

## NASA funds SwRI instrument to date moon and Mars rocks

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NASA has approved \$2.6 million to advance development of Southwest Research Institute's (SwRI) Chemistry, Organics, and Dating Experiment (CODEX) instrument. The device will allow unmanned rovers to analyze the decay of radioactive elements to determine the age of rocks on the Moon and Mars.

"CODEX will provide unprecedented in-situ age information about surface samples, which is not only critically important to <u>planetary</u> <u>science</u> but also can be used to select which samples will be returned to Earth for more detailed analysis," said Dr. Scott Anderson, a principal scientist in the SwRI Space Science and Engineering Division.

The CODEX instrument uses a laser-desorption, time-of-flight mass spectrometer to detect elements and isotopes, including organics that could provide clues in the search for life in our solar system in addition to determining the age of rocks.

The new funding, under NASA's Maturation of Instruments for Solar System Exploration (MatISSE) program, will enhance the laser subsystem and calibrate the instrument's dating capability using <u>terrestrial rocks</u>, planetary analogs, and meteorites from the Moon and Mars. A similar instrument for lunar dating and chemistry, called CDEX (the Chemistry and Dating EXperiment), is under consideration for funding for a Discovery Program lunar mission that could fly in 2021, known as MARE (Moon Age and Regolith Explorer).



"Current research shows that our dating of significant events in the history of the Moon after it was formed ? say, between 1 billion and 3.2 billion years ago ? could be incorrect by up to a billion years." Anderson said. "This has major implications for understanding the duration of bombardment and volcanism in the inner solar system, the era of water and possibly life on Mars, and the evolution of life on Earth. Using this technology, low-cost space missions can achieve significantly more accurate understanding, filling a crucial gap in our knowledge of the inner <u>solar system</u>."

## Provided by Southwest Research Institute

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