



FREQUENT FLYER

American Institute of Aeronautics and Astronautics
Northern Ohio Section

Newsletter - March 2015

Distinguished Lecture with Matthew Mishak on the Future of Unmanned Aircraft Systems in Northern Ohio

Mr. Matthew Mishak, Director of the Northern Ohio Unmanned Aircraft Systems Association (NOUASA), enlightened an audience of nearly 100 attendees on the global market of Unmanned Aircraft Systems (UAS) on January 27, 2015 at the Ohio Aerospace Institute. This meeting was a joint event with the Cleveland Section of the American Society of Mechanical Engineers, the Cleveland Chapter of Women in Aviation, Intl. and the Ohio Aerospace Institute. Attendees also mingled and chatted during the casual hors d'oeuvres period before the talk, which was sponsored by the various organizations. This event was the first trial of a new refreshments format for AIAA evening meetings, with free refreshments offered before the presentation.

Mr. Mishak spoke from an expert enthusiast's perspective on how the UAS global market is projected to become a \$94



Matthew Mishak (NOUASA) enlightened an audience of nearly 100 attendees on the future of unmanned aircraft systems in Northern Ohio.

billion industry by 2020 and how the Northern Ohio Region is aptly poised to capture a large portion of that market. His talk "The Future of Unmanned Aircraft Systems (UAS) in Northern Ohio", outlined the history of UAS, system



From left to right: Al Juhasz (NOS Technical Chair), Chai Yuet Yee (Women in Aviation Intl.), James Gilland (NOS Chair), Matthew Mishak, Dr. Michael Heil (President of OAI), and Ed Lewandowski (ASME) [Photo Courtesy of Patricia Austin, Advanced Ground Instructor, Owner, *Curious About Flying*].

elements and applications, as well as examined the industry challenges of safety, privacy, public misconceptions and regulatory hurdles while promoting that Northern Ohio must take the lead in investing in this potential opportunity. Mr. Mishak observed that, as with piloted airplanes, the earliest designs and manufacturers of UAV's came from Ohio.

Mr. Mishak, whose interests range from the robust and developing field of UAS law and policy to the design and manufacturing of UAS from the ground up, shared small unmanned aerial vehicle models with the audience as well as his UAS experience with photos during the presentation. He also provided an informed legal assessment of the regulation process for UAS, based on his legal expertise. Following his well-received lecture lasting about an hour, the diverse audience engaged Mr. Mishak with various questions for nearly 45 minutes.



Mr. Matthew Mishak is the Director of the Northern Ohio Unmanned Aircraft Systems Association, promoting the safe and non-intrusive use and industry of unmanned aircraft systems (UAS) and aerial robotics in Northern Ohio [Photo courtesy of NOUASA].

Northern Ohio Section Judged and Sponsored Awards for Area Science Fairs

The AIAA Northeastern Ohio Section sponsored special awards at both the Annual Northeastern Ohio Science and Engineering Fair (NEOSEF) and the Northwest Ohio District 2 Science Day. These regional science fairs are for local middle and high school students. Members from AIAA NOS judged and awarded over \$600 in awards to projects with an aerospace focus.

The Northwest Ohio District 2 Science Day, which took place on Saturday March 14, 2015 at the University of Toledo, is the regional science fair for students in grades 5-12 from Defiance, Fulton, Henry, Lucas, Ottawa, Sandusky, Williams, and Wood counties. Judges Ashlie Flegel and Mac Kueick awarded three prizes. Congratulations to our winners: 1st place Grades 7-8: Ryan O'Shea "What Makes Good Aerodynamic Design", 2nd place Grades 7-8: Elijah Long "Paper Airplane - wing design", and 1st place Grades 9-12: Richard Jin "Sulfurization of Thin-Film Copper Antimony Sulfide for Low Cost & Environmental Friendly Solar Cell".

The 62nd Annual Northeastern Ohio Science and Engineering Fair (NEOSEF), which took place on Tuesday March 10, 2015 at Cleveland State University, is open to all students in grades 7-12 from Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, and Summit counties. Judges Valerie Lyons, Jason Wolf, and Erin Tesny awarded 6 prizes. Congratulations to our winners: 1st place Grades 7-8: Kotaro Kojima (Medina) "In Situ Ultrasonic Production of Water-Biodiesel Microemulsion", Runners-up Grades 7-8: JingJing Shen (Beachwood) and Albert Zhu (Solon). 1st place Grades 9-12: Andrew Wahlstrom (Mentor), Runners-up Grades 9-12: Calvin Dolatowski (Lakewood) and Tara Krantz (Pepper Pike).



Kotaro Kojima of Medina won a 1st Place AIAA NOS special award in the Grades 7-8 category for his aerospace-focused project at NEOSEF entitled "In Situ Ultrasonic Production of Water-Biodiesel Microemulsion".

AIAA Congressional Visits Day 2015

Each spring, AIAA hosts an event in Washington, D.C. called Congressional Visits Days, or CVD, to educate members of Congress on public policy issues involving the aerospace community. Issues range from STEM education, restrictions on government travel and conference attendance, to technology transfer. Ohio always has a strong team and this year was no exception.

Team Ohio 2015 consisted of five students (representing Cleveland State University and the Ohio State University) and three professionals. Of these attendees, three were Northern Ohio Section members: John Easton, team leader; Cassie Spino, AIAA CSU student member; and Dr. Michael Heil (OAI). During CVD2015, Team Ohio visited 12 of the 18 Ohio U.S. Congressional members, speaking with either legislative aides or the Congress members themselves. The meetings reaffirmed that the policies that the aerospace community generally support are supported by Ohio U.S. Congressional members.

NASA Glenn Researcher Receives Prestigious Ground Testing Award for 2015

The Northern Ohio Section is proud to announce that Mr. Robert F. Ide has been selected to receive the AIAA Ground Testing Award for 2015. This prestigious award is presented for outstanding achievement in the development or effective utilization of technology, procedures, facilities, or modeling techniques for flight simulation, space simulation, propulsion testing, aerodynamic testing, or other ground testing associated with aeronautics and astronautics.

The citation for Mr. Ide's award reads: "For outstanding technical achievements in icing and wind tunnel calibration and testing at the NASA Glenn Research Center Icing Research Tunnel and other ground test facilities." The award consists of an engraved medal and a certificate of citation and will be presented at a recognition luncheon on June 23rd, during the AIAA Aviation and Aeronautics Forum and Exposition (AVIATION 2015) taking place in Dallas, Texas.



Congressional Visits Day Team Ohio 2015 meeting with Representative Bill Johnson. From left to right: Cassie Spino (CSU), Team Leader John Easton (NASA), Rep. Bill Johnson, and Dr. Michael White (Wright-Patterson) [Photo credit: Cassie Spino].

An “Electrifying” Lunch Hour Talk by Joseph C. Kolecki

This installment of our Lunch Hour talks was held on March 11th at the Ohio Aerospace Institute’s President’s Room. Mr. Joseph C. Kolecki, a planetary physicist and NASA Glenn Research Center retiree with a service record of nearly forty years, provided a presentation on electrical charging in the Martian surface environment.

The lecture began with a brief review of the history of Martian exploration and touched on the extremes of the Martian landscape. The talk then focused on the electrical charging problem of rovers and future astronauts in space suits traversing the dry, sandy surface. Total charge buildup at Martian surface conditions can reach 400 to 500 Volts before an electric arc discharge occurs. Such electric arcs could damage a rover’s electric power/propulsion system, or even more seriously burn a pin hole in the glove of a sample collecting astronaut, thereby causing potentially fatal spacesuit depressurization. Of course, extensive dust accumulation on rover wheels due to electrostatic charges could also lead to failure of robotic or crewed missions.

Such looming hazards of future Mars exploration missions needed to be pointed out and explained to NASA Headquarters in order to secure funding for new R&D efforts to mitigate and solve the electrostatic charging problem. Successful accomplishment of this step led to establishment of two new R&D programs at NASA Lewis (now Glenn) Research Center. The first program, the Wheel Abrasion Experiment (WAE), assessed wheel wear using a model of the Sojourner rover in a laboratory test rig using Martian soil/dust simulant. The second project, referred to as Rover Electrostatic Charging, showed that electrostatic discharges could be controlled by very fine and sharp tungsten points, acting as mini-lightning rods, mounted on the rover antenna base.

Successful landing of the Pathfinder Sojourner rover on July 4th, 1997 and succeeding robotic Martian missions, namely, Spirit, Opportunity, Phoenix, and Curiosity, all benefited from these critical R&D programs.

This lunch hour talk generated an interesting Q&A discussion period, especially since several of the retiree attendees had been associated with the programs referred to above. About 15 persons attended this interesting exploration history-related lecture presentation.

NASA Interns Learn About the Benefits of Professional Society Membership

On February 12th, NOS Secretary Jonathan Litt gave a presentation on the benefits of professional society membership to the spring cohort of NASA interns. The presentation was aimed at a general professional audience, although examples of membership benefits were taken from AIAA. The audience consisted of five college-level interns with a variety of majors. The students were engaged and asked questions.

Young Professionals Post-Holidays Social

On Tuesday, January 6th, the AIAA Northern Ohio Section Young Professionals and the NASA GRC Developing Professionals Club (DPC) co-hosted a social event featuring a White Elephant Gift Exchange. The event was held at Fat Heads Brewery & Saloon in North Olmsted. The eight AIAA and DPC members in attendance had the opportunity to network, enjoy each other’s company, eat lunch and exchange gifts. AIAA sponsored appetizers for the event.



Correction

In the December 2014 edition of *Frequent Flyer* distributed via the NOS mailing list, an article on the AIAA NOS 2014 Honors and Awards Ceremony contained an error in the listing of honorees. The recipient of the **AIAA 2014 Aeroacoustics Award is Edward J. Rice, NASA (Retired)**. A corrected version of the edition is archived at the Northern Ohio Section's newsletter repository:

https://info.aiaa.org/Regions/central/Northern_Ohio/Newsletters/Forms/AllItems.aspx

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