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## Scientific goals and instrument specification of a proposed macro imager for the SELENE-2 mission

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SELENE-2, the next Japanese lunar mission, is being planned by the Japan Aerospace Exploration Agency (JAXA). SELENE-2 consists of an orbiter, a lander, and a rover, but mission details, such as landing sites and instruments, are still being discussed. Our team proposed a hyper-spectral macro camera, the Lunar Macro Imager (LUMI), for the SELENE-2 mission to investigate spectral characteristics and texture of polished rock samples on the Moon.

The objective of our observation is to measure the actual modal abundance and composition of each mineral species of purest anorthosite (PAN) rock, which has recently been detected from remote-sensing data acquired by the SELENE (Kaguya) Multi-band Imager. In addition to the modal abundance and composition, we are going to observe mineralogical texture (grain size and distribution of each mineral species) of the rock that reflects their thermal and pressure histories. The mineralogical texture is also enables us to estimate composition (Fe content) of the lunar magma ocean. We focus on PAN rocks because they are possibly crustal material crystallized directly from a magma ocean on the Moon.

To achieve these objectives, we designed our instrument to obtain hyper-spectral images in wavelengths ranging from 750 nm to 1700 nm. The spatial resolutions of our cameras are 20 micron /pixel with a SN exceeding 100 (we estimated the SN of our instrument under realistic temperature conditions).

Keywords: SELENE-2, macro imager, highland crust, magma ocean