

Present status of international announcement of opportunity for research of Hayabusa-returned samples

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Since Hayabusa spacecraft returned its reentry capsule to the Earth in June 2010, particles captured in its sample catcher have been recovered and described initially by an optical and an electron microscope [1].

Some parts of the described particles were distributed to the Hayabusa sample preliminary examination team (HASPET) and analyzed for their chemistries, tomographies, mineralogies, and oxygen isotope compositions to be indicated that they were comparable to equilibrated LL chondrites [2-5]. They were also analyzed by a transmission electron microscope (TEM) and showed amorphous textures on their surface layers caused by space weathering [6]. Additionally, they were analyzed by a noble gas mass spectrometer and clarified that they had been exposed to solar and galactic cosmic ray and their duration were supposed to be short as less than 3Ma [7]. All of these results indicate that the silicate particles recovered from the catcher originated from the asteroid Itokawa.

Total number of recovered and initially described particles counts up to 430 thus far. Three fourths of them are silicate particles, which are supposed to be originated from Itokawa. We have not recovered particles totally from the catcher yet, and are planning to finish total sample recovery in the middle of fiscal year of 2015.

Based on the memorandum of understanding agreed with NASA, 15% of the recovered samples should be distributed for international announcement of opportunity (AO) for research. JAXA organized the international AO committee and the committee published the first international AO from Jan. to Mar. in 2012. 17 research groups from seven countries were selected for the AO research in Jun. 2012 and totally 65 Itokawa particles had been distributed to them until Nov. 2012. Thus far, they are under investigation and their results will be presented in the first Symposium of Hayabusa, extraterrestrial material and exploration, planning to be held in JAXA Sagami-hara campus in Oct. 2013. And the second international AO has been published from Jan. to Mar. 2013. Selected research groups will be announced in Jun. 2013, and their sample distribution will be performed until the end of Aug. 2013.

References: [1] Yada T. et al. (2013) *Meteoritics Planet. Sci.*, in print. [2] Nakamura T. et al. (2011) *Science*, 333, 1113. [3] Yurimoto H. et al. (2011) *Science*, 333, 1116. [4] Ebihara M. et al. (2011) *Science*, 333, 1119. [5] Tsuchiyama A. et al. (2011) *Science*, 333, 1125. [6] Noguchi T. et al. (2011) *Science*, 333, 1121. [7] Nagao K. et al. (2011) *Science*, 333, 1128.

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