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# Curiosity confirms some meteorites on Earth originated from Mars (Video)

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NASA's Curiosity Rover has discovered both good and bad news for the possibility of life on the dusty red planet. (on.aol.com)



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World News Examiner

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The National Aeronautic and Space Administration (NASA) **announced** on Thursday that the **Mars rover Curiosity**, in its study of the Martian atmosphere, has found “the most definitive evidence yet” that some meteorites found on Earth originated from the planet Mars.

In making this determination, the ratio of argon-36 to argon-38 isotopes found in the thin atmosphere of Mars by Curiosity’s Sample Analysis at Mars (SAM) instrument

has been measured at 4.2, a ratio which falls within the 3.6 to 4.5 ratio range found in the air pockets in some meteorites on Earth.

Previously, the range of the ratio of Argon in the Martian atmosphere had been measured to be between 4 and 7 based upon instruments on the by the Viking landers in the 1970s.

Argon, a noble gas, is a primary indicator due to its inability to react with other elements and compounds, thereby leaving atmospheric escape as the prime factor in any ratio reduction. Due to the lower gravity on Mars, over billions of years more argon-36 has escaped into space than the heavier argon-38 isotope, reducing the ratio of the two isotopes accordingly and creating a type of “fingerprint” which can be used to match with a sample in the

meteorite in order to determine the origin of the air based upon age of the meteorite.

Calling the measurement “key,” University of Michigan Professor of Atmospheric and Space Science Sushil Atreya **remarked** of the analysis, “Other isotopes measured by SAM on Curiosity also support the loss of atmosphere, but none so directly as argon. 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.”

Atreya is a lead author of a paper on the subject submitted to **Geophysical Research Letters** on Oct.16.

According to the NASA **news release**, Ancient Martian air samples trapped in meteorites from billions of years ago are seen by scientists as a key tool to understanding Mars’ change over the eons from a warmer and wetter planet with a denser atmosphere to the cold and dry Mars of today.

With a launch window opening starting on November 18, the upcoming **MAVEN** (Mars Atmosphere and Volatile Evolution Mission) unmanned craft to Mars will be able to directly measure the actual rate of escape of the Martian atmosphere and may provide greater detail to support the argon-36 to argon-38 ratio measurements from Curiosity.