

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

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KAGUYA MISSION SUMMARY

Abstract

The Moon-orbiting KAGUYA (SELENE: Selenological and Engineering Explorer) was launched in September 2007, and reached the lunar mission orbit at about 100 km altitude in October 2007. It kept 100 km circular orbit till the end of December 2008. In February 2009, it started lower altitude observation at 50 km. The mission will be terminated in May or June 2009. The primary objective of KAGUYA is to study the origin and evolution of the Moon by global mapping observation. KAGUYA carried the instruments for scientific investigation, including mapping of lunar topography and surface composition, measurement of the gravity and magnetic fields, and observation of lunar and solar-terrestrial plasma environment. The element abundances have been measured by the gamma-ray spectrometer. Alpha ray spectrometer has detected the radiation from the radon and polonium gas from the lunar surface. The mineralogical study has been conducted by the multiband-spectrum imager and the spectral profiler. The surface topographic data has been obtained by the high resolution stereo cameras and the laser altimeter. The subsurface structure was probed by the radar sounder experiment. Doppler tracking of the main orbiter via the relay sub-satellite (OKINA) when the main orbiter was in the far side was conducted to study the gravimetry and geodesy. The relay-satellite fell to the lunar surface in February 2009 as planned. The magnetometer and electron detectors have provided data on the lunar surface magnetic field. Radio sources on the two sub-satellites (OKINA and OUNA) were used to make the differential VLBI observation from ground stations. In addition to the study of the origin and evolution of the Moon, measurement of the lunar environment and observation of the solar-terrestrial plasma environment have been conducted. The high-definition TV cameras have obtained a lot of impressive movies of the Earth and the Moon surface that have been used for publicity and educational purposes. All observation data will be open to public in November 2009 and will be used as a valuable scientific data-base for the planetary scientists and lunar engineers in the world.