

# World's first gas sample from deep space confirmed

December 15 2020

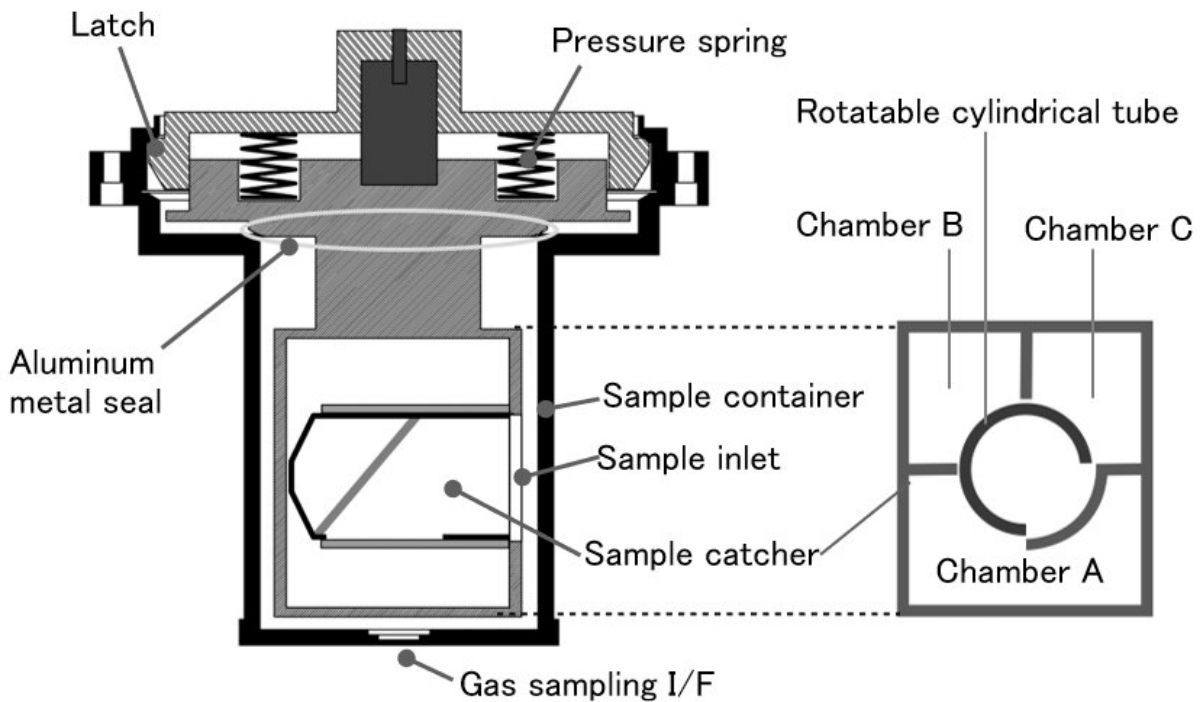


Figure 1: Sample container structure Credit: JAXA

The Japan Aerospace Exploration Agency (JAXA) has confirmed that the gas collected from the sample container inside the re-entry capsule of the asteroid explorer, Hayabusa2, is a gas sample originating from asteroid Ryugu.

The result of the mass spectrometry of the collected gas within the sample container performed at the QLF (Quick Look Facility) established at the Woomera Local Headquarters in Australia on December 7, 2020, suggested that the gas differed from the atmospheric composition of the Earth. For additional confirmation, a similar analysis was performed on December 10-11 at the Extraterrestrial Sample Curation Center on the JAXA Sagami-hara Campus. This has led to the conclusion that the gas in the sample container is derived from asteroid Ryugu.

The grounds for making this decision are due to the following three points.

- Gas analysis at the Extraterrestrial Sample Curation Center and at the Woomera Local Headquarters in Australia gave the same result.
- The sample container is sealed with an aluminum metal seal and the condition of the container is as designed, such that the inclusion of the Earth's atmosphere was kept well below the permissible level during the mission.
- Since it was confirmed on the Sagami-hara campus that gas of the same composition had been generated even after the removal of the container gas in Australia, it is considered that the collected gas must be due to the degassing from the sample.



Figure 2: Equipment for gas analysis brought to the Woomera Local Headquarters in Australia. Credit: JAXA



Credit: JAXA

This is the world's first sample return of a material in the gas state from [deep space](#).

The initial analysis team will continue with opening the [sample container](#) and performing a detailed [analysis](#) of the molecular and isotopic composition of the collected gas.

Provided by JAXA

Citation: World's first gas sample from deep space confirmed (2020, December 15) retrieved 2 July 2024 from <https://phys.org/news/2020-12-world-gas-sample-deep-space.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.