

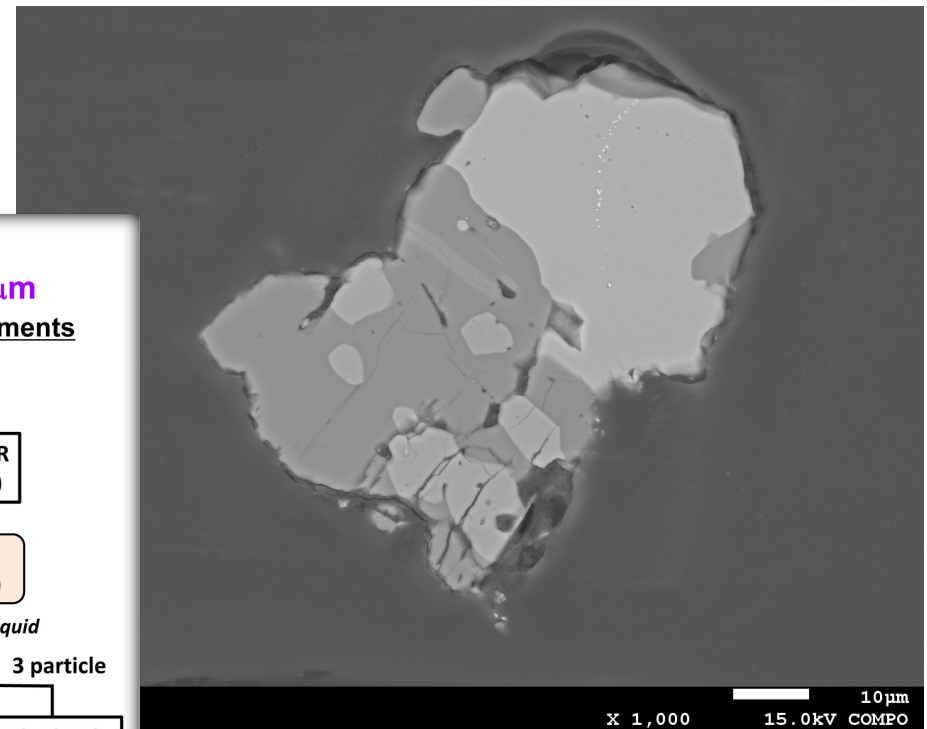
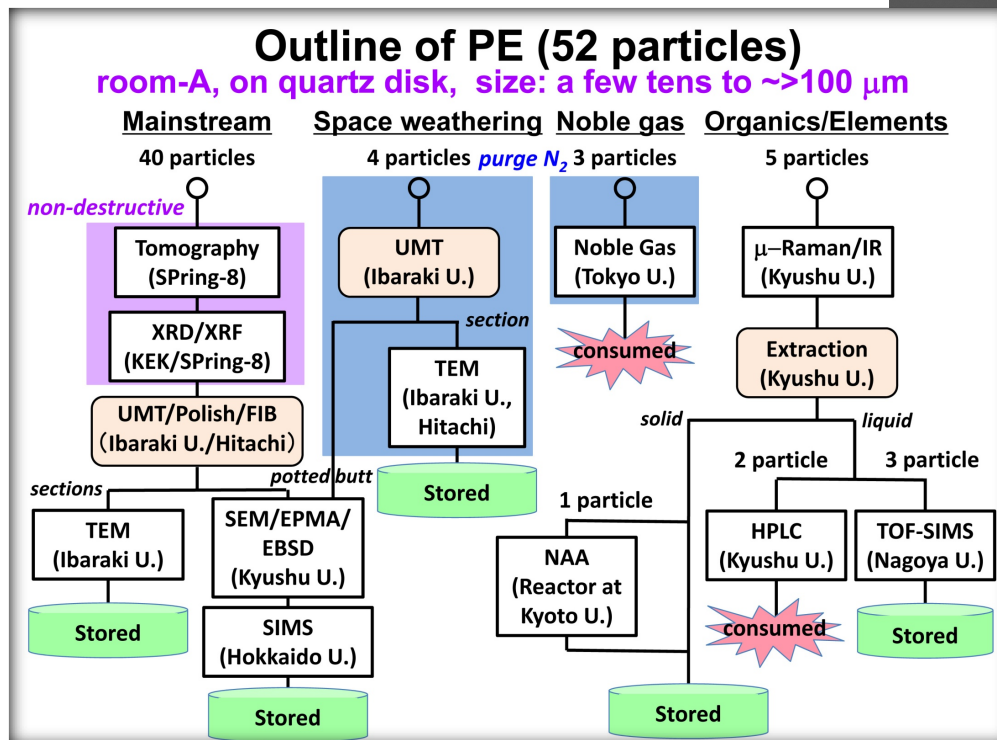
# Hayabusa Update

Mike Zolensky

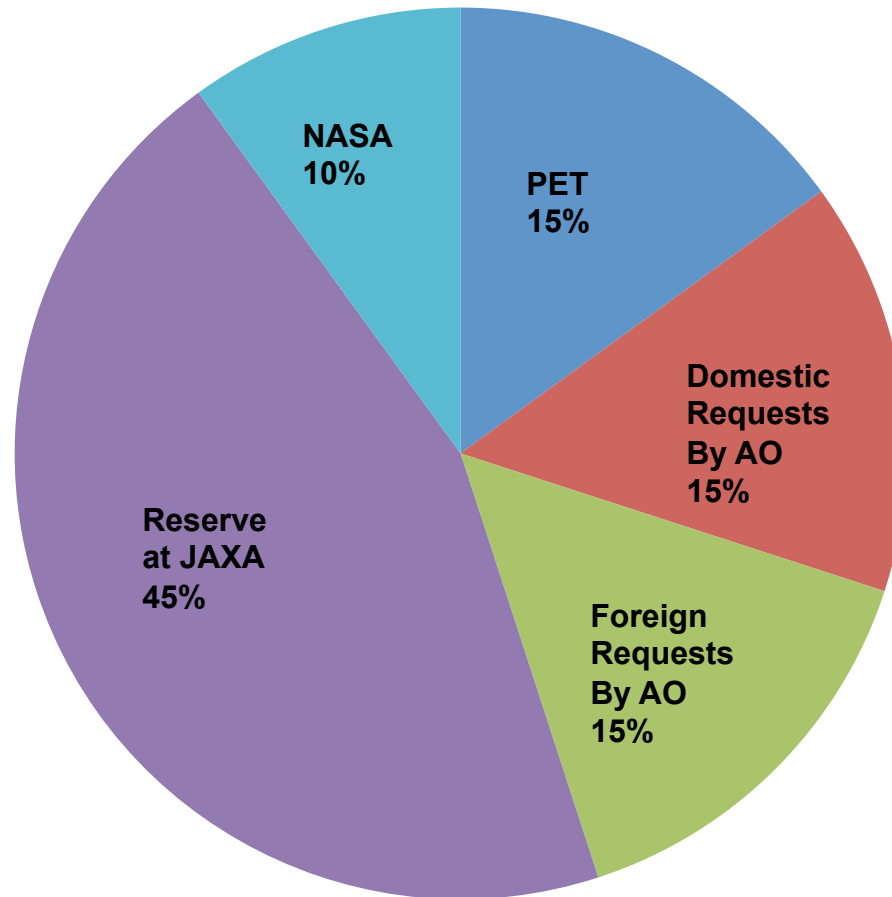
July 2012

# PET in Japan

- Its Over



# Hayabusa Sample Division by mass



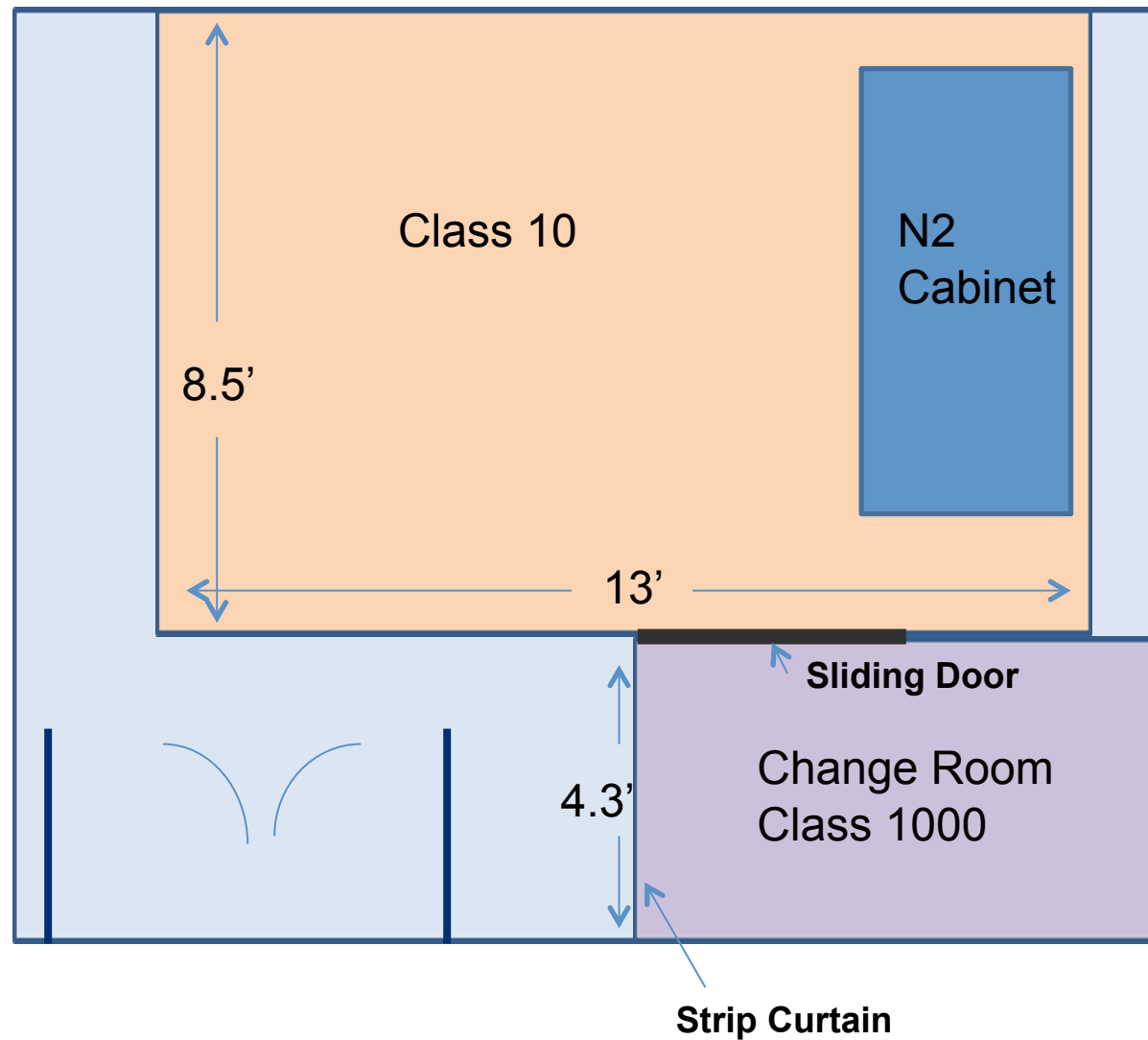
# NASA's samples

- The first batch of 15 grains were carried to JSC in December by Mike Z
- They are now sitting in a cabinet in the Cosmic Dust Lab until the Hayabusa Lab is ready to receive them (next week)
- The remaining samples will arrive over the next few years, the next batch will be in Nov-Dec.



# JSC's Hayabusa Lab

a laminar flow class 100 clean room



# Hayabusa Lab





# Database

- JSC's Hayabusa database is compatible with JAXA's
- Sample catalogs from both agencies are now on line
- Sample Investigator Guidebooks are on line

The image shows two side-by-side browser windows. The left window displays the 'Hayabusa Asteroid Sample Collection' website, which includes navigation tabs for 'SAMPLE COLLECTIONS', 'SAMPLE REQUEST DEADLINES', 'CURATION NEWS', 'EDUCATION SAMPLES', 'PERSONNEL', and 'ABOUT CURATION'. The main content area is titled 'HAYABUSA ASTEROID ITOKAWA SAMPLES' and features a photo of the Itokawa asteroid. The right window shows a 'Sample List' with a table of sample data.

**Hayabusa Asteroid Sample Collection - Windows Internet Explorer**

http://curator.jsc.nasa.gov/hayabusa/index.cfm

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

advanced search...

**CURATION | Hayabusa**

LUNAR METEORITE STARDUST GENESIS COSMIC DUST SPACE EXPOSED HARDWARE HAYABUSA

Home → Hayabusa Sample Collection

**SAMPLE REQUESTS**

**OUR COLLECTION**

**HAYABUSA SAMPLE INFORMATION**

**ABOUT THE HAYABUSA MISSION**

Hayabusa Curation Contacts

**HAYABUSA ASTEROID ITOKAWA SAMPLES**

Hayabusa, the first sample return mission of the Japanese Aerospace Exploration Agency (JAXA), was developed to rendezvous with and collect samples from asteroid Itokawa and return them to Earth. The mission was launched in May 9, 2003 from the Uchinoura Space Center and encountered asteroid Itokawa in November 2005. There, it made several attempts at collecting samples in touch and go maneuvers. During one of these attempts the spacecraft unexpectedly lost communication with Earth and crash-landed on the asteroid surface, damaging the spacecraft. Despite this setback, JAXA managed to return Hayabusa safely to the Earth on June 13, 2010.

Although the sampling mechanism did not work, thousands of 10–100 µm particles were found in one of the sample containers, apparently introduced during the spacecraft impact into the surface of the asteroid. Many of these particles are shown to be asteroidal grains by their chemistry and mineralogy, but they are mixed with contaminant particles from the spacecraft. Thus, instead of returning several grams of sample, Hayabusa has returned less than a milligram of sample. Nevertheless, these are the first direct samples of an asteroid and their geological context is well

**Sample List - Windows Internet Explorer**

http://hayabusa.jsc.nasa.gov/samples/

**Sample List (Instructions)**

**Notice**

The available/non-available status (unatched/fatched) of the samples returned from the Initial Analysis might be subject to change until the end of Feb. This is because the Curator has not yet completed the sample quality check for returned samples. No change will be made after 1 March until the submission deadline of 7 March. If you are interested in making further detailed analysis of those samples, please make sure that you inspect the final Catalog to ensure all potential opportunities.

**Parent**

ID of the parent body before the breakup or division.

**Status**

ISO: tax: name of the slide glass sample holder (\*\*) and address on the slide glass (not at curator facility (available))  
 NO-SP: name of the NO-SP container storage at curator facility (available)  
 DSGLO: diaphragm slide glass  
 PS: polished section  
 PB: pointed butt of TBN acid  
 UTE: ultra thin section  
 UN: Ultrathin section  
 FIB: Focused Ion Beam  
 CONTAINED: contained during initial analysis (not available)  
 BROKEN: broken into several pieces unexpectedly (not available)  
 DIVIDED: sliced or divided in initial analysis (not available)  
 (Others): provided to the initial analysis (currently not available)

**Category**

1. particles showing only homogeneous silicate compositions
2. particles showing heterogeneous silicate and other mineral: such as metals, sulfides and oxides etc.
3. particles showing mainly carbon (not available)
4. particles possible artificial material compositions such as Al, quartz glass, stainless steel and etc. (not available)

**Phase**

Determined by TBN at Curator facility or determined by initial analysis (with [ ])

**Initial Analysis**

Mineral: Euhedral, ISLA  
 Phase: Kricheldorf, Jaxa-CT, CLP, DSD  
 Hironaka, Nishida, HPLC, TOP, SIDS  
 Tetsuo, Nakamura, XRD, FE-SEM, EDS, EDS  
 Takaki, Noguchi, TEM  
 Kikuchi, Nishida, Nishida, Jaxa-CT  
 Akita, Tsuchiyama, CT  
 Hirokoshi, Yamamoto, SIDS  
 Eto, Nakamura, SEM, EDS, EDS, EDS, EDS

**Label**

JAXA: provided to JAXA AO  
 PROTECT-S: not available because of size (smaller equal 10 µm)  
 PROTECT-B: not available because of size (larger equal 100 µm)

Sample name	Parent	Status	Size	Category	Phase	Initial Analysis	Label	References
EDS RA-QD01-0001	-	Initial analysis	75µm	3	CO, CN, AL	-	-	-
EDS RA-QD02-0001	-	Curator NO-SP, PS with C-coat, FIB hole	70µm	1	[sil, cl, pt]	CT, XRD, FE-SEM, EDS, EDS	-	[6]
EDS RA-QD02-0002	-	Curator NO-SP, PS	149µm	1	[cl, pt, sil, hgn, m, tan, hms]	CT, XRD, FE-SEM, EDS, EDS	-	[2][7]
EDS RA-QD02-0003	-	REMOVED	75µm	-	-	-	-	-
EDS RA-QD02-0011-01	RA-QD02-0011	Curator NO-SP, PS with Au coat, almost contained	44.8µm	1	[hgn, sil]	CT, XRD, FE-SEM, EDS, EDS	-	[2]
EDS RA-QD02-0011-02	RA-QD02-0011	Curator NO-SP, PS	80.4µm	1	[cl, sil, hgn, tan]	CT, XRD, FE-SEM, EDS, EDS	-	[7]
EDS RA-QD02-0012	-	Curator NO-SP, PS	100µm	3	CO, PS	-	-	-
EDS RA-QD02-0013	-	Curator NO-SP, PS	81µm	2	[cl, pt, hgn, sil, tan]	CT, XRD, FE-SEM, EDS, EDS	-	[2]

# Sample Requests

- Thus far NASA has received 3 sample requests and JAXA has 31
- The JAXA requests were considered in June and 14 requests were approved. JAXA will consider requests on an annual basis
- The NASA requests are now being considered by the dedicated CAPTEM sub-Committee. Requests will be considered on a continuing basis
- JAXA's sample allocations have now begun