**KOREA'S FIRST SCIENTIFIC INSTRUMENTS ON THE LUNAR SURFACE.** Chae Kyung Sim[1], Young-Jun Choi[1], Sung-Joon Ye[2], Ho Jin[3], Jongho Seon[3], Sungsoo S. Kim[3], Minsup Jeong[1], Dukhang Lee[1], Seul-Min Baek[1], and CLPS Korea Team, [1]Korea Astronomy and Space Science Institute, 776 Daedeok-daero, Yuseong-gu, Daejeon 34055, Republic of Korea (cksim@kasi.re.kr), [2]Department of Applied Bioengineering, Graduate School of Convergence Science and Technology, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 08826, Republic of Korea, [3]Department of Astronomy and Space Science, Kyung Hee University, 1732 Deogyeong-daero, Giheung-gu, Yongin-si, Gyeonggi-do 17104, Republic of Korea.

**Introduction:** Korea Astronomy and Space Science Institute (KASI) is developing payloads to conduct scientific measurements on the lunar surface in situ as a part of Commercial Lunar Payload Services (CLPS) based on the KASI-NASA Exploration Working Group.

Attributed to the heritages of previous space missions, domestic universities and companies have commenced developing the payloads. The Ministry of Science and ICT (MSIT) of Korea supports the development, mission operation, and data analysis processes. All the science, technology, and experiences built up from this project will also help Korea's lunar landing mission.

**MSIT-funded payloads:** KASI has selected four payloads based on the scientific merits expected and the technical readiness to fly onboard two or more CLPS landers.

*GrainCams.* Two light-field cameras, SurfCam and LevCam, consists GrainCams that will explore the dust particles on and near the lunar surface [1]. SurfCam will take microscopic images of the three-dimensional structure of the highly-porous upper-regolith, also known as 'fairy castle', with its own light source to minimize the shadowed area. Onboard a rover or a similar mobile vehicle, SurfCam will take images of the regolith structure at several different places on the Moon, including the inside and outside of the landing blast zone. LevCam will detect the regolith grains levitating and lofted above the surface and take measurements of their motions. It will also measure the particles' diurnal variations and motion to estimate the electric and magnetic fields' influences. GrainCams will provide unique, intact observations of the phenomena irreproducible on Earth and cannot be preserved via a sample return mission.

*LVRad.* In preparation for future human activities on the Moon, we plan to send a suite of the radiation dosimeter, LVRad, to quantify the lunar surface's radiation environment and analyze its biological effects. Lunar Radiation dosimeter and Spectrometer (LRDS) will measure the radiation environment using a tissue-equivalent proportional counter (TEPC). Epithermal Neutron Spectrometer (NS-E) will measure the epithermal neutrons from the surface, potential evidence of subsurface water. Fast Neutron Spectrometer (NS-F) will measure the fast neutrons, which are less frequent but have a more considerable influence on a biological body. The gamma spectroscopy of NS-F will help investigate the radioisotopes of the lunar surface with a high-resolution of ~4%.

*LSMAG.* A fluxgate magnetometer, LSMAG, will measure the magnetic field on the lunar magnetic anomalies in situ. Its measurements will be useful to develop the magnetic field map of the lunar surface and to model the strength and the direction of dipole sources lie buried near the lunar surface, possibly in corporation with other magnetometers onboard orbiters of different altitudes such as ones onboard ARTEMIS, Korean Pathfinder Lunar Orbiter (KPLO), and so one. Its data will also help estimate the lunar paleo-dynamo's magnetic field strength using the magnetic field strength on the surface and corresponding direction and depth of the source. It will keep track of the magnetic field's time variation to study the space weathering of the magnetic anomaly region.

*LUSEM.* Consisted of two pairs of the two solid-state telescopes (SST), LUSEM is to detect high-energy particles of tens keV to tens MeV, such as the solar energetic proton and secondary radiation, and materials in the geomagnetic tail that have been measured mostly from the lunar orbit rather than on the lunar surface. Each pair consists of a nadir- and zenith-viewing SST to take measurements of the incoming high-energy particles and the reflected ones at the same time. Its measurements will help study the space weathering on the Moon and the transport mechanism of the geomagnetic materials to the lunar surface. Its measurements during the ascending phase of the solar cycle through the CLPS program will complement the Apollo measurements conducted during the low solar activity in the descending phase.

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**References:** [1] S. S. Kim et al. (2020) *Lunar Surface Science Workshop 2020*, Abstract #6003.