

**A TEST OF IMAGE PROCESS PROCEDURES OF
ASTEROID IMAGING CAMERA BY USING ITS
PROTOTYPE MODEL OF HAYABUSA (MUSES-C).**

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Introduction: Japanese Asteroid mission HAYABUSA (MUSES-C) was successfully launched at May 9th, 2003, and has been flying steadily towards a S-type asteroid "ITOKAWA". Although one of the main purpose of this mission is to bring back a sample from "ITOKAWA", but to get its surface information by using multiband camera (AMICA: Asteroid Multiband Imaging CAmera) and other instruments are also important [1][2]. We AMICA team has been examining its performance and data process procedures. For this purpose, we took the multiband images of several meteorites using AMICA Prototype Model (PM) in a laboratory.

Method and Instruments: AMICA PM has 7 filters which is similar to ECAS (Eight Color Asteroid Survey) systems. The center wavelength position of 7 filters are; 0.38 μm (ul-band), 0.42 μm (b-band), 0.54 μm (v-band), 0.7 μm (w-band), 0.86 μm (x-band), 0.94 μm (p-band) and 1 μm (z-band). We prepare the chips of 4 meteorites (Allende, Tuxtiac, Ingella Station and Gibeon). About 1-inch sized meteorites are molded in epoxy and sliced, then grounded by #600 and #1000.

Processed Images: Original data are normalized to DN/msec, and divided by STD (SpectralonTM) for cancellation of CCD response and light source energy curve. From these processed data, we made a simulated true color composite image (RGB: w-band, v-band, b-band) and color ratio map [3] to examine the performance of AMICA PM. Color difference of each meteorite sample are confirmed by true color composite image. Chondrules and matrix in the Allende can be distinguished in color ratio map of b-band / w-band. This result will support us for construction of image processing procedures for ITOKAWA observation.

References: [1] Kawaguchi J. and Uesugi K. 1999. IAF-99-IAA.11.2.02, 50th International Astronautical Congress, 1-9. [2] Nakamura T. et al. 2001. Earth Planets Space 53:1047-1063. [3] Pieters C. M. et al. 1994. Science 266:1844-1848.