

SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 2 (2B)

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JAPANESE LUNAR POLAR EXPLORATION MISSION - SELENE-R -

Abstract

The Japan Aerospace Exploration Agency (JAXA) launched the lunar orbiter Kaguya (SELENE) in September 2007. Kaguya observed the Moon for one and a half years with many instruments and a couple of small satellites. As the next step of Japanese moon exploration program, a small lunar lander SLIM (Smart Lander for Investigating Moon) which aims technology demonstration of the precise landing is planned to be launched in 2019. In addition, from the viewpoint of exploring for lunar resources, especially cold-trapped volatiles in lunar polar regions, a landing mission that investigate lunar volatiles such as water ice using a rover is being studied in JAXA. The mission is called tentatively as SELENE-R. Volatile materials under the surface are expected to be useful for future human activity on the Moon, and will reveal the history of the Solar System. And also, polar region is one of the best candidates of the lunar base because of long duration sunlit. Especially, the south pole of the Moon is also interesting from the viewpoint of geological science because there is some ejecta from South Pole Aitkin basin which contains mantle material. According to the present design the spacecraft configuration consists of two major sections, a lander system with an expendable propulsion module, and a rover system optimized for lunar polar exploration. Though the main purpose of the mission is resource prospecting relating to future lunar exploitation, it is also expected to perform in-situ scientific observations and environmental investigations, such as measurement of radiation, regolith dust and soil mechanics for future lunar utilization. In this presentation, this paper details present study status of the SELENE-R mission.