



Lunar Surface Innovation

C O N S O R T I U M

LSIC ISRU Focus Group Monthly

<http://lsic.jhuapl.edu/>

<http://lsic-wiki.jhuapl.edu/> (“Confluence” sign-up required)

May 18, 2022

Kirby Runyon, Karl Hibbitts, Michael Nord, Jodi Berdis, Aparna Srinivasan

Kirby.Runyon@jhuapl.edu

Karl.Hibbitts@jhuapl.edu

Michael.Nord@jhuapl.edu

Jodi.Berdis@jhuapl.edu

Aparna.Srinivasan@jhuapl.edu



JOHNS HOPKINS
APPLIED PHYSICS LABORATORY

Agenda

- Our Agenda will be as follows:
- General updates and house-keeping from Yours Truly
 - APL is happy to consult as appropriate with NASA-funded technologists
 - NASA funding opportunity update
 - Debrief on spring meeting
 - Debrief on Space Resources Week
- Hunter Williams from Honeybee Robotics speaking on MRE and Honey bubble experiments
- Beth Lomax from ESA speaking on bubble nucleation in reduced gravity
- Breakout Groups
 - Kristin on Modularity and Open Systems Architecture (MOSA)
 - Karl on Volatile Analysis
 - Self-hosting on Regolith to Rebar next-steps

Crowd-sourced meeting minutes and notes here: <https://lsic-wiki.jhuapl.edu/x/x6YxAg>



Upcoming Meetings

Some upcoming IRSU related meetings you might not be aware of

- **Space Resources Roundtable.** 7-10 June. Colorado School of Mines. In-person. Abstracts Already due.
- **Lunar Surface Science Workshop.** June 27. “Lunar Resource Evaluation Campaign - Defining”
 - Abstracts are solicited
- **COSPAR.** 16-24 July. Athens, Greece. ISRU session B0.2. Abstracts (already due).
- **NESF (SSERVI).** 19 – 22 July. Boulder, CO. Hybrid. Abstracts (already due)
- **IAC.** 18-22 Sept. Paris, France. In-person. Abstracts (already due).
- **Lunar Surface Science Workshop.** Sept. “Lunar Resource Evaluation Campaign - Implementing”
- **AIAA ASCEND.** 24- 26 Oct. Las Vegas. Abstracts (already due).
- **IEEE Aerospace Conf.** March 5-12, 2023, Big Sky, Montana. Abstracts due **July 1, 2022**



Tuesday, June 7, 2022 -Friday, June 10, 2022

Space Resources Roundtable XXII Meeting

<https://learn.mines.edu/srr/>

The Space Resources Roundtable (SRR) is happy to announce that it will convene its 22nd meeting on **June 7-10, 2022**. The meeting will be held in person on the campus of the Colorado School of Mines in Golden, CO, USA. Registration is open and abstracts for the 22nd meeting of the Space Resources Roundtable (SRR) were **due on March 31st**. Detailed information on abstract preparation, registration, sponsorship opportunities, and other logistical material for this in-person meeting can be found in the conference website: <https://learn.mines.edu/srr/>

TOPICS TO BE EXPLORED:

The SRR meeting will be organized to accommodate technical presentations and roundtable discussions on the following topics:

1. **The Moon and Cislunar Space:** Our nearest celestial destination for space resources
2. **Mars:** Preparing to live and work on the Red Planet
3. **Asteroids:** Stepping stones to develop a space resources infrastructure
4. **Manufacturing and Construction:** Building our future in space
5. **Infrastructure:** Power, communications, transport, and other services to support space resources activities
6. **Economic, Legal, Policy, and Environmental Issues:** The multidisciplinary nature of space resources

Space Resources Week

- Open comments

LSIC Spring Meeting

- Open Comments

NASA LIVE Thrust RFI

Due June 23

Industry Day Q&A June 1, 3:30 pm ET



Advanced Habitation Systems (AHS)

Keep astronauts healthy and productive while living in space and planetary vehicles.



2.4 MB PDF

In-Situ Resource Utilization

Develop scalable ISRU production/utilization capabilities including sustainable commodities on the lunar and Mars surfaces.



2.8 MB PDF

Power and Energy Storage Systems

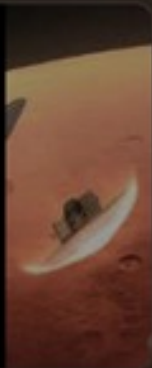
Develop sustainable power sources and other surface utilities to enable continuous lunar and Mars surface operations.



2.6 MB PDF

Thermal Management Systems

Develop thermal management technologies that enable surviving the extreme lunar and Mars environments.



1.9 MB PDF

Excavation, Construction, and Outfitting (ECO)

Develop methodologies for moving regolith for in-situ purposes such as commodities extraction.



3.6 MB PDF

- Notable news

SPACENEWS

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DIU selects nuclear-powered spacecraft designs for 2027 demonstrations

by Sandra Erwin — May 17, 2022



DIU's small spacecraft demonstrations will complement the work being done by DARPA and NASA in nuclear propulsion for larger spacecraft

SPACE.com

China to launch Tianwen 2 asteroid-sampling mission in 2025

By Andrew Jones published about 3 hours ago

The mission will sample an asteroid, return to Earth and then head out again to study a second space rock.



An artist's illustration of the asteroid Kamo'oalewa, the target of China's Tianwen 2 asteroid-sampling mission. Some astronomers think Kamo'oalewa may be a blasted-off chunk of Earth's moon. (Image credit: Addy Graham/University of Arizona)

NASA

May 17, 2022
RELEASE 22-044

NASA Seeks Input on Moon to Mars Objectives, Comments Due May 31



As NASA moves forward with plans to send astronauts to the Moon under Artemis missions to prepare for human exploration of Mars, the agency is calling on U.S. industry, academia, international communities, and other stakeholders to provide input on its deep space exploration objectives.

NASA released a draft set of high-level objectives Tuesday, May 17, identifying 50 points falling under four overarching categories of exploration, including transportation and habitation; Moon and Mars infrastructure; operations; and science. Comments are due to the agency by close of business on Tuesday, May 31.

"The feedback we receive on the objectives we have identified will inform our exploration plans at the Moon and Mars for the next 20 years," said Deputy Administrator Pam Melroy. "We're looking within NASA and to external stakeholders to help us fine-tune these objectives and be as transparent as possible throughout our process. With this approach, we will find potential gaps in our architecture as well as areas where our goals align with those from industry and international partners for future collaboration."



As NASA moves forward with plans to send astronauts to the Moon under Artemis missions to prepare for human exploration of Mars, the agency is calling on U.S. industry, academia, international communities, and other stakeholders to provide input on its deep space exploration objectives.
Credit: NASA

NASA TechFlights 2022 due June 2



Flight Opportunities

SPECIAL ANNOUNCEMENT

Coming Soon: NASA TechFlights 2022

[Flight Opportunities](#) anticipates the release of the 2022 TechFlights solicitation in early May 2022. This year, TechFlights will offer up to \$750,000 per awardee to researchers from U.S.-based industry, academia, and private research institutions to rapidly test promising technologies on commercial flight vehicles. In addition to flight testing with commercial suborbital flight providers, this year Flight Opportunities is joined by NASA's [Small Spacecraft Technology](#) program to provide flight tests on orbital platforms as well. Awardees will 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.

Prepare now for the solicitation

- Read the [full synopsis](#) for more information, and watch your inbox for the official solicitation announcement in the coming weeks.
- View our webinar on [Tips for Preparing Proposals for Flight Testing](#).
- Make plans to attend the Q&A in early May (details to be announced soon).

“NASA will help fund the testing of innovative space technologies by providing up to \$750K for the proposer to purchase flight services from a qualified flight provider. In addition to purchasing the flight(s), these funds may be used to cover the design, development, preparation of the payload for flight including tests required by the flight provider, post-flight analysis and reporting, as well as travel in support of the flight(s) and indirect costs. Funds may also be used for educational purposes in support of the flight.”



<https://sam.gov/opp/b428ab6bded1484bb12791197a48d83e/view#description>

Announcement of Collaborative Opportunity ACO

Getting the government to pay itself to work for you.

- Specific Project
- Funding goes to NASA center(s) that is supporting the effort.
- Focused on use of NASA facilities.
- Short term, up to four years is allowed
- Unfunded Space Act Agreement (SAA) for the industry.

Schedule	
Mini Proposal Q	3/22 (past)
Mini Proposal due	3/31 (past)
Notifications	5/31
Final Proposal Q	7/14
Final Proposal due	7/28
Selections Notified	11/30
Funding	Jan 2023

Topical Discussion

Molten Regolith Electrolysis: Background, Experiments,
and Future Work

Hunter Williams

Honeybee Robotics

Topical Discussion

Influence of Gravity on Gas Evolving Electrolysis.

Beth Lomax

ESA

Wrap-Up and Transition to Breakout Groups

- Interoperability and modularity (Kristen hosting)
- Regolith to Rebar (self-hosting)
 - A reminder about the LSIC Spring meeting breakout meeting on R2R. And everyone should be sure to register for the meeting.
- Volatile prospecting. (Karl hosting)



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