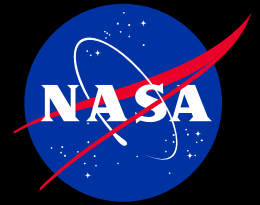


# NASA'S ASTROMATERIALS ACQUISITION AND CURATION OFFICE AT THE JOHNSON SPACE CENTER

National Aeronautics and  
Space Administration



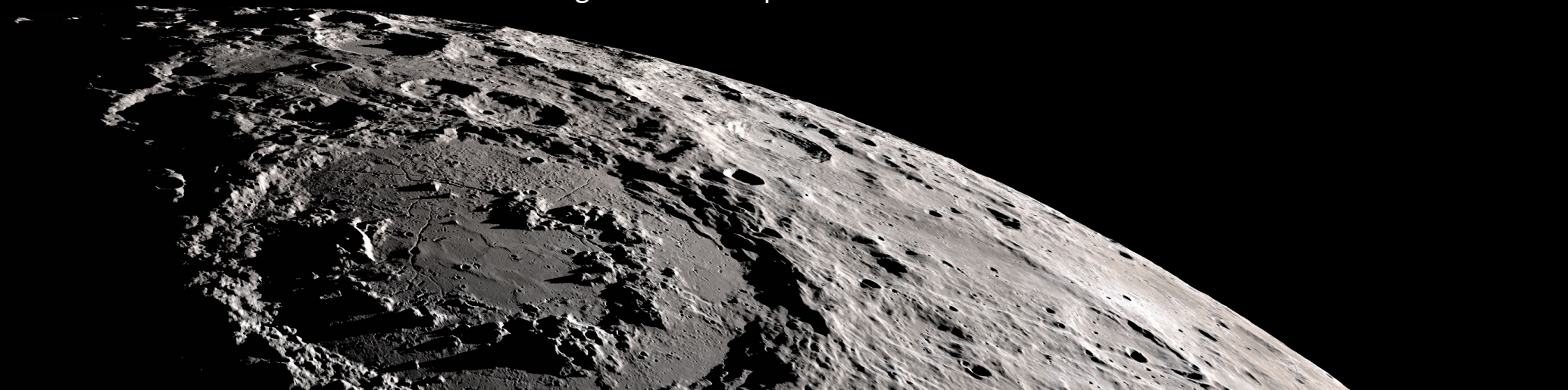
Dr. Jemma Davidson

Branch Chief, Astromaterials Curator

NASA JSC Astromaterials Acquisition and Curation Office

15<sup>th</sup> September 2025

ExMAG Fall 2025 Meeting – Curation Updates





# THE JSC ASTROMATERIALS COLLECTIONS

## Overview and Information Sources



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# NASA'S ASTROMATERIALS ACQUISITION & CURATION OFFICE



- The Astromaterials Acquisition and Curation Office at NASA Johnson Space Center (JSC) is responsible for curating all of NASA's extraterrestrial samples.
- Under the governing documents, NASA Policy Directive (NPD) 7100.10F + derivative NASA Procedural Requirements (NPR) 7100.5 "Curation of Extraterrestrial Materials", JSC is charged with being "the NASA Center that manages all Astromaterials collections and curation facilities [at NASA]."
- This pertains to all current and future Astromaterials collections that NASA owns or that were collected using NASA funds, unless otherwise specified in a formal agreement with a non-NASA entity.

<https://nodis3.gsfc.nasa.gov/displayDir.cfm?t=NPR&c=7100&s=5>



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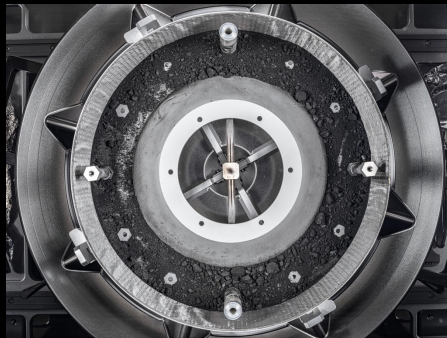
Astromaterials Research and Exploration Science



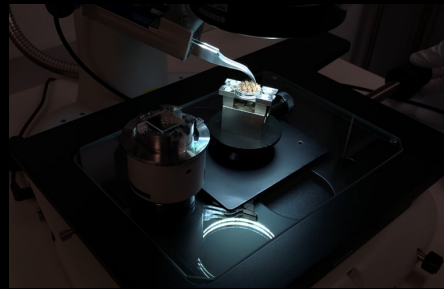
# NASA'S ASTROMATERIALS ACQUISITION & CURATION OFFICE



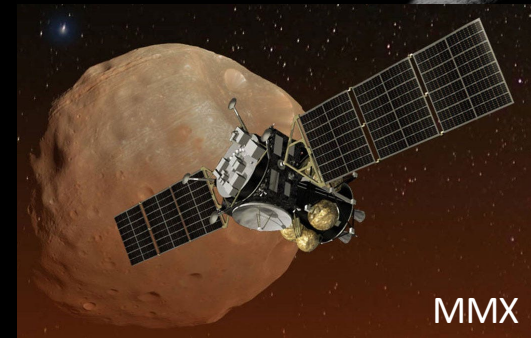
## Current Collections



## Advanced Curation



## Emerging Collections



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# NASA'S ASTROMATERIALS ACQUISITION & CURATION OFFICE



NASA NATIONAL AERONAUTICS & SPACE ADMINISTRATION

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## Astromaterials Acquisition & Curation Office

Astromaterials Newsletter



The newsletter grid consists of nine vertical panels, each with a representative image and a title at the bottom:

- GENESIS**: Close-up of the Sun.
- STARDUST**: Purple nebula.
- MICROPARTICLE IMPACT**: Spacecraft in space with a bright light source.
- ANTARCTIC METEORITES**: A snowy, rocky landscape.
- LUNAR**: A lunar surface with a bright sun in the sky.
- COSMIC DUST**: A spacecraft in space with a bright sun in the background.
- HAYABUSA**: A spacecraft on a rocky surface.
- HAYABUSA2**: A spacecraft in space with a bright light source.
- OSIRIS-REX**: A spacecraft in space with a bright light source.

Visit the curation website at <https://curator.jsc.nasa.gov/>



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# NASA'S ASTROMATERIALS ACQUISITION & CURATION OFFICE



NATIONAL AERONAUTICS & SPACE ADMINISTRATION

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## Astromaterials Acquisition & Curation Office

Astromaterials Newsletter

**GENESIS**   **STARDUST**   **MICROPARTICLE IMPACT**   **ANTARCTIC METEORITES**   **LUNAR**   **COSMIC DUST**   **HAYABUSA**   **HAYABUSA2**   **OSIRIS-REX**

Visit the curation website at <https://curator.jsc.nasa.gov/>



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# ASTROMATERIALS NEWSLETTER VOL. 6 ISSUE 2

- Sign up for the Astromaterials Newsletter to learn more and stay informed!

<https://ares.jsc.nasa.gov/astromaterials-newsletter/>

- The Astromaterials Newsletter announces:
  - New samples
  - Reclassifications
  - Request dates
  - Changes in Curator duties and new Curation personnel announcements
  - Other updates

Both subscribe and unsubscribe options



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**ASTROMATERIALS NEWSLETTER**

ARES CURATION RESEARCH MISSIONS SAFETY IMAGE SCIENCE ENGAGEMENT PEOPLE

## Astromaterials News

Jemma Davidson, Astromaterials Curator

Volume 7 No. 1 • April 2025

### Welcome from the New Astromaterials Curator

Welcome to the thirteenth issue of the Astromaterials Newsletter, a lucky number for some. Since this is my first edition as the Astromaterials Curator, I will optimistically include myself in their company. It has been over a quarter century since my first venture into curation and this month marks the twenty year anniversary of my first foray into astromaterials analysis. I was very fortunate to be afforded the opportunity to work on Apollo basalts as an undergraduate student and consider it the privilege of a lifetime to now be able to lead the NASA Curation Office two decades later. In the interim, as a research scientist, I have worked on an array of sample types, including carbonaceous and ordinary chondrites (Antarctic and non-Antarctic), Hayabusa and Hayabusa2 samples, primitive achondrites, martian meteorites, lunar meteorites, micrometeorites, interplanetary dust particles, organic matter and presolar grains. All this to say, I am very passionate about curation and astromaterials and I am ecstatic to be able to serve the broader planetary sample analysis community in this capacity.

As you will be aware, we have had a very busy and dynamic 2025 so far. We appreciate your patience as we align with new federal guidance, which has slowed some activities and paused federal hiring. I am happy to report that, in addition to making strides toward pulling the branch into compliance with the Curation of Astromaterials NASA Procedural Requirement (NPR) 7100.5, there are some exciting changes on the horizon that will enable the Curation Office to better serve the sample analysis community. Read on for more information.

### About the Astromaterials Newsletter

The Astromaterials Newsletter is a bi-annual publication produced by the Astromaterials Acquisition and Curation Office at NASA Johnson Space Center (JSC) to inform the sample science community about updates to our policies, collections, and available samples. In particular, the Astromaterials Newsletter will be our exclusive mechanism for announcing new samples or new sample opportunities available to the community across all of our collections, and we publish the Astromaterials Newsletter on the same cadence as the Antarctic Meteorite Newsletter.

The primary aim of the Astromaterials Newsletter is to maximize the science returns from our existing collections through better communication and advertisement of sample availability to the scientific community. A big part of that improved communication is to provide updates to the sample analysis community about what is going on in our labs and at JSC that could impact the collections or the timing of sample allocations. Most importantly, the Astromaterials Newsletter was established to provide a fair and transparent process by which the community receives information about available samples across all our collections. As always, details about all of NASA's Astromaterials samples that are available for request can be found within each respective collection's sample catalog, which are available on our website (<https://curator.jsc.nasa.gov/>). Any new samples announced in this issue will also appear within the appropriate sample catalog on our website.

### Astromaterials Data Archiving Announcement from the Astromaterials Data System

The **Astromaterials Data System** (Astromat) is the primary NASA-sponsored archive for laboratory analyses of returned samples (see NASA's Planetary Science Division's Information and Data Management Policy Supplement to SPD-41A). Astromat supports the extraterrestrial samples community with services that enable sharing, discovery, access, and reuse of data generated by laboratory analysis of astromaterials samples.

The **Astromaterials Data Archive** (ADA) curates, publishes, and preserves laboratory analytical data acquired as part of NASA's sample return missions and research projects. The ADA accepts data that describe the chemical, physical, petrological, mineralogical, and textural properties of bulk samples, mineral phases, and other components such as chondrules and presolar grains.

The **Astromaterials Data Synthesis** provides access to over 2 million analytical values acquired over the past 50+ years on lunar samples, meteorites, and other astromaterials samples curated at ARES.

**Participate!** Opportunities for community engagement are planned for 2025 including webinars, exhibits, and social gatherings at relevant conferences. Sign up for the **Astromat Community Mailing List** to stay updated on the latest. Please reach out to the Astromat Team at [info@astromat.org](mailto:info@astromat.org) with any suggestions or needs for customized engagement or training for Astromat use.

### Broad updates for the Astromaterials Acquisition and Curation Office

In November we had a successful, weeklong Building 31 complex-wide outage – a necessary step toward construction of the Annex, which will be completed later this year. Additionally, the back-up power generator for the B31 complex is now installed and ready for the upcoming hurricane season.

## The Newsletters

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July 2025  
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Volume 7 No. 1  
April 2025  
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[Apollo Sample News](#)  
[Antarctic Meteorite News](#)  
[Cosmic Dust News](#)  
[Genesis News](#)  
[Hayabusa News](#)  
[Hayabusa2 News](#)  
[OSIRIS-REx News](#)  
[Stardust News](#)

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Volume 3 No. 2  
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Volume 2 No. 2  
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March 2019  
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# CURATION: PRESERVATION, CHARACTERIZATION, AND ALLOCATION



## PRESERVATION

Maintain integrity of collections.

Maintain lab infrastructure  
(monitoring, cleanliness, N<sub>2</sub>, UPW).

Accept returned samples back into  
the collections.



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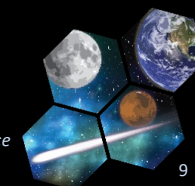


## CHARACTERIZATION

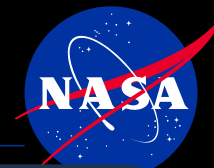
Collect new sample information  
(e.g., XCT, FTIR, etc.).

Improve sample catalogs.

Distinguish between sample  
types/regimes.



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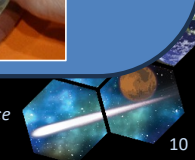


## ALLOCATION

Prepare and provide samples to PIs  
for scientific study. Can involve  
advanced sample preparation.




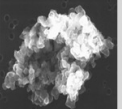

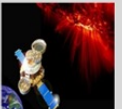
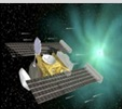

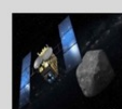
Provide display samples to  
qualified institutions.

Provide Apollo and meteorite disks  
and thin section kits to K-12 and  
colleges/university institutions.



# SAMPLE REQUESTS FROM EXISTING COLLECTIONS



<p><b>Lunar</b> (1969) Apollo program lunar rocks and soils; Luna samples</p> 	<p><b>Meteorite</b> (1977) Antarctic Search for Meteorites (ANSMET) program</p> 	<p><b>OSIRIS-REx</b> (2023) Asteroid sample return from Benu</p> 	<p><b>Cosmic Dust</b> (1981) Cosmic dust grains from Earth's stratosphere</p> 	<p><b>Microparticle Impacts</b> (1985) Space exposed hardware from spacecraft</p> 	<p><b>Genesis</b> (2004) Genesis solar wind samples at Earth-Sun L1 point</p> 	<p><b>Stardust</b> (2006) Cometary and interstellar samples from Comet Wild 2</p> 	<p><b>Hayabusa</b> (2012) Samples collected from JAXA asteroid mission to Itokawa</p> 	<p><b>Hayabusa II</b> (2021) Subset of samples collected from JAXA asteroid mission to Ryugu</p> 
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- Any scientist can request NASA Astromaterials for scientific study:
    - Sample requests are reviewed by the appropriate Astromaterials Allocation Review Board panel (i.e., by peer-review) and the collection's Curator
    - Lunar, meteorites, and OSIRIS-REx requests are reviewed twice a year, with request deadlines approximately 6 months apart
    - Deadlines are announced in the biannual Astromaterials Newsletter
    - Sample requests for other collections are rolling and can be submitted at any time\*
- Genesis is the exception – will discuss later in this talk



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# SAMPLE REQUEST INFORMATION



- First time requestor? Requesting from multiple collections? Want to improve your requests/success rate?

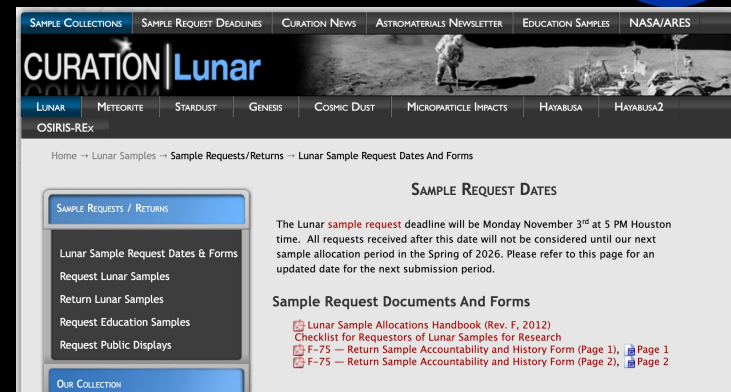
- Check our website first for requirements:

<https://curator.jsc.nasa.gov/>

- Also check out the Curation portion of the *How to Become Part of the NASA Planetary Sample Science Community* recording:

<https://www.hou.usra.edu/meetings/planetarysamplescience2024/>

- Additional questions? Contact the specific collection Curator or Astromaterials Curator.




# THE CURRENT COLLECTIONS – POINTS OF CONTACT



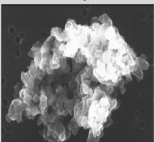
**Lunar**  
(1969)  
Apollo program lunar rocks and soils; Luna samples



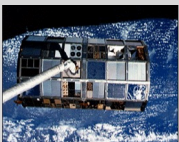
**Meteorite**  
(1977)  
Antarctic Search for Meteorites (ANSMET) program



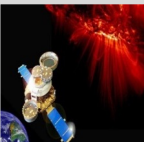
**Cosmic Dust**  
(1981)  
Cosmic dust grains from Earth's stratosphere



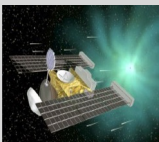
**Microparticle Impacts**  
(1985)  
Space exposed hardware from spacecraft




**Genesis**  
(2004)  
Genesis solar wind samples at Earth-Sun L1 point



**Stardust**  
(2006)  
Cometary and interstellar samples from Comet Wild 2



**Hayabusa**  
(2012)  
Subset of samples collected from JAXA asteroid mission to Itokawa




Release 051101-2 (SAS/JAXA)

**Hayabusa II**  
(2021)  
Subset of samples collected from JAXA asteroid mission to Ryugu



**OSIRIS-REx**  
(2023)  
Asteroid sample return from Bennu



OSIRIS-REx ASTEROID SAMPLE RETURN MISSION



Ryan Zeigler



Andrea Harrington



Michael Zolensky



Alissa Madera (Jemma Davidson)



Michael Zolensky



Christopher Snead



Nicole Lunning

**Astromaterials Curator: Jemma Davidson**

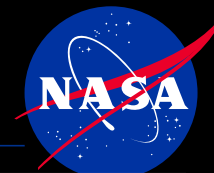


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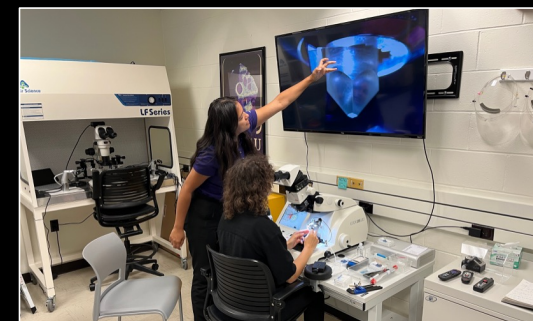
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# OTHER CURATION SERVICES



- Support the LPI-led Small Particle Handling Workshop  
<https://www.hou.usra.edu/meetings/smallsamplemay2025/>
- We also support PI visits to Curation to learn to handle and select samples.
  - Contact the Curator
  - Need sufficient lead-time for planning and badging



*Small particle handling workshop (Purdue)*



*Small particle handling training @JSC*





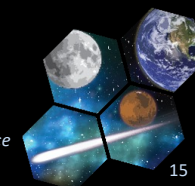
# UPDATES

## Personnel, Infrastructure, and General Updates



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# PERSONNEL UPDATES – RETIREMENTS AND REASSIGNMENTS



- **Curation Retirements:**
  - Former Genesis Curator Judith Allton
    - Duties assigned to Dr. Alissa Madera
  - Former Education Sample Curator Mary Luckey
    - Duties absorbed by the Astromaterials Curator
- **Astromaterials Curation:**
  - Dr. Alissa Madera is the Astromaterials Curation Deputy, incoming Genesis Curator
- **Antarctic Meteorites:**
  - Dr. Andrea Harrington is the Interim Antarctic Meteorite Curator



Judy Allton



Mary Luckey



Alissa Madera



Andrea Harrington



Federal hiring freeze: Civil Servant hires on pause

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# INFRASTRUCTURE UPDATES

## B31 Complex Back-Up Power Generator:

- Generator installed before 2025 tropical storm season
- Fully commissioned



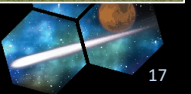
*Building 31 Generator*

## B31 Annex:

- Annex is progressing
- Anticipated completion in early 2026



*Building 31 Annex @JSC*



# GENERAL UPDATES

## Current Collections:

- **Apollo:** *Ryan Zeigler, Mon PM*
- **Meteorite:** *Andrea Harrington, Wed AM*
- **Cosmic Dust and Stardust:** *Mike Zolensky, Mon PM. New balloon flight technologies for cosmic dust collection.*
- **Hayabusa2:** *Christopher Snead, Wed AM*
- **OSIRIS-Rex:** *Nicole Lunning, Mon PM*

## Emerging Collections:

- **Artemis:** *Juliane Gross, Mon PM*
- **Mars:** *Andrea Harrington, Mon PM*

## Advanced Curation:

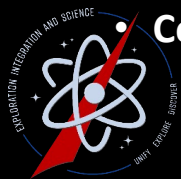
- **Cold Curation:** *Michael Huh, Mon PM*



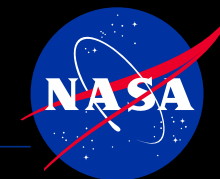
*Cosmic Dust Balloon-Borne Collector Prototype*



*Cold Curation Trade Study*



# ALLOCATIONS (APRIL 2024 – APRIL 2025)



Collection	# Requests Received	# Samples Allocated	# Current Investigators	# Countries Represented
Apollo	54	419	201	17
Antarctic Meteorite	59	237	330	22
Cosmic Dust	5	35	20	8
Microparticle Impact	0	0	1	1
Genesis	4	30	12	2
Stardust	2	4	15	5
Hayabusa 1	0	0	8	2
Hayabusa 2*	3	0*	0*	0*
OSIRIS-REx	121	95	140	10
<b>Total</b>	<b>248</b>	<b>820</b>	<b>727</b>	<b>27</b>

**Countries where samples are being studied (27):** Australia, Austria, Belgium, Canada, Czechia, Finland, France, Germany, Greece, Hungary, India, Ireland, Italy, Japan, Netherlands, New Zealand, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, United Kingdom of Great Britain and Northern Ireland (all countries), United States of America.



# UPDATES: GENESIS COLLECTION PRESERVATION MODE



In the last year:

- **September 2024:** Celebrated Genesis 20<sup>th</sup> Anniversary of Earth-return
- After >50 years of Curation service, the Genesis Curator Judith Allton retired. Many, many thanks to Judy!
- Made the decision to transition the Genesis collection into preservation mode
- Precedence: Previously put Cosmic Dust into preservation-mode for several years to provide adequate resources for Stardust
- Enables us to move resources where we need them. This will enable us to continue removal of all Stardust aerogel cells.



Genesis Curators Alissa Madera and  
Judith Allton



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# UPDATES: GENESIS COLLECTION PRESERVATION MODE



## PRESERVATION

Maintain integrity of collections.

Maintain lab infrastructure (monitoring, cleanliness, N<sub>2</sub>, UPW).

Accept returned samples back into the collections.



## CHARACTERIZATION

Collect new sample information (e.g., XCT, FTIR, etc.).

Improve sample catalogs.

Distinguish between sample types/regimes.



## ALLOCATION

Prepare and provide samples to PIs for scientific study. Can involve advanced sample preparation.

Provide display samples to qualified institutions.

Provide Apollo and meteorite disks and thin section kits to K-12 and colleges/university institutions.



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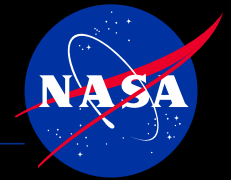


## Genesis preservation mode: What is it?

- It is maintaining the collection in its current state in the dedicated Genesis labs at NASA JSC using the same preservation methods employed since return (e.g., high-purity N<sub>2</sub>, UPW).
- Maintaining lab infrastructure, including cleanliness (regular monitoring), and all supporting systems (e.g., high-purity N<sub>2</sub>, UPW).
- Accepting returned samples, renewing existing loan agreements.
- Pausing new allocations (after September 5<sup>th</sup> deadline) and not performing additional characterization of samples.
- Will consider opening collection during “allocation windows” if there is sufficient community interest.
- Do you have an interest in requesting samples for analysis? Let the Astromaterials Curator know.



# GENERAL UPDATES



To reduce single-point failures:

- We have begun moving to using collection specific emails (includes all collections and Astromaterials Curator)
- Contact information is being updated on the website (remember: the Astromaterials Newsletter is on the website and is the most up-to-date resource for Curation news)

Upcoming:

- We plan to hold Curation Townhalls that coincide with the Astromaterials Newsletter release
- Moving to rolling deadlines for all collection sample requests
  - Investigating lessons learned from NASA R&A (Research and Analysis) rolling deadlines with our HQ counterparts
- **Subscribe to Astromaterials Newsletter for updates!**



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## SUMMARY



- JSC is home to NASA's astromaterials collections.
- We provide samples to support the scientific study of astromaterials to qualified researchers across the globe.
- Our website should always be your first port of call for information.
- Sign up for the Astromaterials Newsletter to stay up-to-date with changes.
- If in doubt, email us!



THANK YOU!

