

# South China Morning Post 南華早報

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## Methane on Mars raises hopes in search for life

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### Reuters in Cape Canaveral

*Nasa's rover Curiosity found spurts of the gas in the atmosphere and carbon compounds in rock, which could be from life past or present*

Nasa's Mars rover Curiosity has found carbon-containing compounds in samples drilled out of an ancient rock, the first definitive detection of organics on the surface of earth's neighbour planet, scientists said.

The rover also found spurts of methane gas in the atmosphere, a chemical that on earth is strongly tied to life. Additional studies, which may be beyond the rover's capabilities, are needed to determine if the organic compounds or the methane gas were produced by past or present life on Mars or if they stem from geochemical processes.

"We have had a major discovery. We have found organics on Mars," Curiosity lead scientist John Grotzinger, with the California Institute of Technology, said during a webcast from a science meeting in San Francisco.

"The probability of any of these things being sources [from life] ... we just have to respect that it is a possibility," he said.

Curiosity picked up hints of organics in its earliest chemical analysis of rocks in Gale Crater, a 150km-wide impact basin where the rover landed in August 2012.

Last week, scientists published research showing the crater was once filled with water, with sediments building up over time to form the 5km-high Mount Sharp, which rises from the basin's floor.

Shortly after Curiosity landed, it found that the planet most like earth in the solar system had the right chemical ingredients and environmental conditions to support microbial life, fulfilling the primary goal of the mission.

The methane detections were a big surprise, said Curiosity co-investigator Chris Webster, with Nasa's Jet Propulsion Laboratory in Pasadena, California.

A year ago, scientists reported that after eight months of searching, Curiosity had found no detectable methane in the atmosphere around Gale Crater.

The rover continued to take air samples and in November last year it hit pay dirt with a methane spike 10 times higher than background levels. The methane patch remained around the rover

for 60 days and then vanished.

Curiosity scientist Sushil Atreya, with the University of Michigan, said his team suspects the methane was produced somewhere around the rover and then dissipated in the wind.

The methane detections by Curiosity follow a series of observations by earth-based telescopes and Mars-orbiting spacecraft that found mysterious but fleeting plumes of methane.

Methane can be generated by solar ultraviolet radiation of cosmic dust on the surface of Mars, said Atreya.

Or, if there is water in subsurface aquifers on Mars, the interaction of rocks and water could produce methane, he said.

Another possibility is that microbes are producing methane in their metabolic process. Scientists cannot tell if the source of methane was "modern" or came from a leakage in stored methane, Atreya said.

What they do know is the source is "relatively well-localised and small", and is likely north of the rover's current location in Gale Crater.

"We're really not in a position from these data to say one way or the other what the origin of the methane is," Atreya said.

"Because we are seeing signals here it's worth coming back and doing more work," Grotzinger added.

The research was released at the American Geophysical Union conference. The methane study is due to be published in this week's edition of the journal *Science*.

### **Additional reporting by Agence France-Presse**

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