Technology and Innovation

Investments in space technology and innovation enable new missions, stimulate the economy, contribute to the Nation’s global competitiveness, and inspire America’s next generation of scientists, engineers and astronauts.
Registration Information
Registrants will be required to provide proper identification prior to receiving a conference badge and associated materials. All registrants must provide a valid photo ID (driver’s license or passport) when they check in.

On-Site Registration Hours
On-site registration will be held at the Cleveland Public Auditorium, in the foyer at the entrance off of Lakeside Avenue. On-site registration hours will be:
- Tuesday, November 27, 2012 3:00 p.m.–5:00 p.m.
- Wednesday, November 28, 2012 7:00 a.m.–5:00 p.m.
- Thursday, November 29, 2012 7:00 a.m.–5:00 p.m.
- Friday, November 30, 2012 7:00 a.m.–12:00 p.m.

Coat Check
A coat check will be available to attendees during the following hours:
- Wednesday, November 28, 2012 8:00 a.m.–5:00 p.m.
- Thursday, November 29, 2012 8:00 a.m.–5:00 p.m.
- Friday, November 30, 2012 8:00 a.m.–5:00 p.m.

Concession Stands
Food and drinks will be available for purchase throughout the event hours on the lower level directly behind the Grand Staircase.

Restrictions
Video or audio recording of program, as well as photographs of sessions and displays for marketing or commercial purposes are prohibited. Please see the registration desk if you have any questions.

Live Stream
On Day 1 November 28, 2012 and Day 2 in the morning, NASA Technology Days will be streamed LIVE on the web. You will be able to find us on the NASA HQ Ustream link: http://www.ustream.tv/channel/nasa-hq.

One-On-One Meetings
All designated one-on-one meetings are open to the public and will require pre-registration to attend. To pre-register, there will be sign-up sheets located at the front registration area after Day 1 presentations have concluded, as well as on Day 2. Entry will be on a first come, first served basis. You will be able to sign up for a time slot of your choosing, based upon availability. Please be prompt to your one-on-one meetings as a courtesy to others and please do not exceed your time allotment. You will only be permitted to sign up for one time slot in each designated topic area of interest, and you cannot exceed two NASA topics. This will allow for a greater opportunity for attendees to engage with NASA officials.

Presentation Material
All presentation material will be available online after the event and can be found at: http://www.nasa.gov/oct.

Showcase Exhibitors
For information on the selected technologies for the exhibit showcase, where you can find a short description of each technology and an electronic book with more detailed information, please visit: http://go.usa.gov/YtA3.

Media Inquiries
Media inquiries, including reporter requests for interviews with participating NASA officials and background on agency technology activities, should be directed to NASA Public Affairs Officers Katherine Martin (katherine.martin@nasa.gov) on 216.433.2406 or David Steitz (david.steitz@nasa.gov) on 202.358.1730.

For further assistance or any other questions, please visit the front registration area or check out the information table.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 a.m.</td>
<td>OPENING OF EVENT</td>
</tr>
<tr>
<td>9:00</td>
<td>Welcome to NASA Technology Days</td>
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<tr>
<td></td>
<td>Mason Peck, NASA</td>
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<tr>
<td>9:15</td>
<td>Opening Keynote</td>
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<td></td>
<td>Robert Lightfoot, NASA</td>
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<tr>
<td>9:30</td>
<td>Introduction to Space Technology</td>
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<td>Michael Gazarik, NASA</td>
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<tr>
<td>10:00</td>
<td>Technology Demonstration Missions</td>
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<td></td>
<td>Randy Lillard, NASA</td>
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<tr>
<td>10:45</td>
<td>Centennial Challenges</td>
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<td></td>
<td>Larry Cooper, NASA</td>
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<tr>
<td>11:10</td>
<td>Small Spacecraft Technology</td>
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<tr>
<td></td>
<td>Andy Petro, NASA</td>
</tr>
<tr>
<td>11:35</td>
<td>Space Technology Research Grants</td>
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<tr>
<td></td>
<td>Claudia Meyer, NASA</td>
</tr>
<tr>
<td>12:00 p.m.</td>
<td>Flight Opportunities</td>
</tr>
<tr>
<td></td>
<td>LK Kubendran, NASA</td>
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<tr>
<td>12:30</td>
<td>LUNCH BREAK / EXHIBIT HALL OPENS</td>
</tr>
<tr>
<td>1:45</td>
<td>NASA Innovative Advanced Concepts (NIAC) and Center Innovation Fund</td>
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<td></td>
<td>Jay Falker, NASA</td>
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<tr>
<td>2:10</td>
<td>Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)</td>
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<tr>
<td></td>
<td>Rich Leshner, NASA</td>
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<tr>
<td>2:30</td>
<td>Game Changing Development</td>
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<tr>
<td></td>
<td>Tibor Balint, NASA</td>
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<tr>
<td>3:15</td>
<td>Human Exploration and Operations Mission Directorate</td>
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<tr>
<td></td>
<td>Jason Crusan, NASA</td>
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<tr>
<td>3:45</td>
<td>Aeronautics Research Mission Directorate</td>
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<td></td>
<td>Tom Irvine, NASA</td>
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<tr>
<td>4:15</td>
<td>CLOSING REMARKS</td>
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<tr>
<td>4:30</td>
<td>ADJOURN</td>
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<tr>
<td>5:00</td>
<td>EXHIBIT HALL CLOSES</td>
</tr>
</tbody>
</table>
Day 2: Thursday, November 29, 2012
Main Auditorium

8:30 a.m. EXHIBIT HALL OPENS

8:30 Opening
Ray Lugo, NASA

8:35 Welcome Remarks
Frank G. Jackson, Mayor, City of Cleveland

8:45 The Value Proposition for Federal Research and Development–Creating U.S. Economic Development
Drew Bond, Battelle

9:30 BREAK

9:30 a.m. Flight Opportunities Room LL04
LK Kubendran, NASA

10:00 Technology Demonstration Missions Room LL02
Randy Lillard, NASA

10:00 Working with NASA and the Processes for SBIR/STTR Opportunities Room LL05B
Rich Leshner, NASA; Robert Shaw, NASA; and Kim Daigleish-Miller, NASA

11:00 Game Changing Development Room LL08
Stephen Gaddis, NASA

11:00 Small Spacecraft Technology Room LL04
Andy Petro, NASA

5:00 EXHIBIT HALL CLOSES

Day 2: Thursday, November 29, 2012
Lower Level/Breakout Sessions

10:00 Aerospace Sector Research and Development Drivers–Aviation
John Kinney, GE Aviation

10:30 Aerospace Sector Research and Development Drivers–Space
Brett Toby, Lockheed Martin Space Systems
John Henderson, Lockheed Martin Space Systems

11:30 Innovative Manufacturing Sector Research and Development Drivers
Dan Berry, MAGNET

1:00 Automotive Sector Research and Development Drivers
Gregg Peterson, Lotus Engineering

2:00 Advanced Energy Sector Research and Development Drivers
Roger Schonewald, GE Power and Water

3:00 Human Health Sector Research and Development Drivers
Brian Duncan, BioEnterprise

3:30 POSTER SESSION WITH UNIVERSITY STUDENTS

5:00 LUNCH BREAK

12:00 p.m. LUNCH BREAK
**ONE-ON-ONE MEETINGS**

All designated one-on-one meetings are open to the public and will require pre-registration to attend. To pre-register, there will be sign-up sheets located at the front registration area after Day 1 presentations have concluded, as well as on Day 2. Entry will be on a first come, first served basis. You will be able to sign up for a time slot of your choosing, based upon availability. Please be prompt to your one-on-one meetings as a courtesy to others and please do not exceed your time allotment. **You will only be permitted to sign up for one time slot in each designated topic area of interest, and you cannot exceed two NASA topics. This will allow for a greater opportunity for attendees to engage with NASA officials.**

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Location</th>
</tr>
</thead>
</table>
| 1:00–3:00 p.m. | One-On-One With NASA Chief Technologist  
Mason Peck, NASA | Room LL05C |
| 1:00–4:00 | One-On-One With Technology Demonstration Missions  
Randy Lillard, NASA  
Bonnie James, NASA  
John McDougal, NASA | Room LL04 |
| 1:00–3:00 | One-On-One With Space Technology Research Grants  
Claudia Meyer, NASA | Room LL06 |
| 1:30–4:00 | One-On-One With Game Changing Development  
Tibor Balint, NASA  
Stephen Gaddis, NASA | Room LL03 |
| 1:30–4:00 | One-On-One With Small Spacecraft Technology  
Andy Petro, NASA | Room LL01 |

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**Day 3: Friday, November 30, 2012**  
**Main Auditorium**

**8:30 a.m.–12:00 p.m. (Noon)**  
**EXHIBIT HALL HOURS**
# Student Agenda at a Glance

**THURSDAY, NOVEMBER 29, 2012**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 p.m.</td>
<td>University Students Arrive and Set Up Posters</td>
<td>Main Auditorium</td>
</tr>
<tr>
<td>1:00</td>
<td>Tour Exhibits and Interact with NASA/Industry Attendees or View Presentations on Stage</td>
<td></td>
</tr>
<tr>
<td>3:30</td>
<td>Poster Session Begins</td>
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<tr>
<td>5:00</td>
<td>Poster Session Ends</td>
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**FRIDAY, NOVEMBER 30, 2012**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>8:30 a.m.</td>
<td>University Students</td>
<td>Main Auditorium</td>
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<tr>
<td></td>
<td>Tour Exhibits, visit NASA Education and Intern Program Table</td>
<td></td>
</tr>
<tr>
<td>9:30</td>
<td>Career Panel for University Students</td>
<td>Lower Level Breakout Room LL05B</td>
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<tr>
<td></td>
<td><em>A distinguished panel of speakers will discuss major trends within their respective industries that will influence future skill needs.</em></td>
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<tr>
<td></td>
<td><em>Welcome provided by Dr. Robert J. Shaw, NASA</em></td>
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<tr>
<td>10:00</td>
<td>Students Tour Exhibits</td>
<td>Main Auditorium</td>
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<tr>
<td></td>
<td>Young Professional Panel for High School Students</td>
<td>Main Auditorium Stage</td>
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<tr>
<td></td>
<td><em>Recently hired NASA Engineers and Scientists will discuss how they were inspired to study STEM in school, how that led to a job at NASA, and what they do now.</em></td>
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<tr>
<td></td>
<td><em>Welcome provided by Dr. Howard Ross and Rob LaSalvia, NASA</em></td>
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</tr>
<tr>
<td>11:00</td>
<td>NASA Astronaut Briefing</td>
<td>Room LL10</td>
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<tr>
<td></td>
<td><em>Retired Navy Captain and NASA Astronaut Mike Foreman will present his flight on two Space Shuttle missions.</em></td>
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</tr>
<tr>
<td>12:00 p.m.</td>
<td>NASA Education Briefing</td>
<td>Lower Level Room LL10</td>
</tr>
<tr>
<td></td>
<td><em>Maurice Reynolds, Higher Education Project Manager</em></td>
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<tr>
<td></td>
<td><em>Giovanna Mignosa, K–12 Education Project Manager</em></td>
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</tr>
<tr>
<td>1:15</td>
<td>Student Departure</td>
<td></td>
</tr>
</tbody>
</table>
NASA Space Technology Exhibits
601 Laser Communication Relay Demonstration
603 MISSE-X
604 Flight Opportunities
605 SCaN
606 “How To Work with NASA”
607 3D Virtual Fuel Cell/Space Power Systems/Additive Manufacturing
608 Radioisotope Power Systems
609 In Space Propulsion Technology
610 Centennial Challenges
611 MARS Team and Robotics
612 Q-V-W- Band Communications
613 Tech Port
614 Game Changing Development
615 SBIR/STTR
616 NASA Innovative Advanced Concepts (NIAC)
617 Aeronautics Research Mission Directorate
619 Small Spacecraft Technology

Aerospace
101 Aerogel Technologies - Polymer Reinforced Aerogels and Polyimide Aerogels
102 Antenna: Reflect Arrays – Ferroelectric
103 Ceramic Matrix Composite (CMC) Technologies
104 Polymer Nano Composites
105 SCAN Testbed and Software-Defined and Cognitive Radios
106 Shape Memory Alloys
107 BACAR and CANS
108 Evolvable Neural Software System
109 Miniaturized High-Speed Modulated X-Ray Source
110 Wavefront Sensing Technology Portfolio
111 Composite Manufacturing Using Double-Vacuum Bags, Fabrication of Fiber-Metal Laminates and High Temperature Liquid Crystal Thermosets
112 L1 Adaptive Control
113 Micro-Ablation Recession Rate Sensor (MARRS)
114 Optically-coupled Micro-Sensors for Hypersonic Environment
115 AlGaN/GaN Ka-band Power FETs
116 ASTE-P Software Tool
117 Cooled CMC High Pressure Turbine Vanes
118 Dynamic Pressure-Sensitive Paint (PSP) for Rotorcraft Aerodynamics
119 High Efficiency RF/Microwave Power Amplifier
120 Portable Gas Analyzer Using a Micro-FID/TCD
121 QuickSAT/step_SATdb
122 Short Wave Infrared Gated Lidar System for Imaging through Obscuring Environments
123 Solid State Ceramic Power Management
124 Super Polished Aluminum Metal
125 Use of Triethylaluminum to Heat and Ignite Hydrocarbon Fuels

Advanced Energy
201 Silicon Carbide (SiC) Large Tapered Crystal (LTC) Growth
202 Lightweight Composite Rotating Components
203 Approaches to Wind Energy Icing Challenges
204 Energy Harvesting: Power Generation Utilizing Waste Heat
205 Flywheel Energy Storage and Electronmechanical Batteries
206 Compact High Power Density Portable Solid Oxide Fuel Cells
207 Materials for Power and Energy Storage and Copolymer Gel Electrolyte
208 Advanced-High energy Lithium-Ion Batteries
209 Smart Grid: Power Systems Integration and Management
210 Photovoltaics Capabilities
211 Stirling Technology (Stirling-Based Energy)
212 Decorated Carbon Nanotubes, Facile Synthesis of Supported Nanocatalysts, and Tailored Dielectric Materials
213 Out of Autoclave Wind Turbine Blade Manufacturing Method
### Automotive
1. Advanced Gas Sensors and High Temperature Pressure Sensors
2. Electrolyzer-Based Hydrogen (H2) Fueling Station
3. Fiber Reinforced Foam (FRF) Core Sandwich Composite Structure
4. Long Life Gear Systems
5. Novel Nonionic Radiofrequency Switches
6. Polymer Matrix Nanocomposites
7. Probabilistic Analysis and Multiscale Modeling
8. Variable Speed Helicopter Turbine Transmission
9. Methodology of Evaluating Margins of Safety in Critical Brazed Joints
10. Advanced Actuators and Transducers, All-Organic Electro Active Device, Compact Active Vibration Control System, and Lightweight Low-Profile Transducer
11. Electroactive Polymer Composites and Electrostrictive Polymers

### Innovative Manufacturing
1. Advanced Materials Design Analysis Tools
2. Affordable Joining and Repair Technologies for Dissimilar Materials
3. GRCop-84 Z
4. High-Temperature Seal Capabilities
5. High-Temperature Sensor Systems and Smart “Lick and Stick” Chemical Sensor Systems
6. High-Temperature, Low-Melt Resins for Liquid Molding
7. Materials Data Management Software
8. Open Multidisciplinary Design Analysis and Optimization
9. Ultra High Resolution Microfocus X-Ray Computed Tomography (NDE)
10. Method for Non-Destructive Evaluation of Thermal Protection System Materials and other Materials via Ultraviolet Spectroscopy
12. Low-Profile Wireless Sensor and Wireless Chemical Sensor
13. Isothermal Furnace Liners and Pressure Controlled Heat Pipes, and Heat Pipes for Aerospace Thermal Control
14. No-Oven, No-Autoclave (NONA) Composite Processing

### Human Health
1. Atomic Oxygen Texturing and Cleaning
2. Qualified Medical Event Likehood Model
3. Intravenous Fluid Generation (IVGEN)
4. Portable Unit for Metabolic Analysis (PUMA)
5. RF Telemetry System for Bio-MEMS Sensors and Actuators
6. Vessel Generation (VESGEN) Analysis Software
7. Asymptotic Diet Algorithm with Psychological and Temporal Stability (ADAPTS)
8. GO-SIM
9. Lotus Dust Mitigation Coating and Molecular Adsorber Coating
10. Wafer Level Microchannel Fabrication Process for Lap-on-a-Chip Devices
11. Game and Simulation Control, LaRC-SI, and ZONE (Zeroing Out Negative Effects)
12. Lunar Health Monitor (LHM)

For information on the selected technologies for the exhibit showcase, where you can find a short description of each technology and an electronic book with more detailed information, please visit: [http://go.usa.gov/YtA3](http://go.usa.gov/YtA3).
Thank You

to all our supporters and contributors to our event
and a special thanks to our NASA Centers.

In Collaboration With

[Logos of National Institute of Aerospace, AIAA, and Penton]