



NEW PRODUCTS PREVIEW

NEW SAMPLE OPTIONS
Hazardous samples can now be analyzed easily

New inXitu Photo Gallery

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NEWS UPDATE

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Multi-year MSL program gets ready for takeoff

Terra's "cousin" loaded into 'Curiosity' Mars Rover

XRD instrument headed for Mars

By: Rosemary Meinert
Staff writer, inXitu, inc.

NASA's Curiosity rover, coming together for a late 2011 launch to Mars, has a newly installed component: an XRD instrument which utilizes the same technology as found in the inXitu based products.

Researchers will use Curiosity in an intriguing area of Mars to search for modern or ancient habitable environments, including any that may have also been favorable for preserving clues about life and environment.

The team assembling and testing Curiosity at NASA's Jet Propulsion Laboratory, Pasadena, Calif., fastened the Chemistry and Mineralogy (CheMin) instrument inside the rover body on June 15. CheMin will identify the minerals in samples of powdered rock or soil that the rover's robotic arm will deliver to an input funnel.

"Minerals give us a record of what the environment was like at the time they were formed," said the principal investigator for CheMin, David Blake of NASA's Ames Research Center, Moffett Field, Calif. Temperature, pressure, and the chemical ingredients present --



"CHEMIN" XRD instrument loading into MSL Rover on June 15, 2010



MSL Curiosity Rover during final assembly



Artist's conception of MSL Rover "Curiosity"

"X-ray diffraction is the gold standard for mineralogy. Anyone who wants to determine the minerals in a rock on Earth takes it to an X-ray diffraction lab"

including water -- determine what minerals form and how they are altered.

The instrument uses X-ray diffraction, a first for a mission to Mars and a more definitive method for identifying minerals

than any instrument on previous missions. It supplements the diffraction measurements with X-ray fluorescence capability to garner further details of composition.

NASA's Mars Science Laboratory mission will send Curiosity to a place on Mars

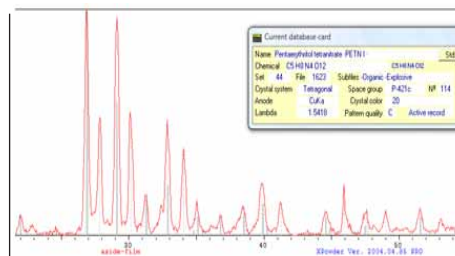
where water-related minerals have been detected by Mars orbiters. The rover's 10 science instruments will examine the site's modern environment and geological clues to its past

environments. NASA's multi-step strategy might include potential future missions for bringing Mars samples to Earth for detailed analysis. One key goal for the Mars Science Laboratory mission is to identify a good hunting ground for rocks that could hold biosignatures -- evidence of life -- though this mission itself will not seek evidence of life.

On Earth, life has thrived for more than 3 billion years, but preserving evidence of life from the geologically distant past requires specific, unusual conditions.

Some minerals detectable by CheMin, such as phosphates, carbonates, sulfates and silica, can help preserve biosignatures. Clay minerals trap and preserve organic compounds under some conditions. Some minerals that form when salty water evaporates can encase and protect organics, too. Other minerals that CheMin could detect might also have implications about past conditions favorable to life and to preservation of biosignatures.

"CheMin will tell us the major minerals there without a lot of debate," said Jack Farmer of Arizona State University, Tempe, a member of the instrument's science team. "It won't necessarily reveal anything definitive about biosignatures, but it will help us select the rocks to check for organics. X-ray diffraction is the gold standard for mineralogy. Anyone who wants to determine the minerals in a rock on Earth takes it to an X-ray diffraction lab."



Explosives, bomb making material easily identified

New application development for Terra allows Federal agencies to rapidly perform forensic analysis

By Rosemary Meinert
Staff writer, inXitu, inc.

After the devastating impact of an explosion comes the challenging process of determining the cause, and culprits. This forensic analysis, often seen on television programs, is in reality quite complex and requires the utilization of multiple scientific disciplines. Recently, inXitu has aided this process with the introduction of a variant of its field portable instrument, Terra. With this introduction, field investigators are able to rapidly identify bomb making components, fusing materials and accelerants. This rapid analysis allows investigators to react quickly and shorten the amount of time it takes to provide critical information to law enforcement bodies.

time, a recent application study resulted in the positive identification of compounds such as PETN (above). Chlorate salts and the typically challenging perchlorate salts. All in all, laboratory performance in the field.



inXitu Terra field portable XRD/XRF

Using only a 60 second analysis

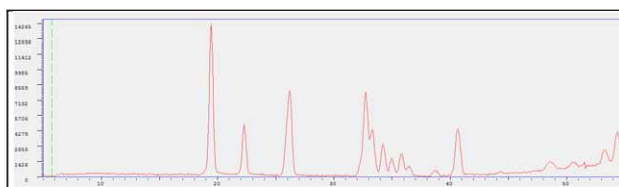
Terra used in discovery of new mineral Cranswickite

By: Rosemary Meinert
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During a recent research trip to Calingasta, Argentina, Dr. Ronald Peterson of Queen's University in Kingston Ontario made a remarkable discovery which has resulted in the recognition by the International Mineralogical Organization (IMO) of a new mineral, Cranswickite. Peterson named the mineral in honor of Lachlan M. D. Cranswick (1968-2010) who, as a crystallographer and mineralogist at the NRC Canadian Neutron Beam Centre located at Chalk River Laboratories, specialized in applying neutron beams to the studies of materials science, structural chemistry, magnetism and geology. He assisted many scientists and students from universities across Canada to apply



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X-ray diffraction pattern from Cranswickite.

these scientific tools to advance their research programs. Lachlan Cranswick was passionate about ensuring the highest quality facilities for those scientists.

The identification of the new mineral cranswickite and the identification of the associated minerals were made possible by using the inXitu "TERRA" portable X-ray diffraction instrument. All of these hydrated magnesium sulfate minerals are soft white powders and are often mixtures. The ability to distinguish these minerals while conducting field work in the remote mountains of Argentina would not have been possible without a portable X-ray diffractometer. The use of a portable diffractometer on location in the field allowed efficient study of the mineral assemblage without returning to use a laboratory X-ray diffractometer.



Photo of new mineral Cranswickite as found.

Remote support introduced. Need training from 10K miles away? No problem...

In response to continued growth, inXitu recently introduced a new comprehensive customer and distributor support section. This new "Support Center" features multiple entrances depending on the intended use. For customers, new videos, "how to guides" and user manuals can be readily found. For distributors, relevant marketing and sales support material are now available at a click of a mouse. Finally, the new Support Center features a company wide intranet, which allows the company to comply with ISO9000:2000 guidelines for document revision and control. Access the Support Center through the main inXitu website.



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