

Objectives and specification of the SELENE Multiband Imager

M. Ohtake (1), J. Haruyama (1), T. Mastunaga (2), S. Kodama (3), T. Morota (1) and Y. Yokota (1)

(1) Department of Planetary Science, Japan Aerospace Exploration Agency, (2) The National Institute for Environmental Studies, (3) Advanced Industrial Science and Technology
(ohtake.makiko@jaxa.jp / Fax: +81 42-759-8457 / Phone: +81 42-759-8541)

The Lunar Imager/ SpectroMeter (LISM) is an instrument being developed for the SELENE project that will be launched in 2007. LISM consists of the three subsystems, Terrain Camera (TC), Multiband Imager (MI), and Spectral Profiler (SP). The subsystems share some components and electronics.

MI is a high-resolution multiband imaging camera consisting of two visible and near infrared sensors. MI takes push-broom imaging data by using selected lines of area arrays. The spectral band assignments are 415, 750, 900 and 1000 nm for visible and 1000, 1050, 1250 and 1550 nm for near infrared. The spatial resolution of visible bands is 20 m, and that of near infrared bands is 62 m from the 100 km SELENE orbital altitude.

We will observe the global mineral distribution of the lunar surface in nine band images of MI. MI's high spatial resolution will also enable us to investigate small but scientifically very important areas such as crater central peaks and crater walls. Investigations of such small areas will help answer current questions such as the existence, chemical composition and source of olivine at the central peaks of some craters. The advantage of MI for this aspect is that we can remove topographic effect, which causes false reflectance values seen in the crater wall and crater central peak, by photometric correction with detailed topography.

Manufacturing and integration of MI flight model have been completed and pre-flight test assembled to the SELENE satellite is underway. Measurements of MTF, viewing vector, sensor linearity, (brief) stray light and electrical noise level were carried out after the MI integration. Measured data indicate that MI will provide sufficient MTF, low noise and low stray light spectral imaging data just as estimated in the MI designing phase. Also as a result of continuous effort, intensity of cross talk among spectral bands is kept especially low.