



2017 OSGC Student Research Symposium
Hosted By: Ohio Aerospace Institute (OAI)
22800 Cedar Point Road • Cleveland, OH 44142
• (440) 962-3000
Friday, March 31, 2017



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) •Group 1 Forum (Lobby Level) •Group 2 Presidents’ Room (Lower Level) •Group 3 Industry Room (2nd Floor) •Group 4 Board Room (2nd Floor)
11:00 AM – 12:15 PM	Various Displays (75 minutes) •Student Poster Presentations.....Lobby Junior, Community College, and Pre-Service Teacher (Education) Scholars •NASA and Industry Displays Lobby •Student Team Displays.....Atrium (Lower Level)
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> ”
<i>Panel Members:</i>	
*Joshua E. Allen, NASA Glenn Research Center	*Derick S. Endicott, Space X
*Emilio J. Borges, NASA Glenn Research Center	*Ashlie B. Flegel, NASA Glenn Research Center
*Robert C. Charvat, GE Aviation	*Chad O. Yoshikawa, Google
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 FORUM (AUDITORIUM – LOBBY LEVEL) Evaluators: Emilio J. Borges, Robert Setlock, Andrew H. Work	
9:00	Kayla B. Andersen, Senior, Mechanical Engineering, Case Western Reserve University <i>Mini-Worm: A Small Worm-Like Robot Actuated Via Nitinol</i>
9:15	Molly C. Ballard, Senior, Mechanical Engineering, Ohio Northern University <i>CFD Analysis of SAE Aero Competition Plane</i>
9:30	Kayla M. Hummell, Senior, Mechanical Engineering, Ohio Northern University <i>Spacesuits of the Future: Adapting Technology for Further Exploration</i>
9:45	Joseph R. Morin, Senior, Mechanical Engineering, Cedarville University <i>An Electrochemical Analysis of Fretting Corrosion in Metal-on-Metal Hip Implants</i>
10:00	Adam L. Reece, Senior, Mechanical Engineering, Miami University <i>Characterization of Dynamic Responses of Bending Actuators Based on Magneto-Rheological Elastomers</i>
10:15	Valerie A. Weaver, Senior, Mechanical Engineering, Case Western Reserve University <i>Hybrid Neuroprostheses for Individuals with Paraplegia</i>
10:30	Daniel G. Gerges, Master's 2, Mechanical Engineering, Cleveland State University <i>Design, Fabrication and Integration of a Low Thrust Measurement Stand for the Altitude Combustion Chamber at Glenn Research Center</i>
10:45	Achal S. Singhal, Master's 2, Mechanical Engineering, The Ohio State University <i>Control of Dynamic Stall Over a NACA 0015 Airfoil Using NS-DBD Plasma Actuators</i>

Group 2 – Aeronautical & Astronautical Engineering / Aerospace Engineering / Mechanical Engineering PRESIDENTS' ROOM (LOWER LEVEL) Evaluators: Derick Endicott, Paul Penko, Jen-Ching Tsao	
9:00	Matthew M. Arnott, Senior, Aeronautical & Astronautical Engineering, The Ohio State University <i>Comparison of an Excited Flow with an Unheated Subsonic Jet in Forward Flight</i>
9:15	Nicholas R. Horn, Senior, Aeronautical & Astronautical Engineering, The Ohio State University <i>Review and Design of Non-Axisymmetric Nozzles with Active Flow Control Capability</i>
9:30	Jeffrey E. Bennett, Senior, Aerospace Engineering, University of Cincinnati <i>Water Testing Utilizing Unmanned Aerial Systems</i>
9:45	Nathaniel L. Richards, Senior, Aerospace Engineering, University of Cincinnati <i>Closed-Loop, Near Time-Optimal Control of a Double Cart Oscillator Under Uncertainty by Genetic Fuzzy Machine Learning</i>
10:00	Eric S. Graf, Jr., Senior, Mechanical Engineering, Ohio University <i>ARGOS 8-Cable Suspended Robot</i>
10:15	Ryan S. Wilber, Senior, Mechanical Engineering, The Ohio State University <i>Parametric Reduced Order Model Applications in Gas Turbines</i>
10:30	Dennis Omari, Master's 1, Aeronautical & Astronautical Engineering, The Ohio State University <i>Plasma Controlled Cavity as a Shock Trap in a Transient Environment</i>



STUDENT ORAL PRESENTATIONS (Continued)
9:00 AM to 11:00 AM (120 minutes)

Group 3 – Biology / Biological Sciences / Biomedical Engineering / Chemistry / Chemical Engineering INDUSTRY ROOM (SECOND FLOOR) Evaluators: Robert Charvat, Mrityunjay Singh	
9:00	Ryan M. Marquardt, Senior, Biology, Cedarville University <i>MiR-146a Upregulation of Phagocytosis in Human Macrophage</i>
9:15	McKenzie L. Nelson, Senior, Biological Sciences, Ohio University <i>Predictions of Human Arm Bone Strength from Measurements of Stiffness of Radii</i>
9:30	Joanna A. Fadel, Senior, Biomedical Engineering, Wright State University <i>Modeling of a Bioinspired Water Filtration System: A Sustainable Approach</i>
9:45	AlRitia J. Gore, Senior, Biomedical Engineering, The University of Akron <i>Determining the Minimum Distance Needed Between a Hip Implant and Knee Implant Using Finite Element Analysis (FEA)</i>
10:00	Olivia L. Petrey, Senior, Biomedical Engineering, The University of Akron <i>The Effects of Anti-Gravity on Bone Formation in Coculture</i>
10:15	Aaron K. Smith, Senior, Chemical Engineering, Cleveland State University <i>Implementing a Micromixer on a 3-D Printer</i>
10:30	Courtney N. Wolfe, Senior, Chemistry, Kent State University <i>Investigation of Thermodynamic Cooperativity Pseudourylation Enzyme RsuA and rProteins During Bacterial 30S Ribosomal Assembly</i>
10:45	Eric M. Lange, Master's 1, Chemical Engineering, Cleveland State University <i>Catalytic Gasification: A Sustainable Waste Management Alternative</i>

Group 4 – Petroleum Engineering / Water Resources Management / Physics / Manufacturing Engineering / ElectroOptics / Applied Geology BOARD ROOM (SECOND FLOOR) Evaluators: Joshua Allen, Raquel Redhouse	
9:00	Sheldon P. Mullet, Senior, Petroleum Engineering, Marietta College <i>Exploring Alternatives to Hydraulic Fracturing</i>
9:15	Jennifer A. Starkey, Senior, Petroleum Engineering, Marietta College <i>Locating Abandoned Wells: Using Historical Documents and Records with Practical Physical and Technical Methods</i>
9:30	Josephine Johnson, Senior, Water Resources Management, Central State University <i>Central State's Pipe System</i>
9:45	Jonathan W. Boyd, Senior, Physics, Kent State University <i>Reduction of Graphene Oxide via Electron Beam Acceleration</i>
10:00	Lauren B. Pinder, Senior, Manufacturing Engineering, Central State University <i>3D Hapkit Modeling</i>
10:15	Joshua A. Burrow, Master's 1, Electro Optics, University of Dayton <i>Bio-sensing with Ultra-flexible Planar Terahertz Metamaterials</i>
10:30	Dulcinea M. Avouris, PhD 3, Applied Geology, Kent State University <i>Hyperspectral Imagery of the 2016 Harmful Algal Bloom in Lake Erie</i>

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

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

Dr. Jay N. Reynolds, Coordinator of Poster Session

Evaluators: James Gilland, Frederic A. Holland, Robert Setlock, Jacqueline Vance, Andrew H. Work

Junior Science, Technology, Engineering, and Mathematics (STEM) Scholarship Recipients
Edward S. Brinkerhoff, Mechanical Engineering, University of Dayton <i>Energy Analysis of a Two Degree of Freedom Mechanical System</i>
Miles A. Burrage, Electrical Engineering, Wright State University <i>Small-Scale Autonomous Hexapod Robot</i>
Michael C. Curtice, Manufacturing Engineering, Central State University <i>Development of a Haptic Joystick System for Human Interaction</i>
Charles E. Drennen, Jr., Petroleum Engineering, Marietta College <i>Development of Formation Evaluation Program to Test Lithology Crossplot Hypothesis</i>
Andrea L. Felicelli, Mechanical Engineering, The University of Akron <i>Low Cost 3D Printing Using Vat-Free Photopolymerization</i>
Paul A. Goetze, Mechanical Engineering, Miami University <i>Computational Analysis of Pulsatile Flow in Abdominal Arterial Bifurcation Models</i>
James D. Harding, Chemical Engineering, Youngstown State University <i>Development of a Shape Memory Smart Structure Via 3D Printing</i>
Heidi E. Kuchta, Astrophysics, The University of Toledo <i>Searching for Brown Dwarfs and Ultra Cool Dwarfs in the Orion Molecular Clouds</i>
Joseph V. Lonardo, Mechanical Engineering, Youngstown State University <i>Low-Cost Metal Printing</i>
Maxime Maisonnet, Computer Science, Wilberforce University <i>An Intelligent Fuzzy Sensor Based Motion Control System for Autonomous Mobile Robots</i>
Alex J. Mazursky, Mechanical Engineering, Miami University <i>Design and Performance Evaluation of a Miniature Haptic Actuator Based on Electrorheological Fluid</i>
Amanda M. Miller, Mechanical Engineering, University of Cincinnati <i>Design of an Active Exoskeleton for the Sit-to-Stand Transition</i>
Daniel D. Musci, Electrical Engineering, Ohio Northern University <i>Feasibility of Drone Networks Controlled by Raspberry Pis</i>
Alexandrea C. Oliver, Computer Science, Wright State University <i>The Impact of Game Design Choices in Interactive Education Games</i>
Sarah C. Rouse, Geology, Cedarville University <i>Characterization of Massive vs. Laminated Texture of the Coconino Sandstone (Permian), Arizona from the Study of Thin Sections</i>
Hannah L. Schlaerth, Environmental Geology, Kent State University <i>Detection and Analysis of Biogeophysical Factors Influencing Local Water Quality and Coral Reef Health in the US Virgin Islands</i>
Anthony O. Smoktonowicz, Electronics Engineering Technology, The University of Toledo <i>Wide Area Air Sampling Prototype</i>
Alexis R. Stanciel, Computer Science, Wilberforce University <i>Cybersecurity Strategies in Law Enforcement</i>
Kweisi F. Wilson, Electrical Engineering, Wilberforce University <i>Design of a Sensitive Probe for Endoscopic Imaging</i>
Yonry R. Zhu, Engineering Physics/ Mechanical Engineering, Ohio University <i>Plasma-Assisted Rotating Detonation Combustor</i>

STUDENT POSTER PRESENTATIONS (Continued)
LOBBY (MAIN FLOOR)
11:00 AM to 12:15 PM (75 minutes)

Community College STEM Scholarship Recipients
Amanda M. Baluch, Electrical Engineering Technology, Cuyahoga Community College <i>Automatization and Enhancement of Hydroponically Grown Crops</i>
Marisa D. Bartholomew, Health Information Management Technology, Cuyahoga Community College <i>Interoperability & Health Care</i>
Anthony J. Cancian, Construction Engineering Technology, Cuyahoga Community College <i>Insulated Concrete Forms: An Energy Efficient Building Solution</i>
Rosario J. Ceraolo Jr., Geographic Information Systems, Lakeland Community College <i>Analysis of Crime to Income Relative to Police Stations</i>
Chad A. Coolidge, Automation Engineering, Lorain County Community College <i>Activated Carbon and Carbon Nanotubes</i>
Griffin M. Derr, Computer Engineering, Sinclair Community College
Solomon Ellison, III, Pre-Engineering, Cincinnati State Technical and Community College <i>Wearable Technology for Regulating Body Temperature</i>
Brett K. Enders, Geospatial Technology, Lakeland Community College <i>LCC Parcel Ortho Mosaic Pixel Analysis to Identify Phragmites Plants</i>
Steven A. Fairley, Engineering, Cuyahoga Community College <i>Tri-C's Extreme Green Ecosystems Experience</i>
Jeanette A. Gardner, Electrical Engineering, Sinclair Community College <i>The Beginning of an Autonomous Robotic Hand</i>
Amanda E. Gibson, Pre-Engineering, Cincinnati State Technical and Community College <i>Graphene and Energy Storage</i>
Katie S. Griffin, Dietetics & Pre-Nutrition Science, Cincinnati State Technical and Community College <i>Heart Disease Awareness on a College Campus</i>
Kayle L. Kornblum, Electrical/Electronic Engineering Technology, Cuyahoga Community College <i>Eradicating Bacteria Using Ultraviolet Light</i>
Jeffrey M. Kudrna, Electronic Engineering Technology, Cuyahoga Community College <i>The Aging of Solar Panels</i>
Maiya A. Kyles-Stewart, Biology, Sinclair Community College <i>Arugula Plants and Their Various Responses to H₂O₂</i>
Joanna C. Maniglia, Geospatial Technology, Lakeland Community College <i>Analysis of Red-tailed Hawk Breeding and Land Cover Change in Ohio</i>
Joshua D. McIntosh, Dietetic Technology, Cincinnati State Technical and Community College <i>Diabetes: The Community College Student's Perspective</i>

STUDENT POSTER PRESENTATIONS (Continued)
LOBBY (MAIN FLOOR)
11:00 AM to 12:15 PM (75 minutes)

Community College STEM Scholarship Recipients
John A. Reynolds, Construction Management, Columbus State Community College <i>Virtual Reality in Construction</i>
Lydia E. Tamburro, Biology, Lakeland Community College <i>Inundated Destinations: An Analysis on Sea Level Rise in Puerto Rico and the US Virgin Islands</i>
James I. Timotiwu, Pre-Engineering, Cuyahoga Community College <i>Multisensory-based Autonomous Navigation in Constrained Indoor Environments</i>
Nicholas Z. Tolbert, Electrical Engineering, Cuyahoga Community College <i>A Comparison in the Cost Effectiveness of Experimental Photovoltaic Cells</i>
Marlo R. Wolfe, Biology, Lakeland Community College <i>Prophylactic Braces and Athletic Performance</i>
Tyland J. Worrell, Mechanical Engineering Design, Cincinnati State Technical and Community College <i>Robotics</i>
Christopher B. Wright, Applied Science, Lorain County Community College/Cleveland State University <i>GC-MS Analysis of Chinese Baijiu Spirit Flavored as American Whiskey</i>
Bryce J. Zwagerman, Pre-Engineering, Lakeland Community College <i>3D Printed Prosthetics</i>

Pre-Service Teacher (Education) Scholarship Recipients
Ellie N. Conrath, Early Childhood Education, Ohio University <i>Wondrous Weather</i>
Hayley R. Crider, Early Childhood Education, Wright State University <i>Can You Go the Distance?</i>
Elizabeth L. Herting, Adolescent to Young Adult (AYA) Education, Mathematics, Cedarville University <i>The Great Space Race: Thrust and Efficiency Rates of Burning Fuel</i>
Kenton C. D. Jarvis, Adolescent to Young Adult (AYA) Education, Mathematics, Ohio Northern University <i>Project Blast Off</i>
Zachary D. Kordeleski, Middle Childhood Education, Physics and Mathematics, Cleveland State University <i>Why Physicists Can't Enjoy Movies</i>
Brittany A. Layden, Adolescent to Young Adult (AYA) Education, Science, The University of Toledo <i>Climate Change Investigation: Clouds and Weather</i>
Abigail E. Recker, Early Childhood Education, Kent State University <i>Lake Erie Water Quality Investigation</i>
Lindsey A. States, Adolescent to Young Adult (AYA) Education, Mathematics, Miami University <i>The Earth, Sun, Stars, and ... Math?</i>
Emily D. Tornes, Early Childhood Education, Marietta College <i>Self Sustaining Ecosystems</i>

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

Lorain County Community College Unmanned Aircraft Systems (UAS) Team
Professor Marlin Linger

The Ohio State University Buckeye Space Launch Initiative Team
<i>Team Members:</i> Bryce Huber Joe Yanoska <i>Advisor:</i> Dr. Jen-Ping Chen

The University of Akron (UA) NASA Robotics Mining Competition Team
<i>Team Members:</i> Dana Cressman Cody Gruber Reed Jacobsen Zachary Kilburn Jack Wolfe, III <i>Advisor:</i> Dr. Seungdeog Choi