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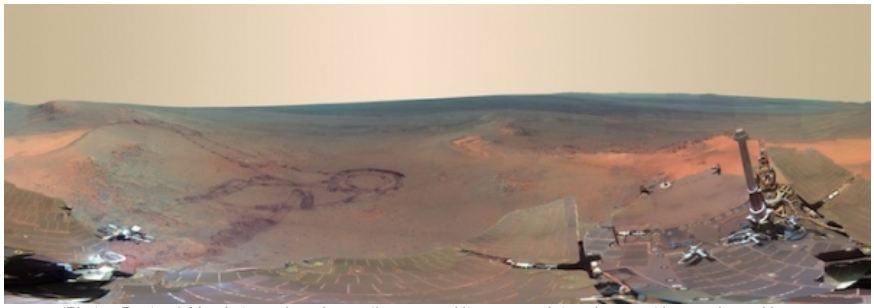
Scientists Develop Super-Accurate Measurement to Determine if a Meteorite Actually Came from Mars



(Photo : Reuters) Mars' atmosphere is mostly gone and its once-moist environment is now dry and baron.

NASA's Mars Curiosity rover has confirmed that meteorites thought to be from Mars are actually from the Red Planet thanks to a way to measure the Martian atmosphere.

According to a press release, the new measurement works by counting with utmost precision two types of gasses: Argon-36 and Argon-38. Curiosity accomplishes this by using its Sample Analysis at Mars (SAM) instrument.

These two gases, lighter and heavier forms of argon, exist in the atmosphere, but ratios are naturally skewed. Since most of Mars' atmosphere has been lost to space, the lighter gas went with it and has left the planet's atmosphere enriched with the heavier.

The SAM measurements pins down with the highest accuracy ever for NASA at 4.2 atoms of Argon-36 for every one of Argon-38. Viking landers in the 70s put that ratio around seven and previous studies and analyses narrowed it to 3.6 to 4.5, but these researchers believe they have closed the gap.

"We really nailed it," said the paper's lead author Sushil Atreya, of the University of Michigan, Ann Arbor. "This direct reading from Mars settles the case with all Martian meteorites."

Atreya and his colleagues published their findings Thursday in the American Geophysical Union journal *Geophysical Research Letters*.

"Other isotopes measured by SAM on Curiosity also support the loss of atmosphere, but none so directly as argon," Atreya said. "Argon is the clearest signature of atmospheric loss because it's chemically inert and does not interact or exchange with the Martian surface or the interior. This was a key measurement that we wanted to carry out on SAM."

The discovery is all part of the curiosity (hence the rover's name) surrounding how Mars went from a warm, wet environment billions of years ago to the dry, baron wasteland it is now. With data on how Mars lost its atmosphere, scientists can better understand the planet's history.

Curiosity's main purpose is to explore Mount Sharp, which scientists also believe holds many answers to Martian mysteries. With the government shutdown over, NASA can get back into full swing with moving Curiosity towards its ultimate goal.

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