Compact Reconnaissance Imaging Spectrometer Begins Mission at Mars

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The most powerful mineral-mapper ever sent to Mars has opened its protective cover and is about to begin its search for hints of past water on the red planet.

The Compact Reconnaissance Imaging Spectrometer for Mars (CRISM), designed and built by the Johns Hopkins University Applied Physics Laboratory in Laurel, Md., is one of six science instruments aboard NASA's Mars Reconnaissance Orbiter. CRISM's spring-loaded cover had been closed since the orbiter's launch in August 2005, protecting the imager's sensitive telescope optics from fuel residue and heat as the spacecraft eased into orbit around Mars. Today, a day after turning on CRISM's power and putting the device through a series of performance tests, operators opened the cover and verified that it had deployed properly.

"Everything went smoothly and our team is looking forward to our first images later this week," says Dr. Scott Murchie, CRISM principal investigator from the Applied Physics Laboratory (APL).

CRISM will look for areas that were wet long enough to leave a mineral signature on the surface, searching for the spectral traces of aqueous and hydrothermal deposits, and mapping the geology, composition, and stratigraphy of surface features. The imager will map areas on the martian surface as small as 60 feet (about 18 meters) across, with the orbiter at its average altitude of about 190 miles (300 kilometers).

Offering greater capability to map spectral variations than any similar instrument sent to another planet, CRISM will read 544 “colors” in reflected sunlight to detect minerals in the surface. Its highest resolution is about 20 times sharper than any previous look at Mars in near-infrared wavelengths. By identifying sites most likely to have contained water, CRISM data will help determine the best potential landing sites for future Mars missions seeking fossils or even traces of life.

“It’s been a long 13 months since launch, waiting throughout the aerobraking phase until we could safely expose the instrument optics,” says Peter Bedini, the CRISM project manager from APL. “The time was well used, though, as we completed the development of a very sophisticated system for collecting, processing, and distributing the data we’ll soon be taking with CRISM.”

APL, which has built more than 150 spacecraft instruments over the past four decades, led the effort to develop, integrate, and test CRISM. CRISM’s co-investigators are top planetary scientists from Brown University, Arizona State University, Space Science Institute, Washington University in St. Louis, University of Paris, the Applied Coherent Technology Corporation, and NASA’s Jet Propulsion Laboratory, Goddard Space Flight Center, Ames Research Center, and Johnson Space Center. Visit crism.jhuapl.edu for more information.

Source: Johns Hopkins University