONTEST

Since 2011, the Space Systems Technical Committee (SSTC) has run an annual middle school essay contest to meet the TC's commitment to directly inspire students and local sections. The members work with their local sections each year to start parallel contests to feed into the selection of a national winner awarded by the SSTC, with increasing section participation each year.

In 2015, eight sections had official entries to the SSTC contest, from which students in the AIAA Los Angeles/Las Vegas and Hampton Roads Sections were selected to receive $100, plus $250 for their classroom toward STEM materials or activities. The 2015 topic was "As a Future Space Tourist, Where Would You Go, and What Would You Do?"

The 2015 winners are 7th grader **Jack Hutchinson** and his teacher Mr. Pat Hillard at Nansemond-Suffolk Academy, Suffolk, VA, and 8th grader **David Hindman** and his teacher Victoria Lawson at Palos Verdes Intermediate School, Palos Verdes Estates, CA. The SSTC also recognized 8th grade runner-up **Micah Robinson** and his teacher Charlene Cooper of Rusheon Middle School, Bossier City, LA, because the scores were so close. Ms. Lawson will be using the award money to purchase art supplies and design technologies for 6th and 7th grade students.

The topic for 2016 is "Discuss How Either a Moon Base or a Mars Base Could Help Us Learn about the Earth and Space," and we expect at least seven sections to participate. If your section is interested in participating in this contest in 2017, please contact the committee: Samantha Infeld, s.infeld@ama-inc.com; Anthony Shao, ant.shao@gmail.com; and Erica Rodgers, erica.rodgers@nasa.gov.

Below is Jack Hutchinson's essay. David Hindman and Micah Robinson's essays can be found at www.aerospaceamerica.org, under Bonus Content.

Hampton Roads awards ceremony: From left to right: Karen Berger (AIAA Hampton Roads Schools [HRS] K–12 STEM Outreach Co-Chair), Bradley Friedman (3rd place), Vishwa Malaisamy (2nd place), Hampton Roads 7th grade winner and national winner Jack Hutchinson, and Sally Viken (former AIAA HRS Chair)

Above left: AIAA Los Angeles/Las Vegas 8th grade winner David Hindman (center); above right: Vicki Lawson, teacher of David Hindman

Right: AIAA Greater New Orleans 8th grade winner and national runner-up Micah Robinson

Destination: Europa

By Jack Hutchinson

Since space travel was first possible, man looked to the moon. When humans first stepped onto the moon, they did what every pioneer in history has done: they looked for life. But in the search for extraterrestrial life, were they really looking in the right place? Maybe instead of looking at Earth's moon for evidence of life, another planet's moon should be considered. Specifically the second Galilean moon closest to Jupiter, a moon smaller than our own, but with a good chance of life. As a future space explorer, I would go to Jupiter's moon Europa.

Like any great vacation, Europa has much to explore. Sure, when one thinks the word: Vacation, they would think of a warm, sandy, beach and not a frigid ice planet. I would not go to Europa for the climate and the weather on the surface, but for what lies 100 kilometers beneath. The surface of Europa is made up of silicate rock and what scientists are fairly certain is water in its solid form. Thanks to flybys of Europa from the Galileo mission scientists have determined the existence of a subsurface liquid water ocean on Europa. A strong chance of a liquid water ocean, a source of energy called tidal heating, and and the chemical composition of Europa's subsurface ocean could provide the chemistry needed for life.

As a space explorer, one of the first things that I would do after arriving on Europa, would be to drill down below the ice layer and search for any form of life. This is not all of what this tiny moon has to offer. Due to tidal force modelling predictions, scientists have theorised the existence of plumes of water shooting out of Europa's poles, which I would observe as part of my vacation plan. Another thing that I would like to investigate and study on Europa is its energy force called tidal heating. Tidal heating is when the gravity of Jupiter, the other moons and Europa's elliptical orbit cause the tides on Europa, which causes the moon to expand and contract like a rubber ball. This creates friction which creates heat that warms the planet, melts the innermost parts of the ice layer, and creates a sub-surface ocean. If we learned how this works, we could harness a new source of energy. Another thing that I would like to see is Europa's seasonal locations. Europa is tidally locked with Jupiter, meaning that one hemisphere is constantly facing Jupiter. This may make one side of Europa consistently warmer than the other half, due to reflective light. This would mean that a certain part of Europa would have not one but two sources of energy, possibly raising the chance of life in that specific hemisphere, depending on what form of energy an archaebacterial creature adapted to Europa's environment might require. In my opinion, one of the coolest geological figures that I would want to see on Europa would be the penitentes found along its equator. Penitentes are icy spikes or ice or hardened snow that can reach 10 meters in height.

Europa is a fascinating place with much to see. It is incredible how a celestial body so unlike our own, is also so similar. From the geographical features on its icy surface to the deepest parts of its sub surface ocean, Europa is a very interesting place. This is why if I were a future space traveller, I would definitely go to Europa.