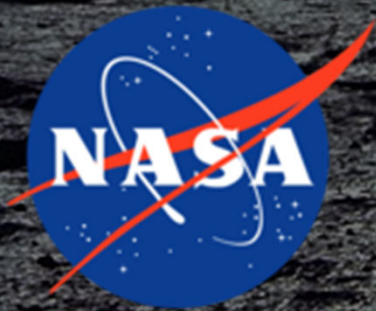


Requesting NASA's Astromaterials Samples: A How To Guide

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Lunar Sample Curator

NASA's Astromaterials Acquisition
and Curation Office



Requesting Samples: Overview



- The Astromaterials Acquisition and Curation Office at JSC is the past, present, and future home for all of NASA's astromaterial sample collections (since 1969).
- Our goals are to (1) provide samples to the worldwide astromaterial community in a transparent and unbiased way, (2) maximize the scientific return from each collection, and (3) preserve a significant portion of each collection for future generations of scientists.
- I'll spend the rest of my talk explaining the sample request process, including providing specific examples of do's and don'ts that should make the process easier for you.
 - This will not, however, be broken down by collection (to my great surprise), though I will lean on Apollo for many of my examples.

Astromaterial Sample Request Process



- Sample requests can be submitted at any time, via email to the relevant collection curators (<https://curator.jsc.nasa.gov/>).
 - Apollo, Antarctic Meteorite, and OSIRIS REx requests are reviewed biannually, with request deadlines ~6 months apart.
 - The deadlines are announced via the [Astromaterials Newsletter](#), and on our [website](#).
 - All other collections are on a rolling basis.
- Each request is reviewed by a peer-reviewed review panel called AARB – Astromaterials Allocation Review Board (formerly known as CAPTEM).
- AARB will make a recommendation to the collection curator on whether they feel the study is an appropriate use of astromaterials, and the collection curator will make a final recommendation on the allocation of samples, which is subject to Approval from the Astromaterials Curator (Jemma Davidson) and concurrence from the Chief Scientist of Astromaterials Curation at HQ (Kathleen Vander Kaaden).
- Once a decision has been made about the sample request, the collections curator will communicate that decision to you.
- Successful requests require completion of a Loan Agreement between NASA and your institution and demonstration that proper security is in place prior to sample allocation.

Sample Request Process – What Goes In Them

But how do I know what to include in my request?!

- The details of what goes into each collection varies slightly, but a detailed description is provided on our website for each collection

- [Apollo](#)
- [Antarctic Meteorite](#)
- [Cosmic Dust](#)
- [Microparticle Impacts](#)
- [Stardust](#)
- [Genesis](#)
- [Hayabusa](#)
- [Hayabusa2](#)
- [OREx](#)

- Highly recommend you follow the template!

Home → Lunar Samples → Sample Requests/Returns → Sample Request Checklist

[SAMPLE REQUESTS / RETURNS](#)
[OUR COLLECTION](#)
[SAMPLE CATALOGS](#)
[SAMPLE COMPENDIUM AND NEWSLETTER](#)
▶ Lunar Curation Contacts

External Links
▶ [Apollo Lunar Surface Journal](#)

CHECKLIST FOR REQUESTING SAMPLES

Requests for research samples from the NASA lunar sample collection are carefully reviewed before allocation decisions are made. However, neither the Lunar Sample Curator, nor the Curator's advisory committee, the Astromaterials Allocation Review Board (AARB), formerly CAPTEM, has access to detailed research proposals that might have been submitted separately by the requestor to other parts of NASA or to other agencies. Therefore, to be successful, each lunar sample request must be as informative and self-contained as possible. Before submitting your sample request, be sure it contains all of the elements on the following checklist:

- Cover letter signed by Principal Investigator(PI) who will be responsible for the loan of any lunar samples.
 - A. Letter on PI's institutional letterhead.
 - B. Letter co-signed (or separate letters provided) by every Co-Investigator (Co-I) who will participate in the investigation under terms of the security plan executed between NASA and the PI.
- Description of the scientific goals and objectives of the proposed work.
 - A. Scientific hypotheses to be tested or technical utilization to be demonstrated.
 - B. Value of new analyses or tests relative to previous work on the same subject.
 - C. Explanation of any time constraints (such as schedules for instrument time at complex facilities).
- Specification of the samples requested for research.
 - A. General types of samples: rocks, regolith (soil); regolith cores.
 - B. Special requirements (for example, location, depth, orientation in parent sample).
 - C. Specific lunar sample numbers (if known).
 1. Five-digit "parent" number (for example, 74001) plus 3-4-digit "daughter" number (for example, 6040) to give complete proper number (in this example, 74001,6040).
 2. Sample identifications based on information published by other PIs should identify the publications in which the sample numbers appear. (Published sample numbers sometimes include unofficial designations, given by individual PIs, that may differ from the official designations maintained by the Lunar Sample Curator. The Curator must be able to unambiguously identify the sample.)
 - D. Mass or volume requested for each sample.
 - E. Specification of whether returned (previously studied) lunar samples are acceptable.

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- [Hayabusa2](#)
- [OREx](#)

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SAMPLE OF Antarctic Meteorite Sample Request Form

1a) Name of person requesting samples: A.L. Hollol 1b) Signature: Alphonse Hollol

2) Professional Title: Mr. 3) Date: September 1, 2001

4) Institution: Antarctic Meteorite Consortium 5) Address: 84001 Moraine Drive Wellington, New Zealand

6) Telephone: 011 64 476 88001 7) E-mail: ALH@MAC.nz

(8)	(9)	(10)	(11)	(12)	(13)	(14)
Meteorite	Class	Form	Number	Mass/Size	Minimum mass/size	Remarks and notes
ALH 81000	CM	Chip	1	100 mg	10 mg	20
		TS	1			
		THK TS	1	150 microns		

15) Title of study : Tin isotopic study in CM chondrites.

16) Purpose of Study/Scientific rationale (can be a few paragraphs)

As part of a doctoral thesis project, I have begun a survey of tin isotopes in meteorites to test for the possibility of isotopic fractionation of tin during aqueous processes. Small effects are seen in terrestrial samples. The comparison with extraterrestrial materials should be interesting.

17) Planned measurements

Methods - Measurements of tin isotopes are made by using a newly acquired ion microprobe here at Consortium Laboratories in Wellington (Hollol et al., 2001, J. Mass Spec., 72, 637-645, attached). In separate, destructive experiments, we will measure the bulk tin content of the sample by ICP-MS. To make the ICP-MS measurements we collaborate with Prof. Shackleton's group at the University of Auckland.

Location of instruments – see above

18) Reason(s) for choosing the particular samples requested (can be a few paragraphs)

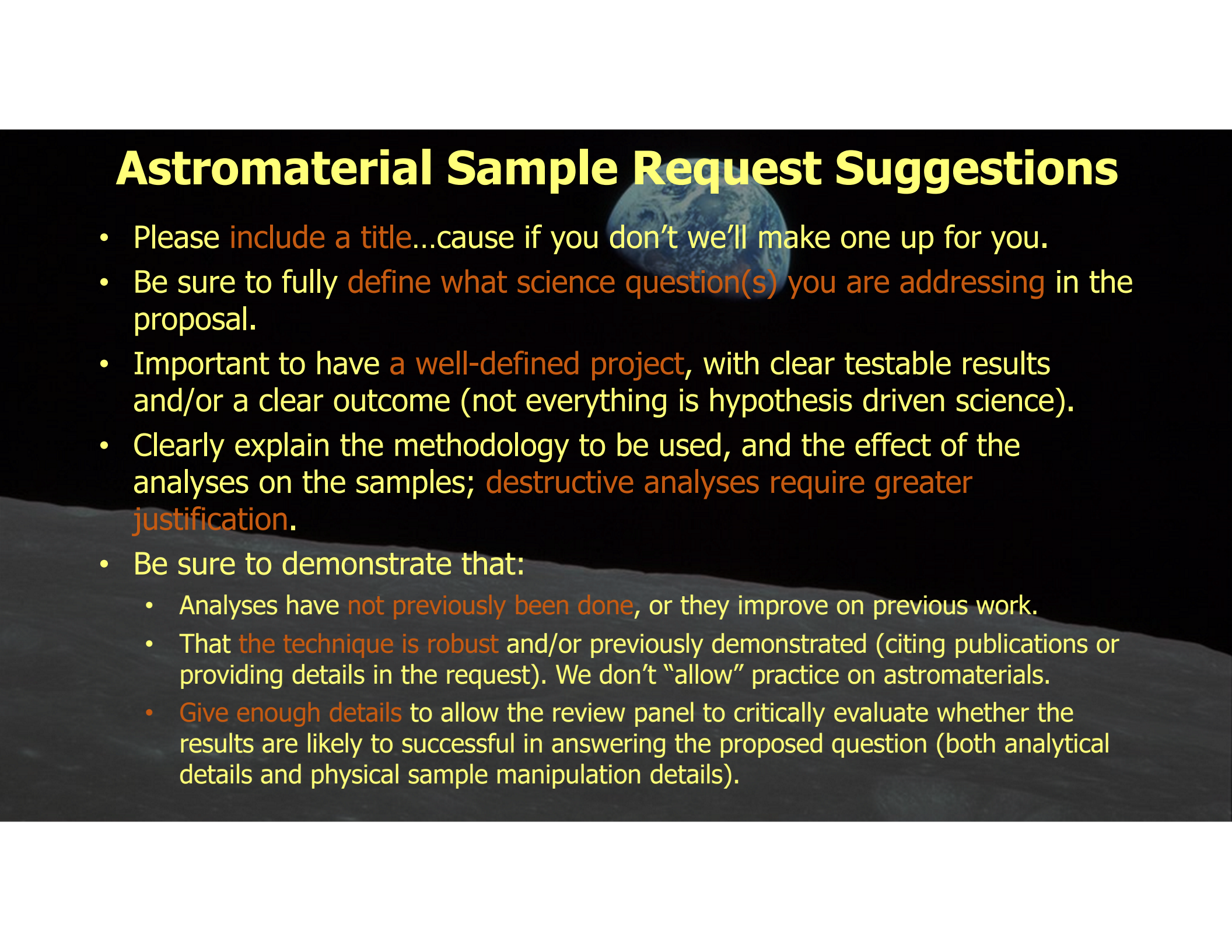
CMs are known to show signs of extensive aqueous alteration. We are aware that many Antarctic meteorites have been weathered and for this reason have selected a sample from the *most* weathered group as a kind of control. In separate studies, we will also be analyzing a recent, non-Antarctic CM fall. The CM that we have requested from the US Antarctic collection is part of a large pairing group; we would be glad to have a sample from any member of this group.

19) Basis for estimating mass requested
Please see Hollol et al. (2001)

20) Special preparations No special preparation required.

21) Effect on sample – Ion microprobing will leave numerous pits, about 50 µm in diameter, in the section.

Astromaterial Sample Request Suggestions



- Please include a title...cause if you don't we'll make one up for you.
- Be sure to fully define what science question(s) you are addressing in the proposal.
- Important to have a well-defined project, with clear testable results and/or a clear outcome (not everything is hypothesis driven science).
- Clearly explain the methodology to be used, and the effect of the analyses on the samples; destructive analyses require greater justification.
- Be sure to demonstrate that:
 - Analyses have not previously been done, or they improve on previous work.
 - That the technique is robust and/or previously demonstrated (citing publications or providing details in the request). We don't "allow" practice on astromaterials.
 - Give enough details to allow the review panel to critically evaluate whether the results are likely to be successful in answering the proposed question (both analytical details and physical sample manipulation details).

Astromaterial Sample Request Suggestions



- Please **be specific about which samples** you need to successfully complete your study.
 - The more detail you can give the better (e.g., what type of basalt or regolith).
 - Why is Stardust preferred to a CD sample? Or an OREx sample to a CC?
 - Provide backup samples if possible in case something isn't available.
- Be sure to **justify the number of samples** you need in detail.
 - Do you really need 37 CI chondrites to complete your study? (spoiler...no one does)
 - Provide descope options, or a ranked list of samples...just in case.
 - Make sure that attempts to address heterogeneity are relevant.
- Be sure to **justify the mass of samples** you need in detail.
 - Be specific! For collections that have a minimum and maximum mass request (e.g., meteorite), be sure to address both!
 - Astromaterials are precious, so "my sample cup holds 10 g" is not adequate.
- **"Special samples" require greater justification** (e.g., samples that are unique, low mass, low pristinity).

Astromaterial Sample Request Suggestions



- Give extra attention to justification for destructive analysis, as this “raises the bar” for getting samples:
 - Au coating counts as destructive!!
 - SIMS and LA-ICP-MS on sections
- The use of returned samples requires less justification, as this is “additional science” on that subsample.
- Speaking of sections, we prefer to prepare polished thin/thick sections for collections where this is relevant, so extra justification is needed to make your own sections.
- Be sure to give any special preparation instructions you require for the samples:
 - Interior piece vs. Exterior piece; Single Chip vs. multiple Chips vs. Fines; Nylon vs. Teflon bags; Metal vs. Plastic containers; Non-standard epoxy or polishing.

Sample Request Process – Sample Info Sources

But there are soooo many samples...how do I chose the right one?!

- Our websites contain detailed information about the samples in our collections:

- [Apollo](#)
- [Antarctic Meteorite](#)
- [Cosmic Dust](#)
- [Microparticle Impacts](#)
- [Stardust](#)
- [Genesis](#)
- [Hayabusa](#)
- [Hayabusa2](#)
- [OREx](#)

- There are also external sources, e.g., [MetBull](#) and peer reviewed literature.
- Do your homework.

Now Let's Watch Ryan Make a Poor Life Decision by trying to use a website in real time during a presentation

Home → Lunar Samples → Lunar Sample And Photo Catalog

LUNAR SAMPLE AND PHOTO CATALOG

Search Samples Search Photos View Samples By Mission View PDF Catalogs Lunar Sample and PhotoCatalog

Lunar Sample Search

Sample Number
Generic:

Advanced Search Options

Mission

- ☐ Apollo 11
- ☐ Apollo 12
- ☐ Apollo 14
- ☐ Apollo 15
- ☐ Apollo 16
- ☐ Apollo 17
- ☐ Luna 16
- ☐ Luna 20
- ☐ Luna 24

Sample Classification

- ☐ Basalt
- ☐ Crustal
- ☐ Breccia
- ☐ Soil
- ☐ Core

Sample Weight:

- ☐ Minimum Weight
- ☐ Maximum Weight

% Pristine Sample Available:

- ☐ Minimum % Pristine from Original Weight

Other Options:

- ☐ Show Public Display Samples
- ☐ Show Samples with Thin Sections

Search

Freedom of Information Act
NASA Privacy Policy, Accessibility and Important Notices
Information-Dissemination Priorities and Inventories

Equal Employment Opportunity Data Posted Pursuant to the No Fear Act
Budgets, Strategic Plans and Accountability Reports
USA.gov
Download Adobe Reader

Responsible NASA Official: Eileen Stansbery
Website Curator: ARES Developers
Last Updated: Apr 14, 2023
Site Map
A compliant PDF will be provided upon request.
Contact site curator.

Home | Lunar | Meteorites | Stardust | Genesis | Cosmic Dust | Microparticle Impacts | Hayabusa | Hayabusa2 | OSIRIS-REX | About Us

Astromaterial Sample Request Timeline

- The review and approval process typically takes a minimum of 2 to 3 months between the request deadlines and when decisions are given to PIs.
- Sample processing time after this varies, but the goal is to get all sample allocations distributed within ~3 months of when PIs are notified of a successful request (thus <6 months total time).
 - External factors (Pandemics, Hurricanes, etc.) can significantly impact this.
- PIs who would like to come to JSC to participate in the processing of their samples are welcome (is likely to slow things down).
- Before samples can be allocated two more administrative things must be completed:
 - A loan agreement (Non-Reimbursable Space Act Agreement) between NASA and the PI's institution must be completed.
 - An approved security plan must be in place at the PIs institution (and at any co-I's institution who will have possession of the samples).

Astromaterial Sample Request Summary



- We want people to study our samples, but we're never going to waste them.
- It's all about demonstrating that the likely outcome of your study is worth the amount of astromaterials that would be consumed by the study.
- We are aware that this process never goes as fast as all people would like, but "being fast" isn't our number one priority, ensuring the short- and long-term health of the collections while enabling science is.
- Curators and Curation Staff are always here to help you, but that help is a lot more efficient with folks who have done their homework ahead of time.