

JAXA Space Science 2021

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or

*Hayabusa2 has taken us up here.
Where will we go from here?*

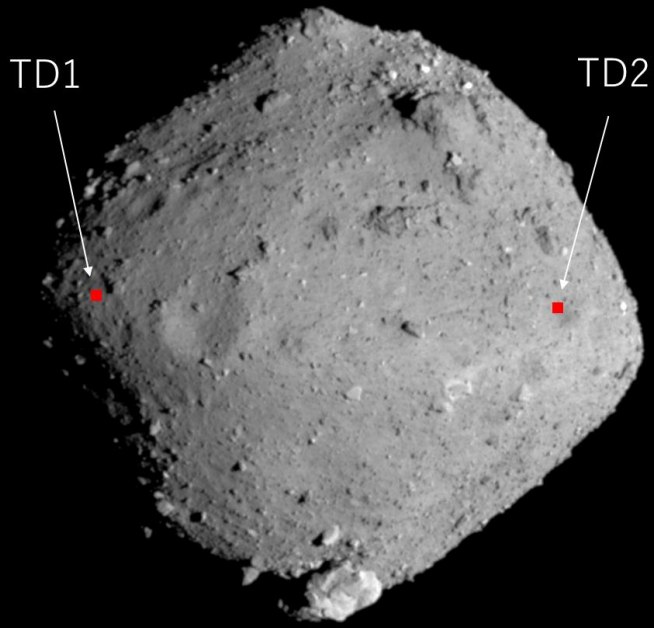
Why Ryugu?

What was the role of C-type asteroids in delivering volatiles to the Earth?



Hayabusa2 SRC

Landing
in Woomera,
Australia



Opening of the sample container at ISAS Astro-material Curation Facility



5.4g in total

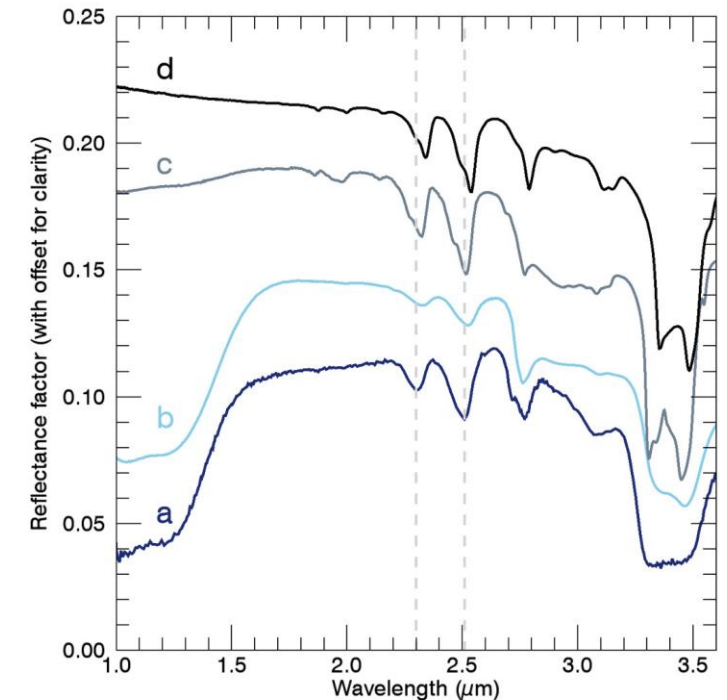
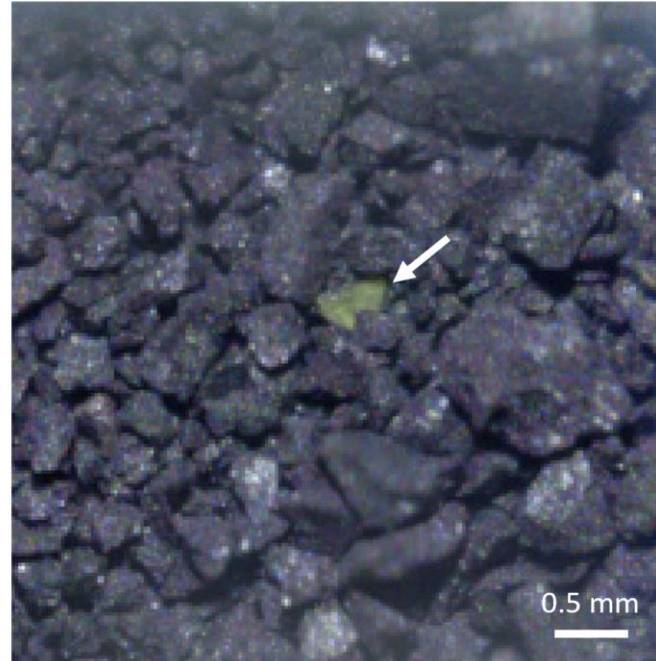


Initial curation activity



The value of the samples guaranteed already by the initial curation activity

- Hydrated minerals
- Organic compounds
- CI chondrite
- Carbonate

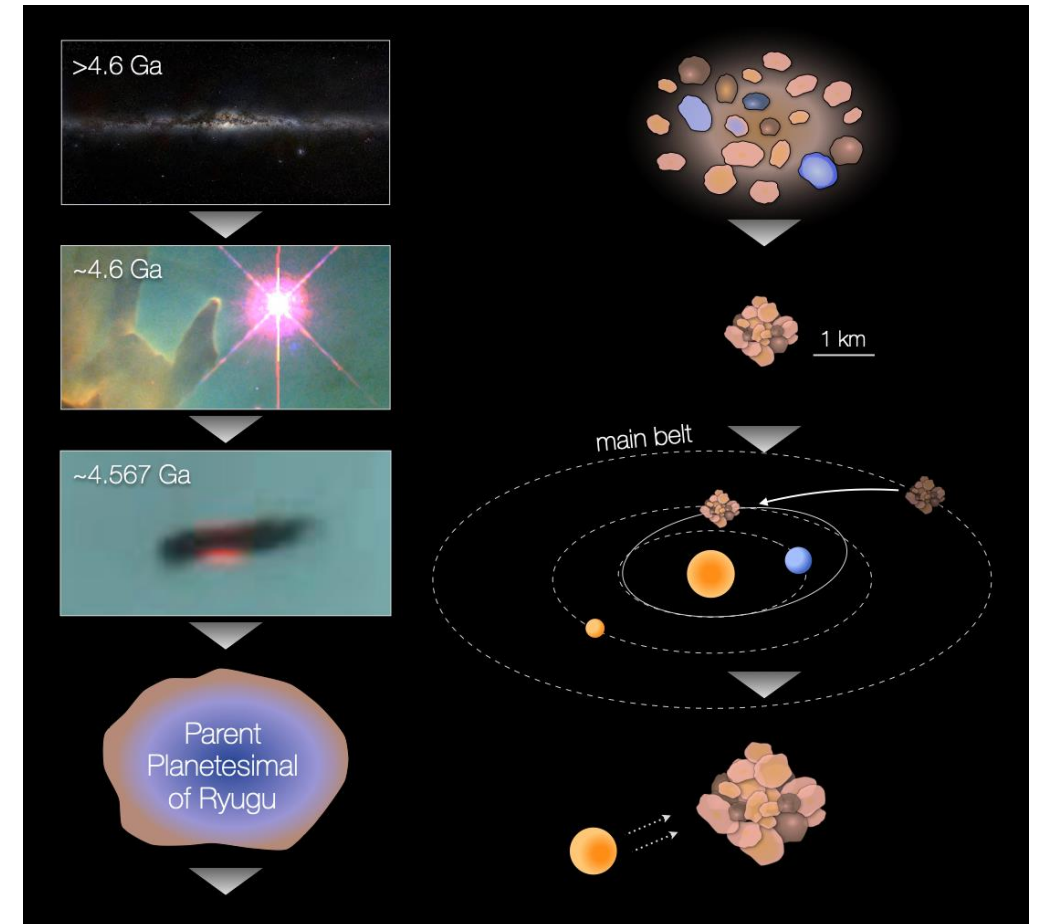


MicrOmega, an IR imaging spectrometer provided by CNES, has been a very powerful workforce for the initial curation activity.

Initial analysis activity

- Detailed analysis according to the science themes fixed prior to launch.
- Showcase the science potential of Ryugu samples.
- Results to be published soon (under review now)

What is C-type asteroid made of?
How did Ryugu form and evolve?
What does Ryugu record about the Solar System history?
What was the role of C-type asteroids in delivering volatiles to the Earth?



AO for sample analysis proposals



Ryugu Sample Database System

[About](#)[Usage](#)[DOI](#)[Sample Request \(Ryugu Sample AO System\)](#)[DARTS](#)

Display style



table



thumbnail

items per page

25

50

100

image size

small

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medium

add columns

[+ condition](#)[+ category](#)[+ label](#)[+ FTIR](#)[+ MicroOmega](#)[+ color ratio](#)[Reset \(default style\)](#)

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	AO allocation x	chamber x	name x	form x	photo x	microscope x	size(μm) x	weight(mg) x	link/download x
☐	available	A	A0001	particle			5130	18.1	all description data folder FTIR(csv)
☐	n/a	A	A0002	particle			4092	19.3	all description data folder FTIR(csv) MicroOmega(csv)
☐	available	A	A0003	particle			4307	19.6	all description data folder FTIR(csv)

Phase-2 curation activity domestic

- Given the rich nature of the samples, effort for continuously updating the entry to the sample catalogue would be necessary.
- Two institutes in Japan, which are equipped with full lined-up collections of machines for material science, have been appointed by ISAS and are collaborating with ISAS Astro-material Curation Group to perform this activity.



Phase-2 curation activity abroad

The results so far make us expect the following two branches would be the best areas to invest P2C effort into.

- **Ryugu-Bennu comparative** sample analysis → Provide O-REx team with Ryugu samples in the P2C framework.
- **Towards MMX** → Provide European community with Ryugu samples in the P2C framework.

JAXA small body exploration: *Way ahead*

- **Leadership role in sample curation:** P2C
- **Sample return:** Hayabusa2, MMX and beyond.
- **Flyby** missions utilizing **small spacecraft:**
DESTINY+, Comet Interceptor (contributing a 24U-cube sat to the ESA-led mission)
- **Planetary Defense:** Hayabusa2#,
HERA (contributing a TIR-imager to the ESA-led mission that will follow-up NASA DART)

