

Performance of a visible-InGaAs sensor onboard a lunar exploration camera

Chikatoshi Honda^{1*}, Daisuke Torii², Makiko Ohtake³, Tatsuo Kinoshita¹, Kazuto Saiki², Tomokatsu Morota⁴, Hisashi Ootake³

¹University of Aizu, ²Osaka University, ³Japan Aerospace and Exploration Agency, ⁴Nagoya University

Information of the lunar highland could help us to know the solidification of the lunar magma ocean and to estimate the internal structure of the Moon. We are now planning to develop a visible-SWIR macro camera with rock abrasion tool (RAT) which is required to establish a light-weighting for setting on a head of rover's arm. The purpose of this camera is to observe the texture of polished rock surface (grain size, shape, species, and crystal configuration) to investigate the geologic history of the rock. The target crystal grain size is about 200 μm in average diameter. We thus need a 500 x 500 pixel sensor to achieve 20 $\mu\text{m}/\text{pixel}$ spatial resolution with fields of view exceeding 100 mmphi. Spectra in the 0.8 - 1.7 μm region is important to analyze major mineral species found on the Moon. So, these requirements are achieved by a visible-InGaAs sensor which has sensitivity from visible to infrared wavelength. It is important to know the performance for using space exploration, especially, an environment at the lunar surface. We'll report the details of the examinations about a dark current test of a visible-InGaAs sensor.

Keywords: visible-InGaAs sensor, dark current