

## Development of CRDS (Cavity Ring-down Spectroscopy) aiming water isotope measurements on the moon

Chihiro Yamanaka<sup>1</sup>, Ko Hashizume<sup>2</sup>, \*Junpei Murayama<sup>1</sup>, Naoya Tasaka<sup>1</sup>

1. Graduate School of Science, Osaka University, 2. Department of Science, Ibaraki University

Existence of water on the moon surface is one of the most interested topics in the moon explorations. Recently, lots of discussions have been held about availability of water resource on the moon. Besides, the origin and hydrology of moon water is also important. For this purpose, we need isotope analyses of moon water. Unless we find the good amount of water reservoir, the sample should be small amount and we need to measure it on site to prevent the contamination of earth water.

We have been studying to launch a laser isotope measurement system to the moon. CRDS (Cavity Ring-down Spectroscopy) is a powerful method for this purpose because of its accuracy with light weight and power saving characters. Currently, we have been testing a table top device with the sample cell of 50cm in length before building a shorter flight model, and achieved accuracy of 100 ‰, which is almost the same as the required D/H accuracy. By adding stability against vibration and temperature variation, we can expect better stability for water isotope measurements including oxygen isotopes.

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