

SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 1 (2A)

Author: Prof. Tatsuaki Hashimoto

Japan Aerospace Exploration Agency (JAXA), Japan, hashimoto.tatsuaki@jaxa.jp

Mr. Takeshi Hoshino

Japan Aerospace Exploration Agency (JAXA), Japan, hoshino.takeshi@jaxa.jp

Prof. Satoshi Tanaka

Japan Aerospace Exploration Agency (JAXA), Japan, tanaka@planeta.sci.isas.jaxa.jp

Dr. Hisashi Otake

Japan Aerospace Exploration Agency (JAXA), Japan, ootake.hisashi@jaxa.jp

Dr. Masatsugu Otsuki

Japan Aerospace Exploration Agency (JAXA), Japan, otsuki.masatsugu@jaxa.jp

Dr. Hitoshi Morimoto

Japan Aerospace Exploration Agency (JAXA), Japan, morimoto.hitoshi@jaxa.jp

STUDY STATUS OF SELENE-2 MOON LANDING MISSION IN 2013

Abstract

JAXA launched Kaguya (SELENE) moon orbiter in September, 2007 and the spacecraft was successfully put into moon orbit in October. It observed moon surface or gravity field with 13 instruments and a couple of small satellites till the hard landing in June, 2009. As the next step of moon exploration, a lunar lander SELENE-2 has been considered. It lands on the moon surface and performs in-situ scientific observation, environment investigation, and research for future lunar utilization including human activity. At the same time, it demonstrates some key technologies for lunar and planetary exploration such as precise and safe landing, surface mobility and overnight staying. The lander carries laser altimeters, image sensors, landing radars for precise and safe landing. Landing legs and precisely-controlled propulsion system are also developed. The rover is designed so as to travel in wide area and observe featured terrain with scientific instruments. Some instruments require long term observation on the moon surface. We are developing survival technologies for 15-days-long night without radio-isotope energy. As scientific instruments, multi-band cameras, a microscopic camera with a grinding tool, and a very broad-band seismometer, etc. are considered. For future lunar exploration, measurement of radiation, regolith dust, and soil mechanics is also planned. The mission definition of SELENE-2 has completed in 2007 and Phase-A study has been continuing from then. From August 2009 to July 2010, Japanese government has been discussed on nation's lunar exploration strategy and summarized in a report. The report said that the first lander should land on near side of moon surface in around 2015. Because of the shortage of the government budget, however, development plan of SELENE-2 is delayed. Presently, some key technologies are studied as so-called "front-loading development". In this presentation, present study status of SELENE-2 is shown.