

## **PRESS RELEASE**

August 5, 2020  
Sigma Koki Co., Ltd.

### **Successful Launch of NASA Mars Rover Equipped with Optical Components of Sigma Koki**

We would like to announce a successful launch of NASA's Mars 2020 exploration rover Perseverance equipped with a remote light sensor SuperCam, which has been installed with 19 optical components manufactured by Sigma Koki Co., Ltd. (ShimotakaHagi Shinden 17-2, Hidaka, Saitama: President and CEO Yosuke Kondo, hereafter called "Sigma Koki").

The Mars 2020 rover "Perseverance" was built for NASA's latest Mars exploration mission. It launched from Cape Canaveral Air Force Base in Florida on Thursday, July 30, 2020, and is scheduled to land on the Red Planet's Jezero Crater on February 18, 2021.

Sigma Koki's subsidiaries, OptoSigma Europe and OptoSigma USA have been working in collaboration with the French Laboratory Observatoire de Paris (Paris Observatory) in France, Los Alamos National Laboratories (LANL) in Los Alamos, NM and the Jet Propulsion Laboratory (JPL) in Pasadena, California, respectively. Nearly (50) percent of the optics onboard the rover's SuperCam such as mirrors, lenses, and prisms are supplied by the Sigma Koki group, OptoSigma.

Optical components supplied by the Sigma Koki group (OptoSigma) have passed a variety of rigorous tests, such as vacuum, temperature, humidity, and heat cycles tests, conducted by external agencies specialized for testing to withstand the operation in special and harsh climatic conditions on Mars, while meeting the advanced optical requirements needed for the Mars exploration. The OptoSigma products proved to be high quality such as high durability and high stability.

Mounted on the mast head of the Mars rover, SuperCam obtains high-resolution images of various samples taken on Mars by remote color microimagers. SuperCam is equipped with a remote Laser Induced Breakdown Spectrometer (LIBS), which has been proven in the previous Mars exploration missions, Raman spectrometer, Time-Resolved Fluorescence spectrometer (TRF) and Visible and Infrared Reflectance Spectroscopy capabilities in order to investigate the elemental composition of samples such as rocks and soil.

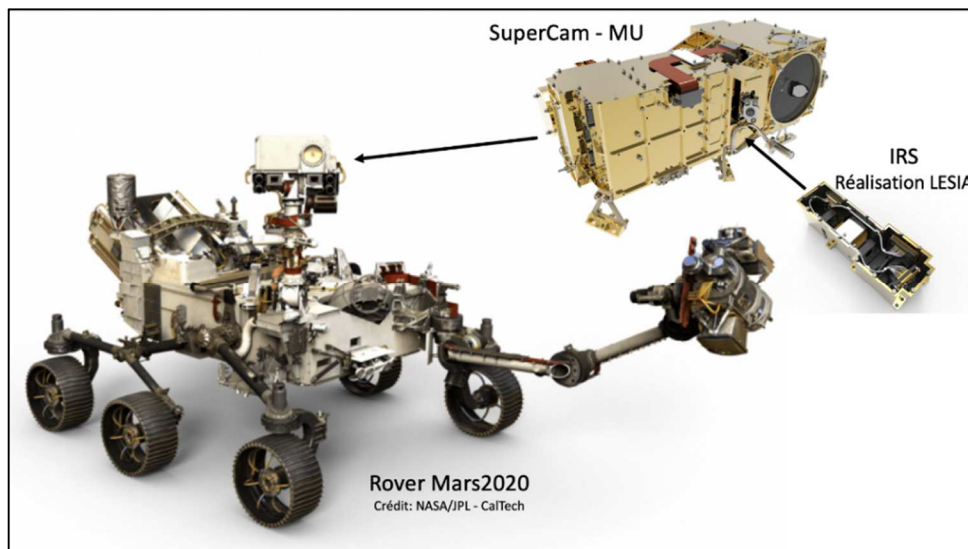


Photo credit: LESIA/Observatoire de Paris/PSL

One of the main purposes of the Mars rover Perseverance's mission is to explore and evaluate the evidence of life, such as ancient microorganisms. The second is to collect and analyze on-the-spot samples of Martian rocks and soil and send the analysis data to Earth. The third is to collect those samples, store them in a sample tube, and place them at a sample cache depot. The plan is for a future mission to bring the samples of Martian rocks and soil to Earth for the first time without being contaminated. The goal is for the scientists to use all kinds of equipment to analyze and obtain detailed results on the geology and climate of Mars by recovering these samples. Based on the results, it is expected that new technologies will be developed to overcome the challenges of future robot and manned explorations.

Utilizing the know-how gained through providing optical components to the Mars rover Perseverance, we will continue to promote the creation of new, high-quality optical components, modules and systems. As a leading company in the optical industry, we will continue to contribute to the development of optical technologies by actively engaged in joint research with industry, academia, and government.

➤ **Comments by Yosuke Kondo, President and CEO of Sigma Koki Co., Ltd., Chairman of OptoSigma Corporation:**

"I would like to express my sincere congratulations on the successful launch of NASA's Mars Exploration Rover. The Sigma Koki group (OptoSigma), whose mission is to contribute to society through the optical technology, is very proud to have been able to support scientists and researchers who are pursuing the search for the unknown with advanced optical technology. Going forward, we will continue to strengthen our manufacturing system, which would be an one-stop provider for optical components and optical units with high reliability, while expanding the possibilities of light and contributing to the advancement of cutting-edge research fields and society."

➤ **Comments by Guy Ear, CEO and President, OptoSigma Europe S.A.S. & OptoSigma Corporation:**

"Working with the world-renowned Paris Observatory, LANL and JPL on the Perseverance project is a great honor for the Sigma Koki group (OptoSigma). The project required optical components to support the various applications of highly advanced SuperCam under a special environment, proving the highly technical expertise and application capabilities accumulated in our manufacturing for more than 40 years. We look forward to many more years of fruitful collaborations. "

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Hours: 9:00 a.m. to 5:00 p.m.

(Excluding company holidays such as national holidays, year-end and New Year holidays)