

Curation works for the Hayabusa samples and development for Hayabusa2 sample curation facility

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Hayabusa spacecraft successfully returned its reentry capsule including regolith samples of S-type asteroid Itokawa to the Earth in 2010 [1, 2]. Their preliminary examinations revealed that they are similar to equilibrated LL chondrite [3]. JAXA astromaterial sample research group (ASRG) conducted international announcement of opportunity (AO) for Hayabusa-returned samples twice from FY2012 to FY2013. With the two AOs, 32 research proposals have been selected for sample allocations and 112 particles have been distributed to them [4]. Based on results of their researches, it is figured out that space weathering rims on regolith particles are less developed in those from the first touchdown place than the second one [5] and the gas retention age of three Itokawa particles was determined as 1.3 billion years by ^{40}Ar - ^{39}Ar dating, which is considered to reflect the age just before or during the catastrophic impact event on the precursor body of the present asteroid Itokawa [6]. The ASRG conducted the 3rd international AO for Hayabusa-returned samples in FY2015. 12 research proposals were selected for sample allocation in Jun 2015, 44 particles for 11 proposals have been distributed until Jan 2016 as we started their distributions in Aug 2015. We are now planning to start international AO in which we will always accept research plan in FY2016. Simultaneously, the ASRG has developed a specification of curation facility for returned samples by Hayabusa2, which was launched in Dec 2014, under the supervision of the specification developing committee for Hayabusa2 sample curation facility [7]. Hayabusa2 will reach C-type asteroid Ryugu in 2018, execute remote-sensing observation, impact crating experiment, and three-times sample collections in a year and half operation there, and return the collected samples to the Earth in Dec 2020. In the committee, we are discussing performances and functions of instruments and facilities in order to start their functional checks and rehearsals for returned sample acceptance in FY2018. We are now considering to equip a function to recover and preserve a certain amount of samples from the sample catcher in vacuum condition. We consider that we will start construction of facilities for Hayabusa2 as early as FY2016.

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