

A status report about the observation of some stars by Asteroid Multiband Imaging Camera (AMICA) of Hayabusa (MUSES-C)

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Muses-C is the first Japanese asteroid mission and also a technology demonstration one to the S-type asteroid, 25143 Itokawa (1998SF36). The main objective of the mission is to acquire and verify the new technology required for a sample-return mission. The new technological items to be proved in this mission are; 1) interplanetary ion-engine performance, 2) autonomous spacecraft control, 3) sampling at the low-gravity asteroid surface, and 4) high-speed Earth reentry. From the scientific perspective, it is expected to collect surface materials of the target asteroid, and obtain geological and geomorphological information by remote sensing instruments such as multiband camera (AMICA), near infrared and X-ray spectrometers (NIRS, XES) and LIDAR.

Muses-C was launched at May 9, 2003, and renamed Hayabusa after the spacecraft was confirmed to be on the interplanetary orbit. This spacecraft has the event of the Earth-swingby for gravitational assist in the way to Itokawa. The arrival to Itokawa is scheduled on 2005 summer. During the visit to Itokawa, the remote-sensing observation with AMICA, NIRS XRS, and LIDAR are performed, and the spacecraft descends and collects the surface samples at the touch down to the surface. The captured asteroid sample will be returned to the Earth in the middle of 2007.

The telescopic optical navigation camera (ONC-T) with seven bandpass filters (and one wide-band filter) and polarizers is called AMICA (Asteroid Multiband Imaging CAmera) when ONC-T is used for scientific observations. The AMICA's seven bandpass filters are nearly equivalent to the seven filters of the ECAS (Eight Color Asteroid Survey) system. Obtained spectroscopic data will be easily compared with previously obtained ECAS data. AMICA also has four polarizers, which are located on one edge of the CCD chip (covering 1.1 x 1.1 degrees each). Using the polarizers of AMICA, we can obtain polarimetric information of the target asteroid's surface. During the cruising to Itokawa, we planned the AMICA observations of some standard stars which have been already selected and catalogued.

After the launch, the spacecraft's onboard devices were all checked out and confirmed their performances. Now the spacecraft is in the Cruising phase. Since last November, we plan the test observations of some stars and planets by AMICA joining with the NIRS team. We obtained 7-band images of Mars (November 2003), Saturn and two stars (January 2004). We could successfully obtain these four star/planet images.

Here, we briefly report these observations, and also show a current status of AMICA.