

New Viewing Technique Bolsters Case For Life On Mars

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New examinations of a Martian meteorite found nearly a century ago have strengthened the possibility that the red planet once harbored life.

"I don't understand the sample completely just yet, but it's exciting," research team member Kathie Thomas-Keprta told SpaceDaily.com.

The sample in question is from a meteorite named Nakhla, which was found in the Egyptian desert in 1911, and which has been held since by the Natural History Museum in London. A new examination of Nakhla has produced a very strong indication that it might have been imbedded with organic carbon - an absolute necessity for life - that did not originate on Earth.

Keprta, a specialist in microscopy techniques and a contractor for NASA at the Johnson Space Center, said she and colleagues recently obtained pristine samples of the rock -which is thought to be 1.3 billion years old - to probe its structure using the latest optical examination techniques.

"We have known for a long time about its carbon content via chemical analysis," she explained, "but up to now no one has been able to locate it."

The team took a tiny, polished piece of the meteorite only 30 micrometers thick that was sealed in epoxy and applied a technique called focused-ion-beam microscopy, or FIB, to carve out a small rectangle from the sample, and another technique called transmission

electron microscopy, or TEM, to identify the deposits of carbonaceous material.

"For the first time, we can find the exact area" on Nakhla that harbors the carbon," Thomas-Keprta said. Further analysis by secondary ion mass spectroscopy, or SIMS, identified the sample as composed of carbon 13, which she said could only have come from an extraterrestrial source, not from any earthbound contamination.

All life on Earth contains some quantity of the isotope carbon 14, but no carbon 13.

The deposits, which Thomas-Keprta described as "shrubby," resemble similar structures on Earth created by the actions of ancient microorganisms that lived within volcanic rocks on the ocean floor.

Thomas-Keprta and colleagues will present their findings next month at the Lunar and Planetary Science Conference in Houston. The team includes scientists who also presented evidence for microbial life in another Martian meteorite - ALH84001, which was found in Antarctica - in 1998.

All Martian meteorites are thought to have been ejected from the red planet's surface during ancient impacts. The meteorites drifted in interplanetary space until captured by Earth's gravity and dragged down to the surface.

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