QUARTZ PLATES IN THE HAYABUSA SAMPLE CONTAINER: EVIDENCE FOR STAINLESS STEEL CONTAMINATION.

K. Nishiizumi[1], K. C. Welten[1], and M. W. Caffee[2]. [1]Space Sciences Laboratory, Univ. of Calif. Berkeley, CA 94720-7450, USA (e-mail: kuni@ssl.berkeley.edu), [2]Dept. of Physics, Purdue Univ., West Lafayette, IN 47907-2036, USA.

Introduction: Hayabusa Sample Container, ICF70 was used to transfer Hayabusa sample to the PI. Each Hayabusa grain is placed in a ~1 mm diameter within a synthetic quartz glass plate and covered by another quartz plate. The quartz plates were cleaned extensively in JAXA's clean curation facility [1, 2]. After receipt of the sample, we inspected the sample and the area around the sample and hole with a microscope before opening the container. We noted the presence of some small grains, ~10s of micrometer in size, between the two quartz plates, but outside of the sample hole.

Examination of Quartz Plate: After removing the Hayabusa sample, RA-QD02-0188, weighing 0.9 µg, from the hole within the quartz plate the major chemical composition and the cosmogenic ^{10}Be and ^{26}Al were measured [3]. The hole was then washed with a few drops of Milli-Q water; the H_2O was recovered and placed in a Teflon vial (as "Hole" in table 1.) The hole and its vicinity (~1 cm^2) on the quartz plate was then washed with 2 drops of 1.5 N HNO_3 3 times and rinsed with 2 drops of Milli-Q water 3 times. These solutions were combined in a Teflon vial (Plate wash in Table 1.) All procedures were performed on a clean bench.

Results: The concentrations (ng) of Mg, Mn, Fe, Co, and Ni in both solutions were analyzed by ICP-MS. The results are shown in Table 1 along with the chemical analysis of the dissolved RA-QD02-0188 and two grains of Kilabo LL6 chondrite. The chemical analysis of each wash solution indicates substantial contamination of the quartz plate. Low Mg and high metal, Fe, Co, and Ni in both washed solution indicate that the source of contamination is likely stainless steel rather than silicate. Since we used only Ti tweezers, the contamination must have been introduced before transferred the container to us. This type of contamination problem has been previously reported [1]. We will measure cosmogenic nuclides in wash.

Table 1. Chemical composition (ng) of Hayabusa and container wash.

Sample	Mg	Mn	Fe	Co	Ni	Fe/Mn
RA-QD02-0188	82	1.4	123	0.6	4.6	85
Hole	**4**	**0.2**	**260**	**1.8**	**2.2**	**1080**
Plate wash	**8**	**2.2**	**95**	**0.2**	**7.6**	**44**
Kilabo-1 (1.5µg)	247	4.7	326	0.1	1.4	69
Kilabo-2 (2.6µg)	244	5.0	279	0.7	1.7	56

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References: [1] Karouji Y. et al. 2014. *Chikyukagaku* 48:211-220. [2] Ishibashi Y. et al. 2012. *Lunar and Planetary Science* 43:#2887. [3] Nishiizumi K. et al. 2015. *Lunar and Planetary Science* 46:#2499.