A CONSORTIUM STUDY FOR A SILICA-CONTAINING PARTICLE OF HAYABUSA-RETURNED SAMPLES.

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Introduction: More than 500 particles of the Hayabusa-returned samples from S-type asteroid Itokawa were catalogued at Extraterrestrial Sample Curation Center (ESCuC) of JAXA, so far [1]. Preliminary examinations revealed that these particles were comparable to equilibrated LL chondrite [e.g. 2, 3].

Some of the Hayabusa-returned samples, which show unique characteristics in mineralogy, composition, structure, and/or size, are difficult to be allocated for International AOs. In order to obtain maximum scientific results from such particles, consortium studies have been conducted by team of ESCuC [4-6]. In this paper, we report an overview and a tentative research plan for a new consortium study of particle RB-QD04-0069 that is contains silica. Silica forms many polymorphs, thus, investigation of the particle will constrain the pressure and temperature of shock metamorphism on asteroid Itokawa.

Particle RB-QD04-0069: RB-QD04-0069 is a particle with 33 μm in size recovered from the Hayabusa sample catcher. Initial description by SEM-EDS showed that the particle consists of olivine, pyroxene, plagioclase, and silica. So far, this is the only particle containing silica with other silicate minerals among catalogued Hayabusa-returned samples. Silica is widespread in ordinary chondrites, but is rare (usually < ~1 vol %) [7]. Therefore, this particle is precious and should be investigated by consortium study.

Research Plan: Synchrotron radiation (SR) XRD analysis is planned to obtain crystallographic information of silica and other silicate minerals. Textural information will be obtained by SR XCT imaging. We are also planning to cut the particle by FIB technique and distribute the pieces to further analysis. Oxygen isotope ratio will be measured by SIMS to indentify the origin of the particle. Furthermore, FE-EMPA analysis and TEM observation on silica and other silicate minerals will provide important information for understanding shock and thermal history of the particle. The research plan is tentative and we welcome research plan proposals to this consortium study.

References: [1] Yada et al. (2015) 78th *MetSoc,* #5215, [2] Nakamura et al. (2011) *Science* 333, 1113. [3] Yurimoto et al. (2011) *Science* 333, 1116. [4] Yada et al. (2014) *LPS XLIV* #1759. [5] Uesugi et al. (2014) *77th MetSoc* #5226 [6] Karouji et al. (2014) *77th MetSoc,* #5240. [7] Hezel et al. (2006) *GCA*, 70, 1548.