



**2018 OSGC STUDENT RESEARCH SYMPOSIUM**  
**Hosted By: Ohio Aerospace Institute (OAI)**  
**22800 Cedar Point Road • Cleveland, OH 44142**  
**• (440) 962-3000**  
**Friday, March 23, 2018**

**AGENDA**

8:00 AM – 8:30 AM	Sign-In / Continental Breakfast / Student Portraits (30 minutes).....Lobby
8:35 AM – 8:40 AM	Welcome to OAI (5 minutes) ..... Forum (Lobby Level) <i>Jeff Rolf</i> President and Chief Executive Officer, Ohio Aerospace Institute
8:40 AM – 8:45 AM	Welcome and Introductions (5 minutes) <i>Jed E. Marquart</i> Director, Ohio Space Grant Consortium
8:45 AM – 8:50 AM	Symposium Logistics (5 minutes) <i>Laura A. Stacko</i> Program Manager, Ohio Space Grant Consortium
8:50 AM – 9:00 AM	Group Photograph (10 minutes).....Lobby / Atrium Stairwell
9:00 AM – 11:00 AM	Student Oral Presentations – Senior Scholars and Fellows (120 minutes) <ul style="list-style-type: none"> <li>•Group 1 ..... Forum (Lobby Level)</li> <li>•Group 2 .....Presidents’ Room (Lower Level)</li> <li>•Group 3 ..... Industry Room A (2nd Floor)</li> <li>•Group 4 ..... Industry Room B (2nd Floor)</li> </ul>
11:00 AM – 12:15 PM	Various Displays (75 minutes) <ul style="list-style-type: none"> <li>•Student Poster Presentations.....Lobby Junior, Community College, and Pre-Service Teacher (Education) Scholars</li> <li>•NASA and Industry Displays .....Lobby</li> <li>•Student Team Displays.....Atrium (Lower Level)</li> </ul>
12:15 PM – 1:15 PM	Luncheon Buffet (60 minutes).....Atrium / Sunroom (Lower Level)
1:15 PM – 2:15 PM	Panel Discussion and Q&A (60 minutes)..... Forum (Lobby Level) <i>“Launching a STEM Career”</i>

***Panel Members:***

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|---|---|
| *Joshua E. Allen, NASA Glenn Research Center  | *Karin E. Bozak, NASA Glenn Research Center |
| *Emilio J. Borges, NASA Glenn Research Center | *Robert C. Charvat, Ohio Drone LLC          |
| *Ashley S. Bowers, Facebook                   | *Brian J. Tomko, NASA Glenn Research Center |

2:15 PM – 2:30 PM	Presentation of Best Poster Awards (15 minutes).....Forum
2:30 PM	Symposium Adjourns



## **STUDENT ORAL PRESENTATIONS**

**9:00 AM to 11:00 AM (120 minutes)**

### **Group 1 – Mechanical Engineering / Manufacturing Engineering**

#### **FORUM (AUDITORIUM – LOBBY LEVEL)**

**Evaluators: Sreeramesh Kalluri, Steve K. Lilley, and Mrityunjay (Jay) Singh**

9:00	Yonry R. Zhu, Senior, Mechanical Engineering, Ohio University <i>Evaluation of Decay Functions for Vector Field Based Obstacle Avoidance</i>
9:15	Kayla M. Pariser, Senior, Mechanical Engineering, University of Dayton <i>Reducing Passive Muscle Force: A Process for Patient Specific Muscle Parameter Calibration in RTSA Patients</i>
9:30	Alex J. Mazursky, Senior, Mechanical Engineering, Miami University <i>Experimental Evaluation of a Miniature Haptic Actuator based on Electrorheological Fluid</i>
9:45	Ryan C. Lucas, Senior, Mechanical Engineering, Ohio University <i>Quadrotor Flight Simulation with Disturbance Estimation Feedback</i>
10:00	Kristen N. Fulmer, Senior, Mechanical Engineering, Cleveland State University <i>Electric Propulsion for Commercial Aircrafts</i>
10:15	Andrea L. Felicelli, Senior, Mechanical Engineering, The University of Akron <i>DLP Stereolithography Using Vat-Free Photopolymerization</i>
10:30	Katie S. Cooperrider, Senior, Mechanical Engineering, Ohio Northern University <i>Human Limitations on Gravitational Assists: A Study of the Impacts of Human Involvement on Space Travel</i>
10:45	Michael C. Curtice, Senior, Manufacturing Engineering, Central State University <i>Automated All-Sky Acquisition Project (AAAP)</i>

### **Group 2 – Aerospace Engineering / Applied Mathematics / Electrical Engineering / Mechanical Engineering**

#### **PRESIDENTS' ROOM (LOWER LEVEL)**

**Evaluators: Daniel G. Gerges, Michael King, and Jen-Ching Tsao**

9:00	Nicole L. Whiting, Senior, Aerospace Engineering, The Ohio State University <i>Dynamic Stall Control Over a Rotorcraft Airfoil Using NS-DBD Plasma Actuators</i>
9:15	Liberty M. Shockley, Senior, Aerospace Engineering, University of Cincinnati <i>Development of Small UAV Engine Capabilities at High-Altitudes</i>
9:30	Alexander Margetis, Senior, Applied Mathematics, Kent State University <i>Beltrami Flows</i>
9:45	DeGraffth A. Palmore, Senior, Electrical Engineering, The University of Akron <i>Triangulation Using Antennas in the Near-Field</i>
10:00	Daniel D. Musci, Senior, Electrical Engineering, Ohio Northern University <i>Raspberry Pi Drone</i>
10:15	Jodi C. Turk, Masters 1, Mechanical Engineering, Cleveland State University <i>Particle Imaging Velocimetry Analysis of Wake Induced by Real Whiskers</i>
10:30	Collin E. Mikol, Masters 1, Mechanical Engineering, The Ohio State University <i>Design, Modeling, and Experimental Testing of a Variable Stiffness Structure for Shape Morphing</i>



## **STUDENT ORAL PRESENTATIONS (Continued)**

**9:00 AM to 11:00 AM (120 minutes)**

<b>Group 3 – Chemical Engineering / Biology / Petroleum Engineering / Aerospace Engineering</b>	
<b>INDUSTRY ROOM A (SECOND FLOOR)</b>	
<b>Evaluators: Ann O. Heyward, Paul Penko, and Thomas P'Simer</b>	
9:00	Uchechukwu N. Obiako, Senior, Chemical Engineering, Cleveland State University <i>Low-Temperature Catalytic Gasification of Particulate Waste for In-Situ Resource Utilization</i>
9:15	Colin W. McConnell, Senior, Chemical Engineering, University of Cincinnati <i>Carbon Nanotube-copper Composite Sheet for EMI Shielding of Aerospace Structures</i>
9:30	James D. Harding, Senior, Chemical Engineering, Youngstown State University <i>Fracture Property Testing of 3D Printed, Carbon Fiber Reinforced ABS</i>
9:45	Daniel J. Stank, Senior, Biology, Cedarville University <i>Elucidating the Pathway by Which miR-146a Leads to Upregulation in Phagocytosis</i>
10:00	Tayla R. Brooks, Senior, Biology, Baldwin Wallace University <i>Investigating the Role of Pseudomonas Quinolone Signal Molecule in P.A Associated Keratitis</i>
10:15	Charles E. Drennen, Jr., Senior, Petroleum Engineering, Marietta College <i>Testing a Novel Minerology Crossplot Hypothesis</i>
10:30	Nathaniel L. Richards, Masters 1, Aerospace Engineering, University of Cincinnati <i>Enhanced Concussion Recovery Prognosis with Deep Neural Networks: Proof-of-Concept for Decision Support</i>

<b>Group 4 – Geology / Physics / Astrophysics / Computer Engineering / Computer Science</b>	
<b>INDUSTRY ROOM B (SECOND FLOOR)</b>	
<b>Evaluators: Joshua Allen and Raquel L. Redhouse</b>	
9:00	Hannah L. Schlaerth, Senior, Geology, Kent State University <i>Remote Sensing of Water Quality Parameters Influencing Coral Reef Health, U.S. Virgin Islands</i>
9:15	Sarah C. Rouse, Senior, Geology, Cedarville University <i>Characterization of Sand Grains of the Tensleep Sandstone (Pennsylvanian-Permian), Wyoming, USA</i>
9:30	Kyle S. Pellegrin, Senior, Physics, Baldwin Wallace University <i>Validation of Variable Star Photometry Utilizing the Burrell Telescope</i>
9:45	Matthew A. Mircovich, Senior, Physics, University of Dayton <i>Loss Characterization of Magnesium Doped Lithium Niobate</i>
10:00	Heidi E. Kuchta, Senior, Astrophysics, The University of Toledo <i>An Optical, Near-IR, and X-ray Study of the Orion South Cluster</i>
10:15	Benjamin D. Shaffer, Senior, Computer Engineering, Miami University <i>An Isolated DC-DC Converter with Bidirectional Current for Interfacing the Voltage Busses of the Dragon Capsule and ISS</i>
10:30	Maxime Maisonnet, Senior, Computer Science, Wilberforce University <i>Biometric Authentication Techniques: A Survey</i>
10:45	Alexandrea C. Oliver, Senior, Computer Science, Wright State University <i>Usability Assessment for Caregiver Behavior Analysis Using Gaming Technology</i>

**STUDENT POSTER PRESENTATIONS**  
**LOBBY (MAIN FLOOR)**

**11:00 AM to 12:15 PM (75 minutes)**

Dr. Jay N. Reynolds, Coordinator of Poster Session

<b>Junior Science, Technology, Engineering, and Mathematics (STEM) Scholarship Recipients</b>
<b>Evaluators: Tadas Bartkus, Karin Bozak, Liangyu Chen, Sreeramesh Kalluri, and Andrew H. Work</b>
Michaela M. Crouch, Mechanical Engineering, Cedarville University <i>Evaluation of Fretting Corrosion Wear in Metal-on-Metal Hip Implants Subjected to Impaction and Cyclical Loading</i>
Rachel E. Evans, Mechanical Engineering, Wright State University <i>The Effect of Scan Strategy on Porosity in Additive Manufacturing</i>
Lynnae S. Frisco, Manufacturing Engineering, Central State University <i>Heated Clothing</i>
Brittney A. N. Gibbs, Biology, Wilberforce University <i>Effects of Cellular Phone Radiation on the Male Reproductive System</i>
Clarissa A. Goldsmith, Mechanical Engineering, Case Western Reserve University <i>Cyber Physical Farming Robot for Organic Farm Weed Control</i>
Mina G. Kamel, Computer Science, Cleveland State University <i>Robotic Mouse in Maze</i>
Joel R. Kavaras, Mathematics, Baldwin Wallace University <i>Mathematical Modeling of Beech Leaf Disease Spread</i>
DerekAllen L. Krieg, Petroleum Engineering, Marietta College <i>Electric Generation Potential in the Upstream Oil &amp; Gas Sector</i>
DeOnte M. Layton, Mechanical Engineering, Youngstown State University <i>Reduction of Tractor-Trailer Base Drag by a Corrugated Boattail</i>
Matthew N. McCannon, Aeronautical and Astronautical Engineering, The Ohio State University <i>Control of Dynamic Stall Over an Airfoil Using NS-DBD Plasma Actuators</i>
Asa E. E. Palmer, Mechanical Engineering, University of Dayton <i>Effect of Curved Boundary Layer Fences on Aerodynamic Efficiency</i>
Kylon J. Payne, Manufacturing Engineering, Central State University <i>Heated Clothing</i>
David B. Prigg, Mechanical Engineering, Case Western Reserve University <i>Digital Analysis of Moths for Micro Aerial Vehicles</i>
Ann M. Rumsey, Manufacturing Engineering/Engineering Management, Miami University <i>Micromilling of Glass</i>
Reannah N. Rymarz, Petroleum Engineering, Marietta College <i>Investigating Storage Systems for Alternative Sources of Energy</i>
Anthony O. Smoktonowicz, Senior, Electrical Engineering Technology, The University of Toledo <i>Flexible Wing Technology for Drone Applications</i>
Kyle W. Strahm, Mechanical Engineering, Ohio Northern University <i>Verification of Ideal Gas Law</i>
Robert P. Thoerner, Senior, Biomedical Engineering, The University of Akron <i>Development and Design of a Cellular 3D Printed Loading Device</i>
Matthias S. Weisfeld, Mechanical/Aerospace Engineering, Case Western Reserve University <i>Manduca Sexta Flying Wing Micro-Air Vehicle</i>
Austin M. Wessels, Aerospace Engineering, University of Cincinnati <i>Variable Pitch Quadcopter Flight Control</i>
Robert R. Wilson, Senior, Aerospace Engineering, Kent State University <i>Subsonic Wind Tunnel Development</i>

## STUDENT POSTER PRESENTATIONS (Continued)

**LOBBY (MAIN FLOOR)**  
**11:00 AM to 12:15 PM (75 minutes)**

<b>Sophomore Community College STEM Scholarship Recipients</b>	
<b>Evaluators: Christopher Hocevar and Stewart J. Leib</b>	
Fiovi E. Agbodjan, Electro-Mechanical Engineering Technology, Columbus State Community College	<b><i>Innovative Technologies Using in the Treatment of WEEE (Waste Electric and Electronic Equipment)</i></b>
Ola J. Ali, Pre-Engineering/Civil Engineering, Cuyahoga Community College	<b><i>Cleveland Radioactive Waste</i></b>
Debin B. Brady, Programming and Development, Cuyahoga Community College	<b><i>Internet Censorship and Freedom of Speech</i></b>
John D. Bukovac, Mechatronics Technology – Micro Electromechanical Systems (MEMS), Lorain County Community College	<b><i>Flexible Wearable Transmissive Pulse Oximeter Sensor</i></b>
Hanin M. Hamid, Pre-Engineering, Cuyahoga Community College	<b><i>Tetrachloroethylene in Dry Cleaning</i></b>
Evan W. Kolodey, Pre-Engineering, Lorain County Community College	<b><i>Identifying Potential Contaminates in a Water Supply</i></b>
Christian E. Lambiase, Mechanical Engineering Technology, Columbus State Community College	<b><i>Comparison of Changes in Strength, Toughness, and Hardness of Steel After Heat Treatment</i></b>
Ryan A. Reffner, Chemistry, Lorain County Community College	<b><i>Unprecedented Whiskey Flavors Created by a Novel Accelerated Pressure Aging Process</i></b>
Zachary D. Reser, Mechanical Engineering Technologies, Cincinnati State Technical and Community College	<b><i>Custom Modification of Mini Excavators</i></b>
Katherine M. Rucker, Construction Management, Columbus State Community College	<b><i>Augmented Reality in Construction Coordination</i></b>
Isis Simone Tubbs, Pre-Engineering, Cincinnati State Technical and Community College	<b><i>Exploring Transverse Myelitis</i></b>

## STUDENT POSTER PRESENTATIONS (Continued)

**LOBBY (MAIN FLOOR)**  
**11:00 AM to 12:15 PM (75 minutes)**

<b>Pre-Service Teacher (Education) Scholarship Recipients</b>
<b>Evaluators: Mary Brown, Valerie Hale, Irina P'Simer, and Kim Tanger</b>
Shantelle M. Binfet, Senior, Early Childhood Education, Wright State University <i>Food's Next Great Frontier</i>
Hayley R. Crider, Junior, Early Childhood Education, Wright State University <i>Life on Mars</i>
Jacob T. Dunwiddie, Senior, Early Childhood Education, Kent State University <i>Responsive S.T.E.M. Teaching Utilizing the 5E Inquiry Cycles</i>
Alexandra A. Flanigan, Post Bacc., Adolescent to Young Adult (AYA), Integrated Science, Cleveland State University <i>Studying Snow and Ice Changes</i>
Abigail M. Fuhrmann, Senior, Middle Childhood Education, Mathematics and Science, The Ohio State University <i>Solar System Exploration</i>
Keilee L. Guthrie, Junior, Early Childhood Education, Ohio University <i>Does My Hero Eat Like an Astronaut? What Astronauts Eat to Stay Healthy and Fit</i>
Elizabeth K. Han, Senior, Middle Childhood Education, Mathematics and Science, The Ohio State University <i>Moon Movements</i>
Kaleb A. Irey, Sophomore, Adolescent to Young Adult (AYA), Mathematics, Cedarville University <i>Measurements of Great Proportions</i>
DeVante M. Jackson, Junior, Adolescent to Young Adult (AYA), Mathematics, Central State University <i>How Do Space Heroes Stay Alive?</i>
Kenton C. D. Jarvis, Junior, General Engineering/Adolescent to Young Adult (AYA), Mathematics, Ohio Northern University <i>Newtons Ride</i>
Brittany A. Layden, Senior, Adolescent to Young Adult (AYA), Science, The University of Toledo <i>The Science of Snowflakes</i>
Meghan G. Mulligan, Sophomore, Adolescent to Young Adult (AYA), Life Science/Chemistry, Miami University <i>Coral Reefs: "Canaries" of the Sea</i>
Kristen E. Pierce, Post Bacc., Middle Childhood Education, Mathematics, The Ohio State University <i>Incorporating STEM into ELA: Humans on Mars?</i>
Kaycie R. Riley, Junior, Adolescent to Young Adult (AYA), Mathematics, Miami University <i>Building a Better Model: The Solar System</i>
Rachel E. Sauder, Senior, Adolescent to Young Adult (AYA), Integrated Science, Ohio Northern University <i>Space Plants: Growing Peas as NASA Scientists</i>
Matthew W. Walker, Sophomore, Adolescent to Young Adult (AYA), Mathematics/Engineering, Ohio Northern University <i>Water Filtration</i>

**STUDENT TEAMS**  
**ATRIUM (OUTSIDE PRESIDENT'S ROOM/LOWER LEVEL)**  
**11:00 AM to 12:15 (75 minutes)**

<b>Case Western Reserve University Unmanned Aircraft Systems (UAS) Team</b>
Professor Marlin Linger

<b>The University of Akron (UA) NASA Robotics Mining Competition Team</b>
<p><b><i>Team Members:</i></b></p> <p>Seth Carpenter Sean Collins Kaylin Cozzens Dana Cressman Erika Nosal</p> <p><b><i>Advisor:</i></b> Dr. Seungdeog Choi</p>