

A Consortium Study for HAYABUSA Returned Samples: Fe-Ni Metal and FeS Particles.

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Introduction: Hayabusa returned samples have been shown as Itokawa origin by the preliminary examinations [e.g. 1-6]. Furthermore, international AO study has begun last year, and a formation process of asteroid Itokawa is becoming revealed.

Hayabusa returned samples are described initially by JAXA Extraterrestrial Sample Curation Team (ESCuTe), and a sample catalogue is prepared based on the data of initial description [e.g. 7]. The samples are classified into four categories so far. A number of samples of each category to be distributed for international AO are decided based on the sample catalogue. But it is difficult to distribute such samples with rare characteristics in composition, mineralogy, structure, or size, although those samples should maintain scientifically important information.

Therefore, in JAXA, ESCuTe started to organize the consortium studies in order to obtain the scientific information as many as possible from these samples [8,9,10]. In this paper, we report the research plan for the particles mainly composed of Fe-Ni metal or FeS in the consortium studies.

Particles mainly consisting of Fe-Ni metal or FeS: The particle, RB-CV-0058, consists mainly of Fe-Ni metal (>70 μm) with much smaller pyroxene grains attached to its surface. And the particle, RA-QD02-0245, consist mainly of FeS (~40 μm) with smaller olivine and pyroxene grains embedded in the FeS. We believe that chemical composition of these particles should be analyzed. Especially, the siderophile element composition gives us information on the formation process of Itokawa parent body.

And we believe that isotopic ratios of oxygen, silicon, boron, and noble gases should be also analyzed. It is thought that the isotopic ratios of these particles in which silicates or oxides are rarely included show that of the solar wind.

If you will propose your research plan to the consortium study, please contact the correspondence author and/or curator; curator@planeta.sci.isas.jaxa.jp.

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