Flight Opportunities

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In This Issue

News

- NASA Seeks Space Technologies for Suborbital and Orbital Flight Tests
- NASA's Flight Opportunities Program Announces Danielle McCulloch as Program Manager

Community of Practice

- Webinar today: Flight Opportunities and NASA's University SmallSat Technology Partnership Initiative

Opportunities

- Now Open: University Smallsat Technology Partnerships Solicitation

Technology Transition Spotlight

- New Optical Component Technology for Next-Generation Large Space Observatories

Resources

- NASA Debuts New TechPort Funding Opportunities Search Tool

Events

- 2023 Scientific Ballooning Technologies Workshop, May 17-19, 2023
- NSMMS & CRASTE Joint Symposia, June 26-29, 2023
- 12th Annual ISSRDC, July 31-August 3, 2023
- 37th Annual Small Satellite Conference, August 5-10, 2023

Enjoy!
The Flight Opportunities team

NASA Seeks Space Technologies for Suborbital and Orbital Flight Tests

NASA's **2023 TechFlights solicitation** is now open! TechFlights offers funding opportunities to researchers from U.S.-based industry, academia, and private research institutions to rapidly test technologies on commercial suborbital vehicles or orbital platforms hosting payloads with awards up to $1 million per awardee.

NASA is seeking proposals to address specific agency goals. Topics for the 2023 solicitation are:

- **Topic 1:** Advancing the Lunar and Low-Earth Orbit (LEO) to Geosynchronous-Earth Orbit (GEO) Economies
- **Topic 2:** Supporting NASA Science Mission Directorate's Commercially Enabled Rapid Space Science (**CERISS**)

Through TechFlights, awardees receive a grant or cooperative agreement allowing them to purchase flights directly from any eligible U.S. commercial flight provider that best suits their technology demonstration. Suborbital vehicle options include suborbital rockets, rocket-powered lander vehicles, high-altitude balloons, and aircraft following reduced-gravity (e.g., parabolic) flight profiles. Orbital platforms hosting payloads are also included, in cooperation with NASA's **Small Spacecraft Technology** program.

This year, Flight Opportunities will prioritize the impact of the proposed flight test relative to the amount of funding requested and expected post-flight outcomes. TechFlights evaluation criteria will also emphasize decreasing the amount of time between award and flight testing, with a goal of accelerating the pace of technology development.

View the solicitation.
Read the NASA announcement.
Review the **TechFlights 2023 infographic** and other **resources for proposers**.

Question & Answer session: May 10 at 2pm EDT
Mandatory Preliminary Proposals due: June 7, 2023
Full proposals (by invitation only) due: October 4, 2023

NASA's Flight Opportunities Program Announces Danielle McCulloch as Program Manager

In April 2023, long-time Flight Opportunities team member Danielle McCulloch took on the role of Program Manager. During her nine years with the program, McCulloch has focused on expanding researcher access to the program's opportunities, leveraging creative mechanisms to increase the speed with which technologies move from the lab to test environments, and increasing awareness of the value of flight testing both within NASA and the broader technology development community.

"I am privileged to be leading this very special program that has helped to advance so many impactful technologies," said McCulloch. "I look forward to reinforcing the role we play in providing rapid, risk-tolerant opportunities to flight test critical technologies, as well as helping the community learn from each other to ensure we are maximizing the value of the program's investments."

Prior to this position, McCulloch also held positions as deputy program manager for Flight Opportunities and the acting chief of staff for the Small Spacecraft Technology and Flight Opportunities program portfolio. She previously held various leadership roles in the medical device and paper manufacturing industries as well as served as vice president for a small technology transfer consultancy. She holds a BS in chemical engineering from Washington University and an MBA from Dartmouth College.

McCulloch's predecessor is John Kelly, who helped Flight Opportunities expand its portfolio of commercial flight providers, multiply its number of technologies funded and flown, and grow the collaborative team that spans both NASA's Armstrong Flight Research Center and NASA's Ames Research Center. Flight Opportunities thanks Kelly for his outstanding service to the program. Kelly is continuing his role as the Deputy Chief of the Space Projects and Partnerships branch at NASA Armstrong and remains a senior advisor to the program.

Community of Practice

Flight Opportunities and NASA's University SmallSat Technology Partnership Initiative

TODAY: Wednesday, May 3, 2023
10:00 a.m. - 11:00 a.m. PDT

Join this month's Community of Practice webinar for an overview of NASA's University SmallSat Technology Partnership (USTP) initiative. Rodolphe De Rosee with NASA's Small Spacecraft Technology program will discuss how USTP supports university-based technologies with the potential to advance the small spacecraft industry. The initiative awards cooperative agreements to U.S. colleges and universities for projects that develop new technologies and capabilities for small spacecraft in collaboration with NASA centers. Principal investigators with experience both in the

UTSP initiative and preparing for suborbital flight tests through the Flight Opportunities program will provide perspectives on using both mechanisms to rapidly mature technologies. We encourage prospective and seasoned researchers to join this webinar and learn about the various pathways for maturing small spacecraft technology with NASA.

Microsoft Teams meeting
Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
+ 1 256-715-9946
Phone Conference ID: 256 877 418#

Do you have ideas or suggestions for a future Community of Practice topic? We'd love to hear your thoughts. Email us at NASA-FlightOpportunities@mail.nasa.gov to tell us what you'd like to see.

Opportunities

Now Open: University SmallSat Technology Partnerships (USTP) Solicitation

University and college research teams can propose small spacecraft technology projects to conduct in collaboration with NASA researchers. The **University Smallsat Technology Partnerships (USTP) solicitation** was issued by the Small Spacecraft Technology Program as an appendix to the Space Technology Mission Directorate's umbrella NASA Research Announcement "Space Technology Research, Development, Demonstration, and Infusion 2023 (SpaceTech-REDDI-2023) issued October 1, 2022.

The solicitation seeks proposals in these topic areas:

- Earth- and Global Navigation Satellite System-Independent Position Navigation and Timing for Small Spacecraft
- Edge Computing and Machine-Learning Architectures, Software, Platforms, and Devices for Small Spacecraft
- High Specific Power Systems and Thermal Control for Small Spacecraft

NASA anticipates making eight awards, with selections announced in September 2023.

View the solicitation.
Mandatory Preliminary Proposals due: May 16, 2023
Full Proposals (by invitation only) due: July 18, 2023

New Optical Component Technology for Next-Generation Large Space Observatories

The Technology: FLUidic Telescope (FLUTE)

Designed for creating fluidic optical components for use in space telescopes, the FLUTE technology created by researchers from NASA's Ames Research Center and Technion - Israel Institute of Technology leverages the natural surface tension of liquids to form liquid and solidified optical components of various geometries. Through ground-based, suborbital, and orbital tests, the research team successfully created high-quality, smooth optical components with less time and cost than traditional manufacturing methods.

Why It Matters

There is a need for cost-effective solutions to scale space telescopes to larger sizes that can enable, for example, the detection of Earth-like planets. Without a breakthrough in scalable technologies for large telescopes, future advances in astrophysics could prove challenging. This approach, which is possible only in microgravity, could advance space-based astronomy by deploying large fluidic components in place of lenses and mirrors fabricated on and launched from Earth, significantly reducing cost, construction time, and failure risk. FLUTE could enable space telescopes with optical apertures measuring in tens or even hundreds of meters, allowing direct imaging of extra-solar planets and more.

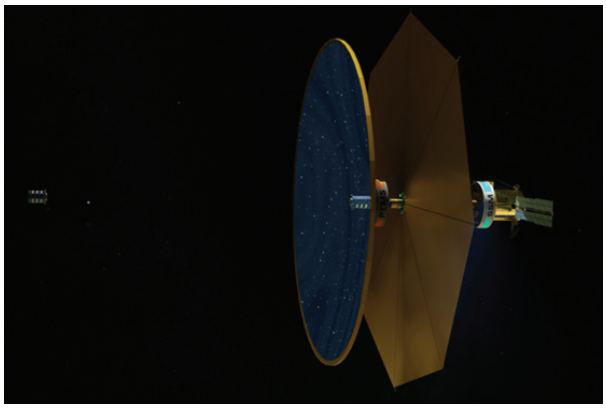
Suborbital Flight Milestones

The FLUTE mirror would be created in space via fluidic shaping in microgravity, which has already been successfully demonstrated in a laboratory neutral buoyancy environment via parabolic flights with Zero Gravity Corporation and aboard the International Space Station. During the parabolic flight experiments, the following milestones were achieved:

- Free-standing liquid lenses were created and measured, with a range of diameters and using liquids of different viscosities, demonstrating the scalability of the approach
- Liquid mirrors were created and measured in microgravity using various kinds of liquids
- Operation of the hardware for liquid optics and the atomic layer deposition of surficial coatings was validated during the flights for use in future experiments

What's Next

In addition to a 2022 space station demonstration, FLUTE was selected for a 2023 Phase I NASA Innovative Advanced Concepts (**NIAC**) award that will allow researchers to analyze suitable options for the key components of a large aperture (50-meter) observatory, develop its detailed mission concept, and create an initial plan for a subscale small spacecraft demonstration in low-Earth orbit.



Credits: Zero Gravity Corporation/Steve Boxall (left); NASA/Ed Balaban (right)

Resources

NASA Debuts New TechPort Funding Opportunities Search Tool

NASA's Space Technology Mission Directorate (STMD) has released a new tool to search for relevant technology funding opportunities across NASA and specific to the STMD. The new **TechPort tool** lets users filter opportunities according to their individual/organization type, funding amount, and technology maturity.

The site aims to make it easier for proposers new to NASA to find funding opportunities and contribute to the agency's technology development efforts.

Check out the TechPort tool to see what opportunities might be a match for you.

Events

2023 Scientific Ballooning Technologies Workshop

May 17-19, 2023
Minneapolis, Minnesota

This workshop is for researchers who are designing and building hardware, and those interested in synergies between the activities of different ballooning groups. The scope of this year's event includes gondola design, experiment-wide data acquisition and control systems, attitude control systems, on-board control software and computer hardware, power systems, telemetry systems, and thermal design and control. Don't miss a **presentation** by Flight Opportunities Campaign Manager Paul De Leon on Wednesday morning!

NSMMS & CRASTE Joint Symposia

June 26-29, 2023
Tucson, Arizona

The joint symposia of the National Space & Missile Materials Symposium (NSMMS) and Commercial and Government Responsive Access to Space Technology Exchange (CRASTE) brings together technologists, users, and decision makers to discuss technology issues related to space, missile, hypersonic systems, and commercial space topics. NSMMS focuses on the material industry's needs and recent advances to enable new capabilities for challenges associated with space and missile systems. CRASTE brings together system integrators and subsystems experts to improve space access capabilities and responsiveness. Flight Opportunities Senior Advisor John Kelly will be presenting an overview of the program.

12th Annual ISSRDC

July 31-August 3, 2023
Seattle, Washington

The International Space Station Research and Development Conference (ISSRDC) connects scientists who are advancing their R&D goals with space community leaders in academia, industry, and government agencies. Technical sessions, panel discussions, and lightning talks highlight space station research involving materials testing, pharmaceutical development, fundamental science, in-space manufacturing, and more.

Events *(cont)*

37th Annual Small Satellite Conference
August 5-10, 2023
Logan, Utah

Attendees at this annual conference will explore future missions and delve into key technology drivers, operational constructs, and activities that inform and secure the success of small satellite missions at scale. Members of the Flight Opportunities and Small Spacecraft Technology program teams will attend, so stay tuned for information on how to connect with them.

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