



## SELENE session program

- Overview of the SELENE project(Takizawa)
- SELENE mission instruments(Kato)
- Gravity field measurements(Namiki)
- SELENE data archive and open to public (Hoshino)
- Contribution of SELENE data for the Exploration (Hoshino)



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SELENE and Engineering Explorer

# Overview of the SELENE project

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# Mission Objectives

JAXA is planning to explore the moon, and SELENE is the first mission.

## Mission objectives of the SELENE

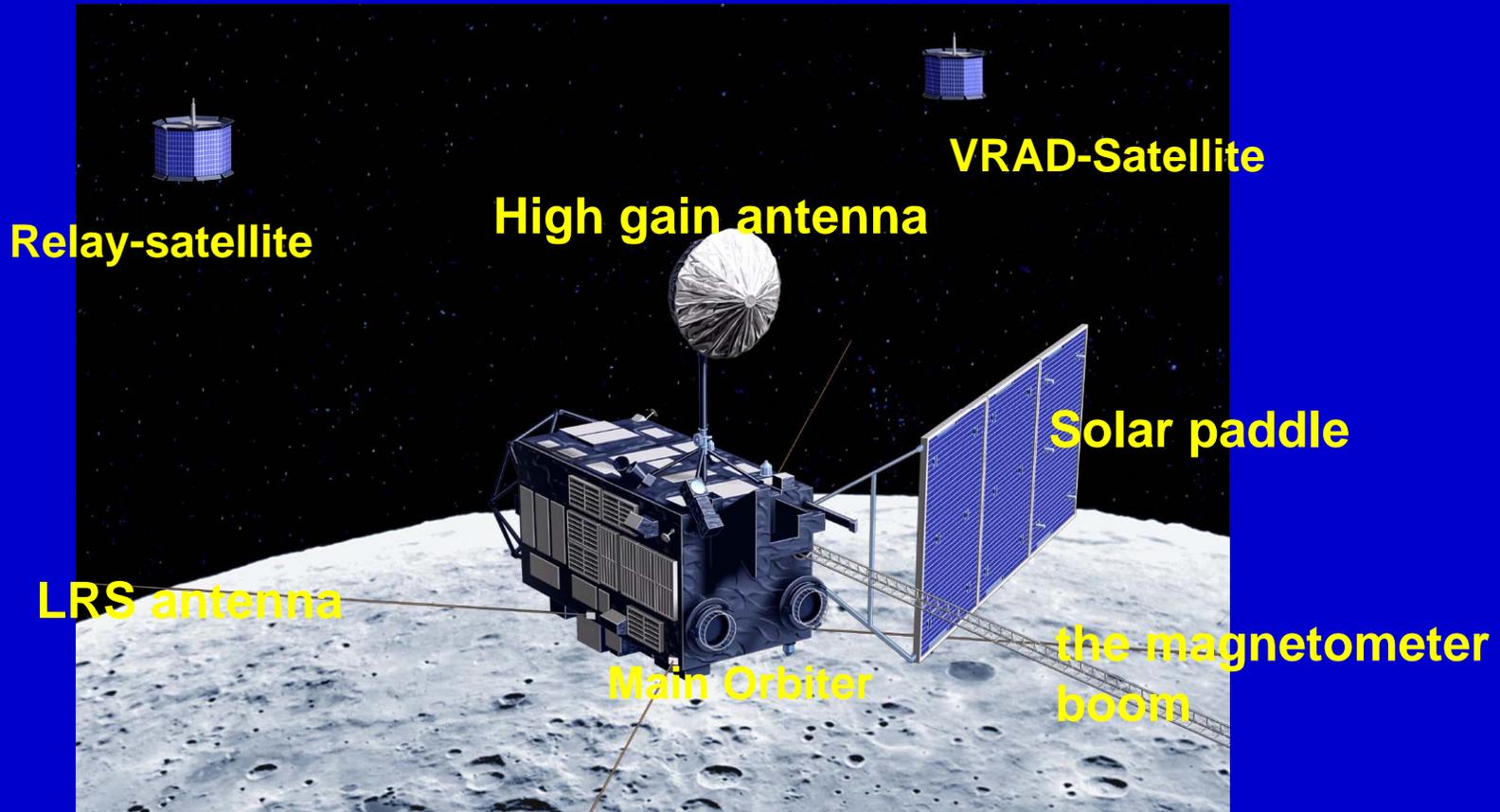
1. Global, high accurate observation for the research of the origin and the evolution of the Moon
2. The data will be used for the manned exploration and the research of the possibility of future utilization of the Moon and
3. Develop the technologies for future lunar exploration
  - Lunar polar orbit injection
  - 3-axis attitude control on the lunar orbit
  - Thermal control on the lunar orbit



# SELENE Mission Instruments

	Observation	Instrument and Characteristics
<b>Main Orbiter</b>	Chemical elements distribution	<b>X-ray Spectrometer</b> (Al, Si, Mg, Fe distribution, spatial resolution 20 [km]) <b>Gamma-ray Spectrometer</b> (U, Th, K distribution, resolution 160 [km])
	Mineralogical distribution	<b>Spectral Profiler</b> (Continuous spectral profile $\lambda = 0.5$ to $2.6$ [ $\mu\text{m}$ ], spatial resolution 500 [m]) <b>Multi-band Imager</b> (UV-VIS-IR imager, $\lambda = 0.4$ to $1.6$ [ $\mu\text{m}$ ], 9 bands, spatial resolution 20 [m])
	Surface structure	<b>Terrain Camera</b> (High resolution stereo camera, spatial resolution 10 [m]) <b>Lunar Radar Sounder</b> (apparent depth 5 [km], resolution 100 [m]) <b>Laser Altimeter</b> (height resolution 5 [m], spatial resolution 1600 [m])
	Surface & Space environment	<b>Lunar Magnetometer</b> (Magnetic field measurement, accuracy 0.5 [nT]) <b>Plasma Imager</b> (Observation of plasmasphere of the earth, XUV to VIS) <b>Charged Particle Spectrometer</b> (Measurement of high-energy particles) <b>Plasma Analyzer</b> (Charged particle energy and composition measurement)
	Imaging	<b>High Definition Television camera</b> (Images of the earth and the lunar surface, for public outreach)
<b>VRAD satellite</b>	Gravitational field distribution	<b>VLBI Radio-source</b> on the VRAD satellite (lunar gravitational field) (VRAD = VLBI RADio source)
	Environment	<b>Radio Science</b> (Detection of the tenuous lunar ionosphere)
<b>Relay satellite</b>	Gravitational field distribution	<b>VLBI Radio-source</b> on the Relay satellite (lunar gravitational field) <b>Relay Sat. transponder</b> (Far-side gravity field using 4-way range rate from ground station to Orbiter via Relay Satellite)

# On orbit configuration



## Main Orbiter

Orbit: 100km circular, polar orbit  
Total Mass: 3 [tons] (at launch)  
Size: 2.1 x 2.1 x 4.8 [m<sup>3</sup>]  
3-axis stabilization

## Daughter Satellites

(Relay-satellite, VRAD-Satellite)  
Mass: 50kg  
Size: 1m x 1m x 0.7m (Octagonal prism)  
Spin stabilized



# Status

**Under Flight model system test, Environmental tests have been finished, Will be launched in the summer of 2007**

SELENE Project and ENGINEERING Explorer



**Flight Model(+Z, +Y)**



**Flight Model(-Z, -Y)**