

DEVELOPMENT OF THE CURATORIAL DATABASE AND THE AO SUBMISSION SYSTEM FOR HAYABUSA2-RETURNED SAMPLES. M. Nishimura¹, T. Yada¹, M. Abe¹, A. Nakato¹, K. Yogata¹, A. Miyazaki¹, K. Nagashima¹, K. Kumagai², K. Hatakeda², Y. Hitomi², H. Soejima², T. Okada¹, T. Usui¹ and S. Tachibana^{1,3}, ¹Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA), Kanagawa 252-5210, Japan (nishimura.masahiro2@jaxa.jp), ²Marine Works Japan Ltd., Yokosuka 237-0063, Japan, ³Univesity Tokyo Organization for Planetary and Space Science (UTOPS), Tokyo 113-0033, Japan

Introduction: The JAXA's Hayabusa2 spacecraft explored C-type near-Earth asteroid (162173) Ryugu, collected samples from the surface of the asteroid, and successfully returned them in its reentry capsule on December 6, 2020. The capsule was transported to the curation facility in JAXA, Sagami-hara, to treat the samples in the clean chamber system dedicated to Ryugu samples. The samples exceeding 5 grams in total were safely extracted from two chambers of the sample container inside the capsule [1, 2].

After a six-month preliminary examination without exposure to the air by the JAXA Astromaterials Research Group (ASRG), a part of Ryugu samples have been studied by the initial analysis team led by the Hayabusa2 project [1, 2]. Some samples have also been characterized by Phase-2 curation teams outside ASRG.

The rest of the samples are continued to be investigated in the clean chamber to be catalogued in [a curatorial database system \(DBS\)](#), which archived to the community for the announcement of opportunity (AO). In this presentation, we report the purpose and characteristics of the curatorial DBS for Ryugu samples (Ryugu Sample DBS) and [the Ryugu Sample AO system \(Ryugu Sample AOS\)](#) (Figs. 1 and 2.).

Development of the Ryugu Sample DBS: The Ryugu Sample DBS has been designed and built to provide the research community with the Ryugu sample catalog and to help the researchers make the sample request through the announcement of opportunity. The concept design of the Ryugu Sample DBS was made in mid 2019 based on the lessons-learned from the operation of DBS for Itokawa samples (Itokawa DBS) [3]. A mockup was first made to check the web interface and the user-friendliness of the system in early 2020. The database system was then developed based on the feedback from the mockup review in Oct. 2020. The system has been used by limited members for further feedback, and a major update was made once, A supplemental system such as a data input system was also developed. The Ryugu Sample DBS is run using open-source technologies, such as PHP, PostgreSQL, and Apache, and data servers on [Data ARchives and Transmission System \(DARTS\)](#) at ISAS/JAXA.

Characteristics of the Ryugu Sample DBS: The Ryugu Sample DBS provides the information on each

individual grain (typically larger than 1 mm along the longest dimension) and on aggregate samples. Because of the presence of large amounts of fine particles (relative to Itokawa particles), fine grains are planned to be examined as an aggregate sample put in a single dish. The basic information listed in the DBS includes photomicrographs, weight, size, and spectroscopic data, all of which are obtained in the clean chamber system without exposure to the air. The spectroscopic data can be downloaded with the CSV format. Along with such basic information, the analysis history and data obtained in previous analysis can also be found for each sample. The data obtained by the project-led initial analysis and that from curation work outside JAXA will also be archived in the future.

AO and the Ryugu Sample AOS: The 1st AO program for the research of Ryugu samples started last December. Proposal submission period is now open to anyone who is interested in these samples on the Ryugu sample AOS (submission due is mid-April). Samples for some successful proposals will be distributed in June, this year.

Acknowledgments: The Ryugu DBS and the AO system was developed by Youworks Co., Ltd. Servers of the Ryugu DBS are being operated by [the Center for Science-satellite Operation and Data Archive \(C-SODA\)](#) at ISAS/JAXA.

References: [1] Tachibana S. et al. (submitted) *Science*. [2] Yada T. et al. (2021) *Nat. Astron.*, <https://doi.org/10.1038/s41550-021-01550-6>. [3] Uesugi M et al. (2016) *Journal of Space Science Informatics Japan*: Vol 5, 59-70.

Ryugu Sample Database System

About Usage DOI Sample Request (Ryugu Sample AO System) ASRG DARTS JAXA

Search results Cart

Total : 443 Search Results : 443 hits

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AO allocation	chamber	name	form	photo	microscope	size(μm)	weight(mg)	link/download
n/a	A	A0001	particle			5130	18.1	<ul style="list-style-type: none"> all description data folder FTIR(csv)
n/a	A	A0002	particle			4092	19.3	<ul style="list-style-type: none"> all description data folder FTIR(csv) MicrOmega(csv)
n/a	A	A0003	particle			4307	19.6	<ul style="list-style-type: none"> all description data folder FTIR(csv)

Announcement of Opportunity for Hayabusa2 Samples

Key milestones

- Call for proposals for the 1st AO: December 17, 2021
- Ryugu sample database launch: mid January, 2022
- Notice of Intent to propose (mandatory): Due mid March, 2022
- Sample request submission: Due mid April, 2022
- Decision announcement: Late May, 2022
- Sample distribution: June, 2022
- Call for proposals for the 2nd AO: June, 2022

Registration
(Coming soon)



Login
(Coming soon)



The Astromaterials Science Research Group (ASRG) of JAXA calls for proposals for Hayabusa2 returned samples! For the first announcement of opportunity, ~50 particles that are individually described in a non-destructive way inside the clean chamber will be available. The typical size of the particles is 1-2 millimeters. The particles have not been exposed to the air after their recovery from the sample container. The available particles are marked in the database, which will be launched in January. All proposals will be subjected to peer review, and allocated samples to successful proposers will be available for a period of one year.

Guidebook for proposal
(Coming soon)



Ryugu sample database
(Coming soon)

